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# IONOSPHERIC DATA IN JAPAN

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RADIO RESEARCH LABORATORIES

NUKUI-KITAMACHI, KOGANEI-SHI, TOKYO, JAPAN

CONTENTS

# SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAISO BRANCH

Ionospheric observation is carried out at the following four observatories in Japan.

| | Latitude | Longitude | Site |
|---|---|---|---|
| Wakkanai | 45°23.6′N. | 141°41.1′E. | Midori-cho, Wakkanai-shi, Hokkaido |
| Akita | 39°43.5′N. | 140°08.2′E. | Tegata Sumiyoshi-cho, Akita-shi, Akita-ken |
| Kokubunji | 35°42.4′N. | 139°29.3′E. | Nukui-Kitamachi, Koganei-shi, Tokyo-to |
| Yamagawa | 31°12.1′N. | 130°37.1′E. | Yamagawa-machi, Ibusuki-gun, Kagoshima-ken |

Solar radio emission and radio propagation conditions are observed at Hiraiso Branch.

| | Latitude | Longitude | Site |
|---|---|---|---|
| Hiraiso | 36°22.0′N. | 140°37.5′E. | Isozaki-machi, Nakaminato-shi, Ibaraki-ken |

## SYMBOLS AND TERMINOLOGY

### A. IONOSPHERE

All symbols and terminology in the table of ionospheric data are used in accordance with the "URSI Handbook of Ionogram Interpretation and Reduction," 1961.

**Terminology**

$f_0F2$, $f_0F1$, $f_0E$ — The ordinary wave critical frequency for the $F2$, $F1$ and $E$ layers, respectively.

$f_0Es$ — The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.

$f_bEs$ — The lowest ordinary wave frequency at which the $Es$ layer begins to become transparent. This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.

$f$-min — The frequency below which no echoes are observed.

$M(3000)F2$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F2$ layer.

$M(3000)F1$ — The maximum usable frequency factor for a path of 3000 km for transmission by $F1$ layer.

$h'F2$ — The minimum virtual height, $h'F2$, refers to the highest, most stable stratification observed in the $F$ region and can only be scaled when such stratification is present.

$h'F$ — The natural and most significant $F$ region virtual height parameter is that for lowest $F$ region stratification. This will be denoted by $h'F$. Thus $h'F$ is identical with the current $h'F2$ when $F$ region stratification is absent, e.g., at night, and with the current $h'F1$ when $F1$ stratification is present.

$h'Es$ — The lowest virtual height of the trace used to give the $f_0Es$.

$hpF2$ — The virtual height of the $F2$ layer measured on the ordinary

wave component at a frequency equal to $0.834 f_0F2$.

*ypF2* The semi-thickness of the *F*2 layer deduced from a parabolic fit to the "nose" of the electron density distribution with height and based on the observed *h'f* trace. (The difference between *hpF*2 and the virtual height at $0.969 f_0F2$).

**a. Descriptive Letters**

The following letters are entered after or used to replace a numerical value on the monthly tabulation sheets.

A Measurement influenced by, or impossible because of, the presence of a lower thin layer, for example *Es*.

B Measurement influenced by, or impossible because of, absorption in the vicinity of *f*-min.

C Measurement influenced by, or impossible because of, any non-ionospheric reason.

D Measurement influenced by, or impossible because of, the upper limit of the normal frequency range. Used in a qualifying sense, see below.

E Measurement influenced by, or impossible because of, the lower limit of the normal frequency range. Used in a qualifying sense, see below.

F Measurement influenced by, or impossible because of, the presence of spread echoes.

G Measurement influenced or impossible because the ionization density of the layer is too small to enable it to be made accurately.

H Measurement influenced by, or impossible because of, the presence of a stratification.

L Measurement influenced or impossible because the trace has no sufficiently definite cusp between layers.

M Interpretation of measurement questionable because the ordinary and extraordinary components are not distinguishable.

N Conditions are such that the measurement cannot be interpreted.

O Measurement refers to the ordinary component.

R Measurement influenced by, or impossible because of, attenuation in the vicinity of a critical frequency.

S Measurement influenced by, or impossible because of, interference or atmospherics.

T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.

V Forked trace which may influence the measurement.

W Measurement influenced or impossible because the echo lies outside the height range recorded.

X Measurement refers to the extraordinary component.

Y Intermittent trace.

Z Third magneto-ionic component present.

**b. Qualifying Letters**

The following letters are entered in the first column before a numerical

value on the monthly tabulation sheets.

D greater than.
E less than.
I Missing value has been replaced by an interpolated value.
J Ordinary component characteristic deduced from the extraordinary component.
O Extraordinary component characteristic deduced from the ordinary component. (Used for x- characteristics only.)
T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful.
U Uncertain or doubtful numerical value.
Z Measurement deduced from the third magneto-ionic component.

**c. Definitions of the CNT, MED, UQ and LQ**

*Median count* (CNT) is the number of values from which a median has been computed. In addition to numerical values, the count may include certain descriptive letters.

*Median* (MED) of a set of numbers is the middle value when the numbers are arranged in order of magnitude, or the average of the two middle values if there is an even number of values.

*Upper quartile* (UQ) is the median value of the upper half of the values when they are ranked according to magnitude; the *lower quartile* (LQ) is the median value of the lower half.

**d. Description of Standard Types of *Es***

The eight standard types of *Es* are identified by corresponding capital letters: *F*, *L*, *C*, *H*, *Q*, *R*, *A*, *S*. These letters suggest the names flat, low, cusp, high, equatorial, retardation, auroral and slant, respectively. The letter '*N*' is used to designate any *Es* trace that does not correspond to any of the eight types.

*F* An *Es* trace which shows no appreciable increase of height with frequency. The trace is usually relatively solid at most latitudes. This classification may only be used at night; apparently flat *Es* traces observed in the daytime are classified according to their virtual hight: *H* or *L*.

*L* A flat *Es* trace at or below the normal *E* layer minimum virtual height in the day or below the night *E* layer minimum virtual height at night.

*C* An *Es* trace showing a relatively symmetrical cusp at or below $f_0E$. This is usually continuous with the normal *E* trace, although when the deviative absorption is large, part or all of the cusp may be missing. (Usually a daytime type.)

*H* An *Es* trace showing a discontinuity in height with the normal *E* layer trace at or above $f_0E$. The cusp is not symmetrical, the low frequency end of the *Es* trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

*Q* An *Es* trace which is diffuse and non-blanketing over a wide

frequency range. The spread is most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)

*R* An *Es* trace showing an increase in virtual height at the high frequency end similar to group retardation but which is non-blanketing over part or all of its frequency range. This is distinguished from the usual group retardation (as in the case of an occulting thick *E* layer) by the lack of group retardation in the *F* layer traces at corresponding frequencies and the lack of complete blanketing.

*A* An *Es* having a well defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. These sometimes extend over several hundred kilometers of virtual height.

*S* A diffuse *Es* trace which rises steadily with frequency and usually emerges from another type *Es* trace. The rising trace alone is classified as '*S*'; the horizontal trace is classified separately. At high latitudes the slant trace usually starts to rise from a horizontal *Es* trace such as *Es-L* or *Es-F*, at frequencies which greatly exceed the *E* layer critical frequency, whereas at low latitudes it usually rises from *Es-Q* *Es-C* or *Es-H* at frequencies near the regular *E* critical frequency. Type *S* is never used to determine $f_0Es$ and $h'Es$. The slant trace is sometimes observed to start at $f_0E$ without echoes clearly identifiable as *Es* echoes being seen.

*N* The designation '*N*' is used to denote an *Es* trace which cannot be classified into one of the standard types. When a trace appears to be intermediate between any two classes a choice should be made whenever possible even if it is uncertain. '*N*' should be used sparingly.

**e. Multiple Reflections from *Es***

When the ionogram shows the presence of multiple reflections from *Es* the number of traces seen should be recorded after the letter indicating the type.

## B. SOLAR RADIO EMISSION

Solar radio observations are carried out on 200 and 500 MHz at Hiraiso Branch.
Antennas are two parabolic reflectors : 10 meter for 200 MHz and
5 meter for 500 MHz, each having the total power receiver.
Observations are feasible almost from sunrise to sunset.

**a. Time and Unit**

The time is expressed as U.T.

The unit is $10^{-22}$ W·m$^{-2}$Hz$^{-1}$ for both components of polarization.

**b. Daily Data**

*Flux density*

The three-hourly and daily mean values are given.

*Variability*

The three-hourly and daily mean values are given at 200 MHz only.

Variability is expressed in the following four grades:

0=Quiet or no burst,
1=A few bursts,
2=Many bursts,
3=Very many bursts.

The number of bursts exceeding the flux level is counted.

Bracet means that observation time does not exceed one third of the period.

**c. Distinctive Events**

The phenomena are picked up on the following criteria:

1. Distinct from the prevailing kind of activity,
2. Correlated with other known solar phenomena,
3. Remarkable change-over from one situation to another.

*Starting time* and *Time of maximum* are given to nearest minute in general, but to nearest a tenth minute for short intense occurrences or clear commencements.

*Duration* is given in minutes and to nearest a tenth minute, if short or clear.

*Descriptive type* is denoted by the following symbols:

S =Simple rise and fall of intensity;
C =Complex variation of intensity,
C + =Prolonged broad-band enhancement of radiation, generally of spectral type IV;
F =Group of bursts: multiple peaks probably belonging to the same event, but separated by relatively short period of quietness;
RF =More or less irregular rise and fall of intensity, at metric or decimetric wavelengths;
e =Sudden beginning of burst with steep rise of intensity;
E =Steep rise of intensity of continuum background;
p.i. =post-burst increase;
onset storm=clear-cut beginning of a noise storm.

*Peak intensity* is the flux density of the highest peak reached during the occurrence, measured above the pre-burst level.

*Mean intensity* is the flux density averaged over the burst's duration, measured above the pre-burst level; therefore, multiplying the duration, the total energy of the occurrence can be estimated.

## C. RADIO PROPAGATION CONDITIONS

### a. Field Strengths of WWV and WWVH

Field Strengths observations of WWV and WWVH transmitted from Fort Collins, Colorado and Hawaii, respectively, are carried out at Hiraiso Branch. In order to avoid interferences with other standard frequency waves on the same frequency, the upper side-band of 440 Hz is picked up by the use of a narrow band pass filter with ±40 Hz bandwidth.

The *tabulated field strength* is the average of peak value of the incident upper side-band field intensity in dB above one microvolt per meter. The *duration* of observation is two minutes for WWV and three minutes for WWVH following the time indicated in universal time on the table.

Particulars of the transmitter and receiver are summarized in the following tables:

Transmitter

| | WWV | WWVH |
|---|---|---|
| Location | Fort Collins, Colorado Long. 105°02′ W Lat. 40°41′ N | Maui, Hawaii Long. 156°28′ W Lat. 20°46′ N |
| Power | 3 kW for the upper side-band | 0.5 kW* for the upper side-band |
| Antenna | λ/2 vertical | λ/2 vertical |
| Distance | 9150 km | 6270 km |

* Reduced from the carrier power of 2 kW with amplitude modulation of 100%.

Receiver

| | |
|---|---|
| Antenna | 4.5 m vertical rod |
| Bandwidth | ±40 Hz for the upper side-band |
| Calibration | every half an hour |

The meaning of *Descriptive symbols* is as follows:

C: Measurement influenced by, or impossible because of, any non-propagational reasons.

S: Measurement influenced by, or impossible because of, interferences or atmospherics.

U: Inaccurate measurement influenced by interferences, atmospherics, or non-propagational reasons.

E: Less than the following figure.

**b. Radio Propagation Quality Figures**

Radio propagation quality figures are usually expressed on the scale that ranges from one to five as follows:

1=very poor (very disturbed)
2=poor (disturbed)
3=rather poor (unstable)
4=normal
5=good

The tabulated circuits contain Hamburg (commercial circuit), WWV (10, 15 and 20 MHz frequencies broadcast from Fort Collins, Colorado), San Francisco (commercial circuit) and WWVH (10 and 15MHz frequencies broadcast from Hawaii), which are received at Hiraiso Branch.

Warnings of radio propagation which are broadcast from JJY station are expressed in three grades:

N=normal
U=unstable
W=disturbed

The letter W expresses HF propagation disturbances which are expected to occur during the following 12 hours after issue. The letter U and N also means unstable and normal conditions, respectively.

Whole day radio quality indices stand for the averages of the 6-hourly indices of the circuits of Hamburg, WWV and San Francisco.

Start- and end-time of principal geomagnetic storms correlated with radio propagation conditions are tabulated from observations at Kakioka Magnetic observatory.

**c. Sudden Ionospheric Disturbances (S. I. D.)**

The data of short wave fade-out (SWF) are prepared from the records of field intensities at Hiraiso, of the following circuits. Start-time, Duration, Type and Importance are obtained from the data of a circuit whose Drop-out Intensity is underlined. Drop-out Intensities of 10, 15 and 20 MHz are indicated by (′), (none), and (″), respectively. Characteristics of the phenomenon are classified as follows.

*Circuits and Drop-out intensities*

C O .....WWV 20, 15 and 10 MHz (Fort Collins, Colorado)
S F .....Various frequencies of commercial circuit (San Francisco)
H A .....WWVH 15 and 10 MHz (Hawaii)
T O .....JJY 15 and 10 MHz (Tokyo)
S H .....BPV 15 and 10 MHz (Shanghai)
H B .....Various frequencies of commercial circuit (Hamburg)

*Start-time and Duration*

*Types*

S : sudden drop-out and gradual recovery
Slow : slow drop-out taking 5 to 15 minutes and gradual recovery
G : gradual disturbances; irregular change in both drop-out and recovery

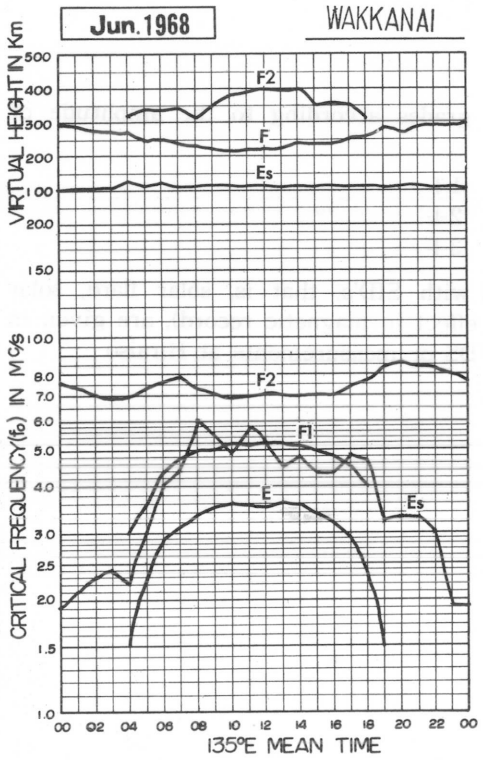
*Importances*

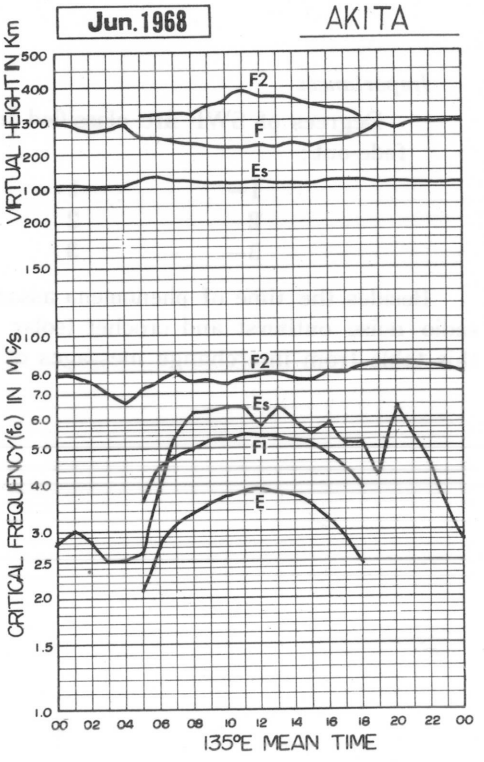
Degrees of SWF are classified into 9 grades according to the amplitude of fade-out ;

| | | |
|---|---|---|
| 1— | 1 | 1+ |
| 2— | 2 | 2+ |
| 3— | 3 | 3+ |

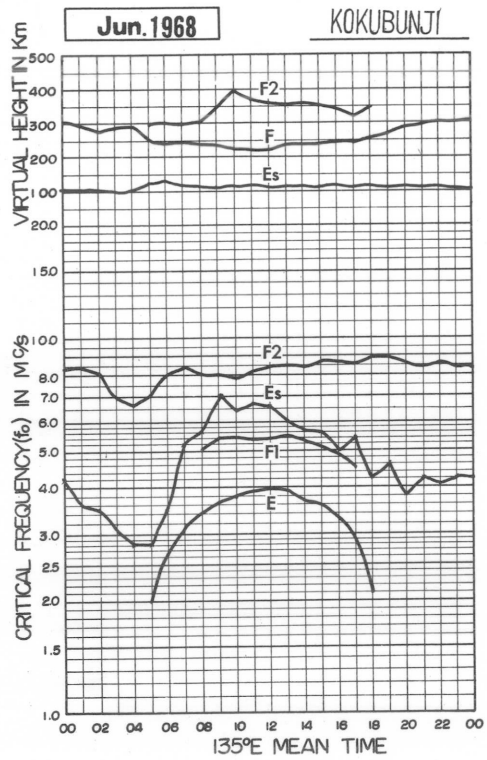
Besides, the time of phenomena associated with SID's, that is, solar flare, solar radio noise outburst and crochet (solar flare effect in magnetic record), are given in this table from interchange messages of IUWDS or measurements at Hiraiso.

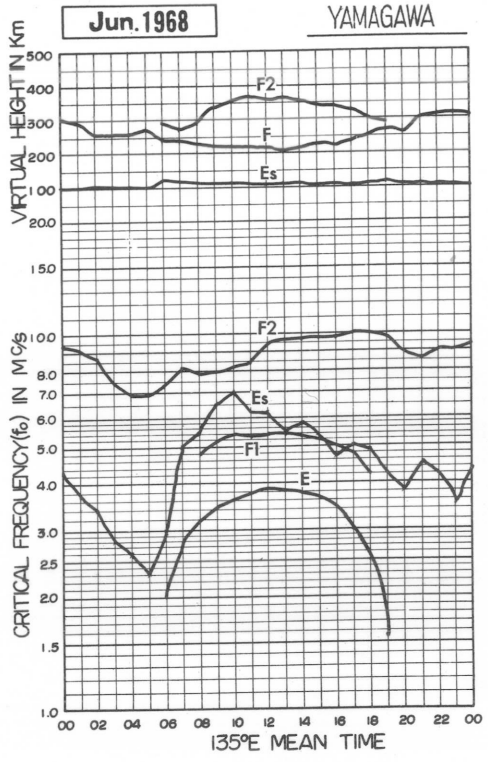
IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS




IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS



## IONOSPHERIC DATA
## LIST OF MEDIAN VALUES

**OBSERVED AT:** WAKKANAI

JUN. 1968

**135° E Mean Time** (G.M.T. +9h)

| CHAR | HR | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| foF2 | MED | 76 | 73 | 70 | 68 | 69 | 73 | 76 | 78 | 73 | 71 | 68 | 69 | 70 | 70 | 70 | 70 | 70 | 73 | 76 | 83 | 86 | 84 | 83 | 80 |
| | CNT | 26 | 26 | 26 | 26 | 26 | 25 | 23 | 20 | 16 | 20 | 21 | 22 | 22 | 24 | 25 | 23 | 24 | 24 | 24 | 24 | 25 | 26 | 26 | 26 |
| | Q R | 8 | 8 | 7 | 9 | 10 | 7 | 14 | 18 | 15 | 9 | 8 | 6 | 9 | 8 | 10 | 9 | 8 | 9 | 10 | 11 | 11 | 10 | 6 | 7 |
| foF1 | MED | | | | | 300 | 360 | 440 | 475 | 500 | 500 | 520 | 510 | 520 | 520 | 510 | 495 | 480 | 450 | 400 | | | | | |
| | CNT | | | | | 5 | 11 | 15 | 14 | 14 | 15 | 17 | 19 | 19 | 23 | 23 | 22 | 17 | 15 | 9 | | | | | |
| foE | MED | | | | E | 150 | 230 | 290 | 310 | 335 | 350 | 360 | 358 | 350 | 365 | 360 | 338 | 315 | 290 | 230 | 150 | E | | | |
| | CNT | | | | 18 | 13 | 22 | 22 | 23 | 22 | 23 | 22 | 24 | 23 | 20 | 22 | 20 | 21 | 22 | 21 | 5 | 11 | | | |
| foEs | MED | 19 | J21X | J23X | J24X | 22 | 30 | 40 | 44 | 60 | 55 | 49 | 58 | 53 | 45 | 48 | 43 | 43 | 48 | 47 | 32 | 33 | J33X | J30X | 19 |
| | CNT | 26 | 25 | 26 | 26 | 26 | 23 | 22 | 23 | 22 | 23 | 23 | 24 | 25 | 23 | 25 | 23 | 23 | 24 | 23 | 24 | 25 | 25 | 24 | 26 |
| | Q R | D18 | | | 8 | | | 22 | 26 | 31 | 36 | 20 | 24 | 23 | 16 | 18 | 10 | 31 | 22 | 26 | 25 | 43 | 25 | D21 | D18 |
| f-min | MED | E13E | E | E | E | E | 11 | 12 | 16 | 17 | 17 | 18 | 18 | 19 | 19 | 18 | 17 | 17 | 15 | 12 | E13S | E | E | E | E |
| | CNT | 26 | 25 | 26 | 26 | 26 | 23 | 22 | 23 | 22 | 23 | 23 | 24 | 25 | 23 | 25 | 23 | 23 | 24 | 23 | 24 | 25 | 25 | 24 | 26 |
| M (3000) F2 | MED | 272 | 270 | 270 | 270 | 270 | 275 | 275 | 285 | 282 | 282 | 275 | 270 | 278 | 275 | 275 | 280 | 275 | 275 | 278 | 280 | 280 | 272 | 270 | 270 |
| | CNT | 26 | 26 | 26 | 26 | 26 | 25 | 23 | 20 | 16 | 20 | 21 | 22 | 22 | 24 | 25 | 23 | 24 | 24 | 24 | 24 | 25 | 26 | 26 | 26 |
| M (3000) F1 | MED | | | | | 335 | 350 | 345 | 345 | 355 | 365 | 360 | 365 | 350 | 352 | 348 | 350 | 342 | 330 | 338 | | | | | |
| | CNT | | | | | 5 | 11 | 15 | 13 | 12 | 13 | 17 | 19 | 18 | 20 | 22 | 20 | 16 | 15 | 6 | | | | | |
| h'F2 | MED | | | | | 320 | 330 | 330 | 340 | 310 | 350 | 378 | 385 | 395 | 390 | 400 | 350 | 360 | 350 | 310 | | | | | |
| | CNT | | | | | 6 | 13 | 18 | 18 | 16 | 19 | 20 | 20 | 22 | 22 | 24 | 23 | 21 | 21 | 15 | | | | | |
| h'F | MED | 290 | 280 | 275 | 275 | 275 | 250 | 250 | 242 | 228 | 218 | 212 | 218 | 220 | 222 | 238 | 240 | 240 | 250 | 255 | 278 | 270 | 280 | 290 | 285 |
| | CNT | 26 | 26 | 26 | 26 | 23 | 24 | 19 | 16 | 12 | 14 | 18 | 18 | 20 | 20 | 22 | 20 | 17 | 17 | 18 | 20 | 19 | 21 | 26 | 25 |
| h'Es | MED | 105 | 108 | 105 | 105 | 105 | 125 | 115 | 120 | 110 | 110 | 110 | 110 | 110 | 110 | 115 | 110 | 118 | 115 | 115 | 115 | 110 | 110 | 110 | 110 |
| | CNT | 15 | 18 | 17 | 21 | 19 | 15 | 19 | 21 | 21 | 22 | 21 | 21 | 22 | 19 | 23 | 19 | 18 | 19 | 21 | 22 | 23 | 23 | 18 | 15 |
| hpF2 | MED | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNT | | | | | | | | | | | | | | | | | | | | | | | | |
| ypF2 | MED | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNT | | | | | | | | | | | | | | | | | | | | | | | | |

## IONOSPHERIC DATA
## LIST OF MEDIAN VALUES

**OBSERVED AT:** AKITA

JUN. 1968

**135° E Mean Time** (G.M.T. +9h)

| CHAR | HR | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| foF2 | MED | 79 | 78 | 75 | 70 | 66 | 72 | 76 | 81 | 76 | 76 | 74 | 76 | 78 | 78 | 76 | 75 | 80 | 79 | 82 | 84 | 84 | 83 | 82 | 81 |
| | CNT | 25 | 26 | 26 | 26 | 28 | 29 | 29 | 29 | 29 | 29 | 27 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 30 | 29 | 26 | 28 | 25 | 25 |
| | Q R | 9 | 8 | 9 | 10 | 10 | 9 | 10 | 17 | 15 | 11 | 10 | 7 | 10 | 9 | 12 | 12 | 8 | 7 | 13 | 9 | 7 | 8 | 6 | 6 |
| foF1 | MED | | | | | | 360L | 440L | 470 | 0495 | 520 | 520 | 540 | 535 | 530 | 520 | 510 | 480 | 440 | 395 | | | | | |
| | CNT | | | | | | 6 | 15 | 21 | 18 | 19 | 19 | 22 | 24 | 26 | 27 | 27 | 24 | 11 | 4 | | | | | |
| foE | MED | | | | | E | 210 | 270 | 310 | 335 | 355 | 370 | 380 | 382 | 380 | 370 | 350 | 320 | 285 | 245 | | | | | |
| | CNT | | | | | 15 | 13 | 23 | 24 | 23 | 22 | 17 | 11 | 10 | 8 | 11 | 13 | 14 | 16 | 4 | | | | | |
| foEs | MED | J28X | J30X | J28X | J25X | J25X | 26 | 38 | J53X | J62X | J62X | J64X | J64X | J57X | J64X | J59X | J54X | J58X | J51X | J51X | J42X | J64X | J52X | J44X | J34X |
| | CNT | 28 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 28 | 29 | 28 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 29 | 29 | 30 | 30 | 30 |
| | Q R | 23 | 21 | 14 | 12 | 16 | 14 | 9 | 18 | 24 | 24 | 18 | 25 | 25 | 32 | 26 | 39 | 29 | 17 | 48 | 42 | 45 | 37 | 37 | 30 |
| f-min | MED | E13S | E | E | E | E | 14 | 17 | 17 | 18 | 18 | 19 | 19 | 19 | 19 | 18 | 18 | 18 | 17 | 16 | E13E | E12S | E13S | E12S | E13S |
| | CNT | 28 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 28 | 29 | 28 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 29 | 29 | 30 | 30 | 30 |
| M (3000) F2 | MED | 270 | 275 | 275 | 275 | 270 | 275 | 280 | 285 | 290 | 280 | 275 | 272 | 275 | 275 | 280 | 275 | 280 | 285 | 285 | 280 | 275 | 270 | 270 | 270 |
| | CNT | 25 | 26 | 26 | 26 | 28 | 29 | 29 | 29 | 29 | 28 | 26 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 30 | 29 | 26 | 28 | 25 | 25 |
| M (3000) F1 | MED | | | | | | 328L | 335L | 348 | 352 | 355 | 350 | 348 | 350 | 345 | 350 | 340 | 340 | 335 | 322 | | | | | |
| | CNT | | | | | | 6 | 15 | 18 | 16 | 17 | 17 | 20 | 23 | 25 | 26 | 26 | 22 | 9 | 4 | | | | | |
| h'F2 | MED | | | | | | 318 | 318 | 320 | 308 | 340 | 365 | 380 | 370 | 372 | 360 | 350 | 342 | 328 | 305 | | | | | |
| | CNT | | | | | | 20 | 28 | 28 | 26 | 27 | 25 | 27 | 28 | 28 | 27 | 28 | 28 | 28 | 26 | | | | | |
| h'F | MED | 290 | 285 | 272 | 275 | 290 | 250 | 250 | 240 | 232 | 225 | 220A | 215 | 225 | 220 | 230 | 220 | 230 | 240A | 255 | 280 | 270 | 285 | 288 | 290 |
| | CNT | 30 | 29 | 30 | 29 | 29 | 27 | 23 | 18 | 16 | 17 | 17 | 18 | 21 | 24 | 23 | 25 | 20 | 14 | 15 | 25 | 28 | 28 | 28 | 29 |
| h'Es | MED | 110 | 108 | 105 | 105 | 105 | 125 | 130 | 125 | 120 | 120 | 120 | 115 | 120 | 115 | 115 | 118 | 120 | 120 | 120 | 115 | 115 | 110 | 110 | 110 |
| | CNT | 25 | 28 | 28 | 28 | 23 | 25 | 29 | 27 | 28 | 29 | 27 | 28 | 29 | 29 | 29 | 28 | 26 | 26 | 29 | 29 | 29 | 30 | 29 | 29 |
| hpF2 | MED | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNT | | | | | | | | | | | | | | | | | | | | | | | | |
| ypF2 | MED | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNT | | | | | | | | | | | | | | | | | | | | | | | | |

## IONOSPHERIC DATA
## LIST OF MEDIAN VALUES

**OBSERVED AT:** KOKUBUNJI

JUN. 1968

**135° E Mean Time** (G.M.T. +9h)

| CHAR | HR | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| foF2 | MED | 83 | 84 | 81 | 70 | 67 | 70 | 80 | 85 | 80 | 80 | 78 | 82 | 84 | 85 | 84 | 87 | 86 | 85 | 88 | 89 | 86 | 84 | 86 | 84 |
| | CNT | 25 | 25 | 25 | 25 | 28 | 29 | 30 | 29 | 28 | 22 | 23 | 27 | 27 | 29 | 28 | 26 | 27 | 27 | 30 | 29 | 28 | 30 | 27 | 29 |
| | Q R | 10 | 11 | 13 | 10 | 12 | 11 | 11 | 17 | 17 | 12 | 8 | 7 | 8 | 11 | 15 | 10 | 12 | 12 | 15 | 10 | 9 | 11 | 10 | 9 |
| foF1 | MED | | | | | | 305 | 445L | 485L | 505L | 540L | 540 | 535 | 540 | 545 | 530 | 510 | 490L | 450L | | | | | | |
| | CNT | | | | | | 2 | 2 | 2 | 6 | 6 | 6 | 6 | 9 | 8 | 11 | 15 | 11 | 6 | | | | | | |
| foE | MED | | | | | | 200 | 265 | 310 | 340 | 360 | 375 | 390 | 395 | 390 | 371 | 360 | 330 | 285 | 210 | | | | | |
| | CNT | | | | | | 13 | 24 | 21 | 18 | 11 | 4 | 5 | 8 | 8 | 10 | 15 | 15 | 13 | 7 | | | | | |
| foEs | MED | J42X | 36 | 35 | 31 | 28 | 28 | 35 | 52 | J56X | 70 | 64 | 67 | 66 | 60 | 58 | 56 | 49 | 54 | 42 | 46 | 38 | 42 | 40 | 42 |
| | CNT | 30 | 30 | 30 | 29 | 28 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 29 | 30 | 30 | 30 | 30 | 30 | 30 |
| | Q R | 25 | 23 | 22 | 14 | 13 | 6 | 11 | 16 | 12 | 31 | 29 | 43 | 43 | 29 | 47 | 33 | 30 | 32 | 26 | 21 | 40 | 54 | 27 | 29 |
| f-min | MED | 14 | 15 | 13 | 12 | 10 | 14 | 15 | 15 | 16 | 25 | 26 | 26 | 26 | 26 | 26 | 20 | 16 | 15 | 15 | 15 | 14 | 14 | 14 | E14S |
| | CNT | 30 | 30 | 30 | 29 | 28 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 29 | 30 | 30 | 30 | 30 | 30 | 30 |
| M (3000) F2 | MED | 265 | 270 | 280 | 270 | 278 | 285 | 282 | 290 | 285 | 275 | 265 | 270 | 275 | 275 | 278 | 278 | 280 | 280 | 285 | 285 | 275 | 265 | 280 | 265 |
| | CNT | 25 | 24 | 25 | 25 | 28 | 29 | 30 | 29 | 28 | 22 | 23 | 27 | 27 | 28 | 26 | 26 | 27 | 27 | 30 | 29 | 28 | 30 | 27 | 29 |
| M (3000) F1 | MED | | | | | | 332 | 335L | 358L | 358L | 345L | 350 | 370 | 355 | 345 | 350 | 348 | 330L | 340L | | | | | | |
| | CNT | | | | | | 2 | 2 | 2 | 6 | 6 | 6 | 5 | 7 | 8 | 11 | 14 | 11 | 5 | | | | | | |
| h'F2 | MED | | | | | | 298 | 300 | 295 | 300 | 345 | 390 | 368 | 360 | 355 | 355 | 350 | 342 | 321 | 298 | | | | | |
| | CNT | | | | | | 12 | 26 | 26 | 28 | 21 | 19 | 23 | 26 | 25 | 26 | 26 | 26 | 26 | 24 | | | | | |
| h'F | MED | 305 | 295 | 275 | 280 | 290 | 250 | 245 | 245 | 240A | 235 | 220 | 218 | 220 | 240 | 238 | 236 | 245 | 246 | 252 | 270 | 282 | 292 | 300 | 300 |
| | CNT | 28 | 27 | 29 | 28 | 28 | 26 | 25 | 15 | 13 | 9 | 7 | 8 | 9 | 12 | 15 | 18 | 15 | 14 | 16 | 29 | 28 | 26 | 29 | 28 |
| h'Es | MED | 105 | 105 | 105 | 100 | 105 | 125 | 128 | 120 | 115 | 115 | 115 | 112 | 110 | 112 | 115 | 115 | 115 | 110 | 115 | 110 | 110 | 110 | 110 | 105 |
| | CNT | 29 | 30 | 29 | 27 | 26 | 27 | 30 | 30 | 30 | 29 | 29 | 30 | 29 | 30 | 27 | 26 | 28 | 29 | 29 | 30 | 29 | 28 | 29 | 29 |
| hpF2 | MED | 390 | 372 | 350 | 370 | 370 | 345 | 340 | 330 | 345 | 365 | 395 | 385 | 368 | 365 | 370 | 360 | 358 | 350 | 348 | 350 | 360 | 390 | 390 | 390 |
| | CNT | 25 | 24 | 25 | 25 | 28 | 28 | 30 | 27 | 26 | 15 | 19 | 24 | 24 | 27 | 23 | 23 | 26 | 25 | 30 | 29 | 28 | 30 | 27 | 29 |
| ypF2 | MED | 100 | 105 | 105 | 100 | 95 | 108 | 110 | 110 | 100 | 120 | 95 | 110 | 100 | 95 | 105 | 105 | 100 | 110 | 110 | 110 | 105 | 012 | 100 | 100 |
| | CNT | 25 | 24 | 25 | 25 | 28 | 28 | 30 | 27 | 26 | 15 | 19 | 24 | 24 | 27 | 23 | 23 | 26 | 25 | 30 | 29 | 28 | 30 | 27 | 29 |

## IONOSPHERIC DATA
## LIST OF MEDIAN VALUES

**OBSERVED AT:** YAMAGAWA

JUN. 1968

**135° E Mean Time** (G.M.T. +9h)

| CHAR | HR | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| foF2 | MED | 94S | 91S | 87S | 74 | 68 | 68 | 72 | 82 | 78 | 79 | 82 | 84 | 94 | 96 | 96 | 97 | 97 | 100 | 100 | 98S | 88S | 86S | 90S | 90S |
| | CNT | 17 | 17 | 25 | 22 | 26 | 26 | 28 | 29 | 29 | 29 | 30 | 29 | 28 | 29 | 29 | 29 | 29 | 30 | 30 | 30 | 30 | 29 | 26 | 20 |
| | Q R | 10 | 16 | 16 | 12 | 13 | 10 | 12 | 13 | 12 | 13 | 15 | 9 | 13 | 14 | 14 | 13 | 11 | 18 | 11 | 11 | 11 | 9 | 8 | 10 |
| foF1 | MED | | | | | | | 360 | 435L | 480 | 515 | 540 | 530 | 540 | 535 | 530 | 520 | 500 | 480 | 420L | | | | | |
| | CNT | | | | | | | 1 | 4 | 9 | 12 | 15 | 19 | 21 | 20 | 23 | 21 | 20 | 20 | 7 | | | | | |
| foE | MED | | | | | | | 200 | 275 | 315 | 345 | 360 | 375 | 385 | 380 | 375 | 362 | 340 | 300 | 250 | 155 | | | | |
| | CNT | | | | | | | 26 | 25 | 25 | 23 | 24 | 20 | 17 | 18 | 19 | 18 | 21 | 21 | 16 | 5 | | | | |
| foEs | MED | J43X | J37X | J34X | J28X | J26X | J23X | 29 | J50X | J54X | J65X | J70X | 62 | 62 | 54 | 58 | 54 | 47 | J50X | J49X | J42X | J38X | J45X | J42X | J35X |
| | CNT | 30 | 30 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 29 | 30 | 29 | 29 | 29 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| | Q R | 39 | 37 | 19 | 13 | 13 | 16 | 10 | 31 | 43 | 38 | 23 | 37 | 19 | 29 | 25 | 23 | 29 | 33 | 25 | 27 | 45 | 56 | 36 | 39 |
| f-min | MED | E15S | E14S | 13 | E | E | 11 | 15 | 14 | 15 | 15 | 17 | 18 | 19 | 19 | 19 | 18 | 16 | 15 | 14 | 13 | E14S | E15S | E15S | E15S |
| | CNT | 30 | 30 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 29 | 30 | 29 | 29 | 29 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| M (3000) F2 | MED | 265S | 275S | 285S | 285 | 275 | 280 | 300 | 300 | 290 | 270 | 270 | 265 | 270 | 270 | 270 | 275 | 275 | 280 | 280 | 282S | 280S | 265S | 260S | 265S |
| | CNT | 17 | 17 | 25 | 22 | 26 | 26 | 28 | 29 | 29 | 28 | 28 | 28 | 27 | 29 | 29 | 29 | 29 | 30 | 30 | 30 | 30 | 29 | 26 | 20 |
| M (3000) F1 | MED | | | | | | | 320 | 362L | 362 | 350 | 350 | 360 | 355 | 362 | 345 | 355 | 340 | 330 | 338L | | | | | |
| | CNT | | | | | | | 1 | 4 | 8 | 11 | 8 | 11 | 13 | 12 | 15 | 16 | 14 | 15 | 4 | | | | | |
| h'F2 | MED | | | | | | | 290 | 270 | 285 | 330 | 355 | 371 | 358 | 365 | 355 | 345 | 341 | 325 | 300 | 288 | | | | |
| | CNT | | | | | | | 14 | 25 | 28 | 27 | 27 | 28 | 26 | 29 | 28 | 29 | 30 | 30 | 30 | 8 | | | | |
| h'F | MED | 302 | 294 | 260 | 258 | 264 | 276 | 244 | 230 | 228 | 220 | 217 | 218 | U214 | 205 | 220 | 225 | 222 | 232 | 252 | 272 | 260 | 300 | 305 | 308 |
| | CNT | 29 | 30 | 30 | 30 | 30 | 30 | 28 | 21 | 17 | 16 | 10 | 13 | 12 | 15 | 17 | 17 | 17 | 18 | 18 | 27 | 28 | 29 | 29 | 29 |
| h'Es | MED | 100 | 100 | 100 | 100 | 100 | 100 | 125 | 120 | 115 | 110 | 110 | 110 | 110 | 110 | 110 | 105 | 105 | 105 | 110 | 110 | 105 | 105 | 105 | 105 |
| | CNT | 30 | 29 | 29 | 29 | 29 | 24 | 29 | 29 | 30 | 30 | 28 | 29 | 27 | 28 | 28 | 29 | 27 | 28 | 30 | 29 | 30 | 30 | 30 | 30 |
| hpF2 | MED | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNT | | | | | | | | | | | | | | | | | | | | | | | | |
| ypF2 | MED | | | | | | | | | | | | | | | | | | | | | | | | |
| | CNT | | | | | | | | | | | | | | | | | | | | | | | | |

# IONOSPHERIC DATA

JUN. 1968

foF2 (0.1)

135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45°23.6'N. Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 76 | 76 | 73 | 63 | 63 | 73 | 83 | 89 | 80 | 76 | 77 | 83 | 78 | 79 | 79 | 76 | 72 | 71 | 73 | 78 | 84 | 87 | 83 | 80 |
| 2 | 74 | 72 | 66 | 66 | 71 | IA 75 | IA 79 | A | A | A | A | IA 62 | 65 | 66 | 64 | 66 | 65 | IA 67 | 67 | 73 | 69 | 70 | S 71 | 70 |
| 3 | 71 | 68 | F 66 | F 63 | 60 | 66 | 81 | 88 | IA 77 | 73 | IA 69 | IA 70 | 73 | 70 | 75 | 71 | 73 | 76 | 76 | 87 | 88 | 82 | 81 | 76 |
| 4 | 79 | 78 | 70 | 68 | 70 | 74 | 74 | 73 | 72 | 78 | 77 | 78 | 79 | IA 74 | 76 | 77 | 78 | 80 | 83 | 85 | IS 88 | 92 | 93 | 90 |
| 5 | 85 | 83 | 76 | 75 | 75 | 89 | 107 | 107 | 111 | 98 | 90 | 85 | 87 | 80 | 80 | 78 | IC 78 | 76 | 78 | 83 | 87 | 88 | 87 | 88 |
| 6 | 85 | 79 | 76 | 73 | 74 | 80 | 89 | 94 | 87 | 74 | 71 | 75 | 76 | 73 | 73 | 75 | 77 | 80 | 87 | 95 | 93 | 90 | TS 88 | 87 |
| 7 | 84 | 83 | 83 | 75 | 70 | 71 | 73 | 85 | 83 | 80 | 78 | 71 | 70 | 70 | 65 | 73 | 74 | C | C | C | C | C | C | C |
| 8 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 9 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | 72 | 72 | 73 | C | C | 80 | 84 | 89 | 86 | 93 | 83 | 70 |
| 11 | 71 | 76 | 77 | UF 73 | UF 73 | 90 | 91 | 77 | 71 | 69 | 66 | 67 | 66 | 71 | 58 | 63 | 67 | 66 | 63 | 67 | 68 | US 73 | 80 | 81 |
| 12 | 66 | F 53 | 44 | 43 | 48 | 51 | 58 | A | A | 58 | 53 | 53 | 53 | 54 | IA 57 | 59 | 60 | 61 | 63 | 68 | 75 | S 75 | 77 | 74 |
| 13 | 67 | 65 | 59 | 58 | 54 | 53 | 56 | 57 | A | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | C | C | C | A | 70 | 72 | 66 | 63 | 65 | 67 | 83 | 88 | 91 | 89 | 77 |
| 15 | 79 | 71 | 73 | 73 | 66 | 63 | 60 | 53 | 54 | 52 | 53 | A | A | A | IA 54 | 57 | 54 | 54 | 56 | 59 | 63 | 70 | 73 | 73 |
| 16 | 72 | 67 | 63 | 63 | 62 | 73 | 77 | 91 | 88 | 86 | 73 | 67 | 69 | 70 | 69 | 71 | 70 | 70 | 73 | 79 | 83 | 85 | 85 | 83 |
| 17 | 80 | 73 | 73 | 68 | 69 | 69 | 61 | 63 | 66 | 67 | 64 | 66 | 67 | 71 | 68 | 72 | 74 | 80 | 93 | 96 | 96 | 84 | 83 | 74 |
| 18 | 77 | 71 | 69 | 66 | 65 | 58 | 53 | A | A | A | A | A | A | 61 | 63 | 62 | 63 | 67 | 70 | 73 | 75 | F 75 | F 73 | F 73 |
| 19 | UF 70 | 66 | 63 | 56 | 58 | 62 | 78 | 76 | 73 | 71 | 68 | 72 | 76 | 79 | 82 | 79 | 74 | 76 | IA 82 | 88 | 84 | 85 | 81 | 80 |
| 20 | 82 | 76 | 66 | 64 | 67 | 75 | 66 | IA 62 | 62 | 63 | 63 | 63 | 65 | 63 | 62 | 64 | 68 | 73 | 78 | 76 | 77 | 77 | 74 | 71 |
| 21 | 73 | 73 | 70 | 69 | 69 | 67 | C | C | C | C | C | 77 | 75 | 74 | 76 | 74 | 71 | 74 | 80 | 90 | 91 | 74 | 73 | 74 |
| 22 | 70 | 73 | 67 | 63 | 70 | 73 | 76 | F 70 | 68 | IA 69 | H 65 | 67 | 68 | 67 | 71 | 67 | 68 | 75 | 81 | 90 | 90 | 88 | 83 | 80 |
| 23 | 77 | 74 | 62 | F 63 | F 63 | IC 69 | 75 | 80 | A | 66 | 64 | 57 | C | C | C | C | C | C | C | C | 74 | 81 | 80 | 75 |
| 24 | UF 70 | S 68 | 65 | F 58 | F 61 | C | C | C | C | 69 | 68 | 62 | 64 | 62 | 65 | C | 65 | 65 | 71 | 80 | 83 | 80 | 83 | 81 |
| 25 | 74 | 73 | 70 | 68 | 74 | 80 | 76 | 76 | 72 | 73 | 73 | 71 | 75 | 69 | 69 | 66 | 66 | IA 70 | 75 | 80 | 86 | 83 | 86 | 82 |
| 26 | 79 | 79 | 77 | 72 | 69 | 74 | 79 | 83 | 88 | 83 | 87 | 71 | 70 | 76 | 75 | 70 | 69 | 73 | 80 | 87 | 94 | 84 | 83 | 79 |
| 27 | 79 | 78 | 73 | 73 | 73 | 73 | 66 | 70 | 73 | 71 | 67 | 69 | 65 | 65 | 66 | 64 | 70 | 71 | 76 | 85 | 87 | 85 | 83 | 81 |
| 28 | 77 | 71 | 71 | 69 | 65 | 67 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | IC 77 | IC 77 | IC 73 |
| 29 | 69 | IC 68 | 66 | 67 | 73 | IC 73 | IC 80 | 85 | C | 69 | 66 | H 67 | 74 | IC 73 | 70 | 69 | 72 | 76 | IC 80 | H 91 | S 86 | 84 | IC 83 | 83 |
| 30 | 78 | 76 | 74 | 70 | 76 | 70 | 73 | 87 | C | C | 72 | 69 | R 70 | IC 67 | 76 | 74 | 76 | 81 | 77 | IA 78 | 83 | 82 | 83 | 80 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 26 | 26 | 26 | 26 | 26 | 25 | 23 | 20 | 16 | 20 | 21 | 22 | 22 | 24 | 25 | 23 | 24 | 24 | 24 | 24 | 25 | 26 | 26 | 26 |
| MED | 76 | 73 | 70 | 68 | 69 | 73 | 76 | 78 | 73 | 71 | 68 | 69 | 70 | 70 | 70 | 70 | 70 | 73 | 76 | 83 | 86 | 84 | 83 | 80 |
| UQ | 79 | 76 | 73 | 72 | 73 | 74 | 80 | 88 | 85 | 77 | 73 | 72 | 75 | 74 | 75 | 74 | 74 | 76 | 80 | 88 | 88 | 87 | 83 | 81 |
| LQ | 71 | 68 | 66 | 63 | 63 | 67 | 66 | 70 | 70 | 68 | 65 | 66 | 66 | 66 | 65 | 65 | 66 | 67 | 70 | 77 | 77 | 77 | 77 | 74 |

# IONOSPHERIC DATA

JUN. 1968 | foF1 (0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45°23.6'N, Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | L | 450 | 480 | 480 | H 550 | 540 | 530 | 500 | H 540 | 540 | 530 | 490 | | | | | | | |
| 2 | | | | | | A | A | A | A | A | A | I A 510 | 520 | 520 | H 530 | 500 | A | A | | | | | | |
| 3 | | | | | | | 440 | 470 | I A 500 | A | A | A | A | 520 | 520 | 490 | 490 | 450 | | | | | | |
| 4 | | | | | | | 500 | L 530 | 530 | L | 530 | I A 540 | 540 | I A 510 | 530 | H 530 | H 480 | L 460 | | | | | | |
| 5 | | | | | | | L 450 | 500 | 500 | 530 | I A 540 | 530 | 550 | 560 | 510 | 500 | C | A | | | | | | |
| 6 | | | | | | | 440 | 480 | 520 | 500 | 520 | I A 540 | 530 | 520 | 530 | 480 | I R 500 | L 440 | L 400 | | | | | |
| 7 | | | | | | L 400 | 410 | 490 | 500 | 510 | 530 | 540 | 520 | H 560 | 540 | 510 | 510 | C | C | | | | | |
| 8 | | | | | | C | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | | |
| 9 | | | | | | C | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | | |
| 10 | | | | | | C | C | C | C | C | C | C | 540 | 530 | 540 | C | C | L 460 | | | | | | |
| 11 | | | | | | | A | 470 | A | 480 | A | A | 490 | 490 | 480 | 460 | 460 | A | A | | | | | |
| 12 | | | | | A | 360 | A | A | A | I A 480 | 480 | 480 | 490 | A | A | 460 | H 460 | 430 | L | | | | | |
| 13 | | | | | 290 | 360 | A | A | A | C | C | C | C | C | C | C | C | C | C | | | | | |
| 14 | | | | | | C | C | C | C | C | C | C | A | 500 | 510 | 480 | 480 | H 450 | | | | | | |
| 15 | | | | | | 360 | 410 | 450 | 460 | 470 | 480 | A | A | A | I A 490 | 470 | | 430 | | | | | | |
| 16 | | | | | | | L | 480 | 480 | 500 | A | 530 | 530 | 520 | 510 | 490 | L 480 | 460 | A | | | | | |
| 17 | | | | | 280 | 360 | 470 | 460 | 470 | 500 | 530 | 520 | 520 | 520 | 510 | 500 | 470 | 440 | 400 | | | | | |
| 18 | | | | | | 360 | 420 | A | A | A | A | A | A | 510 | 500 | 500 | A | A | L 400 | | | | | |
| 19 | | | | | | L 400 | 420 | 520 | 530 | 510 | 520 | 510 | 520 | 510 | 500 | 480 | 480 | 440 | I A 390 | | | | | |
| 20 | | | | | L 300 | 360 | | A | 480 | 480 | 510 | H 500 | I A 500 | 520 | 520 | 460 | 480 | A | A | | | | | |
| 21 | | | | | | 340 | C | C | C | C | C | 530 | A | 530 | 500 | 510 | 470 | 450 | L | | | | | |
| 22 | | | | | 300 | 400 | 420 | 460 | A | A | 480 | 500 | 510 | 510 | 510 | 450 | 500 | 430 | A | | | | | |
| 23 | | | | | | C | 440 | A | A | / | 500 | H 510 | C | C | C | C | C | C | C | C | | | | |
| 24 | | | | | | C | C | C | C | A | 510 | 510 | A | 510 | 510 | C | A | 480 | L 400 | | | | | |
| 25 | | | | | | | 440 | | I A 500 | A 520 | 520 | I A 510 | 530 | 530 | I A 520 | 530 | A | A | L 430 | | | | | |
| 26 | | | | | | | | A | 500 | 500 | I A 510 | 530 | 520 | 520 | 510 | 500 | 490 | H 470 | 410 | | | | | |
| 27 | | | | | | | 440 | 470 | I A 490 | 490 | 520 | 510 | 520 | 520 | 530 | 500 | 490 | A | 400 | | | | | |
| 28 | | | | | | U L 400 | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | | |
| 29 | | | | | L 320 | C | I C 430 | A | A | 530 | 530 | 480 | 520 | I C 510 | 500 | 480 | 490 | 460 | I C 410 | | | | | |
| 30 | | | | | | | | 470 | C | A | A | A | 520 | I C 510 | A | A | A | A | A | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | 5 | 11 | 15 | 14 | 14 | 15 | 17 | 19 | 19 | 23 | 23 | 22 | 17 | 15 | 9 | | | | | |
| MED | | | | | 300 | 360 | 440 | 475 | 500 | 500 | 520 | 510 | 520 | 520 | 510 | 495 | 480 | 450 | 400 | | | | | |
| UQ | | | | | L 300 | 400 | 445 | 490 | 500 | 515 | 530 | 530 | 530 | 525 | 530 | 500 | 490 | 460 | 410 | | | | | |
| LQ | | | | | 290 | 360 | 420 | 470 | 480 | 485 | 510 | 510 | 515 | 510 | 505 | 480 | 480 | 440 | 400 | | | | | |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | foE (0.01) | 135° E Mean Time (G. M. T. + 9h)

Station WAKKANAI Lat. 45°23.6'N. Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | F | 150 | 210 | 290 | 320 | 340 | 350 | 350 | 360 | 350 | 340 | 340 | I A 315 | 325 | 290 | 225 | F | | | | |
| 2 | | | | E | 150 | 230 | 290 | 315 | 340 | 350 | 370 | 355 | 385 | 380 | 365 | 325 | 315 | 275 | 205 | S | | | | |
| 3 | | | | | 140 | 235 | 290 | 310 | 335 | 335 | 345 | 375 | 350 | 330 | 365 | 325 | 315 | 290 | 225 | S | | | | |
| 4 | | | | | 160 | 230 | 290 | 310 | 335 | 345 | 375 | 390 | 385 | 360 | 350 | 350 | 325 | 290 | 230 | S | | | | |
| 5 | | | | F | 140 | 240 | 290 | 320 | 340 | 370 | 370 | 380 | 365 | 355 | 360 | 340 | I C 315 | 290 | 230 | S | | | | |
| 6 | | | | E | 160 | 240 | 295 | 320 | 330 | 340 | 355 | 350 | 335 | 365 | 370 | 355 | 315 | 290 | 220 | S | | | | |
| 7 | | | | | A | 220 | 290 | 305 | 330 | 340 | 345 | 355 | 340 | 380 | 365 | 345 | 325 | C | C | C | | | | |
| 8 | | | | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | |
| 9 | | | | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | |
| 10 | | | | C | C | C | C | C | C | C | C | C | A | A | 385 | C | C | 300 | 240 | S | E | | | |
| 11 | | | | F | A | 225 | 280 | 310 | 345 | 350 | 365 | 370 | 365 | 360 | 340 | 330 | 300 | 295 | 225 | 170 | S | | | |
| 12 | | | | | 175 | 225 | 270 | 300 | 315 | I A 315 | 330 | 330 | 350 | 375 | 360 | 340 | 300 | 280 | 220 | S | E | | | |
| 13 | | | | E | 170 | 230 | 280 | 305 | 330 | C | C | C | C | C | C | C | C | C | C | C | C | | | |
| 14 | | | | C | C | C | C | C | C | C | C | C | 350 | 355 | 365 | 350 | 320 | 290 | 250 | 180 | S | | | |
| 15 | | | | | 170 | 230 | I A 275 | 305 | 315 | 330 | 355 | 350 | 345 | A | A | 300 | 330 | 290 | 230 | S | | | | |
| 16 | | | | | A | A | 295 | 315 | 325 | 345 | 355 | 355 | 340 | 340 | 355 | 325 | 295 | I A 270 | 235 | S | E | | | |
| 17 | | | | E | 150 | 235 | 290 | 305 | 335 | 350 | 360 | 360 | 345 | 375 | 350 | 345 | 320 | 290 | 235 | S | E | | | |
| 18 | | | | F | A | 225 | 275 | 305 | 340 | 350 | 360 | 355 | 350 | 320 | 345 | 325 | 295 | A | A | A | A | | | |
| 19 | | | | E | A | 230 | 295 | 305 | 335 | 345 | 340 | 395 | 395 | 385 | 365 | 335 | 320 | 285 | 235 | S | E | | | |
| 20 | | | | E | A | 220 | 290 | 305 | 330 | 355 | 380 | 380 | 380 | 380 | 375 | 345 | 320 | 280 | A | A | A | | | |
| 21 | | | | E | 125 | 240 | C | C | C | C | C | 395 | 385 | 365 | 360 | 340 | 310 | 280 | 230 | S | E | | | |
| 22 | | | | F | A | 230 | 290 | 310 | 320 | 335 | 350 | 355 | 350 | 380 | 365 | 350 | 325 | 295 | 230 | 120 | E | | | |
| 23 | | | | E | A | C | A | 315 | 330 | 345 | 355 | 335 | C | C | C | C | C | C | C | C | E | | | |
| 24 | | | | F | A | C | C | C | C | 335 | A | 340 | A | A | 380 | C | 305 | 280 | 220 | S | E | | | |
| 25 | | | | F | A | A | 240 | 300 | 340 | 365 | 370 | 380 | 375 | 380 | 340 | 325 | 310 | 295 | 235 | S | S | | | |
| 26 | | | | E | A | 215 | 280 | 315 | 335 | 355 | 365 | 365 | 390 | A | A | A | A | 295 | 250 | 150 | E | | | |
| 27 | | | | E | A | 250 | 290 | 310 | 335 | 350 | 365 | 390 | I A 380 | 370 | 330 | 315 | 320 | 290 | 245 | S | E | | | |
| 28 | | | | F | 140 | 225 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | | | |
| 29 | | | | | 145 | I C 220 | I C 280 | 305 | 325 | 355 | 360 | 340 | 320 | C | A | A | A | 290 | I C 235 | S | | | | |
| 30 | | | | | A | 220 | 285 | 310 | C | 350 | 360 | 345 | 345 | I C 335 | 325 | A | A | A | A | S | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | | | | 18 | 13 | 22 | 22 | 23 | 22 | 23 | 22 | 24 | 23 | 20 | 22 | 20 | 21 | 22 | 21 | 5 | 11 | | | |
| MED | | | | E | 150 | 230 | 290 | 310 | 335 | 350 | 360 | 358 | 350 | 365 | 360 | 338 | 315 | 290 | 230 | 150 | E | | | |
| UQ | | | | E | 160 | 235 | 290 | 315 | 340 | 350 | 365 | 380 | 380 | 380 | 365 | 345 | 320 | 290 | 235 | 170 | E | | | |
| LQ | | | | E | 140 | 220 | 280 | 305 | 330 | 340 | 350 | 350 | 345 | 348 | 345 | 325 | 310 | 280 | 225 | 120 | E | | | |

# IONOSPHERIC DATA

JUN. 1968 | foEs (0.1) | 135 E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | E S 17 | E | E | F | G | 33 | J X 76 | 40 | 49 | 40 | 49 | G | G | G | 53 | J X 51 | G | 44 | 60 | 30 | 21 | J X 75 | J X 51 | E |
| 2 | J X 35 | J X 30 | E | 20 | J X 53 | 83 | J X 83 | J X 70 | 110 | J X 106 | M 73 | 125 | G | 42 | 50 | G | J X 65 | J X 74 | 101 | J X 33 | J X 28 | J X 85 | J X 33 | E |
| 3 | F S 15 | J X 28 | J X 23 | 25 | 22 | 30 | 33 | 44 | J X 86 | J X 183 | 78 | 101 | 63 | G | 40 | 41 | 40 | 33 | J X 63 | J X 48 | J X 53 | J X 43 | J X 30 | E |
| 4 | E | E | E | J X 25 | G | 30 | J X 48 | 41 | J X 55 | 46 | 44 | 56 | J X 68 | J X 143 | G | 39 | 43 | G | 30 | J X 43 | J X 33 | 18 | E | E |
| 5 | E | J X 23 | J X 23 | 23 | G | 30 | 45 | 74 | G | 47 | J X 84 | 43 | J X 73 | 45 | 40 | G | C | J X 55 | 32 | 31 | 20 | J X 24 | 30 | 18 |
| 6 | F | 15 | E | E | G | G | G | G | 54 | J X 60 | 48 | 60 | 40 | J X 63 | 48 | G | 65 | 44 | 47 | J X 31 | 19 | J X 25 | J X 43 | J X 24 |
| 7 | J X 24 | J X 50 | J X 25 | 18 | 21 | 28 | 35 | 44 | 80 | J X 60 | J X 71 | J X 53 | 45 | 50 | 46 | 43 | 43 | C | C | C | C | C | C | C |
| 8 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 9 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | 53 | 40 | J X 145 | C | C | G | G | 25 | 20 | 18 | E S 15 | E S 15 |
| 11 | J X 24 | 35 | 33 | J X 33 | J X 31 | J X 56 | J X 80 | 41 | 71 | 44 | 63 | J X 73 | 53 | 42 | 40 | 43 | 33 | 55 | 81 | G | E S 13 | J X 35 | E S 15 | E S 16 |
| 12 | 18 | J X 24 | J X 26 | J X 50 | J X 43 | 31 | 68 | 128 | J X 136 | J X 84 | 40 | 51 | 39 | J X 61 | J X 113 | J X 73 | G | G | 29 | 22 | 15 | E | E S 17 | E S 16 |
| 13 | F S 16 | E | E | E | G | 31 | J X 50 | 47 | J X 70 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | C | C | C | J X 163 | G | 49 | 43 | 38 | G | G | G | E S 15 | 18 | E S 16 | E |
| 15 | E S 16 | 13 | 15 | J X 24 | G | G | 33 | 35 | 38 | 50 | 47 | J X 75 | 69 | 80 | J X 65 | 43 | G | G | J X 53 | J X 51 | 50 | E S 16 | J X 38 | J X 25 |
| 16 | E S 16 | J X 21 | J X 33 | J X 24 | J X 30 | J X 33 | G | G | 44 | 43 | 53 | 47 | 40 | 56 | 47 | 45 | 33 | 45 | J X 48 | 25 | J X 33 | 20 | 20 | E S 16 |
| 17 | E S 15 | E | E | E | G | G | 33 | 38 | 43 | 40 | G | 44 | 41 | 46 | 44 | G | G | 39 | 36 | 31 | J X 85 | 15 | E S 15 | 18 |
| 18 | J X 33 | J X 25 | J X 31 | J X 23 | 25 | 28 | 33 | J X 57 | 61 | 116 | J X 92 | J X 65 | J X 63 | 45 | 40 | 41 | J X 58 | J X 51 | 31 | J X 25 | 113 | J X 60 | J X 35 | 21 |
| 19 | 20 | J X 40 | J X 28 | J X 43 | J X 50 | 31 | 60 | 55 | J X 95 | J X 70 | 43 | G | G | 45 | 41 | 53 | 45 | J X 53 | J X 143 | J X 35 | J X 33 | J X 30 | J X 22 | J X 51 |
| 20 | J X 35 | J X 44 | J X 36 | J X 31 | 20 | 31 | 43 | 71 | 38 | 40 | 45 | 45 | J X 55 | 48 | 51 | 43 | 63 | 50 | J X 53 | 101 | J X 70 | J X 40 | J X 35 | J X 40 |
| 21 | J X 53 | J X 36 | J X 23 | 14 | 25 | G | C | C | C | C | C | 73 | J X 73 | J X 63 | 60 | 50 | J X 63 | J X 55 | 30 | 25 | 20 | J X 30 | J X 50 | J X 51 |
| 22 | J X 25 | E | E | J X 66 | 23 | G | 38 | 39 | J X 74 | J X 110 | J X 51 | 48 | 42 | G | G | 50 | J X 74 | J X 53 | J X 55 | J X 120 | J X 63 | J X 83 | J X 56 | J X 43 |
| 23 | J X 43 | J X 31 | J X 26 | J X 43 | J X 50 | C | 43 | J X 71 | J X 173 | J X 80 | J X 55 | J X 63 | C | C | C | C | C | C | C | C | J X 54 | J X 74 | J X 33 | J X 30 |
| 24 | J X 70 | 20 | 20 | 18 | J X 30 | C | C | C | C | 80 | 48 | J X 63 | J X 53 | J X 53 | 48 | C | 92 | 165 | 73 | J X 66 | J X 70 | J X 35 | J X 33 | E S 12 |
| 25 | 25 | J X 25 | J X 23 | J X 25 | 26 | J X 83 | J X 55 | 40 | 58 | J X 56 | G | 59 | 48 | 40 | J X 63 | 53 | J X 66 | J X 80 | J X 48 | J X 51 | 80 | J X 63 | 14 | 50 |
| 26 | J X 40 | E | E | 18 | J X 30 | G | 38 | J X 73 | 63 | 50 | J X 57 | J X 60 | J X 48 | J X 56 | J X 58 | J X 53 | J X 43 | 33 | 40 | 41 | 19 | J X 33 | J X 31 | J X 24 |
| 27 | E S 15 | 15 | J X 43 | J X 26 | J X 23 | G | 33 | 38 | 53 | 43 | 43 | G | 43 | 41 | 40 | 37 | G | J X 52 | 35 | J X 43 | J X 43 | J X 21 | J X 23 | J X 28 |
| 28 | 15 | J X 20 | J X 23 | J X 24 | 19 | 28 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | J X 35 |
| 29 | J X 25 | C | J X 25 | J X 26 | 22 | C | C | 49 | J X 60 | G | 42 | 45 | J X 70 | C | J X 55 | 40 | 38 | 34 | C | 30 | J X 28 | J X 45 | C | E |
| 30 | E S 16 | E | E | E | 16 | G | G | 35 | C | J X 55 | 64 | J X 93 | J X 64 | C | J X 83 | J X 105 | J X 90 | J X 63 | J X 43 | J X 121 | 96 | J X 45 | 63 | 20 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 26 | 25 | 26 | 26 | 26 | 23 | 22 | 23 | 22 | 23 | 23 | 24 | 25 | 23 | 25 | 23 | 23 | 24 | 23 | 24 | 25 | 25 | 24 | 26 |
| MED | 19 | J X 21 | J X 23 | J X 24 | 22 | 30 | 40 | 44 | 60 | 55 | 49 | 58 | 53 | 45 | 48 | 43 | 43 | 48 | 47 | 32 | 33 | J X 33 | J X 30 | 19 |
| UQ | J X 33 | J X 30 | J X 26 | J X 26 | J X 30 | 31 | J X 55 | 64 | J X 80 | J X 80 | 64 | J X 69 | J X 64 | 56 | J X 58 | 50 | 64 | J X 55 | J X 58 | J X 50 | J X 63 | J X 45 | J X 36 | J X 30 |
| LQ | E S 15 | E | E | 18 | G | G | 33 | 38 | 49 | 44 | 44 | 45 | 41 | 40 | 40 | 40 | 33 | 33 | 32 | 25 | 20 | 20 | E E 15 | E E 12 |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968

**$f_bEs$ (0.1)**

135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | E S 17 | E | E | E | G | G | G | G | 42 | G | 44 | G | G | G | 50 | 40 | G | 37 | G | 22 | 19 | 55 | 16 | E |
| 2 | 17 | 16 | E | 13 | 50 | A | A | A | A | A | A | A | G | G | G | G | 60 | A | 40 | 27 | 24 | 50 | 15 | E |
| 3 | E S 15 | 20 | E | E | G | G | G | 41 | A | 61 | A | A | 52 | G | G | G | G | G | 60 | 42 | 43 | 43 | 16 | E |
| 4 | E | E | E | 12 | G | 17 | G | G | 45 | 44 | G | 55 | 50 | A | G | G | G | G | G | 40 | 17 | 17 | E | E |
| 5 | E | 18 | E | E | G | G | 40 | G | G | 46 | 76 | G | 48 | G | G | G | C | 51 | G | 28 | 19 | 22 | 20 | 17 |
| 6 | E | 12 | E | E | G | G | G | G | 45 | 44 | G | 57 | G | G | 48 | G | 47 | 39 | G | 22 | 14 | 16 | S | 17 |
| 7 | S | 22 | 12 | 13 | 18 | G 18 | G | G | 45 | 47 | G | G | G | G | G | G | G | C | C | C | C | C | C | C |
| 8 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 9 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | 40 | 40 | G | C | C | G | G | G | 14 | 12 | F S 15 | E S 15 |
| 11 | 20 | 16 | 26 | 17 | 20 | 50 | 68 | G | 56 | 43 | 52 | 66 | G | G | G | G | G | 50 | 51 | G | E S 13 | 35 | F S 15 | E S 16 |
| 12 | E | 16 | 23 | 21 | 30 | G | 45 | A | A | 50 | G | G | G | 52 | A | 44 | G | G | G | G | 15 | E | E S 17 | E S 16 |
| 13 | E S 16 | E | E | E | G | G | 42 | 45 | A | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | C | C | C | A | G | 45 | G | G | G | G | G | E S 15 | E | F S 16 | E |
| 15 | E S 16 | 13 | 12 | 17 | G | G | 28 | G | G | G | G | A | A | A | A | G | G | G | 50 | 41 | 40 | E S 16 | 20 | 20 |
| 16 | E S 16 | 12 | 18 | 15 | 18 | 27 | G | G | 44 | G | 50 | G | G | G | 44 | 45 | G | 42 | 43 | 23 | 27 | 17 | 17 | E S 16 |
| 17 | E S 15 | E | E | E | G | G | G | G | G | G | G | G | G | G | G | G | G | 38 | 30 | 23 | 60 | 13 | E S 15 | 16 |
| 18 | 30 | 18 | 16 | E | 17 | G | G | A | A | A | A | A | A | 44 | G | G | 49 | 45 | 27 | 22 | 15 | 40 | 25 | 19 |
| 19 | S | 20 | 20 | 16 | 45 | G | 35 | G | G | G | G | G | G | G | G | G | G | 41 | A | 28 | 16 | 22 | 16 | 40 |
| 20 | 18 | 15 | 18 | E | 18 | G | G | A | G | G | G | G | 54 | G | G | G | 44 | 45 | 44 | 47 | 42 | 30 | 20 | 20 |
| 21 | 20 | 16 | E | E | G | G | C | C | C | C | C | G | 54 | G | 47 | G | G | G | G | G | 15 | 18 | 29 | 20 |
| 22 | 20 | E | E | E | 17 | G | G | G | 54 | A | G | G | G | G | G | G | 46 | 40 | 50 | 42 | 30 | 20 | 36 | 26 |
| 23 | 20 | 20 | 16 | 20 | 28 | C | 38 | 62 | A | 59 | G | G | C | C | C | C | C | C | C | C | 52 | 52 | 28 | 21 |
| 24 | E | 18 | 15 | E | 18 | C | C | C | C | 55 | 43 | G | 51 | 50 | G | C | 56 | G | G | 30 | 38 | 17 | 25 | E S 12 |
| 25 | S | 18 | 12 | 15 | 20 | 32 | G | G | 53 | 55 | G | 59 | G | G | 55 | 50 | 52 | A | 36 | G | 70 | 42 | 14 | 25 |
| 26 | 25 | E | E | 11 | 20 | G | G | 70 | 48 | 48 | 52 | G | G | 42 | 40 | 40 | 34 | 25 | G | 30 | 18 | 31 | 28 | 16 |
| 27 | E S 15 | E | 18 | 18 | 18 | G | G | G | 50 | G | G | G | 40 | G | G | G | G | 48 | G | 38 | 35 | 17 | 19 | 17 |
| 28 | 15 | 14 | E | 15 | G | G | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | 30 |
| 29 | 24 | C | 20 | 25 | G | C | C | 47 | 52 | G | G | G | G | C | 45 | 36 | 36 | G | C | 29 | 24 | 18 | C | E |
| 30 | F S 16 | E | E | E | 16 | G | G | G | C | 55 | 62 | 55 | 47 | C | 66 | 60 | 60 | 53 | 40 | A | 17 | 40 | 20 | 17 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | 23 | 25 | 26 | 26 | 26 | 23 | 22 | 23 | 22 | 23 | 23 | 24 | 25 | 23 | 25 | 23 | 23 | 24 | 23 | 24 | 25 | 25 | 23 | 26 |
| MED | F E 16 | 15 | E E 12 | 12 | 17 | G | G | G | 49 | 46 | G | G | G | G | G | G | G | 38 | 27 | 28 | 19 | 20 | 17 | 16 |
| UQ | 20 | 18 | 18 | 16 | 20 | E G 17 | 38 | 54 | A | 55 | 52 | 58 | 51 | 41 | 47 | 38 | 46 | 46 | 44 | 39 | 38 | 40 | 22 | 20 |
| LQ | F E 15 | E | E | E | G | G | G | G | 42 | G | G | G | G | G | G | G | G | G | G | E G 22 | 15 | 17 | F E 15 | E E 12 |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | f-min(0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | E S 17 | E | E | E | E | E | E | 17 | 18 | 16 | 17 | 17 | 18 | 17 | 20 | 15 | 12 | 17 | 11 | E | E | E | E | E |
| 2 | E | E | E | E | E | 12 | 12 | 15 | 17 | 17 | 16 | 18 | 17 | 18 | 20 | 15 | 17 | 14 | 12 | E S 15 | E | E | E | E |
| 3 | E S 15 | E | E | E | E | 13 | 12 | 12 | 17 | 19 | 19 | 18 | 27 | 18 | 18 | 16 | 11 | 11 | 12 | E S 12 | E | E | E | E |
| 4 | E | E | E | E | E | E | 12 | 11 | 13 | 17 | 17 | 15 | 17 | 18 | 17 | 17 | 18 | 15 | 17 | E S 13 | E | E | E | E |
| 5 | E | E | E | E | E | 12 | 11 | 16 | 12 | 15 | 17 | 20 | 17 | 17 | 17 | 17 | C | 11 | 12 | E S 16 | E | E | E | E |
| 6 | E | E | E | E | E | E | 17 | 12 | 11 | 16 | 17 | 17 | 17 | 17 | 17 | 17 | 16 | 17 | 12 | E S 12 | E | E | E | E |
| 7 | F S 17 | E | E | E | E | 11 | 11 | 13 | 15 | 17 | 15 | 16 | 20 | 19 | 21 | 17 | 16 | C | C | C | C | C | C | C |
| 8 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 9 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | 19 | 18 | 18 | C | C | 12 | 17 | E S 15 | E | E | F S 15 | E S 15 |
| 11 | E | E | E | E | E | 12 | 18 | 17 | 18 | 17 | 17 | 17 | 19 | 20 | 18 | 19 | 17 | 16 | 12 | 11 | F S 13 | F | F S 15 | E S 16 |
| 12 | E | E | E | E | E | 12 | 13 | 11 | 18 | 17 | 20 | 18 | 20 | 17 | 18 | 17 | 16 | 15 | 16 | E S 16 | E | E | F S 17 | E S 16 |
| 13 | E S 16 | E | E | E | E | 13 | 16 | 17 | 20 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | C | C | C | 20 | 23 | 20 | 17 | 17 | 18 | 12 | 11 | E S 15 | E | F S 16 | E |
| 15 | E S 16 | E | E | E | E | 11 | 12 | 16 | 12 | 18 | 20 | 20 | 20 | 20 | 19 | 18 | 15 | 11 | 11 | E S 15 | E | E S 16 | E | E |
| 16 | E S 16 | E | E | E | E | E | 12 | 20 | 23 | 20 | 20 | 20 | 20 | 21 | 21 | 20 | 18 | 16 | 15 | E S 15 | E | E | E | E S 16 |
| 17 | E S 15 | E | E | E | E | 12 | 16 | 16 | 18 | 17 | 18 | 20 | 20 | 20 | 18 | 17 | 18 | 16 | 12 | E S 15 | E | E | E S 15 | E |
| 18 | E | E | E | E | E | 13 | 16 | 17 | 18 | 19 | 20 | 20 | 20 | 18 | 19 | 20 | 16 | 12 | 15 | E | E | E | E | E |
| 19 | F S 13 | E | E | E | E | 12 | 11 | 16 | 17 | 16 | 26 | 20 | 18 | 19 | 17 | 18 | 17 | 14 | 13 | E S 15 | E | E | E | E S 16 |
| 20 | E | E | E | E | E | 11 | 13 | 16 | 18 | 20 | 16 | 20 | 22 | 20 | 20 | 17 | 18 | 12 | 11 | E | E | E | E | E S 18 |
| 21 | E S 15 | E | E | E | E | E | C | C | C | C | C | 16 | 17 | 16 | 17 | 15 | 12 | 11 | E | E S 13 | E | E | F S 15 | E |
| 22 | E | E | E | E | E | 12 | 12 | 12 | 12 | 18 | 18 | 17 | 17 | 20 | 17 | 18 | 18 | 17 | 11 | E | E | E | E | E |
| 23 | E | E | E | E | E | C | 12 | 11 | 12 | 11 | 18 | 18 | C | C | C | C | C | C | C | C | E | E | E | E |
| 24 | E | E | E | E | E | C | C | C | C | 18 | 18 | 18 | 18 | 20 | 18 | C | 17 | 11 | 11 | E S 15 | E | E | E | E S 12 |
| 25 | E S 17 | E | E | E | E | E | 12 | 17 | 18 | 17 | 20 | 18 | 19 | 20 | 20 | 18 | 17 | 15 | 12 | E S 15 | E S 15 | E S 16 | E | E |
| 26 | E | E | E | E | E | E | 11 | 12 | 17 | 17 | 21 | 20 | 18 | 18 | 18 | 18 | 18 | 17 | 12 | E | E | E | E | E |
| 27 | E S 15 | E | E | E | E | 11 | 11 | 17 | 17 | 18 | 17 | 27 | 19 | 20 | 20 | 20 | 15 | 16 | 12 | E S 13 | E | E | E | E |
| 28 | E | E | E | E | E | E | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | E S 15 |
| 29 | F S 15 | C | E | E | E | C | C | 14 | 20 | 20 | 13 | 17 | 17 | C | 15 | 15 | 13 | 12 | C | E S 15 | E | E | C | E |
| 30 | E S 16 | E | E | E | E | 12 | 16 | 16 | C | 20 | 22 | 22 | 20 | C | 20 | 17 | 16 | 17 | 12 | E S 12 | E | E | E | E |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 26 | 25 | 26 | 26 | 26 | 23 | 22 | 23 | 22 | 23 | 23 | 24 | 25 | 23 | 25 | 23 | 23 | 24 | 23 | 24 | 25 | 25 | 24 | 26 |
| MED | F E 13 | E | E | E | E | 11 | 12 | 16 | 17 | 17 | 18 | 18 | 19 | 19 | 18 | 17 | 17 | 15 | 12 | E S 13 | E | E | E | E |
| UQ | E S 16 | E | E | E | E | 12 | 16 | 17 | 18 | 18 | 20 | 20 | 20 | 20 | 20 | 18 | 18 | 16 | 12 | E S 15 | E | E | E E 15 | E S 15 |
| LQ | E | E | E | E | E | E | 11 | 12 | 13 | 17 | 17 | 17 | 17 | 18 | 17 | 17 | 16 | 12 | 12 | E E 11 | E | E | E | E |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | M(3000) F2 (0.01) | 135 E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45°23.6'N. Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 265 | 275 | 280 | 255 | 250 | 245 | 270 | 280 | 285 | 265 | 265 | 275 | 270 | 280 | 270 | 295 | 290 | 285 | 280 | 280 | 270 | 265 | 265 | 280 |
| 2 | 255 | 260 | 250 | 260 | 260 | IA 275 | IA 285 | A | A | A | A | IA 260 | 260 | 265 | 250 | 270 | 260 | IA 270 | 260 | 280 | 265 | 255 | S 260 | 255 |
| 3 | 255 | 265 | F 270 | F 270 | 280 | 260 | 280 | 270 | IA 270 | 275 | IA 260 | IA 250 | 265 | 255 | 275 | 260 | 275 | 275 | 270 | 265 | 280 | 255 | 260 | 255 |
| 4 | 255 | 270 | 260 | 255 | 265 | 290 | 285 | 290 | 290 | 285 | 275 | 295 | 290 | IA 285 | 290 | 285 | 295 | 300 | 290 | 270 | IS 270 | 265 | 270 | 280 |
| 5 | 275 | 280 | 265 | 270 | 255 | 250 | 285 | 280 | 290 | 275 | 290 | 270 | 285 | 275 | 300 | 280 | IC 290 | 290 | 280 | 275 | 270 | 275 | 275 | 275 |
| 6 | 280 | 280 | 285 | 275 | 280 | 255 | 280 | 295 | 300 | 310 | 275 | 290 | 290 | 275 | 285 | 285 | 290 | 290 | 275 | 285 | 285 | 280 | IS 280 | 275 |
| 7 | 265 | 270 | 265 | 260 | 280 | 270 | 260 | 275 | 290 | 285 | 295 | 270 | 285 | 285 | 260 | 280 | 275 | C | C | C | C | C | C | C |
| 8 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 9 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | 270 | 260 | 270 | C | C | 270 | 275 | 280 | 265 | 285 | 290 | 255 |
| 11 | 255 | 265 | 270 | UF 280 | UF 270 | 280 | 275 | 275 | 255 | 245 | 240 | IA 240 | 240 | 260 | 215 | 230 | 265 | 270 | 260 | 255 | 235 | US 250 | 250 | 265 |
| 12 | 260 | F 245 | 240 | 250 | 250 | 240 | 260 | A | A | 255 | 225 | 215 | 240 | IA 230 | IA 245 | 255 | 250 | 255 | 265 | 265 | 265 | S 265 | 275 | 270 |
| 13 | 265 | 260 | 255 | 260 | 265 | 250 | 250 | 280 | A | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | C | C | C | A | 315 | 305 | 325 | 285 | 275 | 245 | 255 | 265 | 270 | 290 | 270 |
| 15 | 280 | 255 | 245 | 260 | 260 | 260 | 255 | 255 | 265 | 230 | 240 | A | A | A | IA 250 | 285 | 295 | 270 | 285 | 290 | 265 | 255 | 260 | 260 |
| 16 | 280 | 270 | 280 | 270 | 260 | 280 | 275 | 290 | 295 | 305 | 280 | 260 | 265 | 270 | 270 | 280 | 275 | 285 | 275 | 280 | 275 | 265 | 275 | 265 |
| 17 | 275 | 255 | 265 | 265 | 270 | 315 | 260 | 280 | 305 | 290 | 280 | 260 | 270 | 280 | 275 | 265 | 260 | 250 | 265 | 275 | 290 | 265 | 270 | 255 |
| 18 | 275 | 270 | 270 | 275 | 275 | 285 | 255 | A | A | A | A | A | A | 265 | 280 | 265 | 275 | 275 | 285 | 290 | 290 | F 265 | F 260 | F 265 |
| 19 | UF 265 | 275 | 285 | 255 | 280 | 245 | 295 | 285 | 270 | 295 | 290 | 265 | 280 | 290 | 280 | 285 | 285 | 295 | IA 285 | 275 | 285 | 275 | 270 | 265 |
| 20 | 275 | 280 | 265 | 265 | 265 | 310 | 280 | IA 285 | 270 | 265 | 255 | 275 | 265 | 265 | 265 | 280 | 265 | 290 | 295 | 290 | 285 | 275 | 270 | 265 |
| 21 | 255 | 265 | 270 | 280 | 275 | 285 | C | C | C | C | C | 305 | 295 | 285 | 290 | 290 | 280 | 295 | 290 | 290 | 300 | 295 | 265 | 280 |
| 22 | 280 | 275 | 285 | 285 | 275 | 300 | 290 | F 300 | 280 | IA 285 | H 265 | 270 | 280 | 290 | 290 | 295 | 265 | 280 | 280 | 280 | 290 | 280 | 275 | 265 |
| 23 | 285 | 285 | 275 | F 285 | F 270 | IC 265 | 255 | 275 | A | 280 | 265 | 285 | C | C | C | C | C | C | C | C | 280 | 270 | 260 | 270 |
| 24 | UF 275 | S 270 | 285 | F 260 | F 260 | C | C | C | C | 290 | 280 | 265 | 280 | 275 | 270 | C | 280 | 275 | 270 | 280 | 295 | 275 | 265 | 280 |
| 25 | 270 | 265 | 270 | 270 | 285 | 315 | 330 | 295 | 280 | 290 | 290 | 270 | 295 | 275 | 275 | 275 | 265 | IA 270 | 275 | 275 | 285 | 275 | 280 | 285 |
| 26 | 275 | 280 | 285 | 290 | 305 | 285 | 280 | 290 | 295 | 275 | 285 | 275 | 270 | 275 | 285 | 280 | 270 | 275 | 280 | 275 | 295 | 285 | 270 | 270 |
| 27 | 260 | 270 | 255 | 295 | 285 | 275 | 275 | 285 | 280 | 310 | 275 | 290 | 275 | 280 | 275 | 270 | 270 | 275 | 290 | 270 | 285 | 275 | 275 | 270 |
| 28 | 285 | 260 | 270 | 275 | 265 | 275 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | IC 280 | IC 285 | IC 280 |
| 29 | 270 | IC 260 | 275 | 270 | 275 | IC 310 | IC 285 | 320 | C | 280 | 305 | H 260 | 315 | IC 300 | 260 | 285 | 280 | 290 | IC 275 | H 290 | S 300 | 280 | IC 270 | 275 |
| 30 | 280 | 280 | 280 | 265 | 280 | 295 | 260 | 285 | C | C | 260 | 295 | R 295 | IC 265 | 275 | 280 | 275 | 285 | 305 | IA 290 | 275 | 265 | 270 | 275 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 26 | 26 | 26 | 26 | 26 | 25 | 23 | 20 | 16 | 20 | 21 | 22 | 22 | 24 | 25 | 23 | 24 | 24 | 24 | 24 | 25 | 26 | 26 | 26 |
| MED | 272 | 270 | 270 | 270 | 270 | 275 | 275 | 285 | 282 | 282 | 275 | 270 | 278 | 275 | 275 | 280 | 275 | 275 | 278 | 280 | 280 | 272 | 270 | 270 |
| UQ | 280 | 275 | 280 | 275 | 280 | 290 | 285 | 290 | 292 | 290 | 285 | 285 | 290 | 285 | 285 | 285 | 285 | 290 | 285 | 288 | 290 | 280 | 275 | 275 |
| LQ | 260 | 260 | 265 | 260 | 260 | 260 | 260 | 278 | 270 | 270 | 260 | 260 | 265 | 265 | 265 | 270 | 265 | 270 | 270 | 272 | 270 | 265 | 265 | 265 |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968

M(3000)F1 (0.01)

135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45°23.6'N. Long. 141°41.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Day \ Hour | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | L | 335 | 355 | IA 355 | H 330 | 325 | 360 | 380 | H 355 | IA 345 | 320 | 345 | | | | | | | |
| 2 | | | | | | A | A | A | A | A | A | IA 350 | 345 | 355 | H 340 | 330 | A | A | | | | | | |
| 3 | | | | | | | 325 | A | A | A | A | A | A | IA 345 | 340 | 355 | 325 | 325 | | | | | | |
| 4 | | | | | | | 350 | L 345 | 340 | L | 360 | IA 350 | IA 340 | IA 365 | 345 | H 340 | H 345 | L 350 | | | | | | |
| 5 | | | | | | | L 270 | 345 | 355 | 340 | IA 355 | 360 | 330 | 340 | 355 | 350 | C | A | | | | | | |
| 6 | | | | | | | 365 | 350 | IA 380 | IA 365 | 375 | IA 345 | 360 | 345 | IA 350 | 375 | IA 330 | IA 330 | 350 | | | | | |
| 7 | | | | | | L 350 | 355 | 345 | A | A | 360 | 335 | 370 | H 320 | 340 | 345 | 335 | C | C | | | | | |
| 8 | | | | | | C | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | | |
| 9 | | | | | | C | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | | |
| 10 | | | | | | C | C | C | C | C | C | C | 335 | 355 | 330 | C | C | L 325 | | | | | | |
| 11 | | | | | | | A | 345 | A | A | A | A | 345 | 350 | 350 | 350 | 340 | A | A | | | | | |
| 12 | | | | | A | 330 | A | A | A | IA 365 | 375 | 375 | 345 | A | A | A | H 350 | 325 | L | | | | | |
| 13 | | | | | 310 | 335 | A | A | A | C | C | C | C | C | C | C | C | C | C | | | | | |
| 14 | | | | | | C | C | C | C | C | C | C | A | 365 | IA 370 | 370 | 355 | H 330 | | | | | | |
| 15 | | | | | | 335 | 345 | 340 | 365 | 385 | 415 | A | A | A | IA 360 | 360 | | 345 | | | | | | |
| 16 | | | | | | | L | 355 | IA 360 | 370 | A | 355 | 360 | 335 | 335 | IA 350 | 340 | IA 340 | A | | | | | |
| 17 | | | | | 335 | 365 | 325 | 370 | 360 | 360 | 360 | 365 | 350 | 335 | 350 | 360 | 345 | IA 320 | A | | | | | |
| 18 | | | | | | 360 | 355 | A | A | A | A | A | A | 335 | 350 | 340 | A | A | L 335 | | | | | |
| 19 | | | | | | L 320 | 335 | 325 | 330 | 370 | 365 | 370 | 340 | 370 | 360 | 355 | 345 | IA 335 | A | | | | | |
| 20 | | | | | L 345 | 360 | | A | 350 | 375 | 350 | H 380 | IA 350 | 345 | 345 | 370 | A | A | A | | | | | |
| 21 | | | | | | 380 | C | C | C | C | C | 370 | A | 345 | IA 350 | 340 | 355 | 335 | L | | | | | |
| 22 | | | | | 335 | 350 | 355 | 370 | A | A | 395 | 365 | 375 | 355 | 335 | 370 | IA 320 | IA 335 | A | | | | | |
| 23 | | | | | | C | 330 | A | A | A | 380 | H 390 | C | C | C | C | C | C | C | C | | | | |
| 24 | | | | | | C | C | C | C | A | 375 | 375 | A | A | 355 | C | A | 335 | L 335 | | | | | |
| 25 | | | | | | | 375 | | IA 350 | IA 345 | 350 | IA 370 | 360 | 360 | IA 340 | A | A | A | A | | | | | |
| 26 | | | | | | | | A | IA 350 | IA 355 | IA 345 | 345 | 365 | 355 | 355 | 350 | 335 | H 320 | 340 | | | | | |
| 27 | | | | | | | 335 | 360 | IA 365 | 350 | 365 | 375 | 350 | 365 | 335 | 340 | 330 | A | 350 | | | | | |
| 28 | | | | | | UL 365 | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | | |
| 29 | | | | | L 345 | C | IC 360 | A | A | 370 | 360 | 415 | 380 | C | A | 355 | 345 | 325 | IC 330 | | | | | |
| 30 | | | | | | | | 345 | C | A | A | A | A | C | A | A | A | A | A | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | 5 | 11 | 15 | 13 | 12 | 13 | 17 | 19 | 18 | 20 | 22 | 20 | 16 | 15 | 6 | | | | | |
| MED | | | | | 335 | 350 | 345 | 345 | 355 | 365 | 360 | 365 | 350 | 352 | 348 | 350 | 342 | 330 | 338 | | | | | |
| UQ | | | | | L 345 | 362 | 355 | 355 | UA 362 | 370 | 375 | 375 | 365 | 358 | 355 | 360 | 345 | 335 | 350 | | | | | |
| LQ | | | | | 335 | 335 | 332 | 345 | 350 | 350 | 355 | 352 | 345 | 342 | 340 | 340 | 332 | 325 | L 335 | | | | | |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968

$h'F2$ (km)

135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | U L 330 | 345 | 325 | 290 | 400 | 385 | 370 | 365 | 360 | 365 | 345 | 340 | | | | | | | |
| 2 | | | | | | A | A | A | A | A | A | I A 480 | 460 | 440 | 500 | 390 | I A 420 | A | | | | | | |
| 3 | | | | | | | 340 | 310 | A | A 350 | A | A | 410 | 425 | 385 | 350 | 365 | 350 | | | | | | |
| 4 | | | | | | | 315 | 335 | 360 | L 345 | 385 | 340 | 340 | I A 335 | 370 | 350 | 310 | 315 | | | | | | |
| 5 | | | | | | | L 290 | 315 | 295 | 310 | I A 330 | 380 | 345 | 365 | 345 | 345 | I C 330 | 310 | | | | | | |
| 6 | | | | | | | 300 | 295 | 300 | 290 | 340 | 350 | 350 | 350 | 370 | 345 | 320 | 325 | 300 | | | | | |
| 7 | | | | | | 350 | 320 | 350 | 300 | 340 | 340 | 390 | 390 | 395 | 475 | 375 | 365 | C | C | | | | | |
| 8 | | | | | | C | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | | |
| 9 | | | | | | C | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | | |
| 10 | | | | | | C | C | C | C | C | C | C | 410 | 415 | 400 | C | C | 350 | | | | | | |
| 11 | | | | | | | A | 350 | 425 | 450 | 500 | A | 490 | 410 | 640 | 525 | 400 | 400 | I A 365 | | | | | |
| 12 | | | | | 430 | 460 | 425 | A | A | 470 | 625 | 650 | 710 | A | A | 460 | 445 | 420 | L | | | | | |
| 13 | | | | | 360 | 460 | 445 | 410 | A | C | C | C | C | C | C | C | C | C | C | | | | | |
| 14 | | | | | | C | C | C | C | C | C | C | A | 310 | 320 | 300 | 360 | 360 | | | | | | |
| 15 | | | | | | 350 | 400 | 500 | 475 | 575 | 550 | A | A | A | I A 540 | 420 | | 405 | | | | | | |
| 16 | | | | | | | 320 | 290 | 290 | 300 | 340 | 420 | 410 | 390 | 400 | 325 | 345 | 340 | 300 | | | | | |
| 17 | | | | | 310 | 265 | 420 | 375 | 310 | 320 | 400 | 450 | 400 | 360 | 395 | 385 | 360 | 400 | 310 | | | | | |
| 18 | | | | | | 300 | 450 | A | A | A | A | A | A | 445 | 400 | 420 | 360 | 350 | 305 | | | | | |
| 19 | | | | | | 415 | 310 | 345 | 375 | 340 | 370 | 410 | 375 | 350 | 345 | 335 | 335 | 305 | I A 300 | | | | | |
| 20 | | | | | 325 | 260 | | I A 370 | 375 | 420 | 485 | 410 | 440 | 450 | 465 | 365 | 410 | 320 | 300 | | | | | |
| 21 | | | | | | 250 | C | C | C | C | C | 335 | 360 | 375 | 350 | 340 | 365 | 335 | 290 | | | | | |
| 22 | | | | | 300 | 285 | 320 | 310 | 380 | A | H 320 | 365 | 390 | 350 | 360 | 315 | 380 | 350 | 320 | | | | | |
| 23 | | | | | | I C 360 | 375 | A | A | A | 415 | 430 | C | C | C | C | C | C | C | C | | | | |
| 24 | | | | | | C | C | C | C | 350 | 390 | 460 | 400 | 390 | 420 | C | A | 350 | 325 | | | | | |
| 25 | | | | | | | 250 | | 300 | 360 | 360 | 415 | 360 | 390 | 400 | 405 | 420 | A | 335 | | | | | |
| 26 | | | | | | | | A 360 | 310 | 325 | 325 | 355 | 400 | 395 | 350 | 350 | 360 | 365 | 330 | | | | | |
| 27 | | | | | | | 375 | 350 | 385 | 325 | 400 | 370 | 420 | 395 | 415 | 415 | 375 | 350 | 315 | | | | | |
| 28 | | | | | | 290 | C | C | C | C | C | C | C | C | C | C | C | C | C | | | | | |
| 29 | | | | | 315 | C | I C 305 | 275 | 290 | 375 | 350 | H 300 | 325 | C | 400 | 350 | 360 | 345 | I C 315 | | | | | |
| 30 | | | | | | | | 305 | C | 375 | I A 370 | 360 | 365 | I C 450 | 400 | 360 | A | 320 | 290 | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | | | | | 6 | 13 | 18 | 18 | 16 | 19 | 20 | 20 | 22 | 22 | 24 | 23 | 21 | 21 | 15 | | | | | |
| MED | | | | | 320 | 330 | 330 | 340 | 310 | 350 | 378 | 385 | 395 | 390 | 400 | 350 | 360 | 350 | 310 | | | | | |
| UQ | | | | | 360 | 360 | 400 | 360 | 378 | 388 | 408 | 425 | 410 | 415 | 418 | 398 | 380 | 360 | 322 | | | | | |
| LQ | | | | | 310 | 285 | 310 | 310 | 298 | 325 | 340 | 358 | 360 | 360 | 362 | 345 | 345 | 325 | 300 | | | | | |

# IONOSPHERIC DATA

JUN. 1968 | $h'F$ (km) | 135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45° 23.6' N, Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 290 | 275 | 270 | 250 | 275 | 240 | 260 | 250 | I A 235 | H 210 | 260 | 220 | 200 | H 195 | I A 255 | 250 | 240 | A 280 | 250 | 285 | 275 | I A 310 | 265 | 260 |
| 2 | 315 | 300 | 300 | 320 | A | A | A | A | A | A | A | A | 220 | 210 | H 250 | 225 | A | A | A | 290 | 275 | A | 300 | 310 |
| 3 | 300 | 300 | 250 | 260 | 245 | 275 | 250 | A | A | A | A | A | I A 245 | 235 | 235 | 240 | 230 | 250 | A | A | A | I A 295 | 290 | 295 |
| 4 | 300 | 275 | 255 | 290 | 290 | 245 | 250 | 240 | 250 | A 280 | 220 | I A 250 | I A 250 | I A 245 | 205 | H 250 | H 230 | 240 | 250 | A 275 | 275 | 290 | 275 | 270 |
| 5 | 275 | 275 | 275 | 270 | 270 | 260 | 275 | 250 | 210 | A 260 | I A 210 | 200 | 260 | 210 | 240 | 240 | C | A | 260 | 275 | 270 | 275 | 290 | 295 |
| 6 | 260 | 260 | 280 | 265 | 270 | 250 | 250 | 240 | I A 210 | I A 215 | 210 | I A 235 | 220 | 215 | I A 250 | 210 | I A 250 | I A 280 | 265 | 270 | 250 | 260 | I S 295 | 300 |
| 7 | 300 | 310 | 270 | 250 | 260 | 240 | 260 | 250 | A | A | 210 | 240 | 205 | H 250 | 225 | 275 | 280 | C | C | C | C | C | C | C |
| 8 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 9 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | 225 | 220 | 250 | C | C | 250 | 250 | 275 | 260 | 265 | 240 | 290 |
| 11 | 320 | 300 | 300 | 265 | 290 | A 310 | A | 260 | A | A | A | A | 290 | 245 | 245 | 260 | 250 | A | A | 300 | 290 | A | 305 | 270 |
| 12 | 250 | 315 | 400 | 395 | A | 260 | A | A | A | I A 240 | 215 | 215 | 240 | A | A | A | H 215 | 240 | 265 | 300 | 300 | 300 | 300 | 300 |
| 13 | 300 | 310 | 305 | 325 | 310 | 255 | A | A | A | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | C | C | C | A | 205 | I A 230 | 225 | 225 | H 200 | 255 | 295 | 290 | 275 | 260 | 250 |
| 15 | 285 | 305 | 300 | 305 | 295 | 270 | 240 | 230 | 210 | 220 | 200 | A | A | A | I A 250 | 225 | 240 | 240 | I A 280 | I A 290 | I A 310 | 300 | 310 | 300 |
| 16 | 265 | 250 | 295 | 270 | 275 | 255 | 245 | 235 | I A 220 | 215 | I A 220 | 240 | 205 | 250 | A 275 | I A 235 | 225 | I A 250 | I A 255 | 270 | 275 | 290 | 265 | 290 |
| 17 | 275 | 270 | 290 | 295 | 295 | 245 | 235 | 205 | 240 | 220 | 200 | 210 | 220 | 250 | 225 | H 200 | 225 | I A 255 | I A 285 | 275 | I A 250 | 285 | 275 | 275 |
| 18 | A 300 | 280 | 270 | 280 | 290 | 240 | 210 | A | A | A | A | A | A | A 260 | 220 | 245 | A | A | 250 | 285 | 260 | I A 310 | 305 | 275 |
| 19 | 280 | 310 | 285 | 310 | A | 250 | A 250 | 250 | 250 | 200 | 205 | 200 | 220 | 215 | 220 | 240 | 260 | I A 260 | I A 260 | 275 | 250 | 275 | 275 | A |
| 20 | 300 | 280 | 260 | 305 | 285 | 250 | 260 | I A 245 | 235 | 215 | 250 | H 205 | I A 255 | 250 | 260 | 250 | A | A | A | A | A | A 300 | 280 | 300 |
| 21 | 300 | 300 | 270 | 260 | 260 | 210 | C | C | C | C | C | 200 | I A 210 | 235 | I A 210 | 240 | 235 | 245 | 250 | 285 | 250 | 245 | A 300 | 300 |
| 22 | 290 | 280 | 250 | 280 | 260 | 245 | 250 | 240 | A | A | 200 | 250 | 215 | 220 | 210 | 250 | I A 250 | I A 250 | I A 265 | I A 270 | A 270 | 280 | A 300 | 300 |
| 23 | 275 | 275 | 250 | 300 | 310 | I C 250 | 315 | A | A | A | 205 | H 200 | C | C | C | C | C | C | C | C | A | A | A 310 | 285 |
| 24 | 275 | 275 | 275 | 280 | 280 | C | C | C | C | A | 215 | 230 | A | A | 240 | C | A | 250 | 250 | 280 | A | 270 | 290 | 270 |
| 25 | 265 | 275 | 270 | 270 | 275 | A 250 | 240 | H 200 | I A 215 | I A 210 | 220 | I A 235 | 205 | 225 | I A 265 | A | A | A | A | 260 | A | A 310 | 270 | 275 |
| 26 | 300 | 275 | 260 | 260 | 260 | 240 | 250 | I A 255 | I A 240 | I A 250 | I A 250 | 240 | 215 | 215 | 220 | 245 | 240 | 245 | H 290 | A 295 | 250 | A 275 | 290 | 275 |
| 27 | 300 | 285 | 300 | 250 | 250 | 250 | 240 | 225 | I A 220 | 240 | 225 | 215 | 215 | 205 | 230 | 235 | 240 | I A 260 | 250 | A | A | 270 | 270 | 290 |
| 28 | 270 | 275 | 290 | 260 | 265 | 250 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | I C A 280 285 | |
| 29 | 300 | I C 305 | 300 | U A 300 | 270 | I C 255 | I C 240 | A | A | 205 | 200 | 205 | 210 | C | A | 210 | 250 | 235 | I C 245 | A 260 | 260 | 260 | I C 260 | 265 |
| 30 | 275 | 280 | 275 | 265 | 260 | 245 | H 210 | 260 | C | A | A | A | A | C | A | A | A | A | A | A | 265 | A | 295 | 270 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 26 | 26 | 26 | 26 | 23 | 24 | 19 | 16 | 12 | 14 | 18 | 18 | 20 | 20 | 22 | 20 | 17 | 17 | 18 | 20 | 19 | 21 | 26 | 25 |
| MED | 290 | 280 | 275 | 275 | 275 | 250 | 250 | 242 | 228 | 218 | 212 | 218 | 220 | 222 | 238 | 240 | 240 | 250 | 255 | 278 | 270 | 280 | 290 | 285 |
| UQ | 300 | 300 | 300 | 300 | 290 | 255 | 255 | 250 | 240 | A 240 | 220 | 240 | 242 | 248 | 250 | 250 | 250 | U A 255 | 265 | 290 | 275 | 300 | 300 | 300 |
| LQ | 275 | 275 | 270 | 260 | 260 | 245 | 240 | 232 | U A 212 | 210 | 205 | 205 | 210 | 212 | 220 | 225 | 230 | 240 | 250 | 272 | 255 | 270 | 270 | 270 |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | $h'Es$ (km) | 135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45° 23.6' N, Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S | E | E | E | G | 125 | 115 | 115 | 110 | 115 | 110 | G | G | G | 110 | 105 | G | 125 | 115 | 115 | 110 | 110 | 115 | E |
| 2 | 105 | 110 | E | 125 | 120 | 115 | 115 | 115 | 110 | 110 | 110 | 110 | G | 125 | 120 | G | 120 | 115 | 110 | 120 | 115 | 115 | 110 | E |
| 3 | S | 100 | 105 | 100 | 140 | 140 | 145 | 120 | 110 | 110 | 110 | 115 | 110 | G | 145 | 115 | 140 | 150 | 120 | 115 | 115 | 110 | 105 | E |
| 4 | E | E | E | 105 | G | 105 | 115 | 120 | 110 | 110 | 120 | 110 | 110 | 110 | G | 150 | 150 | G | 120 | 110 | 110 | 110 | E | E |
| 5 | E | 105 | 105 | 110 | G | 140 | 135 | 115 | G | 125 | 110 | 115 | 110 | 110 | 125 | G | C | 125 | 125 | 115 | 115 | 110 | 110 | 110 |
| 6 | F | 105 | E | E | G | G | G | G | 110 | 110 | 110 | 110 | 110 | 115 | 115 | G | 120 | 120 | 110 | 110 | 110 | 110 | 110 | 110 |
| 7 | 110 | 110 | 105 | 105 | 105 | 140 | 125 | 120 | 110 | 110 | 110 | 110 | 110 | 110 | 125 | 140 | 150 | C | C | C | C | C | C | C |
| 8 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 9 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 10 | C | C | C | C | C | C | C | C | C | C | C | C | 105 | 105 | 110 | C | C | G | G | 115 | 120 | 110 | S | S |
| 11 | 105 | 125 | 105 | 105 | 105 | 120 | 115 | 120 | 110 | 115 | 110 | 110 | 110 | 120 | 115 | 110 | 125 | 115 | 110 | G | S | 110 | S | S |
| 12 | 110 | 125 | 115 | 120 | 115 | 125 | 110 | 110 | 110 | 110 | 120 | 110 | 125 | 135 | 120 | 125 | G | G | 135 | 125 | 115 | E | S | S |
| 13 | S | E | E | E | G | 135 | 115 | 110 | 110 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C |
| 14 | C | C | C | C | C | C | C | C | C | C | C | C | 110 | G | 125 | 135 | 140 | G | G | G | S | 110 | S | E |
| 15 | S | 110 | 105 | 105 | G | G | 105 | 120 | 120 | 110 | 115 | 110 | 110 | 105 | 105 | 105 | G | G | 115 | 110 | 110 | S | 110 | 105 |
| 16 | S | 105 | 105 | 100 | 100 | 100 | G | G | 120 | 120 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 105 | 110 | 115 | 110 | 110 | 105 | S |
| 17 | S | E | E | E | G | G | 125 | 120 | 115 | 120 | G | 110 | 110 | 110 | 115 | G | G | 125 | 125 | 110 | 110 | 110 | S | 110 |
| 18 | 105 | 105 | 100 | 105 | 105 | 125 | 125 | 115 | 115 | 110 | 110 | 110 | 110 | 105 | 110 | 110 | 110 | 110 | 105 | 105 | 120 | 110 | 110 | 110 |
| 19 | 110 | 110 | 110 | 110 | 110 | 125 | 115 | 125 | 115 | 115 | 110 | G | G | 120 | 140 | 110 | 125 | 115 | 115 | 110 | 110 | 110 | 110 | 110 |
| 20 | 105 | 105 | 105 | 105 | 105 | 120 | 115 | 110 | 125 | 120 | 120 | 115 | 110 | 115 | 125 | 135 | 115 | 115 | 105 | 100 | 105 | 100 | 110 | 110 |
| 21 | 110 | 110 | 110 | 115 | 115 | G | C | C | C | C | C | 110 | 110 | 115 | 115 | 125 | 110 | 110 | 125 | 115 | 110 | 110 | 110 | 110 |
| 22 | 105 | E | E | 100 | 105 | G | 125 | 120 | 110 | 110 | 110 | 110 | 115 | G | G | 140 | 125 | 115 | 110 | 110 | 110 | 110 | 110 | 110 |
| 23 | 110 | 110 | 110 | 105 | 105 | C | 110 | 115 | 110 | 110 | 110 | 110 | C | C | C | C | C | C | C | C | 115 | 110 | 110 | 110 |
| 24 | 110 | 105 | 105 | 105 | 105 | C | C | C | C | 110 | 110 | 110 | 105 | 105 | 120 | C | 110 | 115 | 115 | 115 | 110 | 110 | 105 | S |
| 25 | 105 | 100 | 100 | 105 | 120 | 110 | 110 | 115 | 120 | 120 | G | 110 | 110 | 120 | 110 | 110 | 110 | 115 | 115 | 115 | 110 | 110 | 110 | 110 |
| 26 | 105 | E | E | 105 | 100 | G | 125 | 115 | 115 | 115 | 110 | 110 | 110 | 105 | 105 | 110 | 110 | 105 | 120 | 115 | 115 | 110 | 110 | 110 |
| 27 | S | 110 | 105 | 105 | 105 | G | 140 | 125 | 115 | 120 | 115 | G | 110 | 115 | 110 | 115 | G | 115 | 120 | 110 | 110 | 110 | 110 | 105 |
| 28 | 105 | 105 | 105 | 105 | 150 | 140 | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | C | 110 |
| 29 | 105 | C | 105 | 105 | 130 | C | C | 120 | 110 | G | 115 | 110 | 110 | C | 105 | 110 | 105 | 125 | C | 110 | 110 | 110 | C | E |
| 30 | S | E | E | E | 105 | G | G | 145 | C | 110 | 110 | 110 | 110 | C | 110 | 110 | 105 | 105 | 105 | 120 | 110 | 110 | 110 | 110 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | 15 | 18 | 17 | 21 | 19 | 15 | 19 | 21 | 21 | 22 | 21 | 21 | 22 | 19 | 23 | 19 | 18 | 19 | 21 | 22 | 23 | 23 | 18 | 15 |
| MED | 105 | 108 | 105 | 105 | 105 | 125 | 115 | 120 | 110 | 110 | 110 | 110 | 110 | 110 | 115 | 110 | 118 | 115 | 115 | 115 | 110 | 110 | 110 | 110 |
| UQ | 110 | 110 | 105 | 105 | 118 | 138 | 125 | 120 | 115 | 120 | 115 | 110 | 110 | 118 | 122 | 130 | 125 | 122 | 120 | 115 | 115 | 110 | 110 | 110 |
| LQ | 105 | 105 | 105 | 105 | 105 | 118 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 108 | 110 | 110 | 110 | 112 | 110 | 110 | 110 | 110 | 110 | 110 |

# IONOSPHERIC DATA

JUN. 1968 | Types of Es | 135° E Mean Time (G. M. T. + 9 h)

Station WAKKANAI Lat. 45° 23.6' N. Long. 141° 41.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | C 1 | C 2 | C 1 | C 2 | C 1 | C 2 | | | | C 2 | L 2 | | C 1 | C 2 | C 2 | F 2 | F 4 | F 1 | |
| 2 | F 2 | F 1 | | C 2 | C 4 | C 5 | C 6 | C 2 | C 4 | C 3 | C 2 | C 2 | | C 1 | C 1 | | C 3 | C 5 | C 4 | C 2 | F 4 | F 4 | F 2 | |
| 3 | | F 2 | F 1 | F 1 | H 1 | H 1 | H 1 | C 1 | C 4 | C 2 | C 2 | C 4 | C 1 | | H 1 | C 1 | H 1 | H 1 | C 4 | C 6 | F 7 | F 5 | F 2 | |
| 4 | | | | F 1 | | L 1 | C 2 | C 2 | C 2 | C 2 | C 2 | C 2 | C 2 | C 2 | | H 1 | H 1 | | C 1 | C 4 | F 2 | F 1 | | |
| 5 | | F 2 | F 2 | L 1 | | H 1 | H 1 | C 2 | | C 1 | C 3 | C 1 | C 1 | C 1 | C 1 | | | C 2 | C 1 | C 2 | F 2 | F 2 | F 3 | F 1 |
| 6 | | F 1 | | | | | | | C 2 | C 2 | C 1 | C 2 | C 1 | C 1 | C 1 | | C 2 | C 2 | C 3 | C 3 | F 1 | F 2 | F 3 | F 1 |
| 7 | F 1 | F 4 | F 2 | F 2 | L 2 | HL 11 | C 1 | C 1 | C 2 | C 2 | C 1 | C 1 | C 1 | C 1 | C 1 | H 1 | H 1 | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | L 1 | L 1 | C 1 | | | | | C 2 | C 1 | F 1 | | |
| 11 | F 4 | FF 22 | F 6 | L 2 | L 2 | C 5 | C 4 | C 2 | C 3 | C 2 | C 2 | C 2 | C 2 | C 2 | C 2 | C 2 | C 2 | C 2 | C 2 | | | F 7 | | |
| 12 | F 1 | F 2 | F 3 | F 3 | C 3 | C 1 | C 3 | C 4 | C 3 | L 2 | C 1 | C 1 | C 1 | H 2 | C 3 | C 3 | | | H 1 | C 1 | C 1 | | | |
| 13 | | | | | | H 1 | C 3 | C 2 | C 2 | | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | C 3 | | C 2 | H 1 | H 1 | | | | | F 1 | | |
| 15 | | F 2 | F 1 | F 2 | | | L 1 | C 1 | C 1 | C 1 | C 1 | C 2 | C 2 | L 2 | L 2 | C 1 | | | C 4 | C 4 | F 3 | | F 2 | F 4 |
| 16 | | F 2 | F 2 | F 2 | L 2 | L 2 | | | C 1 | C 1 | C 2 | C 1 | C 1 | C 1 | C 1 | C 1 | C 1 | L 2 | C 3 | C 2 | C 4 | F 1 | F 1 | |
| 17 | | | | | | | C 1 | C 1 | C 1 | C 1 | | C 1 | C 1 | C 1 | C 1 | | | C 1 | C 2 | C 2 | C 5 | F 1 | | F 1 |
| 18 | F 6 | F 2 | F 2 | L 1 | L 1 | C 1 | C 1 | C 2 | C 2 | C 3 | C 2 | C 2 | C 3 | C 2 | C 2 | C 2 | C 3 | L 4 | L 2 | L 2 | CL 12 | F 4 | F 2 | F 2 |
| 19 | F 1 | F 2 | F 3 | L 2 | L 4 | C 1 | C 2 | C 1 | C 2 | C 1 | C 1 | | | C 1 | H 1 | C 1 | C 1 | C 3 | C 2 | C 2 | C 3 | F 3 | F 1 | F 4 |
| 20 | F 2 | F 2 | F 2 | L 1 | L 1 | C 1 | C 3 | C 4 | C 1 | C 1 | C 1 | C 1 | C 2 | C 1 | C 1 | H 1 | C 2 | C 3 | L 4 | L 3 | L 3 | F 5 | F 3 | F 3 |
| 21 | F 2 | F 2 | F 1 | L 1 | C 2 | | | | | | | C 2 | C 2 | C 1 | C 1 | C 1 | C 2 | C 2 | C 1 | C 2 | C 1 | F 2 | F 3 | F 2 |
| 22 | F 4 | | | L 1 | L 1 | | C 1 | C 1 | C 2 | C 2 | C 1 | C 2 | C 1 | | | H 1 | C 2 | C 2 | C 3 | C 4 | C 2 | F 2 | F 2 | F 2 |
| 23 | F 2 | F 4 | F 2 | L 3 | L 4 | | L 3 | C 3 | C 4 | C 3 | C 1 | C 1 | | | | | | | | | C 3 | F 6 | F 2 | F 7 |
| 24 | F 1 | F 1 | F 2 | L 1 | L 2 | | | | | C 3 | L 1 | C 2 | L 1 | L 1 | C 1 | | CL 21 | C 2 | C 2 | C 2 | C 3 | F 2 | F 2 | |
| 25 | F 1 | F 2 | F 1 | L 1 | CL 21 | L 3 | C 2 | C 1 | C 1 | C 2 | | C 1 | C 1 | C 1 | C 3 | C 2 | C 2 | C 3 | C 3 | C 2 | C 4 | F 4 | F 1 | F 3 |
| 26 | F 4 | | | L 1 | L 2 | | C 1 | C 2 | C 2 | C 2 | C 2 | C 2 | C 1 | L 2 | L 2 | L 1 | L 1 | L 1 | C 2 | C 5 | C 1 | F 4 | F 6 | F 2 |
| 27 | | F 1 | F 2 | L 4 | L 1 | | H 1 | C 1 | C 1 | C 1 | C 1 | | L 1 | C 1 | C 1 | C 1 | | C 2 | C 2 | C 4 | C 5 | F 1 | F 2 | F 2 |
| 28 | F 1 | F 1 | F 2 | L 2 | H 1 | HL 11 | | | | | | | | | | | | | | | | | | F 4 |
| 29 | F 2 | | F 4 | F 3 | C 1 | | | C 1 | C 2 | | C 1 | C 1 | C 1 | | L 2 | L 1 | L 1 | C 1 | | C 2 | F 3 | F 3 | | |
| 30 | | | | | L 1 | | | H 1 | | C 1 | C 3 | C 2 | C 2 | | C 2 | L 2 | L 3 | L 3 | L 3 | C 4 | F 2 | F 4 | F 2 | F 1 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | | | | | | | | | | | | | | | | | | | | | | | | |
| MED | | | | | | | | | | | | | | | | | | | | | | | | |
| UQ | | | | | | | | | | | | | | | | | | | | | | | | |
| LQ | | | | | | | | | | | | | | | | | | | | | | | | |

# IONOSPHERIC DATA

JUN. 1968 | foF2 (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39°43.5'N. Long. 140° 8.2'E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 76 | 81 | 77 | 62 | 59 | 67 | 84 | 91 | 86 | 85 | 91 | 96 | 92 | 92 | 91 | 83 | 79 | 77 | 79 | 84 | 84 | 85 | 81 | F |
| 2 | F | F | 70 | 68 | 67 | 74 | 79 | 63 | IA 61 | 59 | 63 | 74 | 74 | IA 74 | 69 | 72 | 76 | 74 | IA 74 | 73 | 72 | 71 | 71 | F |
| 3 | F | 71 | 66 | S 64 | 61 | 67 | 85 | 96 | 95 | 80 | 74 | 79 | 85 | 83 | 89 | 88 | 82 | 82 | 86 | 87 | 86 | 82 | F | 81 |
| 4 | F | 80 | 76 | 71 | 67 | 75 | 75 | 76 | 74 | 78 | 82 | 79 | 82 | 79 | 77 | 84 | 88 | 87 | IA 84 | IC 84 | 86 | 87 | 91 | 88 |
| 5 | 86 | 84 | 77 | 74 | 71 | 86 | IR 104 | IR 114 | IR 106 | 99 | 96 | 93 | 95 | 96 | 89 | 84 | IA 84 | 82 | 81 | IA 82 | 82 | 89 | 91 | 87 |
| 6 | IC 86 | 84 | 81 | 76 | 76 | 81 | 96 | 98 | 86 | 76 | 76 | 78 | 82 | 83 | 82 | 83 | 81 | 84 | 91 | IR 95 | 91 | 88 | 94 | 89 |
| 7 | IC 88 | 83 | 86 | 78 | 71 | 69 | 78 | 91 | IC 86 | C | C | C | C | C | C | C | C | C | 89 | R | R | 86 | F | R |
| 8 | 82 | 81 | 76 | 73 | 68 | 80 | 87 | 89 | 90 | 82 | 81 | 77 | 81 | 85 | 84 | 85 | 81 | 82 | IA 80 | IA 78 | F | S 81 | S 75 | 76 |
| 9 | 71 | 70 | 62 | 63 | 62 | 67 | 74 | 73 | 72 | 71 | 75 | 74 | 80 | 82 | 78 | 80 | 80 | 79 | 86 | 84 | 77 | 74 | 73 | 73 |
| 10 | 73 | 73 | 68 | 63 | 61 | 64 | 75 | 88 | 87 | 92 | 87 | 84 | 83 | 78 | 83 | 75 | 81 | 82 | 84 | IR 88 | 92 | 91 | 78 | 74 |
| 11 | 75 | 79 | 79 | 77 | 71 | 82 | 89 | 81 | 76 | IA 78 | 81 | 78 | 75 | 78 | 61 | IA 68 | 81 | 78 | 62 | 62 | 69 | 76 | 76 | 76 |
| 12 | 72 | IA 60 | 54 | 51 | 48 | 51 | 55 | 59 | IA 53 | 58 | IR 62 | IA 63 | 67 | 68 | 67 | 69 | 67 | 64 | 71 | 71 | 75 | 73 | 81 | 76 |
| 13 | 74 | 69 | 68 | 71 | 57 | 57 | 61 | 65 | 63 | 61 | IC 66 | 71 | 77 | 78 | 86 | 89 | 87 | 85 | 87 | IA 85 | IR 85 | IR 84 | IR 83 | IR 82 |
| 14 | 84 | 77 | 64 | 66 | 61 | 59 | 62 | 54 | IA 52 | EG 51 | R | 74 | 69 | 72 | 76 | 68 | 60 | 62 | 72 | 83 | IC 88 | 89 | 86 | 81 |
| 15 | 79 | 78 | 79 | 81 | 79 | 74 | 66 | 60 | 56 | 58 | R | EG 50 | EG 50 | A | A | A | A | A | 57 | 60 | 67 | 70 | 71 | 70 |
| 16 | 69 | 69 | 67 | 64 | 62 | 73 | 84 | 96 | 87 | 77 | 74 | 78 | 79 | 80 | 77 | 79 | 81 | 78 | 76 | 79 | 80 | 81 | 84 | 82 |
| 17 | 82 | 81 | 77 | 72 | 71 | 68 | 69 | 72 | 69 | 65 | 64 | 65 | 68 | IR 74 | 75 | 76 | 82 | 77 | 92 | IR 94 | IR 85 | IR 82 | R | R |
| 18 | F | F | F | S 71 | F | 56 | 54 | 57 | IA 58 | 61 | 66 | IA 67 | 69 | 66 | 69 | 75 | 74 | 74 | 76 | 82 | IR 84 | 76 | 72 | 76 |
| 19 | 75 | 73 | 74 | F | 53 | 59 | 76 | 79 | 71 | 73 | 78 | 77 | 86 | 91 | 88 | 86 | 82 | 86 | 93 | IR 96 | 85 | 86 | 87 | 85 |
| 20 | 86 | IR 79 | 73 | 64 | 69 | 88 | 76 | 62 | 72 | 69 | IA 73 | 78 | 77 | 75 | 73 | 74 | 76 | 79 | 82 | 80 | 79 | 79 | 79 | IR 78 |
| 21 | 75 | 76 | 78 | C | C | C | C | C | C | 80 | 77 | 75 | 79 | 78 | 83 | 79 | 80 | 84 | 90 | IR 96 | F 83 | 80 | 81 | 81 |
| 22 | 80 | 82 | 76 | 67 | 64 | H 72 | 82 | 86 | 85 | 71 | 70 | 73 | 75 | 74 | 74 | IA 72 | 75 | 82 | 90 | IR 90 | 87 | 84 | 82 | 80 |
| 23 | 85 | 79 | F | 62 | 60 | 66 | 79 | 86 | 89 | IA 78 | IA 68 | 71 | 72 | 66 | 65 | 69 | 69 | 75 | 72 | 76 | F | R | R | R |
| 24 | R 75 | S 70 | 61 | 61 | 61 | 72 | 87 | IR 90 | IA 82 | 82 | 78 | 70 | 73 | 71 | 71 | 72 | 73 | 72 | 76 | 84 | R | R | R | 78 |
| 25 | IR 74 | F | F | F | 72 | 74 | 75 | 77 | 75 | 76 | 74 | 81 | 79 | 76 | 71 | IA 70 | 71 | 76 | IA 82 | 87 | 86 | 85 | IR 84 | IR 87 |
| 26 | 86 | 91 | 85 | 77 | 66 | 65 | 75 | 86 | IA 85 | 79 | 81 | 82 | 70 | 71 | 76 | 73 | 74 | 80 | 96 | 98 | 87 | 82 | 84 | 84 |
| 27 | 78 | 77 | 72 | 76 | 72 | 75 | 76 | 80 | 76 | 83 | 75 | 74 | 74 | 71 | 76 | 73 | 74 | IA 75 | 78 | 86 | 89 | 87 | 82 | 77 |
| 28 | 79 | 77 | 73 | 67 | 66 | 73 | 76 | 80 | 73 | 72 | 73 | 78 | 80 | 86 | 81 | 74 | 74 | 76 | 85 | 88 | 84 | IR 84 | IR 82 | 80 |
| 29 | R | F | F | F | 73 | 75 | 78 | 89 | 77 | 69 | 71 | 68 | 78 | 78 | 75 | 73 | 78 | 86 | 89 | 91 | 87 | 86 | 82 | 82 |
| 30 | 81 | 80 | 77 | 73 | 70 | 71 | 74 | 87 | 92 | 82 | 71 | A | A | 74 | 84 | IR 90 | 94 | IR 96 | 83 | 76 | 80 | 76 | 78 | 82 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 25 | 26 | 26 | 26 | 28 | 29 | 29 | 29 | 29 | 29 | 27 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 30 | 29 | 26 | 28 | 25 | 25 |
| MED | 79 | 78 | 75 | 70 | 66 | 72 | 76 | 81 | 76 | 76 | 74 | 76 | 78 | 78 | 76 | 75 | 80 | 79 | 82 | 84 | 84 | 83 | 82 | 81 |
| UQ | 84 | 81 | 77 | 74 | 71 | 75 | 84 | 89 | 86 | 80 | 80 | 78 | 82 | 82 | 84 | 84 | 82 | 83 | 89 | U 88 | 87 | 86 | 84 | 82 |
| LQ | 75 | 73 | 68 | 64 | 61 | 66 | 74 | 72 | 71 | 69 | 70 | 71 | 72 | 73 | 72 | 72 | 74 | 76 | 76 | 79 | 80 | 78 | 78 | 76 |

# IONOSPHERIC DATA

JUNE 1968 | foF1 (0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39°43.5'N. Long. 140° 8.2'E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | L 460 | L 470 | UL 520 | 530 | 540 | 560 | 540 | IA 530 | 510 | UL 530 | 480 | L | | | | | | |
| 2 | | | | | | L | A | L | A | 530 | 530 | IA 510 | IA 520 | IA 530 | 530 | 530 | H 490 | A | A | | | | | |
| 3 | | | | | | L | UL 460 | IA 480 | L 510 | 580 | 510 | IA 580 | IA 560 | 530 | 520 | 530 | 500 | 430 | L | | | | | |
| 4 | | | | | | | | L | L | A | 540 | IA 540 | 530 | H 540 | IA 520 | IA 510 | 470 | A | A | | | | | |
| 5 | | | | | | L | L | L 460 | L 510 | 490 | A | H 550 | 540 | 520 | A | A | A | L | A | | | | | |
| 6 | | | | | | L | L | L 470 | IA 490 | A | 560 | IA 560 | 540 | 540 | 520 | 510 | 500 | L | A | | | | | |
| 7 | | | | | | | L 470 | IA 490 | IC 500 | C | C | C | C | C | C | C | C | C | A | | | | | |
| 8 | | | | | | L 400 | L | A | IA 520 | IA 540 | L 500 | 540 | IA 540 | 540 | IA 520 | 510 | A | A | A | | | | | |
| 9 | | | | | | L | UL 460 | 470 | A | A | A | A | A | IA 550 | IA 570 | H 510 | IA 480 | L | L | | | | | |
| 10 | | | | | | | L | L | L | IA 540 | 550 | 530 | R 540 | 540 | 510 | IA 510 | 480 | L 460 | | | | | | |
| 11 | | | | | | | A | L | A | A | 510 | IA 510 | 500 | 500 | IA 500 | IA 470 | 460 | 430 | L | | | | | |
| 12 | | | | | | | 400 | 430 | IA 460 | 480 | A | A | 500 | 500 | 480 | H 500 | 460 | H 440 | L 390 | | | | | |
| 13 | | | | | | A | 500 | 440 | A | A | C | A | IA 520 | 540 | R 500 | H 510 | L 470 | A | A | | | | | |
| 14 | | | | | | 320 | IA 380 | IA 430 | IA 450 | R 510 | 510 | IA 530 | IA 510 | IA 510 | IA 520 | 500 | L 460 | H 470 | 410 | | | | | |
| 15 | | | | | | L 360 | 400 | 440 | 480 | 490 | 500 | 500 | 500 | IA 510 | A | A | A | A | A | | | | | |
| 16 | | | | | | L | UL 430 | 470 | 500 | L 510 | L 570 | 540 | 540 | 540 | 500 | IA 520 | 480 | A | L | | | | | |
| 17 | | | | | | L | L 420 | 460 | 480 | 500 | A | 540 | 530 | IA 530 | IA 520 | 500 | 480 | A | A | | | | | |
| 18 | | | | | | L | A | IA 440 | A | A | A | A | 540 | 530 | 520 | IA 500 | IA 460 | A | A | | | | | |
| 19 | | | | | | UL 360 | 420 | 460 | 460 | 530 | 520 | 520 | 530 | IA 530 | 530 | 500 | 470 | L | L | | | | | |
| 20 | | | | | | L | L | A | A | A | A | A | A | 500 | 520 | 500 | A | A | A | | | | | |
| 21 | | | | | | C | C | C | C | 500 | H 550 | 530 | 540 | IA 520 | 490 | L 520 | IA 460 | 420 | L | | | | | |
| 22 | | | | | | L 320 | L | 480 | IA 500 | IA 510 | 520 | L | 520 | A | 500 | IA 520 | 470 | A | A | | | | | |
| 23 | | | | | | A | L 480 | A | A | A | A | 520 | A | 520 | IA 520 | IA 510 | H 480 | 450 | A | | | | | |
| 24 | | | | | | L | L | 470 | IA 500 | 520 | IA 530 | 530 | 540 | 530 | 520 | IA 500 | 460 | L 440 | L 360 | | | | | |
| 25 | | | | | | | 420 | 530 | 500 | IA 540 | L | IA 620 | L | 560 | 540 | IA 510 | L | 450 | A | | | | | |
| 26 | | | | | | | L | UL 470 | IA 490 | L 520 | 520 | 530 | 540 | 530 | 520 | 510 | 520 | 440 | 400 | | | | | |
| 27 | | | | | | L | L | 460 | 490 | IA 510 | 520 | L 550 | 520 | A | 520 | 500 | L 490 | A | A | | | | | |
| 28 | | | | | | UL 400 | I | A | A | 520 | IA 520 | 540 | 540 | 520 | 500 | 500 | 490 | A | A | | | | | |
| 29 | | | | | | A | 440 | L 460 | A | A | 540 | 540 | 530 | 530 | 530 | 520 | 490 | UL 450 | L | | | | | |
| 30 | | | | | | | UL 500 | IA 470 | IA 470 | A | A | A | A | A | IA 520 | 500 | IA 470 | L | L | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | 6 | 15 | 21 | 18 | 19 | 19 | 22 | 24 | 26 | 27 | 27 | 24 | 11 | 4 | | | | | |
| MED | | | | | | L 360 | L 440 | 470 | U 495 | 520 | 520 | 540 | 535 | 530 | 520 | 510 | 480 | 440 | 395 | | | | | |
| UQ | | | | | | L 400 | L 465 | 470 | U 500 | 530 | 540 | 550 | 540 | 540 | 520 | 515 | 490 | 450 | 405 | | | | | |
| LQ | | | | | | L 320 | 420 | 460 | UA 480 | 505 | 515 | 530 | 520 | 520 | 505 | 500 | 465 | 435 | L 375 | | | | | |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | foE (0.01) | 135 E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39° 43.5' N. Long. 140 8.2 E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | E | 210 | 275 | 310 | I A 340 | I A 350 | 370 | A | A | A | A | I A 330 | 315 | 285 | A | S | | | | |
| 2 | | | | | E | A | 280 | 315 | 335 | 355 | 370 | 385 | 380 | 375 | 350 | 330 | 310 | 275 | A | B | | | | |
| 3 | | | | | E | A | A | 305 | 330 | 355 | 360 | 370 | 385 | A | A | A | A | 275 | A | S | | | | |
| 4 | | | | | E | I A 215 | 260 | A | A | 355 | 370 | I A 375 | 380 | I A 375 | 365 | A | A | 300 | A 240 | C | | | | |
| 5 | | | | | 135 | I A 215 | 270 | 310 | 340 | 355 | 370 | A 380 | 380 | 380 | A | A | A | A | A | S | | | | |
| 6 | | | | | 135 | 210 | 270 | I A 305 | 325 | 350 | A | A | A | 390 | 375 | 350 | 320 | A | A | S | | | | |
| 7 | | | | | A | A | 270 | 310 | C | C | C | C | C | C | C | C | C | C | A | A | | | | |
| 8 | | | | | E | 200 | I A 260 | I A 310 | 335 | I A 355 | A | A | A | A | A | 350 | 330 | A | A | S | | | | |
| 9 | | | | | A | 205 | 275 | 310 | 340 | 360 | 375 | 390 | I A 390 | A | A | A | A | A | 260 | S | | | | |
| 10 | | | | | E | A | A | A | A | 355 | A | A | A | A | 380 | 355 | 325 | 290 | A | S | | | | |
| 11 | | | | | | A | 265 | I A 310 | 340 | 355 | 370 | A | A | A | A | A | A | 300 | A | S | | | | |
| 12 | | | | | | A | A | A | 330 | A | A | A | A | A | 355 | 335 | 320 | 285 | A | B | | | | |
| 13 | | | | | E | A | 270 | I A 305 | I A 330 | 350 | I C 350 | 355 | A | A | A | A | A | A | A | S | | | | |
| 14 | | | | | E | A | 275 | 300 | 330 | 350 | 360 | I A 370 | 380 | 375 | 370 | 350 | 325 | 290 | 250 | A | | | | |
| 15 | | | | | 155 | 225 | 265 | 300 | I A 320 | I A 350 | 365 | A | A | A | A | A | A | A | A | A | | | | |
| 16 | | | | | A | A | A | A | I A 330 | 350 | 360 | A | A | A | A | A | A | A | A | S | | | | |
| 17 | | | | | 145 | 215 | 265 | 310 | 335 | A | A | A | A | A | A | 345 | 320 | I A 295 | A | S | | | | |
| 18 | | | | | A | 215 | I A 260 | 305 | 330 | 355 | A | A | A | A | A | A | A | A | A | A | | | | |
| 19 | | | | | 135 | 215 | I A 280 | 315 | A | A | A | A | A | A | A | A | 330 | 280 | A | S | | | | |
| 20 | | | | | A | A | A | I A 300 | I A 330 | 355 | I A 365 | 380 | 385 | I A 385 | I A 375 | A | A | A | A | S | | | | |
| 21 | | | | | C | C | C | C | C | 355 | 380 | 385 | 385 | 380 | 370 | 350 | 315 | 275 | 220 | B | | | | |
| 22 | | | | | E | 195 | 250 | 305 | 345 | 350 | 370 | 375 | 385 | 380 | 370 | 350 | 325 | 280 | A | S | | | | |
| 23 | | | | | A | A | 275 | 310 | 345 | A | A | A | A | A | 375 | 350 | I A 320 | A | A | A | | | | |
| 24 | | | | | A | A | I A 265 | 315 | 330 | 355 | A | A | A | A | 375 | 350 | 320 | I A 280 | A | S | | | | |
| 25 | | | | | A | A | 285 | 315 | 340 | 355 | 370 | 380 | A | A | A | A | A | 290 | A | A | | | | |
| 26 | | | | | A | A | 270 | 310 | I A 340 | A | A | A | A | A | A | A | A | 295 | A | A | | | | |
| 27 | | | | | A | A | I A 265 | I A 305 | I A 330 | I A 355 | 365 | A | A | A | A | A | A | A | A | A | | | | |
| 28 | | | | | A | 210 | 265 | 305 | A | A | I A 360 | A | A | A | A | A | A | A | A | A | | | | |
| 29 | | | | | A | A | A | A | 335 | 350 | A | A | A | A | A | 355 | 315 | 280 | A | A | | | | |
| 30 | | | | | E | 185 | 255 | 305 | A | A | A | A | 380 | A | A | A | A | A | A | A | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | 15 | 13 | 23 | 24 | 23 | 27 | 17 | 11 | 10 | 8 | 11 | 13 | 14 | 16 | 4 | | | | | |
| MED | | | | | E | 210 | 270 | 310 | 335 | 355 | 370 | 380 | 382 | 380 | 370 | 350 | 320 | 285 | 245 | | | | | |
| UQ | | | | | 135 | 215 | 275 | 310 | 340 | 355 | 370 | 382 | 385 | 382 | 375 | 350 | 325 | 292 | 255 | | | | | |
| LQ | | | | | E | 205 | 265 | 305 | 330 | 350 | 360 | 372 | 380 | 375 | 368 | 345 | 315 | 280 | 230 | | | | | |

# IONOSPHERIC DATA

JUNE 1968 | foEs (0.1) | 135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

| Day \ Hour | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | J X 33 | J X 22 | J X 25 | J X 25 | J X 21 | G | 36 | G | J X 54 | 47 | 49 | J X 71 | J X 54 | J X 86 | J X 45 | 36 | 38 | 44 | J X 38 | J X 61 | J X 34 | J X 64 | J X 83 | J X 65 |
| 2 | J X 77 | J X 28 | J X 28 | J X 20 | J X 32 | 32 | J X 74 | J X 83 | J X 88 | J X 73 | J X 74 | J X 62 | J X 53 | J X 93 | J X 48 | 44 | 36 | J X 59 | J X 129 | J X 42 | J X 43 | J X 27 | E S 13 | J X 34 |
| 3 | J X 28 | E | E | J X 20 | J X 20 | 23 | 32 | J X 58 | J X 75 | J X 69 | J X 64 | J X 77 | J X 73 | J X 46 | 38 | 41 | 33 | G | 27 | 17 | J X 15 | J X 38 | J X 41 | J X 33 |
| 4 | J X 24 | J X 44 | J X 29 | J X 30 | J X 25 | 23 | 28 | 40 | J X 65 | J X 59 | J X 59 | J X 64 | J X 47 | J X 85 | J X 78 | J X 124 | J X 61 | J X 55 | J X 156 | C | J X 42 | J X 32 | J X 24 | E S 13 |
| 5 | F S 13 | J X 19 | J X 20 | J X 24 | G | 25 | J X 34 | 39 | J X 50 | J X 62 | J X 69 | 43 | J X 60 | 43 | J X 75 | J X 80 | J X 159 | J X 60 | J X 77 | J X 110 | J X 64 | J X 75 | J X 28 | J X 35 |
| 6 | C | J X 13 | E | J X 23 | G | G | 31 | 35 | J X 56 | J X 71 | J X 67 | J X 103 | 42 | 52 | 46 | 40 | 47 | J X 44 | J X 80 | J X 85 | J X 64 | J X 20 | J X 26 | J X 32 |
| 7 | C | J X 52 | J X 29 | J X 20 | J X 31 | J X 50 | J X 90 | J X 70 | C | C | C | C | C | C | C | C | C | C | J X 78 | J X 78 | J X 159 | J X 76 | J X 84 | J X 83 |
| 8 | J X 85 | J X 31 | J X 16 | J X 25 | J X 23 | J X 36 | 39 | J X 84 | J X 66 | J X 59 | J X 53 | J X 66 | J X 68 | J X 78 | J X 59 | J X 57 | J X 78 | J X 65 | J X 140 | J X 99 | J X 83 | J X 84 | J X 65 | J X 20 |
| 9 | J X 26 | J X 20 | J X 29 | J X 31 | J X 24 | 26 | 40 | J X 52 | J X 64 | J X 77 | J X 75 | J X 74 | J X 76 | J X 64 | J X 76 | J X 54 | J X 66 | J X 43 | G | 19 | J X 24 | J X 50 | J X 16 | J X 21 |
| 10 | J X 16 | J X 18 | J X 20 | J X 23 | J X 25 | J X 25 | 32 | J X 56 | J X 55 | J X 58 | J X 64 | J X 64 | J X 97 | J X 111 | J X 50 | J X 84 | 39 | G | 27 | 18 | J X 15 | J X 13 | J X 15 | M 22 |
| 11 | J X 29 | J X 41 | J X 53 | J X 76 | J X 56 | J X 55 | J X 64 | J X 55 | J X 60 | J X 89 | J X 50 | J X 66 | 45 | 41 | J X 64 | J X 82 | J X 66 | J X 53 | J X 40 | J X 26 | J X 53 | J X 64 | J X 64 | J X 80 |
| 12 | J X 76 | J X 78 | J X 36 | J X 58 | J X 68 | J X 68 | J X 76 | J X 54 | J X 74 | J X 53 | J X 149 | J X 144 | J X 54 | J X 66 | J X 60 | J X 40 | G | G | 30 | J X 39 | J X 84 | J X 79 | J X 50 | J X 19 |
| 13 | M 21 | M 21 | J X 25 | J X 58 | J X 55 | J X 38 | 34 | J X 46 | J X 64 | J X 68 | C | J X 60 | J X 74 | J X 41 | 41 | 38 | J X 36 | J X 50 | J X 50 | J X 106 | J X 86 | J X 86 | J X 80 | J X 64 |
| 14 | J X 26 | J X 14 | J X 27 | J X 29 | J X 27 | 27 | J X 38 | J X 54 | J X 51 | 38 | J X 47 | J X 66 | J X 57 | J X 65 | J X 61 | G | G | 32 | 26 | 23 | C | J X 25 | J X 18 | J X 24 |
| 15 | E S 13 | J X 17 | J X 18 | J X 13 | G | J X 38 | 36 | 37 | 39 | 40 | 41 | 40 | J X 94 | J X 79 | J X 144 | J X 138 | J X 110 | J X 98 | J X 57 | J X 25 | J X 38 | J X 29 | J X 34 | J X 29 |
| 16 | J X 29 | J X 35 | J X 22 | J X 24 | J X 18 | 25 | 31 | 43 | J X 48 | 44 | 51 | J X 74 | J X 49 | J X 53 | J X 64 | J X 58 | J X 65 | J X 51 | J X 26 | J X 29 | J X 86 | J X 39 | J X 29 | J X 49 |
| 17 | J X 29 | J X 29 | J X 16 | J X 16 | G | G | 30 | 35 | 44 | J X 49 | J X 53 | J X 54 | 42 | J X 95 | J X 57 | 39 | G | J X 65 | J X 103 | J X 88 | J X 98 | J X 54 | J X 78 | J X 86 |
| 18 | J X 38 | J X 44 | J X 38 | J X 47 | J X 34 | G | J X 44 | J X 54 | J X 61 | J X 65 | J X 67 | J X 94 | J X 70 | J X 64 | J X 84 | J X 55 | J X 70 | J X 54 | J X 64 | J X 68 | J X 86 | J X 66 | J X 61 | J X 43 |
| 19 | J X 46 | J X 30 | J X 24 | J X 29 | G | 24 | 33 | G | J X 44 | J X 49 | 40 | 39 | 43 | J X 65 | J X 66 | 41 | 43 | 39 | J X 34 | J X 52 | J X 64 | J X 21 | J X 53 | J X 28 |
| 20 | J X 23 | J X 34 | J X 34 | J X 54 | J X 24 | 26 | 38 | J X 61 | J X 74 | J X 79 | J X 84 | J X 64 | J X 66 | 46 | 45 | J X 49 | J X 59 | J X 51 | J X 52 | J X 29 | J X 54 | J X 29 | J X 24 | J X 31 |
| 21 | J X 49 | J X 40 | J X 70 | C | C | C | C | C | C | J X 38 | G | G | 44 | J X 74 | J X 69 | 41 | J X 68 | J X 43 | 36 | J X 57 | J X 31 | J X 70 | J X 72 | J X 35 |
| 22 | J X 28 | J X 28 | J X 28 | J X 23 | J X 27 | 24 | J X 45 | 44 | J X 64 | J X 82 | J X 64 | J X 54 | 45 | J X 50 | J X 58 | J X 90 | J X 81 | J X 113 | J X 58 | J X 53 | J X 66 | J X 65 | J X 40 | J X 23 |
| 23 | J X 27 | J X 48 | J X 31 | J X 35 | J X 40 | J X 60 | J X 40 | J X 65 | J X 78 | J X 113 | J X 134 | J X 49 | J X 83 | J X 83 | J X 71 | J X 67 | J X 74 | J X 64 | J X 63 | J X 63 | J X 80 | J X 64 | J X 60 | J X 74 |
| 24 | J X 54 | J X 66 | J X 65 | J X 57 | J X 37 | 25 | J X 46 | J X 64 | J X 90 | J X 74 | J X 68 | J X 83 | J X 74 | 41 | 42 | J X 80 | 40 | J X 42 | 29 | J X 70 | J X 83 | J X 81 | J X 74 | J X 34 |
| 25 | J X 43 | J X 34 | J X 36 | J X 38 | J X 38 | J X 54 | 36 | J X 54 | 42 | J X 68 | J X 51 | J X 69 | J X 73 | 44 | J X 44 | J X 78 | J X 50 | J X 44 | J X 103 | J X 25 | J X 25 | J X 31 | J X 39 | J X 24 |
| 26 | J X 27 | J X 53 | J X 28 | J X 34 | J X 46 | J X 39 | 39 | J X 46 | J X 84 | J X 54 | J X 64 | J X 54 | J X 53 | J X 52 | J X 54 | J X 53 | J X 49 | J X 33 | 29 | J X 29 | J X 74 | J X 28 | J X 49 | J X 45 |
| 27 | J X 28 | J X 21 | J X 14 | J X 20 | J X 18 | J X 30 | 34 | 39 | 45 | J X 62 | 43 | 45 | J X 57 | J X 63 | J X 73 | J X 48 | J X 59 | J X 84 | J X 85 | 19 | J X 79 | J X 66 | J X 43 | J X 31 |
| 28 | J X 82 | J X 33 | J X 21 | J X 29 | J X 29 | J X 29 | 35 | J X 64 | J X 80 | 37 | J X 64 | J X 48 | J X 74 | J X 39 | J X 44 | J X 54 | J X 58 | J X 64 | J X 64 | J X 64 | J X 52 | J X 35 | J X 72 | J X 60 |
| 29 | J X 68 | J X 26 | J X 34 | J X 24 | J X 28 | J X 68 | J X 43 | J X 53 | J X 64 | J X 67 | J X 54 | 42 | J X 51 | J X 64 | 43 | 40 | J X 48 | J X 44 | J X 43 | J X 38 | J X 35 | J X 53 | J X 35 | J X 21 |
| 30 | E S 13 | E | J X 13 | E | E | 23 | J X 43 | J X 50 | J X 49 | J X 73 | J X 78 | J X 135 | J X 134 | J X 73 | J X 146 | J X 101 | J X 75 | J X 54 | J X 36 | J X 33 | J X 39 | J X 35 | J X 44 | J X 54 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 28 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 28 | 29 | 28 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 29 | 29 | 30 | 30 | 30 |
| MED | J X 28 | J X 30 | J X 28 | J X 25 | J X 25 | 26 | 38 | J X 53 | J X 62 | J X 62 | J X 64 | J X 64 | J X 57 | J X 64 | J X 59 | J X 54 | J X 58 | J X 51 | J X 51 | J X 42 | J X 64 | J X 52 | J X 44 | J X 34 |
| UQ | J X 48 | J X 41 | J X 34 | J X 35 | J X 34 | J X 38 | J X 43 | J X 58 | J X 74 | J X 73 | J X 68 | J X 74 | J X 74 | J X 78 | J X 71 | J X 80 | J X 68 | J X 60 | J X 78 | J X 68 | J X 83 | J X 66 | J X 65 | J X 54 |
| LQ | J X 25 | J X 20 | J X 20 | J X 23 | J X 18 | 24 | 34 | 40 | J X 50 | J X 49 | J X 50 | J X 49 | J X 49 | J X 46 | J X 45 | 41 | 39 | J X 43 | 30 | J X 26 | J X 38 | J X 29 | J X 28 | J X 24 |

# IONOSPHERIC DATA

JUN. 1968 | $f_bEs$ (0.1) | 135 E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 23 | 17 | 14 | E | 14 | G | 34 | G | 39 | 46 | 48 | 48 | 46 | 79 | 43 | U R 36 | 37 | 43 | 38 | 38 | 21 | 55 | 21 | 50 |
| 2 | 50 | 13 | 16 | 14 | 23 | 28 | 59 | 49 | A | 42 | 42 | 62 | 53 | A | 44 | 40 | 34 | 55 | A | 34 | 38 | 24 | F S 13 | 28 |
| 3 | 21 | E | E | 16 | 17 | 23 | 30 | 52 | 45 | 37 | 43 | 71 | 67 | 45 | 38 | 39 | 33 | G | 25 | 17 | E | 26 | 22 | 23 |
| 4 | 16 | 19 | 23 | 17 | 14 | 23 | 28 | 34 | 38 | 53 | 51 | 54 | 42 | 42 | 60 | 58 | 40 | U R 55 | A | C | 26 | 22 | 17 | E S 13 |
| 5 | E S 13 | 14 | 18 | E | G | 23 | 30 | 38 | 40 | 44 | 56 | 41 | 45 | 42 | 60 | 77 | A | 35 | 58 | A | 20 | 15 | 20 | 26 |
| 6 | C | E | E | E | G | G | 30 | 33 | 52 | 56 | 39 | 58 | 42 | 50 | 44 | 39 | 43 | 40 | 74 | 34 | 20 | E | 17 | 30 |
| 7 | C | 35 | 20 | 14 | 20 | 39 | 44 | 62 | C | C | C | C | C | C | C | C | C | C | 52 | 39 | 53 | 54 | 48 | 68 |
| 8 | 20 | 18 | 14 | 16 | 14 | 23 | 37 | 57 | 65 | 54 | 45 | 46 | 58 | 47 | 54 | 49 | 71 | 64 | A | A | 28 | 38 | 20 | 18 |
| 9 | 18 | E | 23 | 16 | 15 | 25 | 36 | 45 | 54 | 65 | 59 | 68 | 60 | 60 | 70 | 38 | 63 | 36 | G | 18 | 13 | 50 | E | 17 |
| 10 | E | 13 | E | E | 18 | 25 | 31 | 40 | 41 | 54 | 46 | 44 | 46 | 45 | 44 | 58 | 38 | G | 27 | 17 | 15 | 13 | 12 | E |
| 11 | 17 | 20 | 23 | 33 | 20 | 40 | 60 | 43 | 58 | A | 49 | 61 | 43 | 40 | 53 | A | 38 | 42 | 28 | 19 | 40 | 24 | 30 | 60 |
| 12 | 36 | A | 22 | 26 | 23 | 44 | 30 | 37 | A | 40 | 50 | A | 42 | 45 | 44 | G | G | G | 25 | 34 | 18 | 28 | 34 | 16 |
| 13 | E | E | E | 38 | 25 | 34 | 34 | 39 | 48 | 54 | C | 53 | 54 | 41 | 41 | 37 | 36 | 48 | 48 | A | 66 | 74 | 39 | 18 |
| 14 | 16 | 13 | 18 | 22 | 24 | 25 | 38 | 45 | A | 37 | 46 | 55 | 57 | 64 | 58 | G | G | G | 26 | 18 | C | 21 | 17 | 23 |
| 15 | F S 13 | E | E | E | G | 16 | 34 | 37 | 36 | 38 | 40 | 40 | 42 | A | A | A | A | A | 40 | 19 | 34 | 29 | E | 15 |
| 16 | 16 | 17 | E | 18 | 16 | 24 | 29 | 37 | 45 | 43 | 50 | 46 | 48 | 50 | 39 | 55 | 47 | 48 | 23 | 25 | 16 | 24 | 18 | 22 |
| 17 | 23 | 24 | E | E | G | G | 29 | 34 | 43 | 45 | 51 | 44 | 40 | 55 | 54 | G | G | 55 | 46 | 68 | 65 | 28 | 68 | 62 |
| 18 | 24 | 25 | 23 | 25 | 17 | G | 42 | 47 | A | 51 | 52 | A | 44 | 49 | 39 | 54 | 70 | 46 | 54 | 18 | A | 50 | 24 | 21 |
| 19 | 24 | 22 | 17 | 14 | G | G | 30 | G | 38 | 44 | 39 | 39 | 42 | 57 | 42 | 40 | 42 | 38 | 28 | 51 | 28 | E | 16 | 17 |
| 20 | 16 | 26 | 16 | 36 | 17 | 24 | 34 | 56 | 60 | 61 | A | 60 | 58 | 45 | 43 | 41 | 57 | 49 | 44 | 19 | 32 | 23 | 20 | 23 |
| 21 | 18 | 24 | 17 | C | C | C | C | C | C | 37 | G | G | 43 | 60 | 39 | 37 | 50 | 37 | 35 | 57 | 22 | 40 | 18 | 25 |
| 22 | 17 | 16 | 17 | 13 | 20 | 22 | 35 | 38 | 55 | 58 | 48 | 53 | 43 | 53 | 42 | A | 43 | 66 | 42 | 52 | 36 | 23 | 17 | 17 |
| 23 | 22 | 22 | 20 | 17 | 23 | 38 | 35 | 54 | 70 | A | A | 43 | 53 | 43 | 58 | 56 | 35 | 42 | 59 | 25 | 25 | 18 | 35 | 23 |
| 24 | 33 | 16 | 30 | 22 | 20 | 24 | 44 | 45 | A | 51 | 58 | 49 | 41 | 41 | 40 | 52 | 36 | 36 | 29 | 23 | 18 | 18 | 31 | E |
| 25 | 24 | 24 | 21 | 23 | 16 | 24 | 34 | 40 | 38 | 56 | 46 | 63 | 50 | 41 | 42 | A | 48 | 43 | A | 24 | 21 | 17 | 16 | 16 |
| 26 | 19 | 24 | 14 | 21 | 23 | 28 | 35 | 38 | A | 42 | 42 | 42 | 43 | 41 | 44 | 36 | 48 | 26 | 27 | 25 | 42 | 17 | 17 | 26 |
| 27 | 24 | 17 | E | E | 16 | 26 | 31 | 39 | 43 | 58 | 41 | 44 | 46 | 54 | 45 | 39 | 45 | A | 40 | 18 | 17 | 30 | 25 | E |
| 28 | 23 | 16 | 14 | 14 | 16 | 20 | 32 | 54 | 56 | 37 | 60 | 45 | 48 | 39 | 40 | 40 | 48 | 62 | 57 | 36 | 35 | 31 | 58 | 21 |
| 29 | 18 | 13 | 18 | 14 | 17 | 54 | 38 | 43 | 57 | 61 | 49 | 42 | 47 | 43 | 42 | G | 48 | 39 | 29 | 26 | 20 | 25 | 17 | 16 |
| 30 | E S 13 | E | E | E | E | 22 | 35 | 48 | 49 | 62 | 64 | A | A | 57 | 64 | 48 | 73 | 35 | 30 | 23 | 22 | 28 | 30 | 35 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 28 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 28 | 29 | 28 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 29 | 29 | 30 | 30 | 30 |
| MED | 18 | 17 | 16 | 16 | 17 | 24 | 34 | 40 | 53 | 51 | 48 | 49 | 46 | 47 | 44 | 40 | 43 | 42 | 40 | 25 | 25 | 24 | 20 | 22 |
| UQ | 24 | 24 | 20 | 22 | 20 | 28 | 37 | 48 | 68 | 58 | 54 | 61 | 53 | 57 | 54 | 56 | 50 | 55 | 57 | 39 | 36 | 31 | 30 | 26 |
| LQ | 16 | 13 | E | E | 14 | 22 | 30 | 37 | 42 | 42 | 42 | 44 | 43 | 42 | 42 | 37 | 36 | 36 | 28 | 19 | 20 | 18 | 17 | 16 |

# IONOSPHERIC DATA

JUN. 1968 | f-min (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F S 14 | E | E | E | E | 14 | 14 | 14 | 21 | 23 | 22 | 19 | 21 | 21 | 18 | 17 | 18 | 16 | 16 | E S 14 | E S 13 | E S 13 | F 14 | E S 12 |
| 2 | E S 13 | E | E | E | E | 14 | 18 | 14 | 18 | 17 | 18 | 19 | 24 | 23 | 18 | 18 | 17 | 17 | 14 | 16 | E S 13 | E S 13 | F 13 | E S 14 |
| 3 | E S 12 | E | E | E | E | 13 | 15 | 18 | 16 | 20 | 18 | 18 | 25 | 19 | 18 | 17 | 19 | 16 | 14 | E S 14 | E S 12 | E | E S 12 | E S 13 |
| 4 | E | E | E | E | E | 14 | 14 | 14 | 17 | 19 | 18 | 20 | 18 | 18 | 18 | 18 | 19 | 17 | 17 | C | E S 12 | E S 14 | E S 12 | E S 13 |
| 5 | E S 13 | E | E | E | E | 14 | 17 | 17 | 18 | 18 | 18 | 19 | 23 | 17 | 21 | 20 | 19 | 18 | 16 | E S 14 | E S 13 | E S 13 | E S 12 | E S 12 |
| 6 | C | E | E | E | E | 13 | 18 | 17 | 17 | 17 | 17 | 18 | 18 | 18 | 18 | 17 | 16 | 14 | 13 | E S 13 | E S 12 | E S 13 | E S 13 | E S 13 |
| 7 | C | E S 13 | E | E | E | 14 | 18 | 18 | C | C | C | C | C | C | C | C | C | C | 14 | 13 | E S 12 | E S 13 | E S 12 | E S 13 |
| 8 | F S 12 | E | E | E | E | 12 | 17 | 18 | 17 | 19 | 21 | 21 | 22 | 18 | 18 | 17 | 17 | 16 | 14 | E S 14 | E S 12 | E S 12 | E S 12 | E S 13 |
| 9 | E S 13 | E | E | E | E | 12 | 16 | 17 | 18 | 17 | 34 | 18 | 18 | 19 | 18 | 17 | 19 | 17 | 22 | E S 14 | E S 12 | E S 14 | E S 12 | E S 13 |
| 10 | F S 13 | E | E | E | E | 14 | 17 | 17 | 17 | 17 | 21 | 18 | 18 | 18 | 23 | 18 | 18 | 18 | 17 | E S 13 | E | E | E | E S 12 |
| 11 | F S 12 | E | E | E | E | 14 | 17 | 17 | 17 | 18 | 24 | 18 | 24 | 23 | 18 | 18 | 18 | 17 | 17 | E S 13 | E | E S 12 | E S 12 | E S 12 |
| 12 | E | E | E | E | E | 16 | 17 | 16 | 18 | 18 | 21 | 18 | 18 | 20 | 19 | 17 | 17 | 17 | 16 | 13 | E S 12 | E S 14 | E S 13 | E S 13 |
| 13 | E S 13 | E | E | E | E | 14 | 18 | 18 | 18 | 19 | C | 21 | 22 | 20 | 20 | 18 | 18 | 17 | 16 | E S 13 | E S 13 | 17 | F S 13 | E S 14 |
| 14 | E | E | E | E | E | 16 | 17 | 17 | 18 | 18 | 20 | 19 | 18 | 18 | 19 | 18 | 21 | 18 | 17 | 14 | C | E S 12 | E S 13 | E S 13 |
| 15 | E S 13 | E | E | E | E | 14 | 17 | 14 | 17 | 18 | 20 | 18 | 23 | 21 | 18 | 18 | 17 | 17 | 14 | 12 | E S 13 | E S 13 | F S 13 | E S 13 |
| 16 | E S 13 | E | E | E | E | 14 | 17 | 18 | 18 | 19 | 19 | 22 | 25 | 21 | 24 | 23 | 24 | 17 | 18 | E S 14 | E S 12 | E S 13 | E S 13 | E S 13 |
| 17 | E S 13 | E | E | E | E | 16 | 16 | 18 | 18 | 18 | 18 | 18 | 19 | 20 | 20 | 18 | 20 | 16 | 17 | E S 14 | E S 13 | E S 13 | F S 13 | E S 13 |
| 18 | 16 | E | E | E | E | 17 | 17 | 17 | 18 | 18 | 19 | 25 | 20 | 24 | 17 | 18 | 17 | 16 | 16 | 13 | E | E | F S 12 | E S 13 |
| 19 | E | E | E | E | E | 14 | 17 | 17 | 17 | 17 | 18 | 23 | 19 | 20 | 18 | 17 | 22 | 17 | 13 | E S 13 | E | E S 12 | E S 13 | E S 13 |
| 20 | F S 13 | E | E | E | E | 13 | 19 | 16 | 18 | 19 | 20 | 18 | 20 | 19 | 23 | 17 | 18 | 17 | 14 | E S 13 | E S 13 | E S 14 | E | E S 12 |
| 21 | E S 12 | E | E | C | C | C | C | C | C | 19 | 23 | 24 | 24 | 19 | 17 | 17 | 17 | 17 | 17 | 11 | E S 16 | E S 15 | E | E |
| 22 | E | E S 11 | E | E | E | 12 | 16 | 16 | 17 | 18 | 17 | 19 | 23 | 18 | 20 | 17 | 17 | 16 | 15 | E S 13 | E S 15 | E | E S 12 | E S 15 |
| 23 | E S 12 | E | E | E | E | 12 | 17 | 16 | 17 | 17 | 18 | 18 | 19 | 19 | 20 | 18 | 19 | 19 | 17 | 13 | E | E S 12 | E S 13 | E S 13 |
| 24 | E S 12 | E | E | E | E | 13 | 14 | 17 | 18 | 18 | 18 | 19 | 22 | 20 | 19 | 18 | 19 | 17 | 16 | E S 13 | E S 13 | E S 13 | E S 13 | E S 13 |
| 25 | E | E | E | E | E | 13 | 16 | 18 | 18 | 18 | 18 | 18 | 19 | 18 | 17 | 17 | 17 | 19 | 13 | E | E S 13 | E S 13 | E S 13 | E S 13 |
| 26 | F S 14 | E | E | E | E | 13 | 14 | 17 | 19 | 18 | 18 | 21 | 19 | 18 | 18 | 17 | 19 | 18 | 16 | E S 13 | E S 13 | E S 13 | E S 13 | E S 13 |
| 27 | E S 13 | E | E | E | E | 12 | 13 | 17 | 17 | 18 | 22 | 18 | 19 | 18 | 18 | 18 | 21 | 16 | 13 | 16 | E S 12 | E S 12 | E S 13 | E S 13 |
| 28 | E | E | E | E | E | E | 17 | 17 | 18 | 18 | 19 | 20 | 18 | 19 | 21 | 17 | 18 | 17 | 13 | 13 | E | E S 12 | E | E S 13 |
| 29 | F S 14 | E | E | E | E | E | 14 | 14 | 17 | 17 | 19 | 18 | 18 | 18 | 18 | 17 | 15 | 15 | 14 | 13 | E S 12 | E S 12 | E S 12 | E S 13 |
| 30 | E S 13 | E | E | E | E | 12 | 14 | 17 | 18 | 20 | 21 | 20 | 18 | 18 | 18 | 18 | 18 | 18 | 14 | 14 | E S 13 | E S 13 | E S 12 | E S 13 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 28 | 30 | 30 | 29 | 29 | 29 | 29 | 29 | 28 | 29 | 28 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 30 | 29 | 29 | 30 | 30 | 30 |
| MED | E S 13 | E | E | E | E | 14 | 17 | 17 | 18 | 18 | 19 | 19 | 19 | 19 | 18 | 18 | 18 | 17 | 16 | E S 13 | E S 12 | E S 13 | E S 12 | E S 13 |
| UQ | E S 13 | E | E | E | E | 14 | 17 | 17 | 18 | 19 | 21 | 20 | 23 | 20 | 20 | 18 | 19 | 17 | 17 | 14 | E S 13 | E S 13 | E S 13 | E S 13 |
| LQ | E E 12 | E | E | E | E | 12 | 15 | 16 | 17 | 18 | 18 | 18 | 18 | 18 | 18 | 17 | 17 | 16 | 14 | E S 13 | E S 12 | E S 12 | E S 12 | E S 13 |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968

M(3000) F2(0.01)

135 E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 265 | 275 | 275 | 275 | 255 | 260 | 275 | 295 | 275 | 265 | 275 | 280 | 275 | 275 | 295 | 280 | 285 | 285 | 285 | 275 | 275 | 275 | 265 | F |
| 2 | F | F | 255 | 260 | 270 | 280 | 305 | 290 | IA 265 | 255 | 250 | 270 | 255 | IA 270 | 260 | 255 | 275 | 285 | IA 280 | 290 | 265 | 255 | 255 | F |
| 3 | F | 265 | 275 | S 280 | 280 | 270 | 275 | 280 | 295 | 290 | 280 | 260 | 270 | 265 | 280 | 280 | 275 | 275 | 285 | 275 | 280 | 270 | F | 260 |
| 4 | F | 275 | 270 | 280 | 270 | 295 | 285 | 290 | 305 | 290 | 285 | 280 | 275 | 285 | 275 | 280 | 285 | 290 | IA 285 | IC 280 | 270 | 260 | 275 | 275 |
| 5 | 270 | 275 | 285 | 270 | 255 | 255 | IR 275 | IR 285 | IR 270 | 270 | 260 | 270 | 275 | 280 | 290 | 285 | IA 285 | 295 | 285 | IA 275 | 270 | 270 | 275 | 270 |
| 6 | IC 275 | 275 | 280 | 285 | 280 | 280 | 310 | 295 | 300 | 285 | 275 | 275 | 275 | 290 | 275 | 285 | 280 | 280 | 280 | IR 290 | 285 | 265 | 265 | 270 |
| 7 | IC 270 | 280 | 290 | 295 | 285 | 280 | 275 | 285 | IC 300 | C | C | C | C | C | C | C | C | C | 280 | R | R | 270 | F | R |
| 8 | 275 | 280 | 280 | 260 | 250 | 265 | 290 | 285 | 300 | 275 | 280 | 270 | 265 | 275 | 280 | 285 | 285 | 285 | IA 280 | IA 285 | F | S 285 | S 265 | 275 |
| 9 | 265 | 270 | 260 | 265 | 265 | 255 | 260 | 290 | 280 | 265 | 275 | 265 | 270 | 280 | 270 | 275 | 280 | 285 | 295 | 285 | 280 | 265 | 250 | 255 |
| 10 | 260 | 275 | 280 | 290 | 285 | 290 | 285 | 275 | 275 | 275 | 280 | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 265 | IR 280 | 275 | 275 | 275 | 245 |
| 11 | 250 | 275 | 280 | 300 | 285 | 275 | 270 | 265 | 255 | IA 250 | 250 | 245 | 245 | 270 | 225 | IA 240 | 265 | 290 | 275 | 260 | 240 | 245 | 250 | 275 |
| 12 | 285 | IA 260 | 240 | 250 | 265 | 275 | 230 | 275 | IA 240 | 240 | IR 270 | IA 260 | 255 | 260 | 285 | 275 | 275 | 265 | 270 | 265 | 265 | 245 | 255 | 270 |
| 13 | 255 | 260 | 265 | 265 | 250 | 255 | 255 | 275 | 290 | 280 | IC 280 | 275 | 285 | 280 | 280 | 280 | 285 | 280 | 290 | IA 285 | IR 280 | IR 270 | IR 265 | IR 270 |
| 14 | 275 | 265 | 255 | 255 | 255 | 260 | 280 | 265 | IA 250 | G | R | 300 | 280 | 295 | 295 | 300 | 300 | 275 | 265 | 265 | IC 275 | 280 | 270 | 265 |
| 15 | 265 | 270 | 260 | 270 | 280 | 265 | 260 | 270 | 245 | 295 | R | G | G | A | A | A | A | A | 285 | 275 | 260 | 255 | 260 | 265 |
| 16 | 265 | 275 | 270 | 275 | 270 | 275 | 285 | 305 | 305 | 285 | 275 | 275 | 280 | 265 | 290 | 275 | 285 | 295 | 290 | 280 | 275 | 265 | 270 | 260 |
| 17 | 265 | 270 | 275 | 265 | 270 | 265 | 295 | 300 | 300 | 310 | 265 | 255 | 270 | IR 265 | 285 | 275 | 285 | 250 | 270 | IR 275 | IR 275 | IR 260 | R | R |
| 18 | F | F | F | S 280 | F | 285 | 290 | 265 | IA 265 | 255 | 260 | IA 275 | 275 | 275 | 275 | 280 | 285 | 290 | 285 | 280 | IR 295 | 290 | 265 | 270 |
| 19 | 260 | 275 | 290 | F | 265 | 260 | 285 | 305 | 300 | 275 | 305 | 260 | 275 | 285 | 285 | 280 | 280 | 275 | 285 | IR 300 | 270 | 265 | 275 | 265 |
| 20 | 270 | IR 280 | 275 | 265 | 265 | 305 | 320 | 275 | 265 | 275 | IA 265 | 280 | 280 | 290 | 280 | 275 | 285 | 295 | 295 | 285 | 280 | 270 | 270 | IR 270 |
| 21 | 265 | 270 | 285 | C | C | C | C | C | C | 280 | 275 | 275 | 275 | 285 | 290 | 270 | 285 | 285 | 285 | IR 300 | F 300 | 265 | 270 | 280 |
| 22 | 270 | 275 | 290 | 280 | 275 | H 295 | 280 | 290 | 325 | 300 | 275 | 255 | 300 | 280 | 280 | IA 280 | 275 | 270 | 270 | IR 290 | 295 | 285 | 270 | 265 |
| 23 | 285 | 285 | F | 285 | 275 | 275 | 265 | 285 | 295 | A | A | 280 | 280 | 265 | 270 | 275 | 280 | 285 | 275 | 285 | F | R | R | R |
| 24 | R 270 | S 275 | 280 | 275 | 270 | 270 | 285 | IR 290 | IA 295 | 295 | 295 | 265 | 275 | 270 | 270 | 280 | 280 | 280 | 285 | 300 | R | R | R | 285 |
| 25 | IR 270 | F | F | F | 295 | 325 | 300 | 300 | 295 | 295 | 270 | 275 | 285 | 270 | 275 | IA 270 | 265 | 280 | IA 285 | 275 | 290 | 285 | IR 280 | IR 280 |
| 26 | 270 | 275 | 285 | 300 | 290 | 285 | 290 | 295 | IA 305 | 280 | 280 | 285 | 265 | 255 | 270 | 265 | 260 | 270 | 275 | 290 | 300 | 270 | 270 | 275 |
| 27 | 265 | 275 | 255 | 280 | 280 | 285 | 280 | 280 | 285 | 290 | 270 | 270 | 275 | 275 | 280 | 275 | 270 | IA 290 | 280 | 280 | 280 | 275 | 275 | 275 |
| 28 | 280 | 285 | 265 | 275 | 265 | 275 | 280 | 285 | 280 | 280 | 270 | 285 | 275 | 295 | 285 | 285 | 280 | 280 | 285 | 295 | 275 | IR 270 | IR 270 | 275 |
| 29 | R | F | F | F | 290 | 285 | 285 | 315 | 290 | 290 | 270 | 260 | 280 | 285 | 280 | 260 | 275 | 290 | 295 | 290 | 285 | 285 | 280 | 280 |
| 30 | 275 | 275 | 285 | 275 | 270 | 270 | 275 | 275 | 295 | 295 | 280 | A | A | 250 | 265 | IR 270 | 275 | IR 300 | 305 | 275 | 275 | 260 | 265 | 270 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 25 | 26 | 26 | 26 | 28 | 29 | 29 | 29 | 29 | 28 | 26 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 30 | 29 | 26 | 28 | 25 | 25 |
| MED | 270 | 275 | 275 | 275 | 270 | 275 | 280 | 285 | 290 | 280 | 275 | 272 | 275 | 275 | 280 | 275 | 280 | 285 | 285 | 280 | 275 | 270 | 270 | 270 |
| UQ | 275 | 275 | 285 | 280 | 280 | 285 | 290 | 295 | 300 | 290 | 280 | 278 | 280 | 285 | 285 | 280 | 285 | 290 | 285 | 290 | 285 | 275 | 275 | 275 |
| LQ | 265 | 270 | 265 | 265 | 265 | 265 | 275 | 275 | 270 | 268 | 270 | 260 | 270 | 268 | 272 | 272 | 275 | 275 | 275 | 275 | 270 | 262 | 265 | 265 |

# IONOSPHERIC DATA

JUN. 1968

M(3000) F1(0.01)

135° E Mean Time (G. M. T. + 9h)

Station AKITA Lat. 39°43.5'N. Long. 140° 8.2'E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | L 330 | L 345 | UL 350 | 340 | 350 | 320 | 350 | IA 360 | 355 | UL 335 | 340 | L | | | | | | |
| 2 | | | | | | L | A | L | A | 340 | 340 | IA 365 | IA 365 | IA 355 | 340 | 325 | H 325 | A | A | | | | | |
| 3 | | | | | | L | UL 330 | IA 345 | L 335 | 330 | 380 | IA 310 | IA 320 | 340 | 345 | 325 | 325 | 345 | L | | | | | |
| 4 | | | | | | | | L | L | A | 335 | IA 360 | 340 | H 355 | IA 355 | IA 340 | 345 | A | A | | | | | |
| 5 | | | | | | L | L | L 355 | L 355 | 370 | A | H 350 | 350 | 350 | A | A | A | L | A | | | | | |
| 6 | | | | | | L | L | L 355 | IA 355 | A | 350 | IA 340 | 340 | 330 | 345 | 335 | 335 | L | A | | | | | |
| 7 | | | | | | | L 335 | IA 335 | IC 340 | C | C | C | C | C | C | C | C | C | A | | | | | |
| 8 | | | | | | L 330 | L | A | IA 340 | IA 330 | L 325 | 335 | IA 330 | 330 | IA 335 | A | A | A | A | | | | | |
| 9 | | | | | | L | UL 335 | A | A | A | A | A | A | IA 310 | IA 310 | H 340 | IA 340 | L | L | | | | | |
| 10 | | | | | | | L | L | L | IA 335 | 345 | 345 | R 345 | 355 | 355 | IA 320 | 340 | L 330 | | | | | | |
| 11 | | | | | | | A | L | A | A | A | A | 355 | 340 | IA 340 | IA 340 | 330 | A | L | | | | | |
| 12 | | | | | | | 375 | 350 | IA 360 | 370 | A | A | 360 | 360 | 355 | H 355 | 350 | H 335 | L 315 | | | | | |
| 13 | | | | | | A | 265 | 350 | A | A | C | A | IA 360 | 335 | R 360 | H 340 | L 345 | A | A | | | | | |
| 14 | | | | | | 315 | IA 335 | IA 340 | IA 350 | R 355 | 335 | A | A | A | IA 355 | 360 | L 365 | H 325 | 320 | | | | | |
| 15 | | | | | | L 335 | 345 | 360 | 350 | 355 | 380 | 360 | 380 | IA 345 | A | A | A | A | A | | | | | |
| 16 | | | | | | L | UL 350 | 350 | 360 | L 375 | L 320 | 335 | 345 | 330 | 360 | IA 340 | IA 340 | A | L | | | | | |
| 17 | | | | | | L | L 355 | 360 | 375 | 360 | A | 345 | 345 | IA 340 | IA 350 | 340 | 335 | A | A | | | | | |
| 18 | | | | | | L | A | A | A | A | A | A | 350 | 340 | 350 | IA 340 | IA 350 | A | A | | | | | |
| 19 | | | | | | UL 315 | 335 | 350 | 375 | 340 | 380 | 365 | 335 | IA 340 | 340 | 335 | 345 | L | L | | | | | |
| 20 | | | | | | L | L | A | A | A | A | A | A | 355 | 345 | 340 | A | A | A | | | | | |
| 21 | | | | | | C | C | C | C | 370 | H 355 | 355 | 360 | IA 390 | 375 | L 345 | IA 340 | 365 | L | | | | | |
| 22 | | | | | | L 375 | L | 345 | A | A | 330 | L | 365 | A | 375 | IA 350 | 330 | A | A | | | | | |
| 23 | | | | | | A | L 320 | A | A | A | A | 380 | A | 345 | IA 340 | IA 350 | H 350 | 335 | A | | | | | |
| 24 | | | | | | L | L | A | A | A | A | 325 | 370 | 360 | 345 | IA 350 | 350 | L 345 | L 360 | | | | | |
| 25 | | | | | | | 365 | 335 | 345 | IA 330 | L | IA 330 | L | 350 | 350 | IA 330 | L | A | A | | | | | |
| 26 | | | | | | | L | UL 345 | IA 355 | L 350 | 365 | 360 | 355 | 360 | 335 | 340 | 315 | IA 320 | 325 | | | | | |
| 27 | | | | | | L | L | 340 | 350 | IA 360 | 350 | L 345 | 350 | A | 345 | 340 | L 325 | A | A | | | | | |
| 28 | | | | | | UL 325 | L | A | A | 365 | IA 350 | 355 | 335 | 380 | 360 | 360 | A | A | A | | | | | |
| 29 | | | | | | A | 345 | L 345 | A | A | 345 | 370 | 340 | 345 | 360 | 335 | IA 340 | UL 335 | L | | | | | |
| 30 | | | | | | | UL 320 | IA 360 | IA 380 | A | A | A | A | A | A | 380 | A | L | L | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | 6 | 15 | 18 | 16 | 17 | 17 | 20 | 23 | 25 | 26 | 26 | 22 | 9 | 4 | | | | | |
| MED | | | | | | L 328 | L 335 | 348 | 352 | 355 | 350 | 348 | 350 | 345 | 350 | 340 | 340 | 335 | 322 | | | | | |
| UQ | | | | | | L 335 | 348 | 355 | 360 | 365 | 355 | 360 | 360 | 355 | 355 | 350 | 345 | 345 | 342 | | | | | |
| LQ | | | | | | UL 315 | L 330 | 345 | 348 | 340 | 335 | 335 | 340 | 340 | 340 | 335 | 330 | 330 | 318 | | | | | |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | h'F2 (km) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39°43.5'N, Long. 140° 8.2'E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 340 | 300 | 310 | 335 | 350 | 345 | 355 | IA 350 | 315 | 345 | 325 | 315 | | | | | | |
| 2 | | | | | | 305 | 280 | 315 | A | 480 | 525 | 395 | 405 | IA 380 | 430 | 430 | 360 | 330 | A | | | | | |
| 3 | | | | | | 305 | 335 | 305 | 290 | 325 | 370 | 460 | 370 | 370 | 345 | 340 | 365 | 320 | 300 | | | | | |
| 4 | | | | | | | | 250 | 280 | 330 | 335 | 370 | 335 | 355 | 380 | 350 | 330 | 290 | IA 300 | | | | | |
| 5 | | | | | | 350 | 295 | 280 | 300 | 320 | 325 | 345 | 345 | 325 | 340 | IA 350 | IA 320 | 300 | 305 | | | | | |
| 6 | | | | | | 290 | 280 | 280 | 245 | 360 | 360 | 365 | 370 | 330 | 360 | 340 | 340 | 330 | IA 300 | | | | | |
| 7 | | | | | | | 350 | 320 | IC 300 | C | C | C | C | C | C | C | C | C | 320 | | | | | |
| 8 | | | | | | 330 | 280 | 320 | 300 | 340 | 350 | 385 | 385 | 360 | 355 | 340 | IA 340 | 330 | A | | | | | |
| 9 | | | | | | L 340 | 330 | 305 | 370 | IA 380 | 385 | IA 375 | 365 | 355 | IA 360 | 355 | 350 | 320 | 300 | | | | | |
| 10 | | | | | | | 300 | 320 | 320 | 355 | 350 | 340 | 370 | 385 | 355 | 350 | 355 | 345 | | | | | | |
| 11 | | | | | | | 320 | 320 | 400 | IA 420 | 425 | 420 | 440 | 375 | 600 | IA 480 | 370 | 320 | 310 | | | | | |
| 12 | | | | | | | 460 | 375 | A | 530 | 415 | A | 440 | 430 | 405 | 380 | 355 | 400 | 345 | | | | | |
| 13 | | | | | | 400 | 420 | 385 | 340 | 450 | C | 385 | 350 | 375 | 345 | 345 | 315 | 325 | 290 | | | | | |
| 14 | | | | | | 370 | 355 | 410 | IA 510 | G | 500 | 350 | 350 | IA 340 | 330 | 330 | 295 | 370 | 355 | | | | | |
| 15 | | | | | | 320 | 340 | 400 | 505 | 370 | R | G | G | A | A | A | A | A | 320 | | | | | |
| 16 | | | | | | 315 | 300 | 280 | 280 | 300 | 370 | 380 | 365 | 345 | 335 | 350 | 330 | 310 | 295 | | | | | |
| 17 | | | | | | 320 | 300 | 315 | 330 | 310 | 390 | 470 | 400 | 400 | 350 | 365 | 335 | 395 | 325 | | | | | |
| 18 | | | | | | 275 | 355 | 440 | A | 470 | 430 | IA 395 | 385 | 400 | 390 | 345 | IA 320 | 315 | 305 | | | | | |
| 19 | | | | | | 370 | 325 | 285 | 300 | 340 | 315 | 405 | 350 | 345 | 330 | 335 | 330 | 315 | 300 | | | | | |
| 20 | | | | | | 270 | 250 | A | A 370 | IA 335 | IA 400 | 380 | 365 | 360 | 380 | 370 | 345 | 300 | 305 | | | | | |
| 21 | | | | | | C | C | C | C | 295 | 360 | 360 | 385 | 365 | 345 | 350 | 320 | 330 | 300 | | | | | |
| 22 | | | | | | 260 | L 290 | 320 | 285 | 330 | 365 | L 400 | 345 | 385 | 350 | IA 370 | 375 | IA 350 | 330 | | | | | |
| 23 | | | | | | 320 | 365 | 325 | 330 | A | A | 380 | 370 | 405 | A 400 | 375 | 375 | 340 | IA 280 | | | | | |
| 24 | | | | | | 300 | 315 | 300 | IA 305 | 315 | 315 | 370 | 395 | 390 | 400 | 360 | 340 | 310 | 305 | | | | | |
| 25 | | | | | | | 300 | 320 | 290 | 330 | 360 | 375 | 360 | 405 | 380 | IA 390 | 385 | 355 | IA 320 | | | | | |
| 26 | | | | | | | 300 | 300 | IA 290 | 345 | 340 | 330 | 390 | 440 | 365 | 395 | 385 | 360 | 315 | | | | | |
| 27 | | | | | | 300 | 290 | 325 | 320 | 340 | 345 | 385 | 370 | 380 | 370 | 365 | 370 | IA 350 | 315 | | | | | |
| 28 | | | | | | 345 | 300 | 340 | 335 | 375 | 400 | 365 | 370 | 335 | 345 | 340 | 355 | A 340 | 325 | | | | | |
| 29 | | | | | | 310 | 320 | 285 | 280 | A | 415 | 410 | 370 | 340 | 365 | 390 | 365 | 315 | 290 | | | | | |
| 30 | | | | | | | 345 | 350 | 310 | 325 | A | A | A | 440 | A | IR 350 | A 330 | 295 | 260 | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | | | | | | 20 | 28 | 28 | 26 | 27 | 25 | 27 | 28 | 28 | 27 | 28 | 28 | 28 | 26 | | | | | |
| MED | | | | | | 318 | 318 | 320 | 308 | 340 | 365 | 380 | 370 | 372 | 360 | 350 | 342 | 328 | 305 | | | | | |
| UQ | | | | | | 342 | 342 | 332 | 335 | 378 | 400 | 398 | 388 | 395 | 380 | 372 | 365 | 348 | 320 | | | | | |
| LQ | | | | | | 300 | 298 | 300 | 290 | 328 | 350 | 365 | 358 | 348 | 345 | 345 | 330 | 315 | 300 | | | | | |

# IONOSPHERIC DATA

JUN 1968 | h'F (km) | 135° E Mean Time (G. M. T. +9 h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 315 | 290 | 250 | 250 | 310 | 260 | 240 | 225 | 235 | 250 A | I A 210 | I A 230 | 240 A | I A 225 | 230 | 250 | 245 | I A 260 | 280 | 280 | 260 | I A 270 | 260 | I A 310 |
| 2 | I A 300 | 275 | 305 | 320 | 300 | 260 | A | A | A | 215 | 220 | I A 235 | I A 205 | I A 220 | 230 | 215 | H 205 | A | A | 265 | 300 | 305 | 305 | A 350 |
| 3 | 320 | 280 | 250 | 275 | 280 | 255 | 250 | I A 245 | I A 230 | 210 | 220 | A | A | A 240 | 230 | 220 | 230 | 240 | 250 | 275 | 255 | 280 | 305 | 290 |
| 4 | 305 | 285 | 270 | 275 | 275 | 245 | 240 | 230 | 225 | I A 225 | I A 220 | I A 205 | 240 | H 210 | I A 245 | I A 245 | A 240 | A | A | C | 285 | 310 | 285 | 260 |
| 5 | 280 | 270 | 270 | 265 | 290 | 250 | 240 | 240 | A 240 | A 240 | I A 215 | H 190 | 240 | 220 | A | A | A | A 250 | A | A | 280 | 285 | 275 | 280 |
| 6 | I C 275 | 270 | 265 | 245 | 285 | 240 | 245 | 220 | I A 230 | I A 205 | 195 | I A 210 | 230 | I A 240 | 250 | 240 | A 250 | I A 240 | I A 265 | 275 | 245 | 275 | 290 | 300 |
| 7 | I C 310 | 305 | 270 | 245 | 270 | 270 | A | A | C | C | C | C | C | C | C | C | C | C | A | 285 | A | A | A | A |
| 8 | 260 | 250 | 255 | 295 | 290 | 240 | 255 | I A 240 | I A 235 | I A 245 | A | A | A | A | A | A | A | A | A | A | 305 | 290 | 285 | 290 |
| 9 | 285 | 270 | 305 | 310 | 280 | 255 | 255 | A | A | A | A | A | A | A | A | H 230 | I A 230 | 255 | 270 | 260 | 245 | I A 305 | 290 | 300 |
| 10 | 295 | 280 | 240 | 240 | 270 | 250 | 240 | 255 | 240 | I A 250 | A 240 | 230 | 240 | 215 | 240 | I A 245 | 245 | 240 | 255 | 280 | 270 | 255 | 240 | 300 |
| 11 | 290 | 290 | 290 | 265 | 280 | 280 | A | A | A | A | A | A | 240 | 230 | I A 240 | I A 240 | 240 | A | A | 300 | I A 340 | 350 | 315 | I A 300 |
| 12 | A 280 | A | 360 | 340 | 350 | A | 255 | A 255 | I A 240 | 225 | A | A | 225 | 230 | I A 240 | H 210 | 220 | H 240 | 255 | 290 | 295 | A 320 | 330 | 295 |
| 13 | 275 | 310 | 290 | A 340 | 340 | A | A 250 | 245 | A | C | A | I A 220 | 230 | 240 | H 220 | H 240 | A | A | A | A | A | 350 | A | 305 |
| 14 | 285 | 280 | 320 | 340 | 350 | A 295 | I A 245 | I A 240 | I A 240 | 225 | I A 200 | A | A | A | I A 230 | 220 | 220 | H 210 | 265 | 280 | I C 290 | 280 | 245 | 290 |
| 15 | 290 | 290 | 310 | 280 | 290 | 235 | I A 250 | 235 | 225 | 205 | 220 | 200 | 210 | I A 220 | A | A | A | A | A | 280 | 310 | 320 | 290 | 290 |
| 16 | 290 | 280 | 275 | 280 | 300 | 255 | 250 | 240 | 250 | 215 | I A 240 | A 240 | A 250 | I A 220 | 210 | I A 220 | I A 220 | I A 220 | 235 | 270 | 270 | 290 | 285 | 305 |
| 17 | 305 | 295 | 270 | 280 | 275 | 240 | 245 | 220 | 220 | A | I A 250 | 230 | 220 | I A 240 | I A 235 | 230 | 230 | A | A | A | I A 250 | 285 | A | I A 240 |
| 18 | 330 | 310 | 280 | 290 | 250 | 230 | A | A | A | A | A | A | 210 | I A 215 | 205 | I A 230 | I A 235 | I A 240 | I A 265 | 280 | I A 270 | I A 285 | 290 | 300 |
| 19 | 335 | 315 | 265 | 290 | 305 | 265 | 250 | 230 | 220 | 240 | 195 | 195 | 240 | I A 265 | 230 | 230 | I A 255 | A | A | 275 | 270 | 280 | 280 | 300 |
| 20 | 285 | 250 | 255 | I A 310 | 295 | 255 | A | A | A | A | A | A | A | A 250 | 245 | 230 | A | A | A | 230 | 290 | 290 | 290 | 285 |
| 21 | 320 | 300 | 275 | C | C | C | C | C | C | 225 | H 200 | 200 | 230 | I A 205 | 220 | 200 | A | A | I A 260 | A 280 | 230 | I A 270 | 290 | A 295 |
| 22 | 295 | 275 | 265 | 260 | 295 | 255 | I A 240 | 245 | A | A | I A 240 | I A 220 | 210 | I A 230 | 220 | A | A | A | A | 290 | 280 | 270 | 270 | 305 |
| 23 | 290 | 280 | 245 | 260 | 310 | I A 300 | 245 | A | A | A | A | 205 | I A 220 | 240 | I A 230 | I A 220 | H 205 | A | A | 260 | 300 | 300 | 295 | 290 |
| 24 | 280 | 290 | 290 | 315 | 290 | 260 | A | A | A | A | A | A | 205 | 200 | 225 | I A 220 | 230 | I A 230 | 235 | 280 | 260 | 270 | A 275 | 240 |
| 25 | 305 | 330 | 300 | 280 | 245 | 240 | 220 | 230 | 205 | A | A | I A 260 | I A 255 | 220 | 215 | I A 220 | I A 230 | I A 260 | I A 270 | 270 | 255 | 265 | 280 | 280 |
| 26 | 285 | 290 | 260 | 245 | 250 | 235 | 250 | 230 | I A 230 | 215 | 210 | 190 | 215 | 220 | I A 230 | 220 | 240 | 245 | 250 | 275 | 250 | 270 | 295 | 290 |
| 27 | 310 | 300 | 275 | 255 | 260 | 230 | 250 | 255 | 245 | I A 220 | 210 | 230 | A | A | A | 235 | A | A | A | 285 | 285 | 260 | 280 | 270 |
| 28 | 275 | 270 | 285 | 255 | 295 | 250 | 255 | A | A | 195 | I A 225 | 220 | I A 220 | 215 | 230 | 220 | A | A | A | 270 | 290 | 290 | I A 270 | 280 |
| 29 | 295 | 290 | 290 | 270 | 270 | I A 240 | I A 230 | A | A | A | A | 180 | A | 210 | 230 | 205 | I A 230 | I A 230 | I A 240 | 265 | 255 | 255 | 265 | 280 |
| 30 | 275 | 285 | 250 | 275 | 270 | 240 | 250 | A | A | A | A | A | A | A | A | I A 235 | A | A | I A 240 | 280 | 265 | 300 | 320 | 330 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 29 | 30 | 29 | 29 | 27 | 23 | 18 | 16 | 17 | 17 | 18 | 21 | 24 | 23 | 25 | 20 | 14 | 15 | 25 | 28 | 28 | 28 | 29 |
| MED | 290 | 285 | 272 | 275 | 290 | 250 | 250 | 240 | 232 | 225 | 220 A | 215 | 225 | 220 | 230 | 220 | 230 | 240 A | 255 | 280 | 270 | 285 | 288 | 290 |
| UQ | 305 | 295 | 290 | 295 | 300 | 260 | 250 | 245 | 240 | 240 | U A 225 | 230 A | 240 | 235 A | 240 | 235 | 240 | 250 A | 265 | 280 | 290 | 300 | 295 | 300 |
| LQ | 280 | 275 | 260 | 260 | 270 | 240 | 240 | 230 | 225 | 215 | 210 | 200 | 215 | 215 | 228 | 220 | 225 | U A 230 | 245 | 270 | 255 | 270 | 275 | 280 |

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# IONOSPHERIC DATA

JUN. 1968 | $h'Es$ (km) | 135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39° 43.5' N. Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 105 | 100 | 100 | 100 | 105 | G | 135 | G | 125 | 115 | 115 | 110 | 110 | 105 | 115 | 120 | 150 | 125 | 125 | 120 | 115 | 115 | 115 | 110 |
| 2 | 110 | 110 | 105 | 110 | 140 | 140 | 125 | 125 | 115 | 120 | 120 | 120 | 120 | 115 | 125 | 130 | 140 | 125 | 115 | 120 | 115 | 120 | S | 115 |
| 3 | 105 | E | E | 105 | 105 | 140 | 140 | 120 | 125 | 120 | 120 | 120 | 120 | 120 | 120 | 115 | 115 | G | 130 | 125 | 125 | 115 | 115 | 105 |
| 4 | 110 | 105 | 100 | 105 | 110 | 155 | 155 | 125 | 130 | 125 | 120 | 120 | 120 | 120 | 120 | 110 | 120 | 125 | 115 | C | 115 | 120 | 110 | S |
| 5 | S | 105 | 105 | 105 | G | 145 | 100 | 130 | 130 | 120 | 120 | 125 | 125 | 125 | 115 | 115 | 105 | 110 | 115 | 115 | 115 | 120 | 115 | 105 |
| 6 | C | 110 | E | 140 | G | G | 140 | 125 | 120 | 110 | 115 | 110 | 125 | 135 | 145 | 165 | 130 | 120 | 115 | 115 | 110 | 115 | 120 | 115 |
| 7 | C | 110 | 110 | 110 | 110 | 110 | 125 | 120 | C | C | C | C | C | C | C | C | C | C | 115 | 115 | 115 | 115 | 110 | 110 |
| 8 | 110 | 105 | 105 | 105 | 105 | 105 | 125 | 115 | 115 | 115 | 115 | 110 | 110 | 115 | 115 | 125 | 120 | 115 | 115 | 115 | 110 | 110 | 115 | 115 |
| 9 | 110 | 110 | 105 | 105 | 120 | 140 | 135 | 125 | 120 | 115 | 120 | 110 | 110 | 115 | 115 | 115 | 110 | 110 | G | 125 | 110 | 110 | 115 | 105 |
| 10 | 105 | 105 | 100 | 100 | 100 | 110 | 140 | 115 | 115 | 115 | 115 | 115 | 110 | 110 | 140 | 120 | 155 | G | 140 | 120 | 115 | 110 | 110 | 110 |
| 11 | 110 | 110 | 105 | 105 | 105 | 125 | 125 | 120 | 115 | 115 | 120 | 115 | 120 | 140 | 115 | 110 | 115 | 120 | 120 | 120 | 115 | 110 | 110 | 110 |
| 12 | 105 | 105 | 105 | 105 | 105 | 115 | 140 | 120 | 115 | 115 | 110 | 110 | 120 | 125 | 125 | 115 | G | G | 140 | 115 | 115 | 115 | 110 | 110 |
| 13 | 110 | 115 | 115 | 105 | 105 | 125 | 125 | 120 | 120 | 115 | C | 115 | 110 | 110 | 115 | 110 | 110 | 115 | 125 | 115 | 115 | 115 | 115 | 110 |
| 14 | 110 | 140 | 105 | 105 | 115 | 140 | 120 | 120 | 115 | 130 | 120 | 125 | 125 | 120 | 120 | G | G | 140 | 150 | 120 | C | 115 | 110 | 110 |
| 15 | S | 110 | 110 | 110 | G | 100 | 125 | 120 | 125 | 120 | 125 | 120 | 115 | 110 | 110 | 105 | 105 | 105 | 105 | 115 | 110 | 110 | 120 | 110 |
| 16 | 110 | 105 | 115 | 105 | 110 | 145 | 140 | 125 | 120 | 125 | 120 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 115 | 120 | 115 | 110 | 105 | 105 |
| 17 | 100 | 105 | 105 | 110 | G | G | 145 | 140 | 125 | 120 | 120 | 115 | 120 | 115 | 105 | 120 | G | 120 | 115 | 115 | 115 | 110 | 110 | 105 |
| 18 | 105 | 105 | 105 | 105 | 105 | G | 125 | 120 | 120 | 120 | 115 | 110 | 120 | 115 | 110 | 110 | 110 | 110 | 105 | 105 | 105 | 105 | 100 | 115 |
| 19 | 105 | 110 | 105 | 105 | G | 150 | 125 | G | 125 | 115 | 120 | 115 | 125 | 110 | 115 | 120 | 130 | 125 | 125 | 115 | 115 | 115 | 110 | 110 |
| 20 | 105 | 100 | 105 | 100 | 105 | 140 | 125 | 115 | 115 | 115 | 115 | 115 | 120 | 130 | 140 | 140 | 125 | 120 | 120 | 105 | 105 | 105 | 105 | 110 |
| 21 | 115 | 115 | 115 | C | C | C | C | C | C | 120 | G | G | 140 | 125 | 125 | 130 | 120 | 125 | 120 | 115 | 115 | 110 | 110 | 110 |
| 22 | 110 | 110 | 110 | 105 | 105 | 135 | 125 | 130 | 130 | 120 | 120 | 120 | 145 | 140 | 145 | 125 | 135 | 115 | 110 | 120 | 105 | 105 | 120 | 115 |
| 23 | 110 | 110 | 105 | 110 | 105 | 110 | 135 | 125 | 120 | 115 | 115 | 120 | 115 | 110 | 130 | 125 | 120 | 125 | 125 | 120 | 115 | 120 | 110 | 110 |
| 24 | 110 | 105 | 105 | 105 | 105 | 125 | 125 | 125 | 125 | 120 | 110 | 115 | 115 | 125 | 130 | 120 | 130 | 125 | 125 | 115 | 115 | 110 | 110 | 105 |
| 25 | 105 | 100 | 100 | 100 | 110 | 110 | 140 | 125 | 125 | 120 | 120 | 120 | 120 | 120 | 120 | 115 | 115 | 130 | 120 | 105 | 100 | 100 | 105 | 110 |
| 26 | 110 | 110 | 110 | 100 | 100 | 100 | 130 | 125 | 120 | 120 | 115 | 115 | 110 | 110 | 110 | 115 | 110 | 105 | 125 | 120 | 110 | 115 | 110 | 110 |
| 27 | 110 | 105 | 100 | 110 | 100 | 110 | 135 | 125 | 125 | 120 | 125 | 115 | 110 | 110 | 110 | 110 | 110 | 115 | 115 | 125 | 120 | 110 | 110 | 140 |
| 28 | 105 | 105 | 100 | 100 | 100 | 100 | 130 | 115 | 115 | 120 | 115 | 115 | 105 | 115 | 115 | 110 | 105 | 110 | 105 | 105 | 100 | 100 | 110 | 110 |
| 29 | 110 | 110 | 105 | 110 | 110 | 115 | 120 | 120 | 115 | 115 | 115 | 120 | 110 | 110 | 115 | 150 | 125 | 125 | 120 | 105 | 105 | 110 | 110 | 115 |
| 30 | S | E | 115 | E | E | 140 | 140 | 125 | 115 | 120 | 115 | 115 | 115 | 120 | 115 | 120 | 120 | 120 | 130 | 120 | 115 | 110 | 110 | 110 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 25 | 28 | 28 | 28 | 23 | 25 | 29 | 27 | 28 | 29 | 27 | 28 | 29 | 29 | 29 | 28 | 26 | 26 | 29 | 29 | 29 | 30 | 29 | 29 |
| MED | 110 | 108 | 105 | 105 | 105 | 125 | 130 | 125 | 120 | 120 | 120 | 115 | 120 | 115 | 115 | 118 | 120 | 120 | 120 | 115 | 115 | 110 | 110 | 110 |
| UQ | 110 | 110 | 110 | 110 | 110 | 140 | 140 | 125 | 125 | 120 | 120 | 120 | 120 | 125 | 125 | 125 | 130 | 125 | 125 | 120 | 115 | 115 | 115 | 110 |
| LQ | 105 | 105 | 105 | 105 | 105 | 110 | 125 | 120 | 115 | 115 | 115 | 115 | 110 | 110 | 115 | 110 | 110 | 110 | 115 | 115 | 110 | 110 | 110 | 110 |

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# IONOSPHERIC DATA

JUN. 1968

Types of Es

135° E Mean Time (G. M. T. + 9 h)

Station AKITA Lat. 39° 43.5' N, Long. 140° 8.2' E Sweep 1.0 Mc to 20.0 Mc in 15 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F 3 | F 2 | F 2 | F 1 | L 1 | | H 2 | | H 2 | H 2 | H 2 | C 2 | C 3 | L 3 | C 2 | H 1 | HL 22 | H 3 | H 3 | C 5 | F 6 | F 4 | F 3 | F 3 |
| 2 | F 4 | F 2 | F 3 | F 2 | H 2 | H 3 | H 4 | H 4 | H 5 | HL 21 | H 2 | H 3 | H 2 | H 4 | H 2 | H 2 | H 1 | H 5 | C 4 | C 6 | F 5 | F 4 | | F 4 |
| 3 | F 3 | | | F 4 | L 3 | H 2 | H 1 | H 3 | H 2 | H 1 | H 2 | H 4 | H 2 | H 3 | H 1 | H 2 | C 1 | | H 2 | C 1 | F 1 | F 6 | F 3 | F 3 |
| 4 | F 2 | F 2 | F 5 | F 4 | L 2 | H 1 | H 1 | H 1 | H 2 | HL 21 | H 2 | H 1 | H 1 | H 1 | H 3 | C 3 | C 2 | H 4 | C 4 | | F 4 | F 5 | F 4 | |
| 5 | | F 2 | F 3 | F 1 | | H 1 | LH 12 | H 3 | HL 21 | H 1 | H 2 | H 1 | H 2 | H 1 | C 2 | C 4 | C 4 | C 3 | C 6 | C 6 | F 3 | F 2 | F 3 | F 3 |
| 6 | | F 1 | | F 1 | | | H 1 | H 2 | H 3 | C 3 | C 2 | C 2 | H 1 | H 2 | H 2 | H 1 | H 2 | C 2 | C 4 | C 3 | F 2 | F 1 | F 2 | F 5 |
| 7 | | F 4 | F 3 | F 2 | L 2 | L 3 | H 2 | H 3 | | | | | | | | | | | C 4 | C 4 | F 5 | F 6 | F 4 | F 5 |
| 8 | F 4 | F 4 | F 2 | F 2 | L 2 | LH 11 | H 3 | C 4 | H 3 | C 2 | H 3 | C 2 | C 2 | C 2 | C 3 | H 3 | H 5 | C 6 | C 3 | C 4 | F 3 | F 3 | F 6 | F 3 |
| 9 | F 5 | F 2 | F 4 | F 3 | C 1 | H 2 | H 3 | H 3 | H 4 | H 4 | H 2 | C 3 | C 3 | C 2 | C 5 | C 2 | C 4 | C 2 | | H 2 | F 2 | F 7 | F 2 | F 2 |
| 10 | F 1 | F 1 | F 2 | F 1 | L 2 | L 3 | H 2 | C 3 | C 3 | H 1 | H 3 | H 2 | C 2 | C 2 | H 2 | H 3 | H 2 | | H 2 | C 2 | F 1 | F 2 | F 2 | F 2 |
| 11 | F 3 | F 5 | F 4 | F 7 | F 7 | H 4 | H 6 | H 4 | H 3 | C 3 | H 2 | C 2 | H 2 | H 1 | C 2 | C 4 | C 2 | H 2 | C 2 | C 2 | F 4 | F 5 | F 4 | F 4 |
| 12 | F 4 | F 6 | F 3 | F 3 | F 4 | C 4 | H 2 | C 2 | C 3 | C 2 | C 2 | C 2 | H 1 | H 1 | H 2 | H 1 | | | H 1 | C 5 | F 3 | F 3 | F 7 | F 2 |
| 13 | F 2 | F 1 | F 2 | F 3 | L 3 | H 5 | H 2 | HL 21 | H 3 | C 3 | | C 3 | C 2 | C 2 | C 2 | C 2 | C 2 | C 2 | H 3 | C 6 | F 4 | F 6 | F 4 | F 2 |
| 14 | F 2 | F 1 | F 3 | F 5 | C 6 | H 2 | H 2 | H 2 | C 2 | H 1 | H 1 | H 2 | H 2 | H 2 | H 2 | | | H 1 | H 1 | C 2 | | F 3 | F 2 | F 4 |
| 15 | | F 2 | F 2 | F 1 | | L 1 | H 2 | H 2 | H 1 | H 2 | H 2 | H 1 | C 1 | C 2 | C 3 | L 3 | L 5 | L 6 | L 3 | C 4 | F 5 | F 4 | F 2 | F 2 |
| 16 | F 2 | F 2 | F 1 | F 3 | L 1 | H 2 | HL 11 | H 1 | H 2 | H 2 | H 2 | H 2 | C 2 | C 2 | C 2 | C 2 | C 3 | C 3 | C 2 | C 4 | F 3 | F 4 | F 3 | F 3 |
| 17 | F 4 | F 2 | F 2 | F 2 | | | H 1 | H 1 | H 2 | H 2 | H 2 | C 2 | H 1 | C 2 | L 2 | H 1 | | H 4 | C 5 | C 4 | F 5 | F 4 | F 4 | F 3 |
| 18 | F 3 | F 3 | F 3 | F 3 | L 3 | | H 3 | H 3 | H 5 | H 2 | H 2 | C 3 | H 2 | C 2 | C 1 | C 2 | C 2 | C 4 | L 4 | L 4 | F 6 | F 6 | F 3 | FF 23 |
| 19 | F 3 | F 5 | F 4 | F 3 | | H 1 | H 2 | | H 1 | H 2 | H 1 | C 1 | H 2 | C 2 | C 2 | H 2 | H 2 | H 1 | H 3 | C 6 | F 4 | F 1 | F 3 | F 2 |
| 20 | F 1 | F 3 | F 3 | F 3 | L 1 | HL 11 | H 2 | C 3 | C 3 | H 3 | C 3 | H 3 | H 2 | H 1 | H 1 | H 2 | H 2 | C 3 | C 4 | L 3 | F 4 | F 3 | F 3 | F 3 |
| 21 | F 2 | F 3 | F 3 | | | | | | | H 1 | | | H 1 | H 2 | H 2 | H 1 | H 2 | H 2 | C 4 | C 4 | F 4 | F 7 | F 2 | F 2 |
| 22 | F 2 | F 4 | F 2 | F 2 | L 2 | H 1 | H 3 | H 3 | H 2 | H 2 | H 2 | H 3 | H 1 | H 1 | H 2 | H 3 | H 2 | C 3 | CH 31 | C 5 | F 3 | F 2 | F 1 | F 2 |
| 23 | F 2 | F 7 | F 7 | F 3 | L 2 | L 2 | H 2 | H 3 | H 4 | C 4 | C 3 | H 2 | H 3 | C 2 | H 3 | H 2 | H 1 | H 3 | H 2 | C 3 | F 3 | F 4 | F 6 | F 4 |
| 24 | F 4 | F 4 | F 4 | F 3 | L 2 | H 3 | H 4 | H 2 | H 4 | H 2 | C 2 | C 2 | C 1 | H 1 | H 1 | H 2 | H 1 | H 2 | H 2 | C 3 | F 3 | F 2 | F 4 | F 2 |
| 25 | F 3 | F 2 | F 2 | F 2 | L 1 | L 2 | H 2 | H 3 | H 3 | H 3 | H 2 | H 2 | H 2 | H 1 | H 1 | C 4 | H 2 | H 2 | C 5 | L 2 | F 4 | F 2 | F 2 | F 2 |
| 26 | F 3 | F 3 | F 2 | F 3 | L 3 | L 3 | H 2 | H 2 | H 3 | H 2 | H 1 | C 1 | C 2 | C 2 | C 2 | C 1 | C 2 | LH 21 | H 2 | C 3 | F 4 | F 2 | F 3 | F 4 |
| 27 | F 4 | F 3 | F 2 | F 1 | L 2 | L 3 | H 2 | H 4 | H 3 | H 1 | H 1 | C 2 | C 2 | C 2 | C 2 | C 3 | C 2 | C 3 | C 4 | C 1 | F 5 | F 4 | F 5 | F 1 |
| 28 | F 3 | F 4 | F 2 | F 2 | L 2 | L 1 | H 2 | H 4 | C 3 | H 1 | C 2 | H 2 | L 2 | C 2 | C 2 | C 2 | L 3 | C 4 | L 4 | L 4 | F 2 | F 4 | F 4 | F 4 |
| 29 | F 3 | F 2 | F 2 | F 2 | L 3 | C 4 | C 4 | H 3 | H 2 | H 3 | C 2 | H 2 | C 2 | C 2 | C 2 | H 1 | H 2 | H 2 | C 3 | L 3 | F 2 | F 2 | F 2 | F 1 |
| 30 | | | F 1 | | | H 1 | H 2 | H 2 | C 2 | C 3 | C 2 | C 4 | C 4 | H 2 | C 3 | H 3 | H 4 | C 2 | C 3 | C 3 | F 3 | F 4 | F 4 | F 3 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | | | | | | | | | | | | | | | | | | | | | | | | |
| MED | | | | | | | | | | | | | | | | | | | | | | | | |
| UQ | | | | | | | | | | | | | | | | | | | | | | | | |
| LQ | | | | | | | | | | | | | | | | | | | | | | | | |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | $f_0F2$ (0.1) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35°42.4'N. Long. 139°29.3'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | J R 78 | 74 | J R 79 | 66 | F 59 | 63 | 81 | 90 | 87 | H 89 | 95 | 101 | 103 | 99 | 94 | 89 | 86 | 84 | 88 | 94 | U R 86 | 77 | J R 84 | 80 |
| 2 | J R 78 | J R 80 | J R 69 | F | 75 | J R 84 | 80 | 68 | 60 | A | J R 70 | 79 | 85 | 78 | 76 | 81 | 85 | 85 | 81 | 74 | 71 | 70 | 72 | 71 |
| 3 | F | 71 | 68 | 62 | 62 | 68 | 89 | 98 | 97 | 82 | 82 | 83 | 97 | 97 | 100 | 101 | 93 | 95 | 97 | 88 | 90 | 84 | 83 | 89 |
| 4 | 82 | 82 | J R 87 | 69 | 67 | 75 | 78 | 79 | 80 | 81 | 76 | 82 | 84 | 83 | I A 82 | 90 | 95 | 94 | 89 | A | J R 92 | 89 | 94 | 89 |
| 5 | J R 87 | 87 | 86 | 79 | 73 | 84 | 100 | 109 | 99 | 97 | 100 | 103 | 105 | 108 | 98 | I A 94 | 94 | 93 | I A 87 | 87 | 84 | 94 | I R 93 | 87 |
| 6 | 91 | 91 | 86 | 84 | 79 | 82 | 98 | 95 | 75 | 72 | I R 75 | I A 84 | 87 | 91 | 89 | 86 | 84 | 92 | 99 | 99 | 93 | 97 | 99 | 98 |
| 7 | 99 | 92 | 90 | I R 83 | 74 | 70 | 84 | 90 | 90 | 81 | 80 | 80 | 81 | 87 | 92 | 90 | 89 | 88 | 91 | 94 | 94 | F 92 | F | U F 91 |
| 8 | A | I A 88 | 84 | 69 | 66 | F 74 | 93 | 98 | 101 | 90 | 84 | I A 90 | 92 | 101 | 103 | 97 | A | A | 88 | 84 | 87 | 78 | I S 80 | I A 74 |
| 9 | 69 | A | A | 60 | F 61 | 64 | 78 | 80 | 74 | 76 | I A 80 | I A 82 | I A 88 | 94 | 94 | 92 | 88 | 90 | 92 | 89 | 80 | 80 | J R 79 | 73 |
| 10 | 74 | 75 | 73 | 64 | 59 | 59 | 72 | 83 | 88 | 92 | 90 | 89 | 89 | 85 | 88 | A | 82 | 83 | 87 | 93 | 96 | 86 | 85 | 82 |
| 11 | J R 85 | I R 86 | 87 | C | C | 72 | 86 | F 81 | 75 | 73 | R | 83 | 85 | 84 | A | 74 | 94 | 82 | 60 | 61 | 69 | F 75 | F 78 | F 80 |
| 12 | F 79 | F 59 | F 56 | F | C | C | 60 | 58 | A | A | I R 61 | 64 | A | 83 | 81 | 80 | 75 | 73 | 79 | 78 | 80 | I R 75 | 86 | I R 77 |
| 13 | 80 | 75 | 75 | F 68 | F 65 | 58 | I A 65 | 72 | 62 | 72 | A | I A 79 | 86 | I A 91 | 99 | 107 | 101 | 101 | 103 | 91 | I A 82 | 85 | 90 | 89 |
| 14 | 98 | F 84 | 74 | 70 | 68 | 61 | I A 59 | 58 | A | A | A | 68 | 79 | 70 | 74 | A | 64 | 62 | 73 | 84 | 89 | 89 | J R 88 | 83 |
| 15 | 83 | 82 | 81 | 86 | 91 | 84 | 71 | J R 64 | 68 | U R 59 | R | R | R | R | 62 | 66 | 59 | 59 | 58 | 61 | U R 62 | 67 | 70 | I R 68 |
| 16 | J R 68 | 70 | R 70 | 64 | 61 | 67 | 82 | 94 | 84 | 69 | 72 | 81 | 87 | 90 | 86 | 89 | 90 | 84 | 80 | 84 | 84 | 82 | J R 89 | U S 84 |
| 17 | 84 | J R 88 | U S 81 | 75 | 72 | 76 | 74 | I A 75 | 69 | A | A | A | A | 76 | 85 | 85 | C | C | 97 | 96 | A | 78 | A | A |
| 18 | A | U R 89 | R | R | I R 74 | 63 | 52 | A | 63 | A | I A 69 | 71 | 78 | I A 77 | I A 80 | 90 | 91 | 84 | 83 | 88 | 87 | 77 | 78 | 80 |
| 19 | 76 | 77 | 81 | 66 | 58 | 63 | 75 | 80 | 67 | 75 | 84 | 85 | 95 | 98 | 98 | A | 93 | 99 | 108 | 96 | I A 86 | 88 | F 91 | 91 |
| 20 | 91 | V 95 | J R 87 | 71 | 73 | 93 | 87 | 64 | 74 | C | A | 85 | 84 | 80 | 84 | 89 | 85 | 80 | 87 | 85 | 81 | I R 88 | 81 | 82 |
| 21 | 80 | 80 | I R 82 | 76 | 63 | 65 | 71 | 78 | 87 | 82 | 78 | 83 | 84 | 89 | 84 | 88 | 93 | 96 | 103 | S 102 | 84 | 86 | I S 87 | J R 85 |
| 22 | 88 | 88 | 86 | 74 | 66 | 70 | U R 85 | U S 96 | 82 | 71 | J R 74 | 80 | 80 | 85 | 78 | 86 | 89 | 93 | 97 | S 95 | 91 | J R 83 | I R 83 | U R 84 |
| 23 | J F 85 | F | J R 81 | 63 | 60 | 68 | 84 | 94 | 94 | 90 | A | A | J R 74 | 75 | 72 | 69 | 72 | I A 74 | I A 78 | J R 80 | 76 | 74 | F | J F 84 |
| 24 | F | J R 77 | 62 | F 61 | 58 | F 63 | 82 | 95 | 94 | A | 82 | I A 78 | 76 | I A 78 | 80 | I R 78 | 81 | I A 82 | 82 | 80 | 81 | I A 82 | 85 | J R 80 |
| 25 | F | F | F 74 | 74 | 67 | 70 | 74 | 77 | 80 | 68 | 74 | 80 | 83 | 81 | I A 76 | 74 | 79 | 82 | 89 | 91 | 91 | 91 | 90 | R 96 |
| 26 | I R 97 | S | S | J F 91 | J R 68 | 67 | 75 | 88 | 82 | I A 79 | 82 | 88 | 74 | 71 | 78 | 78 | 81 | 88 | 102 | J R 101 | 88 | 81 | 87 | F 91 |
| 27 | 82 | I R 84 | I R 82 | 76 | 77 | 79 | 80 | 86 | 80 | 80 | 81 | 78 | 80 | 80 | A | 82 | 79 | 79 | 83 | 89 | A | J S 90 | J F 98 | U S 91 |
| 28 | J F 89 | J R 84 | 72 | F 70 | 69 | 75 | 88 | 88 | 69 | A | 78 | 85 | 89 | 95 | 86 | A | A | A | 97 | 98 | 88 | 84 | 86 | 93 |
| 29 | J F 81 | F | F | F | J R 80 | 74 | 80 | 88 | 81 | 69 | 69 | I A 76 | I A 82 | 87 | I A 80 | 81 | 86 | 96 | 96 | 93 | 94 | 92 | 90 | 88 |
| 30 | 92 | J R 86 | R | 70 | R 66 | 70 | 75 | 85 | 98 | 84 | 75 | 77 | 83 | 85 | 94 | 104 | 113 | 110 | 90 | 79 | 81 | 79 | 80 | 81 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 25 | 25 | 25 | 25 | 28 | 29 | 30 | 29 | 28 | 22 | 23 | 27 | 27 | 29 | 28 | 26 | 27 | 27 | 30 | 29 | 28 | 30 | 27 | 29 |
| MED | 83 | 84 | 81 | 70 | 67 | 70 | 80 | 85 | 80 | 80 | 78 | 82 | 84 | 85 | 84 | 87 | 86 | 85 | 88 | 89 | 86 | 84 | 86 | 84 |
| UQ | 89 | 88 | 86 | 76 | 74 | 75 | 85 | 94 | 89 | 84 | 82 | 85 | 88 | 91 | 94 | 90 | 93 | 94 | 97 | 94 | 90 | 89 | 90 | 89 |
| LQ | 79 | 77 | 73 | 66 | 62 | 64 | 74 | 77 | 72 | 72 | 74 | 78 | 80 | 80 | 79 | 80 | 81 | 82 | 82 | 84 | 81 | 78 | 80 | 80 |

# IONOSPHERIC DATA

JUN. 1968 | foF1 (0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | L | U L 500 | L | 550 | L | R 550 | I R 550 | L | L 500 | U L 490 | A | L | | | | | |
| 2 | | | | | | L | A | A | 520 | A | U R 540 | A | 530 | A | 550 | 530 | 500 | L | L | | | | | |
| 3 | | | | | | | L | L | A | A | A | A | A | A | L | A | A | A | L | | | | | |
| 4 | | | | | | | L | L | L 510 | L 680 | A | A | 560 | A | A | A | A | A | A | A | | | | |
| 5 | | | | | | | L | L | L | A | L | L | A | A | L | A | A | A | A | | | | | |
| 6 | | | | | | | L | L 450 | A | A | A | A | L | A | A | L 500 | A | L | L | | | | | |
| 7 | | | | | | | L | L | L | L 500 | A | U R 550 | R | 530 | L 560 | 530 | 500 | L | L | | | | | |
| 8 | | | | | | | L | A | A | A | A | A | A | A | 530 | A | A | A | A | | | | | |
| 9 | | | | | | L | A | A | L 520 | A | A | A | A | A | 590 | L | L 510 | L | | | | | | |
| 10 | | | | | | | L | U L 520 | L | A | A | L 530 | L 540 | A | L | A | L | A | A | | | | | |
| 11 | | | | | | L | A | A | A | A | A | A | A | A | A | L 500 | L 460 | A | L | | | | | |
| 12 | | | | | | | L | A | A | A | L 510 | A | A | A | L 510 | L 490 | L 490 | L | L | | | | | |
| 13 | | | | | | A | A | A | A | L 650 | A | A | A | A | A | A | A | A | L | | | | | |
| 14 | | | | | | L 320 | A | A | A | A | A | A | 520 | A | A | A | L | 450 | L | | | | | |
| 15 | | | | | | 290 | L 450 | L | L 490 | U L 500 | U R 540 | R | R | A | 520 | 500 | 490 | L | L | | | | | |
| 16 | | | | | | | L | L | A | A | A | A | A | 530 | 540 | 510 | L | L 430 | | | | | | |
| 17 | | | | | | L | L | A | A | A | A | A | A | 540 | A | A | C | C | A | | | | | |
| 18 | | | | | | L | L | A | A | A | A | A | A | A | A | A | L | A | A | | | | | |
| 19 | | | | | | L | L | A | L | A | A | L 540 | 530 | L 550 | A | A | A | U L 470 | A | | | | | |
| 20 | | | | | | | L | L | L | C | A | A | A | L | A | 500 | L 480 | L | L | | | | | |
| 21 | | | | | | | | L | A | U L 540 | H 580 | 530 | 550 | U R 570 | A | 530 | A | A | A | | | | | |
| 22 | | | | | | | U L 440 | L | L 480 | 540 | 530 | R 550 | 540 | 550 | A | 520 | 500 | U L 470 | L | | | | | |
| 23 | | | | | | | L | A | A | A | A | A | A | 520 | 540 | 550 | A | A | A | | | | | |
| 24 | | | | | | L | A | A | A | A | A | A | A | A | 510 | A | L | A | L | | | | | |
| 25 | | | | | | L | L | | A | R | A | R | A | A | A | 510 | A | L | L | | | | | |
| 26 | | | | | | | L | L | A | A | L | A | A | R | 520 | 510 | L | 440 | L | | | | | |
| 27 | | | | | | L | L | L | L | A | A | A | A | A | A | 490 | L 490 | A | A | | | | | |
| 28 | | | | | | L | L | L | A | A | R | A | A | A | A | A | A | A | A | | | | | |
| 29 | | | | | | | I | A | A | L | A | A | A | A | A | A | A | A | A | | | | | |
| 30 | | | | | | | | A | A | A | A | 530 | U R 540 | A | 520 | A | 500 | U L 450 | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | 2 | 2 | 2 | 6 | 6 | 6 | 6 | 9 | 8 | 11 | 15 | 11 | 6 | | | | | | |
| MED | | | | | | 305 | L 445 | L 485 | L 505 | L 540 | 540 | 535 | 540 | 545 | 530 | 510 | 490 | L 450 | | | | | | |
| UQ | | | | | | | | | L 520 | L 650 | 550 | R 550 | 550 | 550 | 545 | 525 | 500 | U L 470 | | | | | | |
| LQ | | | | | | | | | 490 | 500 | 530 | 530 | 530 | 530 | 520 | 500 | L 490 | L 440 | | | | | | |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | $f_0E$ (0.01) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | 200 | 270 | 310 | 330 | 365 | A | A | R | A | I R 350 | 355 | 335 | 275 | I A 215 | | | | | |
| 2 | | | | | | A | 275 | 310 | 340 | 365 | 380 | 390 | 380 | 385 | I A 375 | 365 | 320 | 285 | 210 | | | | | |
| 3 | | | | | | 200 | 270 | 305 | 335 | 355 | A | A | A | A | A | A | A | A | A | | | | | |
| 4 | | | | | | 190 | 260 | 300 | A | A | A | A | A | A | F A 400 | 340 | A | A | A | | | | | |
| 5 | | | | | | 200 | 270 | 315 | 345 | I A 360 | A | A | A | A | A | A | A | A | A | | | | | |
| 6 | | | | | | I A 200 | I A 260 | 310 | 345 | A | A | A | A | R | A | I A 370 | 330 | A | A | | | | | |
| 7 | | | | | | 170 | 260 | 300 | I A 340 | I A 365 | A | A | U R 395 | 390 | I B 375 | 360 | 340 | A | A | | | | | |
| 8 | | | | | | A | 265 | 310 | I A 345 | A | A | A | 390 | I A 395 | 380 | 370 | 335 | A | A | | | | | |
| 9 | | | | | | 250 | 285 | 330 | 355 | 375 | B | A | A | A | A | A | A | A | B | | | | | |
| 10 | | | | | | 220 | 270 | A | A | A | A | A | A | A | A | 375 | 330 | 290 | A | | | | | |
| 11 | | | | | | 180 | 260 | 310 | A | A | A | A | A | A | A | 350 | A | 290 | A | | | | | |
| 12 | | | | | | C | A | I A 300 | A | A | A | A | A | A | R | R | R | R 280 | R | | | | | |
| 13 | | | | | | A | A | A | 325 | A | B | B | A | B | A | A | A | A | A | | | | | |
| 14 | | | | | | A | A | I A 300 | I A 325 | 345 | I B 390 | I A 400 | I A 400 | I R 390 | I A 370 | 355 | 330 | 300 | 240 | | | | | |
| 15 | | | | | | A | 250 | I A 310 | I A 335 | I A 350 | R | A | A | A | A | I R 360 | 320 | 280 | 200 | | | | | |
| 16 | | | | | | B | 255 | 315 | I A 335 | 365 | 370 | A | A | A | A | A | A | A | A | | | | | |
| 17 | | | | | | A | 265 | I A 310 | I A 330 | A | A | A | A | A | A | A | C | C | 225 | | | | | |
| 18 | | | | | | A | A | 300 | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 19 | | | | | | A | 280 | A | A | A | A | 400 | I A 400 | A | A | A | A | A | 210 | | | | | |
| 20 | | | | | | 200 | 250 | 310 | 350 | C | A | A | A | A | A | A | A | A | A | | | | | |
| 21 | | | | | | A | I A 260 | A | A | A | A | A | 400 | 390 | 370 | 350 | 330 | 270 | A | | | | | |
| 22 | | | | | | A | 255 | 320 | 340 | I R 370 | 370 | 385 | 390 | 390 | I A 370 | 350 | I A 320 | A | A | | | | | |
| 23 | | | | | | 210 | 265 | A | A | A | A | A | A | 390 | 385 | 360 | 320 | 290 | A | | | | | |
| 24 | | | | | | I A 185 | 265 | 315 | 340 | A | A | A | A | A | R | A | 325 | 275 | A | | | | | |
| 25 | | | | | | A | 270 | A | I A 340 | A | A | A | A | A | A | A | A | A | A | | | | | |
| 26 | | | | | | A | 275 | 325 | A | A | A | A | A | A | A | A | A | A | A | | | | | |
| 27 | | | | | | A | A | A | A | 365 | A | A | A | A | A | A | 330 | 285 | A | | | | | |
| 28 | | | | | | I A 190 | 275 | 310 | I A 330 | A | A | A | A | A | A | A | A | A | A | | | | | |
| 29 | | | | | | A | A | A | A | A | A | A | A | A | A | 365 | 330 | 280 | 210 | | | | | |
| 30 | | | | | | A | I A 275 | A | A | A | A | 385 | 395 | 385 | 360 | 350 | 320 | 290 | A | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | 13 | 24 | 21 | 18 | 11 | 4 | 5 | 8 | 8 | 10 | 15 | 15 | 13 | 7 | | | | | |
| MED | | | | | | 200 | 265 | 310 | 340 | 365 | 375 | 390 | 395 | 390 | 371 | 360 | 330 | 285 | 210 | | | | | |
| UQ | | | | | | 200 | 272 | 315 | 345 | 365 | 385 | 400 | U 400 | 390 | 378 | 365 | 330 | 290 | 220 | | | | | |
| LQ | | | | | | 190 | 260 | 305 | U A 330 | 358 | 370 | 385 | 390 | 388 | U 370 | 350 | 320 | 280 | 210 | | | | | |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | foEs (0.1) | 135 E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | J X 42 | J X 35 | M 35 | 31 | 22 | 30 | 30 | J X 45 | 36 | 47 | J X 43 | J X 73 | G | 45 | 43 | G | 37 | 73 | 58 | J X 36 | J X 40 | J X 52 | J X 75 | J X 24 |
| 2 | J X 61 | M 40 | J X 74 | M 35 | J X 30 | J X 34 | M 60 | J X 54 | 48 | J X 120 | 48 | J X 54 | 43 | J X 66 | 44 | G | 34 | 41 | 31 | J X 42 | 32 | 35 | 27 | J X 24 |
| 3 | J X 42 | J X 52 | J X 46 | J X 59 | J X 43 | G | 44 | 47 | J X 54 | J X 67 | 77 | 71 | J X 89 | 61 | 46 | J X 59 | M 68 | 79 | 32 | 31 | 31 | 30 | M 42 | 41 |
| 4 | 35 | J X 52 | 31 | 23 | 24 | 21 | 28 | 36 | 42 | J X 93 | 63 | 45 | J X 67 | 56 | J X 93 | J X 138 | M 71 | M 73 | 60 | 95 | 67 | J X 87 | 56 | 31 |
| 5 | E B 15 | 23 | 21 | E B 16 | E B 15 | 24 | 37 | 38 | 46 | J X 62 | J X 62 | J X 61 | 68 | 69 | 57 | J X 133 | M 103 | J X 52 | J X 106 | J X 61 | 47 | J X 90 | J X 29 | 35 |
| 6 | J X 29 | 22 | E | E B 17 | M 21 | 23 | J X 35 | 36 | J X 56 | M 70 | 58 | J X 106 | 49 | 75 | 62 | 41 | 59 | 49 | J X 38 | M 34 | J X 61 | E B 15 | F B 15 | 21 |
| 7 | 22 | J X 43 | J X 46 | 29 | 21 | 24 | 35 | J X 119 | J X 55 | 42 | J X 120 | 46 | 45 | 43 | E B 41 | 40 | 39 | J X 44 | J X 28 | 90 | J X 70 | 71 | J X 89 | J X 83 |
| 8 | J X 143 | J X 125 | 48 | 31 | J X 30 | 36 | 36 | J X 53 | 72 | 90 | J X 92 | 90 | J X 118 | J X 163 | 48 | J X 79 | J X 116 | J X 164 | 58 | J X 54 | J X 36 | M 31 | J X 53 | J X 125 |
| 9 | J X 76 | J X 118 | J X 115 | J X 60 | J X 59 | J X 42 | M 68 | J X 59 | J X 61 | J X 144 | J X 140 | J X 128 | 104 | 69 | J X 91 | J X 60 | J X 51 | J X 70 | J X 57 | J X 120 | J X 60 | J X 38 | J X 25 | 21 |
| 10 | J X 44 | 35 | J X 24 | 24 | J X 16 | G 21 | J X 28 | J X 47 | J X 60 | M 68 | J X 63 | 63 | 49 | 49 | J X 53 | J X 72 | 49 | M 79 | M 44 | 36 | 24 | E B 16 | M 29 | F B 16 |
| 11 | 43 | J X 61 | M 32 | C | C | 28 | 65 | M 68 | J X 60 | 66 | 71 | J X 96 | 65 | 60 | J X 125 | 48 | 37 | 51 | J X 35 | J X 48 | 31 | M 34 | 30 | 35 |
| 12 | 64 | 58 | 31 | 35 | C | C | 35 | 52 | 61 | J X 108 | 66 | 47 | J X 90 | J X 89 | G | G | G | 32 | G | 36 | 35 | J X 113 | 60 | J X 56 |
| 13 | 24 | 57 | 47 | 58 | 36 | J X 52 | 84 | 57 | 60 | 68 | J X 108 | J X 89 | 61 | J X 110 | 82 | J X 73 | M 58 | 63 | 35 | 48 | J X 142 | J X 85 | 52 | J X 89 |
| 14 | 57 | 31 | 35 | 34 | 34 | 27 | J X 68 | 47 | 48 | J X 84 | M 58 | 56 | 48 | 54 | M 80 | M 85 | M 49 | 39 | 32 | J X 29 | E B 14 | 35 | J X 26 | J X 39 |
| 15 | J X 25 | 21 | M 34 | J X 28 | 24 | 24 | 34 | J X 53 | J X 41 | 47 | G | 50 | 44 | 52 | J X 44 | G | J G 29 | G 23 | 32 | 35 | J X 25 | J X 72 | J S 42 | J X 42 |
| 16 | J X 42 | J X 28 | 21 | J X 24 | J X 18 | J X 29 | 37 | 44 | J X 51 | J X 72 | 50 | J X 58 | M 70 | 47 | J X 42 | 39 | 56 | 36 | 35 | 21 | 19 | Y 58 | J X 33 | M 36 |
| 17 | 36 | 23 | 23 | J X 29 | J X 36 | J X 29 | 34 | M 76 | J X 68 | J X 79 | J X 72 | J X 119 | J X 127 | 48 | J X 66 | 65 | C | C | J X 73 | 59 | J X 127 | 92 | J X 124 | J X 122 |
| 18 | J X 122 | 49 | 43 | 50 | 44 | 35 | 35 | 62 | 64 | 92 | 85 | J X 111 | J X 121 | J X 85 | J X 132 | 69 | 48 | 54 | 56 | 43 | M 35 | 34 | 22 | 25 |
| 19 | 32 | 31 | 31 | 26 | 31 | 30 | 31 | 59 | 47 | 65 | 71 | 44 | 42 | 45 | J X 54 | 91 | J X 120 | J X 30 | 55 | J X 46 | J X 87 | J X 121 | 48 | M 49 |
| 20 | J X 43 | J X 51 | J X 35 | J X 42 | J X 34 | 25 | 35 | 43 | J X 52 | C | J X 109 | M 86 | 72 | J X 59 | 46 | 44 | 47 | J X 41 | 35 | 43 | 35 | 39 | 49 | 21 |
| 21 | 22 | J X 39 | 43 | 42 | 31 | 21 | 31 | 35 | J X 82 | 39 | 45 | 42 | 43 | J X 56 | J X 89 | J X 52 | 72 | J X 61 | 49 | M 57 | 43 | 31 | M 35 | J X 43 |
| 22 | J S 39 | 21 | J X 25 | J X 25 | J X 25 | J X 30 | 31 | 36 | 43 | G 36 | 40 | 44 | 45 | 47 | M 72 | 48 | 36 | J X 42 | J X 30 | J X 40 | Y 90 | 31 | J X 38 | J X 42 |
| 23 | J X 32 | J X 30 | J X 66 | J X 53 | 16 | G | 31 | 55 | 60 | M 90 | M 112 | J X 172 | J X 142 | 49 | 49 | 46 | J X 69 | J X 102 | J X 106 | J X 65 | J X 30 | J X 87 | J X 61 | J X 57 |
| 24 | J X 89 | 35 | J X 86 | J X 39 | J X 50 | 28 | J X 42 | J X 55 | 81 | J X 110 | J X 68 | J X 102 | J X 124 | J X 78 | G | 68 | 44 | J X 137 | J X 110 | 47 | Y 59 | J X 110 | 57 | 69 |
| 25 | 35 | 34 | 31 | 24 | E B 15 | 35 | 31 | 33 | 56 | 48 | J X 62 | 46 | 60 | J X 89 | J X 146 | 41 | M 71 | J X 41 | J X 41 | J X 53 | J X 30 | M 22 | J X 29 | 23 |
| 26 | J X 41 | J X 36 | J X 66 | J X 36 | M 31 | J X 29 | 30 | J X 54 | J X 58 | J X 138 | 48 | J X 71 | J X 59 | 48 | 41 | 44 | J X 42 | J X 61 | 35 | 29 | 23 | J X 43 | M 58 | J X 51 |
| 27 | J X 41 | J X 42 | 21 | 30 | J X 25 | J X 29 | 35 | 35 | J X 48 | J X 63 | J X 71 | 57 | J X 83 | J X 79 | J X 118 | J X 38 | J X 41 | J X 54 | M 90 | J X 53 | J X 144 | J X 57 | 24 | 49 |
| 28 | J X 43 | 22 | J X 35 | J X 35 | 22 | 25 | J X 31 | J X 43 | J X 52 | J X 120 | J X 48 | 80 | 70 | 72 | J X 124 | J X 120 | 111 | J X 110 | Y 91 | 58 | J X 97 | J X 42 | J X 32 | J X 48 |
| 29 | J X 59 | J X 42 | J X 60 | M 34 | 21 | 24 | 42 | 61 | J X 58 | 50 | M 60 | J X 90 | J X 175 | J X 84 | 121 | J X 80 | J X 84 | 56 | J X 49 | 47 | J X 74 | J X 53 | J X 42 | 22 |
| 30 | J X 24 | 22 | M 21 | M 22 | J X 35 | J X 26 | J X 41 | J X 80 | J X 59 | J X 96 | J X 79 | 42 | 47 | 58 | J X 60 | J X 74 | 42 | 38 | 31 | J X 29 | 24 | 19 | J X 31 | J X 53 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 30 | 30 | 29 | 28 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 29 | 30 | 30 | 30 | 30 | 30 | 30 |
| MED | J X 42 | 36 | 35 | 31 | 28 | 28 | 35 | 52 | J X 56 | 70 | 64 | 67 | 66 | 60 | 58 | 56 | 49 | 54 | 42 | 46 | 38 | 42 | 40 | 42 |
| UQ | J X 57 | J X 51 | J X 47 | 39 | J X 34 | J X 30 | 42 | J X 59 | J X 60 | J X 93 | J X 79 | J X 90 | J X 90 | J X 78 | J X 91 | J X 74 | 71 | J X 73 | 58 | 57 | J X 70 | J X 85 | 56 | J X 53 |
| LQ | 32 | 28 | 25 | 25 | 21 | 24 | 31 | 43 | 48 | 62 | 50 | 47 | 47 | 49 | 44 | 41 | 41 | 41 | 32 | 36 | 30 | 31 | J X 29 | 24 |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | $f_bE_s$ (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 31 | 19 | 22 | 19 | 14 | 25 | 28 | 38 | 36 | 46 | 42 | 55 | G | E R 45 | 41 | G | 37 | 65 | 30 | 26 | E | 18 | 53 | 16 |
| 2 | 44 | 18 | 15 | 25 | 12 | 25 | 51 | 52 | 46 | A | E R 48 | 54 | 43 | 61 | 41 | G | 34 | 41 | 31 | 29 | 32 | 35 | 19 | E |
| 3 | 29 | 40 | 29 | 37 | 37 | G | 40 | 45 | 54 | 59 | 67 | 67 | 62 | 56 | 45 | 55 | 62 | 77 | 26 | 26 | 25 | 20 | 25 | E |
| 4 | 17 | 18 | 18 | 16 | 16 | 15 | 28 | 33 | 32 | 62 | 58 | E R 45 | 55 | 55 | A | 86 | 55 | 66 | 55 | A | 66 | 40 | 17 | 18 |
| 5 | E B 15 | 16 | E | E B 16 | E B 15 | 24 | 29 | 37 | 45 | 58 | 55 | 59 | 61 | 67 | 50 | A | 74 | 46 | A | 57 | 40 | 78 | E | 23 |
| 6 | 16 | 13 | E | E B 12 | 15 | 21 | 29 | 33 | 51 | 63 | 56 | A | 47 | 70 | 56 | 40 | 54 | 41 | 30 | 31 | 51 | E B 15 | E B 15 | E |
| 7 | 17 | 25 | 17 | 16 | 17 | 22 | 28 | 40 | 40 | 38 | 64 | E R 46 | E R 45 | 43 | E B 41 | 40 | 38 | 35 | 28 | 58 | 41 | 41 | 79 | 54 |
| 8 | A | A | 20 | 20 | 20 | 27 | 36 | 52 | 65 | 80 | 74 | A | 75 | 61 | 45 | 79 | A | A | 41 | 45 | 26 | 19 | 35 | A |
| 9 | 46 | A | A | 28 | 35 | 34 | 54 | 53 | 45 | 55 | A | A | A | 61 | 53 | 43 | 40 | 34 | 29 | 51 | 40 | 29 | 18 | E |
| 10 | 28 | 25 | 15 | 13 | 14 | G 17 | 25 | 35 | 46 | 67 | 62 | 41 | 44 | 46 | 51 | A | 41 | 71 | 41 | 30 | 17 | E B 16 | 19 | E B 16 |
| 11 | 35 | 25 | 26 | C | C | 26 | 60 | 56 | 51 | 55 | E R 71 | 70 | 56 | 55 | A | 42 | 34 | 44 | 30 | 26 | 25 | 28 | 16 | 19 |
| 12 | 28 | 17 | 20 | 24 | C | C | 32 | 46 | A | A | 38 | E R 47 | A | 75 | G | G | G | 30 | G | 28 | 28 | 25 | 42 | 29 |
| 13 | 16 | E | 16 | 41 | 26 | 50 | A | 49 | 51 | 45 | A | A | 56 | A | 74 | 65 | 52 | 55 | 29 | 25 | A | 68 | 43 | 41 |
| 14 | 29 | 16 | 20 | 25 | 17 | 26 | A | E R 47 | A | A | A | E R 56 | 46 | F S 54 | 66 | A | 44 | 39 | 29 | 25 | F B 14 | 32 | 16 | 36 |
| 15 | 20 | E | 21 | 22 | 15 | 24 | 32 | 41 | 41 | 47 | G | 45 | E R 44 | E R 52 | 42 | G | G 29 | G 23 | 27 | 26 | 16 | 51 | E | 17 |
| 16 | 25 | 16 | E | 16 | 15 | 22 | 28 | 43 | 51 | 63 | 50 | 53 | 64 | 42 | 41 | 39 | 46 | 30 | 27 | 18 | E | 18 | 25 | 25 |
| 17 | 26 | E | 15 | 16 | 26 | 25 | 32 | A | 53 | A | A | A | A | 46 | G | 59 | C | C | 73 | 53 | 41 | 68 | A | A |
| 18 | A | 25 | 25 | 40 | 26 | 25 | 25 | A | 57 | A | A | 55 | 58 | A | A | 65 | 45 | 52 | 52 | 35 | 30 | 28 | 17 | 18 |
| 19 | 29 | 16 | 25 | 16 | 17 | 22 | 27 | 52 | 38 | 62 | 64 | E R 44 | 41 | 44 | 53 | A | 55 | 29 | 52 | 29 | A | 65 | 37 | 40 |
| 20 | 26 | 25 | 25 | 28 | 19 | 25 | 32 | 41 | 42 | C | A | 75 | 62 | 55 | E R 46 | 40 | 40 | 34 | 28 | 40 | 29 | 31 | 25 | E |
| 21 | 20 | 38 | 30 | 20 | 19 | E R 21 | 30 | 33 | 53 | 38 | 40 | 42 | 41 | 48 | 66 | 47 | 71 | 46 | 42 | 46 | 34 | 26 | 26 | 20 |
| 22 | E | E | E | 16 | 20 | 24 | 29 | 35 | 40 | E R 36 | 40 | 44 | 45 | 45 | 62 | 46 | 34 | 38 | 28 | 38 | 54 | 21 | 28 | 29 |
| 23 | 20 | 21 | 40 | 26 | 14 | G | 31 | 52 | 55 | 78 | A | A | 55 | 48 | 42 | 42 | 65 | A | A | 46 | 26 | 26 | 40 | 41 |
| 24 | 19 | 15 | 25 | 20 | 16 | 25 | 40 | 54 | 75 | A | 53 | A | 65 | A | G | 62 | 38 | A | 30 | 35 | 35 | A | E | 40 |
| 25 | 25 | 23 | 23 | 18 | E B 15 | 25 | 28 | E R 33 | 46 | F R 48 | 55 | E R 46 | 59 | 61 | A | 40 | 67 | 40 | 34 | 40 | 17 | 17 | 26 | F |
| 26 | 26 | 19 | 46 | 16 | 16 | 22 | 30 | 46 | 54 | A | E R 48 | 53 | 55 | F R 48 | 40 | 40 | 34 | 40 | 30 | 19 | 16 | 16 | 17 | 18 |
| 27 | 28 | 25 | E | 16 | 21 | 25 | 29 | 34 | 47 | 55 | 57 | 56 | 73 | 74 | A | 38 | 40 | 51 | 40 | 46 | A | 45 | 16 | 38 |
| 28 | 19 | E | 34 | 25 | E | 20 | 29 | 41 | 50 | A | E R 48 | 80 | E R 70 | 70 | 74 | A | A | A | 79 | 55 | 55 | 25 | 26 | 28 |
| 29 | 29 | 18 | 38 | 16 | E | 21 | 35 | 52 | 56 | 46 | 53 | A | A | 55 | A | 65 | 68 | 53 | 46 | 42 | 44 | 19 | 16 | E |
| 30 | E | 16 | E | 13 | 24 | 22 | 40 | 53 | 53 | 75 | 64 | 41 | E R 47 | 55 | 46 | 55 | 40 | 37 | 25 | 28 | 18 | E | 18 | 25 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 30 | 30 | 29 | 28 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 29 | 30 | 30 | 30 | 30 | 30 | 30 |
| MED | 26 | 18 | 20 | 19 | 16 | 24 | 30 | 45 | 51 | 62 | 57 | 56 | 56 | 55 | 50 | 46 | 44 | 44 | 30 | 35 | 31 | 27 | 22 | 22 |
| UQ | 29 | 25 | 26 | 25 | 20 | 25 | 40 | 52 | 54 | A | 74 | A | 64 | 67 | 74 | 65 | 62 | 65 | 46 | 46 | 44 | 41 | 35 | 38 |
| LQ | 19 | 16 | 15 | 16 | 15 | 21 | 28 | 37 | 45 | 48 | 48 | U 44 | 44 | U 46 | 41 | 40 | 38 | 37 | 28 | 26 | 18 | 19 | 16 | 16 |

# IONOSPHERIC DATA

JUN. 1968

f-min (0.1)

135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35°42.4'N, Long. 139°29.3'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F S 15 | 14 | 12 | 12 | 10 | 15 | 14 | 15 | 16 | 25 | 18 | 25 | 26 | 26 | 20 | 20 | 16 | 15 | 15 | 10 | E S 16 | E S 15 | E S 15 | E S 15 |
| 2 | 12 | E S 15 | 10 | 10 | 10 | 14 | 14 | 14 | 15 | 16 | 25 | 25 | 26 | 24 | 26 | 19 | 15 | 15 | 12 | 12 | E S 15 | 12 | 11 | E S 15 |
| 3 | E S 15 | 13 | 10 | E | E | 14 | 12 | 15 | 17 | 25 | 25 | 26 | 40 | 26 | 26 | 26 | 16 | 16 | 14 | 16 | 13 | 16 | 16 | 16 |
| 4 | 14 | 14 | 14 | 11 | 10 | 13 | 14 | 15 | 16 | 27 | 26 | 26 | 26 | 27 | 26 | 19 | 16 | 17 | 15 | 12 | 14 | 16 | 15 | 15 |
| 5 | 15 | 15 | 15 | 16 | 15 | 12 | 16 | 17 | 25 | 25 | 26 | 25 | 26 | 33 | 26 | 17 | 16 | 12 | 12 | 10 | 11 | E S 15 | 13 | E S 15 |
| 6 | 14 | 12 | 10 | 12 | 10 | 14 | 14 | 16 | 14 | 27 | 26 | 27 | 28 | 30 | 27 | 27 | 17 | 14 | 14 | 12 | 16 | 15 | 15 | 16 |
| 7 | 16 | 15 | 12 | 11 | 11 | 15 | 15 | 15 | 16 | 26 | 25 | 22 | 30 | 29 | 41 | 22 | 18 | 14 | 14 | 12 | 12 | E S 15 | E S 16 | E S 16 |
| 8 | 13 | 12 | 12 | 13 | 10 | 12 | 11 | 15 | 16 | 16 | 25 | 25 | 25 | 25 | 26 | 26 | 18 | 16 | 16 | 12 | 12 | 12 | E S 15 | E S 15 |
| 9 | E S 15 | E S 15 | 14 | E | 10 | 14 | 15 | 14 | 16 | 26 | 41 | 25 | 25 | 26 | 22 | 19 | 16 | 12 | 19 | 11 | E S 15 | E S 15 | E S 16 | 14 |
| 10 | E S 15 | E S 15 | E | E | E | 14 | 16 | 16 | 16 | 20 | 260 | 27 | 27 | 27 | 17 | 18 | 16 | 16 | 15 | 15 | 15 | 16 | 16 | 16 |
| 11 | 17 | 15 | 15 | C | C | 16 | 17 | 16 | 17 | 27 | 29 | 26 | 27 | 28 | 27 | 17 | 16 | 15 | 14 | 15 | 16 | 16 | 14 | 16 |
| 12 | 16 | 15 | 15 | 15 | C | C | 16 | 15 | 15 | 29 | 27 | 27 | 28 | 26 | 16 | 17 | 16 | 15 | 15 | 15 | 13 | 16 | 15 | 16 |
| 13 | 15 | 16 | 15 | 16 | 16 | 14 | 16 | 16 | 25 | 15 | 40 | 40 | 26 | 45 | 26 | 27 | 16 | 16 | 14 | 16 | 16 | 15 | 15 | 16 |
| 14 | 15 | 15 | 14 | 16 | 14 | 15 | 15 | 16 | 16 | 16 | 40 | 27 | 28 | 27 | 28 | 21 | 27 | 15 | 14 | E S 15 | 14 | 13 | 14 | E S 16 |
| 15 | E S 15 | E S 15 | 12 | 10 | 10 | 14 | 14 | 15 | 15 | 25 | 28 | 28 | 25 | 26 | 26 | 18 | 16 | 14 | 15 | E S 15 | E S 15 | E S 15 | F S 15 | E S 15 |
| 16 | F S 15 | E S 15 | 15 | 11 | 10 | 14 | 14 | 16 | 15 | 18 | 25 | 26 | 18 | 26 | 26 | 22 | E S 27 | 15 | 12 | 14 | E S 15 | E S 15 | F S 15 | E S 15 |
| 17 | 14 | 13 | 11 | 11 | E | 14 | 15 | 15 | 16 | 27 | 27 | 28 | 27 | 27 | 15 | 15 | C | C | 16 | 15 | 16 | 15 | 16 | 16 |
| 18 | 16 | 15 | 15 | 15 | 15 | 15 | 15 | 16 | 26 | 26 | 25 | 29 | 28 | 26 | 25 | 26 | 19 | 17 | 16 | 16 | 16 | 13 | 16 | 16 |
| 19 | 15 | 13 | 16 | 15 | 11 | 15 | 15 | 15 | 15 | 16 | 18 | 19 | 26 | 32 | 25 | 15 | 17 | 14 | 14 | E S 15 | E S 16 | 13 | 10 | E S 15 |
| 20 | E S 15 | 10 | 10 | 11 | E | 11 | 16 | 16 | 25 | C | 25 | 27 | 26 | 26 | 26 | 26 | 17 | 15 | 15 | 15 | 16 | 16 | 15 | 16 |
| 21 | 16 | 13 | 15 | 14 | 13 | 15 | 16 | 16 | 16 | 16 | 15 | 25 | 28 | 26 | 26 | 18 | 16 | 15 | 15 | 12 | 10 | E S 15 | E S 16 | E S 15 |
| 22 | E S 15 | E S 15 | 12 | 10 | 11 | 10 | 15 | 16 | 17 | 18 | 26 | 26 | 26 | 26 | 25 | 25 | 16 | 16 | 12 | 13 | E S 15 | E S 15 | 14 | 14 |
| 23 | E S 15 | 13 | 12 | 14 | 10 | 15 | 14 | 16 | 15 | 16 | 25 | 25 | 26 | 25 | 19 | 20 | 25 | 15 | 15 | E S 15 | E S 15 | 13 | F S 15 | 13 |
| 24 | 12 | 10 | 13 | 10 | 10 | 15 | 12 | 14 | 15 | 26 | 26 | 28 | 29 | 26 | 40 | 26 | 18 | 14 | 16 | 16 | 16 | 15 | 16 | 16 |
| 25 | 16 | 15 | 15 | 15 | 15 | 16 | 15 | 18 | 26 | 26 | 26 | 29 | 27 | 27 | 28 | 30 | 27 | 16 | 16 | 10 | E S 15 | E S 16 | E S 15 | E S 15 |
| 26 | E S 16 | E S 15 | E S 15 | 12 | 10 | 13 | 14 | 16 | 16 | 26 | 27 | 27 | 26 | 30 | 27 | 25 | 27 | 16 | 15 | E S 15 | 14 | 14 | F S 15 | E S 16 |
| 27 | F S 16 | E S 15 | E S 15 | 14 | 15 | 15 | 15 | 14 | 26 | 28 | 25 | 26 | 25 | 25 | 25 | 25 | 16 | 14 | 14 | E S 15 | E S 16 | 14 | F S 15 | E S 15 |
| 28 | 13 | 15 | 10 | 14 | 13 | 14 | 12 | 14 | 18 | 18 | 26 | 25 | 28 | 25 | 19 | 19 | 15 | 14 | 13 | 11 | 13 | E S 15 | E S 16 | 14 |
| 29 | E S 16 | 14 | 14 | 10 | 10 | 11 | 10 | 12 | 15 | 16 | 26 | 26 | 26 | 26 | 15 | 17 | 16 | 15 | 14 | E S 15 | E S 15 | E S 15 | E S 15 | E S 15 |
| 30 | 13 | 11 | 14 | 12 | 10 | 14 | 16 | 15 | 16 | 25 | 23 | 26 | 26 | 25 | 27 | 25 | 15 | 16 | 15 | E S 15 | 14 | 13 | 12 | E S 15 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 30 | 30 | 29 | 28 | 29 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 29 | 30 | 30 | 30 | 30 | 30 | 30 |
| MED | 14 | 15 | 13 | 12 | 10 | 14 | 15 | 15 | 16 | 25 | 26 | 26 | 26 | 26 | 26 | 20 | 16 | 15 | 15 | 15 | 14 | 14 | 14 | E S 14 |
| UQ | 16 | 15 | 15 | 14 | 13 | 15 | 16 | 16 | 17 | 26 | 27 | 27 | 28 | 27 | 27 | 26 | 18 | 16 | 15 | 15 | 16 | 15 | 16 | 16 |
| LQ | 13 | 13 | 12 | 10 | 10 | 14 | 14 | 15 | 15 | 16 | 25 | 25 | 26 | 26 | 22 | 18 | 16 | 14 | 14 | 12 | 13 | 13 | E S 15 | E S 15 |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | M(3000) F2(0.01) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | J R 255 | 280 | J R 290 | 275 | F 265 | 275 | 270 | 280 | 265 | H 250 | 255 | 260 | 280 | 275 | 280 | 280 | 280 | 280 | 285 | 285 | U R 290 | 280 | J R 260 | 280 |
| 2 | J R 260 | J R 285 | J R 275 | F | 265 | J R 295 | 325 | 310 | 230 | A | J R 250 | 270 | 275 | 260 | 270 | 265 | 280 | 285 | 295 | 285 | 280 | 265 | 265 | 275 |
| 3 | F | 280 | 265 | 270 | 285 | 280 | 270 | 295 | 300 | 280 | 260 | 245 | 270 | 265 | 265 | 280 | 270 | 270 | 290 | 285 | 270 | 260 | 255 | 245 |
| 4 | 255 | 270 | J R 285 | 270 | 270 | 295 | 300 | 290 | 300 | 290 | 280 | 280 | 285 | 285 | I A 280 | 275 | 295 | 285 | 280 | A | J R 250 | 265 | 265 | 265 |
| 5 | J R 265 | 270 | 275 | 265 | 260 | 270 | 280 | 285 | 280 | 265 | 255 | 270 | 270 | 285 | 285 | I A 280 | 285 | 290 | I A 280 | 275 | 275 | 275 | I R 280 | 270 |
| 6 | 275 | 285 | 290 | 285 | 295 | 285 | 295 | 315 | 320 | 270 | I R 270 | I A 270 | 265 | 280 | 285 | 275 | 270 | 280 | 280 | 280 | 260 | 260 | 255 | 255 |
| 7 | 250 | 270 | 280 | I R 300 | 275 | 275 | 290 | 290 | 290 | 295 | 275 | 285 | 270 | 270 | 290 | 280 | 290 | 270 | 260 | 290 | 265 | F 270 | F | U F 275 |
| 8 | A | I A 270 | 285 | 265 | 260 | F 265 | 280 | 295 | 280 | 285 | 255 | I A 260 | 250 | 265 | 275 | 280 | A | A | 275 | 275 | 275 | 270 | I S 265 | I A 270 |
| 9 | 260 | A | A | 260 | F 280 | 275 | 270 | 290 | 285 | 275 | I A 265 | I A 270 | I A 265 | 275 | 270 | 275 | 275 | 280 | 290 | 305 | 275 | 250 | J R 265 | 260 |
| 10 | 270 | 280 | 295 | 295 | 290 | 290 | 290 | 275 | 270 | 275 | 255 | 275 | 270 | 275 | 270 | A | 270 | 280 | 280 | 270 | 280 | 295 | 270 | 250 |
| 11 | J R 270 | R | 285 | C | C | 275 | 270 | F 275 | 265 | 230 | R | 245 | 250 | 260 | A | 235 | 270 | 295 | 300 | 250 | 245 | F 235 | F 255 | F 265 |
| 12 | F 265 | F 250 | F 250 | F | C | C | 265 | 250 | A | A | I R 260 | 255 | A | 275 | 285 | 285 | 285 | 265 | 280 | 270 | 240 | I R 250 | 240 | I R 265 |
| 13 | 240 | 255 | 250 | F 240 | F 250 | 270 | I A 270 | 290 | 280 | 270 | A | I A 280 | 275 | I A 275 | 280 | 295 | 275 | 270 | 285 | 285 | I A 270 | 255 | 255 | 250 |
| 14 | 250 | F 260 | 255 | 255 | 260 | 265 | I A 270 | 265 | A | A | A | 265 | 315 | 285 | A | A | 290 | 275 | 270 | 275 | 265 | 270 | J R 275 | 275 |
| 15 | 265 | 270 | 260 | 275 | 285 | 300 | 270 | J R 255 | 290 | U R 270 | R | R | R | R | 270 | 290 | 275 | 295 | 285 | 290 | U R 290 | 265 | 275 | I R 265 |
| 16 | J R 260 | 275 | R 290 | 280 | 275 | 280 | 280 | 305 | 320 | 305 | 270 | 270 | 280 | 280 | 275 | 280 | 290 | 295 | 285 | 275 | 275 | 265 | J R 270 | U S 255 |
| 17 | 265 | J R 270 | U S 285 | 275 | 275 | 290 | 290 | I A 300 | 320 | A | A | A | A | 265 | 280 | 275 | C | C | 250 | 280 | A | 265 | A | A |
| 18 | A | U R 250 | R | R | I R 295 | 305 | 300 | A | 270 | A | I A 265 | 270 | 275 | I A 280 | I A 280 | 275 | 280 | 300 | 275 | 290 | 280 | 280 | 295 | 265 |
| 19 | 265 | 255 | 280 | 260 | 265 | 270 | 275 | 310 | 280 | 285 | 275 | 270 | 280 | 270 | 280 | A | 270 | 275 | 295 | 325 | I A 260 | 255 | F 265 | 265 |
| 20 | 280 | V 285 | J R 290 | 270 | 270 | 315 | 355 | 330 | 285 | C | A | 280 | 285 | 270 | 280 | 280 | 290 | 280 | 280 | 280 | 280 | I R 265 | 270 | 270 |
| 21 | 265 | 265 | I R 290 | 315 | 280 | 285 | 280 | 265 | 280 | 280 | 270 | 280 | 285 | 280 | 275 | 275 | 280 | 290 | 295 | S 315 | 265 | 280 | I S 270 | J R 275 |
| 22 | 270 | 285 | 300 | 300 | 285 | 275 | U R 295 | U S 310 | 330 | 275 | J R 270 | 290 | 275 | 295 | 260 | 275 | 270 | 265 | 290 | S 295 | 285 | J R 260 | I R 270 | U R 270 |
| 23 | J F 265 | F | J R 285 | 270 | 280 | 265 | 270 | 280 | 275 | 270 | A | A | J R 285 | 285 | 290 | 280 | 285 | I A 275 | I A 290 | J R 285 | 280 | 265 | F | J F 270 |
| 24 | F | J R 290 | 270 | F 270 | 265 | F 275 | 285 | 295 | 285 | A | 260 | I A 265 | 265 | I A 270 | 270 | I R 280 | 285 | I A 280 | 270 | 290 | 280 | I A 275 | 270 | J R 280 |
| 25 | F | F | F 265 | 290 | 290 | 300 | 300 | 290 | 310 | 310 | 255 | 265 | 275 | 275 | I A 270 | 270 | 270 | 285 | 290 | 275 | 285 | 265 | 275 | R 270 |
| 26 | I R 270 | S | S | J F 330 | J R 295 | 285 | 300 | 305 | 290 | I A 275 | 265 | 290 | 265 | 260 | 255 | 260 | 275 | 265 | 285 | J R 300 | 285 | 265 | 245 | F 260 |
| 27 | 260 | I R 260 | I R 270 | 270 | 280 | 285 | 270 | 290 | 275 | 275 | 285 | 265 | 275 | A | A | 285 | 285 | 280 | 275 | 280 | A | J S 265 | J F 285 | U S 265 |
| 28 | J F 270 | J R 300 | 280 | F 255 | 275 | 290 | 305 | 305 | 305 | A | 255 | I A 275 | 270 | 285 | A | A | A | A | 280 | 295 | 275 | 275 | 270 | 280 |
| 29 | J F 270 | F | F | F | J R 300 | 300 | 300 | 305 | 310 | 290 | 310 | I A 280 | I A 270 | 290 | I A 280 | 270 | 270 | 290 | 295 | 280 | 280 | 280 | 280 | 265 |
| 30 | 275 | J R 280 | R | 285 | R 280 | 290 | 285 | 275 | 295 | 295 | 270 | 275 | 265 | 270 | 255 | 265 | 290 | 300 | 290 | 275 | 275 | 270 | 265 | 270 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 25 | 24 | 25 | 25 | 28 | 29 | 30 | 29 | 28 | 22 | 23 | 27 | 27 | 28 | 26 | 26 | 27 | 27 | 30 | 29 | 28 | 30 | 27 | 29 |
| MED | 265 | 270 | 280 | 270 | 278 | 285 | 282 | 290 | 285 | 275 | 265 | 270 | 275 | 275 | 278 | 278 | 280 | 280 | 285 | 285 | 275 | 265 | 270 | 265 |
| UQ | 270 | 282 | 290 | 285 | 285 | 290 | 300 | 305 | 302 | 290 | 270 | 280 | 280 | 282 | 280 | 280 | 285 | 290 | 290 | 290 | 280 | 275 | 272 | 270 |
| LQ | 260 | 262 | 270 | 265 | 265 | 275 | 270 | 280 | 278 | 270 | 255 | 265 | 268 | 270 | 270 | 275 | 270 | 275 | 280 | 275 | 265 | 260 | 262 | 265 |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968

M(3000) F1(0.01)

135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E  Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | L | U L 360 | L | 350 | L | R 355 | I R 340 | L | L 360 | U L 325 | A | L | | | | | |
| 2 | | | | | | L | A | A | 350 | A | U R 325 | A | 360 | A | 335 | 320 | 320 | L | L | | | | | |
| 3 | | | | | | | L | L | A | A | A | A | A | A | L | A | A | A | L | | | | | |
| 4 | | | | | | | L | L | L 355 | L 320 | A | A | A | A | A | A | A | A | A | A | | | | |
| 5 | | | | | | | L | L | L | A | L | L | A | A | I | A | A | A | A | | | | | |
| 6 | | | | | | | L | L 375 | A | A | A | A | L | A | A | L 340 | A | L | L | | | | | |
| 7 | | | | | | | L | L | L | L 380 | A | R | R | L 360 | L 320 | 335 | 340 | L | L | | | | | |
| 8 | | | | | | | I | A | A | A | A | A | A | A | 340 | A | A | A | A | | | | | |
| 9 | | | | | | L | A | A | L 340 | A | A | A | A | A | 330 | L | L 315 | L | | | | | | |
| 10 | | | | | | | L | U L 340 | L | A | A | L 370 | L 370 | A | L | A | L | A | A | | | | | |
| 11 | | | | | | L | A | A | A | A | A | A | A | A | A | L 310 | L 320 | A | L | | | | | |
| 12 | | | | | | | L | A | A | A | L 360 | A | A | A | L 355 | L 360 | L 350 | L | L | | | | | |
| 13 | | | | | | A | A | A | A | L 305 | A | A | A | A | A | A | A | A | L | | | | | |
| 14 | | | | | | L 315 | A | A | A | A | A | A | 345 | A | A | A | L | 345 | L | | | | | |
| 15 | | | | | | 350 | L 320 | L | L 450 | U L 340 | U R 350 | R | R | A | 345 | 360 | 345 | L | L | | | | | |
| 16 | | | | | | | L | L | A | A | A | A | A | 360 | 350 | 360 | L | L 350 | | | | | | |
| 17 | | | | | | L | L | A | A | A | A | A | A | 340 | A | A | C | C | A | | | | | |
| 18 | | | | | | L | L | A | A | A | A | A | A | A | A | A | L | A | A | | | | | |
| 19 | | | | | | L | L | A | L | A | A | L 330 | 360 | L 330 | A | A | A | U L 330 | A | | | | | |
| 20 | | | | | | | L | L | L | C | A | A | A | L | A | 345 | L 335 | L | L | | | | | |
| 21 | | | | | | | | L | A | U L 350 | H 335 | 370 | 345 | U R 345 | A | 355 | A | A | A | | | | | |
| 22 | | | | | | | U L 350 | L | L 375 | 360 | 360 | R 345 | 350 | 345 | A | A | 335 | U L 325 | L | | | | | |
| 23 | | | | | | | L | A | A | A | A | A | A | I A 355 | 350 | 325 | A | A | A | | | | | |
| 24 | | | | | | L | A | A | A | A | A | A | A | A | 350 | A | L | A | L | | | | | |
| 25 | | | | | | L | L | | A | R | A | R | A | A | A | 370 | A | L | L | | | | | |
| 26 | | | | | | | L | L | A | A | L | A | A | R | 350 | 335 | L | 340 | L | | | | | |
| 27 | | | | | | L | L | L | L | A | A | A | A | A | A | 350 | L 330 | A | A | | | | | |
| 28 | | | | | | L | L | L | A | A | R | A | A | A | A | A | A | A | A | | | | | |
| 29 | | | | | | | I | A | A | L | A | A | A | A | A | A | A | A | A | | | | | |
| 30 | | | | | | | | A | A | A | A | 370 | R | A | 365 | A | 320 | L | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | | | | | | 2 | 2 | 2 | 6 | 6 | 6 | 5 | 7 | 8 | 11 | 14 | 11 | 5 | | | | | | |
| MED | | | | | | 332 | L 335 | L 358 | L 358 | L 345 | L 350 | 370 | 355 | 345 | 350 | 348 | L 330 | L 340 | | | | | | |
| UQ | | | | | | | | | L 375 | L 360 | 360 | 370 | 360 | 358 | 350 | 360 | 338 | 345 | | | | | | |
| LQ | | | | | | | | | L 350 | L 320 | U R 335 | 345 | 348 | 340 | 338 | 335 | L 320 | U L 330 | | | | | | |

# IONOSPHERIC DATA

JUN. 1968 | h'F2 (km) | 135° E Mean Time (G. M. T. + 9h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | 270 | 310 | H 305 | 345 | 375 | 335 | 325 | 340 | 330 | 320 | E A 340 | 295 | | | | | |
| 2 | | | | | | 275 | 255 | 290 | 585 | A | 475 | 390 | 350 | 395 | 390 | 390 | 345 | 325 | 290 | | | | | |
| 3 | | | | | | | 300 | 305 | 280 | 310 | 410 | E A 425 | 390 | 360 | 320 | 320 | 340 | I A 330 | 300 | | | | | |
| 4 | | | | | | | 250 | 280 | 315 | 380 | 370 | 360 | 360 | 350 | I A 380 | E A 450 | 320 | 310 | 290 | A | | | | |
| 5 | | | | | | | 270 | 285 | 300 | 315 | 360 | 340 | 345 | 310 | 330 | A | E A 350 | 290 | A | | | | | |
| 6 | | | | | | | 270 | 245 | 240 | 340 | 390 | I A 380 | 370 | 350 | 345 | 345 | 335 | 330 | 300 | | | | | |
| 7 | | | | | | | 285 | 300 | 300 | 295 | 360 | 360 | 355 | 370 | 345 | 350 | 320 | 320 | 290 | | | | | |
| 8 | | | | | | | 260 | 295 | 300 | A | A | I A 360 | E A 420 | 355 | 345 | 360 | A | A | 285 | | | | | |
| 9 | | | | | | 300 | 325 | 305 | 340 | 385 | A | A | I A 380 | 345 | 360 | 340 | 320 | 315 | | | | | | |
| 10 | | | | | | | 305 | 320 | 305 | 350 | 390 | 330 | 375 | 365 | 355 | A | 350 | A | 310 | | | | | |
| 11 | | | | | | 340 | 310 | 350 | 375 | 465 | R | 450 | 405 | 400 | A | 490 | 360 | 295 | 280 | | | | | |
| 12 | | | | | | | 365 | 440 | A | A | I R 500 | 480 | A | A | 355 | 340 | 355 | 350 | 315 | | | | | |
| 13 | | | | | | A | A | 340 | E A 370 | 420 | A | I A 385 | 360 | I A 380 | 355 | 335 | 300 | 300 | 300 | | | | | |
| 14 | | | | | | 350 | I A 390 | A | A | A | A | E R 450 | 305 | E S 355 | A | A | 370 | 425 | 320 | | | | | |
| 15 | | | | | | 295 | 350 | L 380 | 355 | U R 440 | R | R | R | R | 445 | 375 | 425 | 320 | 325 | | | | | |
| 16 | | | | | | | 310 | 245 | 260 | E A 360 | 370 | 370 | 355 | 345 | 360 | 350 | 315 | 285 | | | | | | |
| 17 | | | | | | 300 | 280 | A | 270 | A | A | A | A | 400 | 350 | 350 | C | C | 390 | | | | | |
| 18 | | | | | | 270 | 310 | A | E A 420 | A | A | 390 | 360 | A | A | 345 | 300 | 300 | 300 | | | | | |
| 19 | | | | | | 350 | 325 | 270 | 280 | 360 | 390 | 355 | 345 | 350 | 340 | I A 340 | 350 | 325 | 290 | | | | | |
| 20 | | | | | | | 220 | 255 | 350 | C | A | A | 345 | 395 | 340 | 345 | 320 | 340 | 280 | | | | | |
| 21 | | | | | | | | 300 | 300 | 325 | 385 | 355 | 350 | 350 | 355 | 345 | E A 350 | 300 | 290 | | | | | |
| 22 | | | | | | | 295 | 255 | 250 | 400 | 395 | 350 | 360 | 330 | E A 360 | 355 | 345 | 340 | 290 | | | | | |
| 23 | | | | | | | 305 | 305 | 330 | E A 390 | A | A | 360 | 355 | 375 | 395 | I A 365 | I A 360 | A | | | | | |
| 24 | | | | | | 340 | 300 | 295 | I A 220 | A | 360 | A | 400 | A | 370 | 380 | 345 | I A 340 | 280 | | | | | |
| 25 | | | | | | 280 | 310 | | 300 | 340 | 400 | 355 | 375 | 350 | I A 390 | 385 | E A 380 | 330 | 310 | | | | | |
| 26 | | | | | | | 280 | 280 | 295 | I A 335 | 390 | 325 | 400 | 430 | 380 | 380 | 365 | 350 | 305 | | | | | |
| 27 | | | | | | 290 | 305 | 310 | 315 | 350 | 350 | 400 | A | A | A | 335 | 340 | 320 | 310 | | | | | |
| 28 | | | | | | 295 | 275 | 245 | 270 | A | 420 | A | E R 370 | 345 | 350 | A | A | A | A | | | | | |
| 29 | | | | | | | 295 | 290 | 295 | 290 | 300 | I A 385 | I A 370 | 330 | I A 350 | 360 | A | 315 | 270 | | | | | |
| 30 | | | | | | | | 325 | 275 | E A 350 | A | 385 | 395 | 385 | 360 | 355 | 315 | 270 | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | 12 | 26 | 26 | 28 | 21 | 19 | 23 | 26 | 25 | 26 | 26 | 26 | 26 | 24 | | | | | |
| MED | | | | | | 298 | 300 | 295 | 300 | 345 | 390 | 368 | 360 | 355 | 355 | 350 | 342 | 321 | 298 | | | | | |
| UQ | | | | | | 340 | 310 | 310 | 325 | 382 | 398 | 388 | 378 | 380 | 370 | 378 | 352 | 340 | 310 | | | | | |
| LQ | | | | | | 285 | 275 | 270 | 278 | 320 | 360 | 355 | 350 | 345 | 345 | 340 | 320 | 300 | 290 | | | | | |

# IONOSPHERIC DATA

JUN. 1968 | h'F (km) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 340 | 280 | 275 | 260 | 320 | 260 | 240 | 245 | 205 | 245 | 220 | I A 240 | 220 | I R 245 | 230 | 205 | 255 | A | 270 | 260 | 250 | 300 | I A 320 | 290 |
| 2 | I A 335 | 295 | 305 | 350 | 280 | E A 260 | A | A | 255 | A | A | A | 230 | I A 235 | 220 | 210 | 230 | A | A | 270 | A 300 | E A 340 | 305 | 300 |
| 3 | A 355 | E A 340 | 300 | E A 340 | A 320 | 250 | E A 270 | A | A | A | A | A | A | A | A 260 | A | A | A | 260 | 260 | 285 | 275 | 330 | 320 |
| 4 | 310 | 300 | 270 | 270 | 270 | 245 | 200 | 250 | 250 | 320 | A | A | A | A | A | A | A | A | A | A | E A 350 | E A 350 | 300 | 280 |
| 5 | 280 | 295 | 255 | 260 | 300 | 260 | 245 | 240 | E A 260 | A | A | A | A | A | A | A | A | A | A | E A 310 | 310 | A | 260 | 275 |
| 6 | 295 | 270 | 260 | 250 | 255 | 250 | 240 | 205 | A | A | A | A | A | A | A | 250 | A | A | I A 250 | 250 | E A 300 | 285 | 300 | 300 |
| 7 | 305 | 300 | 260 | 230 | 250 | 230 | 250 | 250 | 250 | 205 | I A 210 | I R 230 | I R 230 | 245 | 240 | 235 | 245 | E A 260 | 240 | E A 300 | A 290 | A 340 | I A 340 | A 310 |
| 8 | A | A | 250 | 290 | 340 | 255 | A 250 | A | A | A | A | A | A | A | 255 | A | A | A | A | A 260 | 285 | 290 | A 300 | A |
| 9 | E A 350 | A | A | A 360 | A 310 | A | A | A | E A 260 | A | A | A | A | A | E A 290 | 250 | 260 | 250 | A 260 | E A 270 | A 300 | A 350 | 305 | 305 |
| 10 | 315 | 290 | 250 | 240 | 250 | 250 | 225 | 225 | E A 280 | A | A | 210 | 215 | 240 | A | A | 250 | A | A | 290 | 265 | 240 | 255 | 305 |
| 11 | 325 | A | 260 | C | C | 250 | A | A | A | A | A | A | A | A | A | E A 290 | 250 | I A 250 | 250 | 330 | 360 | 360 | 310 | 320 |
| 12 | 280 | 320 | 375 | 390 | C | C | E A 260 | I A 250 | A | A | 240 | I A 255 | A | A | 240 | 230 | 215 | 245 | 255 | 290 | 305 | 340 | E A 360 | 310 |
| 13 | 305 | 315 | 280 | A | 320 | A | A | A | I A 250 | 235 | A | A | A | A | A | A | A | A | 260 | 275 | I A 315 | 335 | 350 | 320 |
| 14 | 320 | 250 | 330 | 320 | 345 | A | A | A | A | A | A | A | 270 | I A 250 | A | A | A | E A 290 | 290 | A 305 | 300 | 300 | 270 | 305 |
| 15 | 305 | 290 | 315 | 285 | 270 | 250 | 245 | I A 250 | I A 220 | E A 290 | 245 | R | R | A | 240 | 220 | 245 | 245 | 250 | 290 | 280 | A | 280 | 290 |
| 16 | 310 | 295 | 250 | 280 | 300 | 255 | 245 | A | A | A | A | A | A | 225 | 225 | 220 | I A 250 | 240 | 250 | 255 | 270 | 295 | 295 | 350 |
| 17 | 315 | 260 | 255 | 295 | 295 | 260 | 245 | A | A | A | A | A | A | E A 270 | A | A | C | C | A | 285 | 265 | A | A | A |
| 18 | A | 310 | 280 | 280 | 230 | 250 | 220 | A | A | A | A | A | A | A | A | A | A | A | A | 280 | 250 | 250 | 300 | 300 |
| 19 | 315 | 300 | 275 | 260 | 315 | 275 | 245 | A | 230 | A | A | I R 205 | 205 | 245 | A | A | A | 220 | A | 240 | A | A | 310 | 320 |
| 20 | 285 | 270 | 275 | 300 | 305 | 255 | 240 | A 240 | A 250 | C | A | A | A | A | A | 245 | 240 | 230 | 260 | 255 | 275 | 295 | 305 | 300 |
| 21 | 300 | A 315 | 275 | 250 | 265 | 250 | 250 | 250 | I A 240 | 200 | H 195 | 210 | 210 | 220 | I A 235 | A 250 | A | A | A | A 250 | E A 290 | 290 | 295 | 295 |
| 22 | 290 | 265 | 250 | 250 | 270 | 250 | 245 | 240 | A 230 | 205 | 200 | 225 | 245 | 245 | I A 245 | I A 245 | 245 | 260 | A 270 | 245 | E A 300 | 280 | 310 | 345 |
| 23 | 305 | 260 | 260 | 280 | 290 | 255 | 245 | A | A | A | A | A | A | I A 200 | 210 | 245 | A | A | A | E A 290 | A 255 | 315 | E A 345 | 340 |
| 24 | 295 | 245 | 300 | 310 | 310 | 250 | I A 260 | A | A | A | A | A | A | A | 210 | I A 230 | 230 | I A 250 | 240 | 275 | 275 | I A 280 | 280 | 270 |
| 25 | 300 | 325 | 300 | 250 | 235 | 250 | 220 | 245 | A | A | A | A | A | A | A | 220 | A | E A 310 | A | A 270 | 260 | 250 | 280 | 300 |
| 26 | 310 | 295 | 295 | 220 | 240 | 245 | 245 | I A 255 | A | I A 235 | 245 | A | I A 220 | I A 200 | 220 | 200 | 220 | E A 300 | I A 250 | 255 | 245 | 260 | 325 | 300 |
| 27 | 330 | 325 | 285 | 280 | 275 | 250 | 245 | 230 | A | A | A | A | A | A | A | 245 | A 250 | A | A | A 280 | A | E A 350 | 245 | 315 |
| 28 | 290 | 250 | A 300 | 310 | 290 | 260 | 245 | A | A | A | A | A | A | A | A | A | A | A | A | A 270 | E A 320 | 300 | 300 | 300 |
| 29 | 300 | 345 | 345 | 280 | 255 | 245 | A 250 | A | A | 245 | A | A | A | A | A | A | A | A | A | A 270 | A 295 | 255 | 270 | 290 |
| 30 | 280 | 270 | 240 | 255 | 300 | 245 | A 250 | I A 245 | A | A | A | 205 | A | A | A 250 | I A 250 | 250 | I A 250 | 250 | 270 | 295 | 275 | 310 | 300 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 28 | 27 | 29 | 28 | 28 | 26 | 25 | 15 | 13 | 9 | 7 | 8 | 9 | 12 | 15 | 18 | 15 | 14 | 16 | 29 | 28 | 26 | 29 | 28 |
| MED | 305 | 295 | 275 | 280 | 290 | 250 | 245 | 245 | A 240 | 235 | 220 | 218 | 220 | 240 | 238 | 236 | 245 | 246 | 252 | 270 | 282 | 292 | 300 | 300 |
| UQ | 316 | 308 | 300 | 302 | 310 | 255 | 248 | 250 | A 252 | 245 | 242 | U 235 | 230 | 245 | 245 | 248 | 250 | E A 260 | 260 | 285 | A 299 | U 320 | 310 | 318 |
| LQ | 295 | 270 | 260 | 252 | 260 | 250 | 240 | 240 | A 230 | 205 | 205 | 208 | 215 | 222 | 222 | 220 | 235 | 245 | 250 | 258 | 266 | 275 | 280 | 298 |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968

**h'Es (km)**

135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E  Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 105 | 105 | 100 | 100 | 100 | 150 | 140 | 115 | 120 | 115 | 110 | 110 | G | 110 | 120 | G | 175 | 120 | 120 | 105 | 105 | 110 | 110 | 110 |
| 2 | 110 | 105 | 105 | 105 | 145 | 140 | 130 | 125 | 120 | 130 | 125 | 115 | 120 | 115 | 115 | G | 170 | 130 | 115 | 110 | 115 | 115 | 110 | 110 |
| 3 | 105 | 105 | 105 | 100 | 100 | G | 130 | 120 | 115 | 115 | 115 | 125 | 125 | 115 | 115 | 115 | 110 | 110 | 115 | 115 | 110 | 110 | 110 | 110 |
| 4 | 110 | 110 | 105 | 100 | 110 | 115 | 155 | 135 | 130 | 125 | 130 | 130 | 125 | 125 | 120 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 110 | 105 |
| 5 | B | 105 | 105 | B | B | 150 | 130 | 140 | 120 | 115 | 115 | 115 | 110 | 110 | 115 | 110 | 110 | 110 | 110 | 105 | 120 | 115 | 105 | 105 |
| 6 | 105 | 105 | E | B | 105 | 155 | 110 | 125 | 115 | 115 | 115 | 115 | 120 | 140 | 135 | 145 | 135 | 125 | 120 | 110 | 110 | B | B | 110 |
| 7 | 110 | 110 | 110 | 110 | 125 | 145 | 135 | 115 | 120 | 125 | 105 | 120 | 145 | 150 | B | 150 | 175 | 115 | 115 | 105 | 110 | 110 | 105 | 105 |
| 8 | 105 | 105 | 100 | 100 | 100 | 105 | 125 | 120 | 115 | 105 | 110 | 110 | 110 | 115 | 145 | 120 | 115 | 110 | 110 | 110 | 105 | 105 | 115 | 105 |
| 9 | 105 | 105 | 105 | 105 | 105 | 130 | 125 | 120 | 115 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 105 | 105 | 105 | 100 | 100 | 100 | 105 | 100 |
| 10 | 100 | 100 | 100 | 100 | 100 | 100 | 110 | 105 | 105 | 105 | 105 | 125 | 120 | 120 | 130 | 115 | 135 | 130 | 115 | 110 | 110 | B | 105 | B |
| 11 | 105 | 105 | 100 | C | C | 130 | 120 | 115 | 110 | 115 | 115 | 115 | 115 | 110 | 125 | 130 | 130 | 130 | 120 | 115 | 110 | 110 | 110 | 105 |
| 12 | 110 | 110 | 105 | 105 | C | C | 130 | 120 | 115 | 115 | 115 | 130 | 125 | 125 | G | G | G | 145 | G | 115 | 115 | 110 | 115 | 110 |
| 13 | 110 | 105 | 110 | 105 | 105 | 120 | 125 | 120 | 120 | 110 | 110 | 105 | 105 | 105 | 110 | 105 | 105 | 105 | 105 | 110 | 110 | 110 | 110 | 110 |
| 14 | 110 | 110 | 110 | 110 | 110 | 135 | 130 | 130 | 130 | 115 | 125 | 130 | 130 | 125 | 115 | 115 | 140 | 200 | 155 | 115 | B | 105 | 110 | 105 |
| 15 | 105 | 105 | 105 | 105 | 110 | 145 | 125 | 120 | 115 | 120 | G | 110 | 110 | 110 | 105 | G | 110 | 105 | 145 | 105 | 105 | 110 | 110 | 105 |
| 16 | 110 | 100 | 100 | 105 | 105 | 105 | 130 | 115 | 115 | 115 | 110 | 115 | 110 | 110 | 110 | 110 | 105 | 105 | 105 | 105 | 110 | 115 | 105 | 100 |
| 17 | 100 | 100 | 100 | 100 | 105 | 105 | 130 | 115 | 120 | 115 | 115 | 110 | 110 | 110 | 140 | 110 | C | C | 120 | 115 | 115 | 115 | 115 | 115 |
| 18 | 115 | 110 | 110 | 105 | 105 | 105 | 120 | 130 | 120 | 120 | 120 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 105 | 100 | 100 | 100 |
| 19 | 100 | 105 | 105 | 100 | 110 | 125 | 130 | 115 | 115 | 110 | 110 | 130 | 115 | 110 | 105 | 105 | 105 | 105 | 115 | 115 | 115 | 115 | 110 | 105 |
| 20 | 105 | 105 | 100 | 100 | 105 | 140 | 130 | 125 | 115 | C | 115 | 115 | 115 | 115 | 115 | 115 | 115 | 105 | 105 | 115 | 115 | 105 | 105 | 105 |
| 21 | 115 | 110 | 110 | 110 | 110 | 125 | 120 | 120 | 110 | 110 | 110 | 110 | 140 | 125 | 115 | 125 | 115 | 115 | 115 | 110 | 110 | 110 | 105 | 105 |
| 22 | 110 | 105 | 105 | 105 | 100 | 105 | 120 | 150 | 140 | 110 | 135 | 135 | 125 | 115 | 110 | 110 | 115 | 110 | 115 | 120 | 115 | 100 | 115 | 110 |
| 23 | 105 | 105 | 100 | 105 | 110 | G | 140 | 105 | 105 | 110 | 110 | 105 | 110 | 145 | 135 | 140 | 125 | 115 | 115 | 115 | 110 | 110 | 115 | 115 |
| 24 | 110 | 105 | 100 | 100 | 105 | 130 | 125 | 120 | 125 | 115 | 115 | 110 | 110 | 110 | G | 130 | 145 | 110 | 110 | 120 | 110 | 120 | 115 | 110 |
| 25 | 105 | 100 | 100 | 100 | B | 115 | 120 | 130 | 125 | 125 | 125 | 110 | 110 | 115 | 110 | 125 | 115 | 115 | 120 | 115 | 110 | 100 | 100 | 105 |
| 26 | 110 | 105 | 105 | 100 | 100 | 100 | 140 | 120 | 115 | 110 | 115 | 110 | 110 | 110 | 110 | 115 | 110 | 105 | 110 | 115 | 110 | 110 | 110 | 110 |
| 27 | 110 | 105 | 100 | 100 | 100 | 110 | 115 | 120 | 125 | 115 | 110 | 105 | 110 | 105 | 105 | 110 | 125 | 115 | 110 | 110 | 115 | 115 | 110 | 105 |
| 28 | 105 | 100 | 100 | 100 | 100 | 140 | 130 | 115 | 110 | 110 | 110 | 110 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 100 | 100 | 100 | 100 | 110 |
| 29 | 105 | 105 | 105 | 100 | 105 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 125 | 130 | 125 | 120 | 115 | 115 | 110 | 110 | 110 | 110 |
| 30 | 105 | 105 | 105 | 110 | 110 | 110 | 125 | 105 | 105 | 105 | 105 | 120 | 130 | 125 | 120 | 120 | 125 | 115 | 115 | 115 | 110 | 100 | 105 | 110 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | 29 | 30 | 29 | 27 | 26 | 27 | 30 | 30 | 30 | 29 | 29 | 30 | 29 | 30 | 27 | 26 | 28 | 29 | 29 | 30 | 29 | 28 | 29 | 29 |
| MED | 105 | 105 | 105 | 100 | 105 | 125 | 128 | 120 | 115 | 115 | 115 | 112 | 110 | 112 | 115 | 115 | 115 | 110 | 115 | 110 | 110 | 110 | 110 | 105 |
| UQ | 110 | 105 | 105 | 105 | 110 | 140 | 130 | 125 | 120 | 115 | 115 | 120 | 125 | 125 | 122 | 125 | 132 | 120 | 115 | 115 | 115 | 112 | 110 | 110 |
| LQ | 105 | 105 | 100 | 100 | 100 | 108 | 120 | 115 | 115 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 110 | 105 | 110 | 110 | 110 | 105 | 105 | 105 |

# IONOSPHERIC DATA

JUN. 1968

Types of Es

135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F3 | F4 | F2 | F3 | F1 | H1 | H1 | C1 | C1 | C1 | C1 | C2 | | C1 | C1 | | H1 | H3 | C2 | F5 | F2 | F3 | F3 | F3 |
| 2 | F6 | F3 | F3 | F4 | F1 | H3 | H4 | H2 | C2 | HC 22 | H1 | C1 | C1 | C1 | C1 | | H1 | H2 | C3 | F3 | F6 | F6 | F4 | F1 |
| 3 | F4 | F3 | F4 | F6 | F4 | | H3 | H3 | C2 | C1 | C2 | H2 | H1 | C1 | C1 | C1 | C2 | C2 | C3 | F4 | F5 | F6 | F5 | F6 |
| 4 | F5 | F5 | F4 | F5 | F3 | L2 | H1 | H2 | H2 | H2 | HL 21 | HL 11 | H1 | H1 | H1 | C3 | C1 | C3 | L4 | F5 | F3 | F4 | F4 | F6 |
| 5 | | F4 | F1 | | | HL 11 | H1 | H1 | H1 | C2 | C1 | C1 | C1 | C1 | C1 | L4 | L3 | L3 | L3 | F4 | F4 | F5 | F2 | F3 |
| 6 | F2 | F2 | | | F1 | HL 12 | L1 | H1 | C2 | C2 | C1 | C1 | H1 | H1 | H1 | H1 | H2 | H1 | H2 | F5 | F3 | | | F4 |
| 7 | F4 | F3 | F4 | F4 | F4 | H1 | H2 | C1 | H1 | H1 | L2 | H1 | H1 | H1 | | H1 | H1 | C2 | C2 | F4 | F3 | F3 | F3 | F3 |
| 8 | F4 | F4 | F4 | F3 | F2 | L4 | H2 | C3 | C2 | C2 | C2 | C2 | C2 | C2 | H1 | H2 | C3 | C4 | C3 | F3 | F4 | F4 | F3 | F3 |
| 9 | F3 | F4 | F3 | F4 | F3 | HL 22 | H3 | H3 | C2 | C2 | C2 | C2 | C2 | C1 | C1 | C2 | L2 | L2 | L2 | F5 | F3 | F3 | F3 | F2 |
| 10 | F3 | F4 | F2 | F3 | F1 | L1 | L1 | L2 | L2 | L2 | L1 | H1 | H1 | H2 | H1 | C2 | H1 | H3 | C2 | F3 | F1 | | F5 | |
| 11 | F4 | F5 | F4 | | | H1 | H4 | C3 | C2 | C1 | C2 | C2 | C1 | C1 | H2 | H1 | H1 | H2 | H3 | F1 | F4 | F5 | F4 | F4 |
| 12 | F4 | F1 | F4 | F4 | | | H2 | H2 | C2 | C1 | C1 | H1 | H2 | H2 | | | | H2 | | F3 | F5 | F3 | F4 | F3 |
| 13 | F4 | F4 | F5 | F5 | F4 | H4 | H4 | H2 | H2 | C1 | C2 | C2 | C1 | L2 | L2 | L2 | L2 | L3 | L2 | F3 | F3 | F3 | F5 | F4 |
| 14 | F3 | F2 | F3 | F4 | F3 | H1 | H2 | H2 | H1 | C2 | H1 | H1 | H1 | H1 | C2 | C2 | H1 | H1 | H2 | F3 | | F4 | F2 | F6 |
| 15 | F3 | F2 | F3 | F4 | F3 | H1 | H2 | C2 | C1 | C1 | | C1 | C1 | C1 | L1 | | L2 | L1 | H1 | FF 41 | F3 | F5 | F2 | F2 |
| 16 | FF 23 | F2 | F1 | F2 | F2 | L2 | HL 12 | C2 | C2 | C2 | C1 | C1 | C2 | C1 | C1 | C2 | L2 | L2 | L3 | F3 | F2 | F2 | F4 | F6 |
| 17 | F5 | F2 | F2 | F2 | F4 | L2 | H2 | C2 | C2 | C2 | C1 | C2 | C2 | C1 | HL 11 | L1 | | | H3 | F4 | F2 | F4 | F3 | F6 |
| 18 | F4 | F4 | F4 | F4 | F6 | L2 | H1 | H3 | H2 | H2 | C2 | C2 | C2 | C2 | C3 | C2 | C2 | C3 | L2 | F4 | F3 | F4 | F3 | F4 |
| 19 | F3 | F4 | F4 | F4 | F5 | H2 | H2 | C3 | C1 | L3 | L3 | H1 | C1 | L1 | L2 | L2 | L3 | L2 | C3 | F4 | F3 | F5 | F4 | F4 |
| 20 | F4 | F3 | F2 | F4 | F2 | HL 21 | H2 | H2 | C2 | | C2 | C2 | C1 | C1 | C1 | C1 | C1 | L2 | L2 | F5 | F4 | F5 | F5 | F3 |
| 21 | F4 | F6 | F4 | F4 | F4 | H1 | H1 | H2 | C2 | C1 | C1 | L1 | H1 | H1 | C2 | H2 | C2 | C3 | C3 | F5 | F4 | F4 | F3 | F3 |
| 22 | F2 | F1 | F1 | F3 | F2 | L3 | C1 | H1 | H2 | L1 | H1 | H1 | H1 | C1 | C2 | C1 | C1 | C2 | C2 | F2 | FF 32 | F5 | FF 22 | F3 |
| 23 | F2 | F3 | F4 | F2 | F1 | | H2 | L4 | L2 | C2 | C3 | L4 | C2 | H1 | H2 | H2 | H2 | C3 | C3 | F4 | F3 | F3 | F3 | F4 |
| 24 | F3 | F4 | F3 | F3 | F3 | H2 | H3 | H2 | H3 | C2 | C2 | C2 | C2 | C2 | | H2 | HL 21 | C3 | L3 | FF 13 | F4 | F4 | F4 | F2 |
| 25 | F4 | F3 | F3 | F3 | | L3 | LH 11 | H1 | H2 | HC 11 | H1 | C2 | C1 | C1 | C4 | H1 | C2 | C2 | HL 31 | FF 22 | F2 | F1 | F4 | F2 |
| 26 | F4 | F3 | F3 | F2 | F1 | L2 | H2 | H2 | C2 | C3 | C1 | C1 | C1 | C1 | C1 | C1 | L2 | L2 | L2 | F2 | F2 | F3 | F3 | F3 |
| 27 | F3 | F5 | F4 | F3 | F3 | L2 | LH 11 | HL 12 | H1 | C2 | C2 | C2 | C2 | C2 | C3 | C1 | H2 | C2 | C3 | F4 | F6 | F6 | F2 | F4 |
| 28 | F3 | F1 | F4 | F2 | F1 | H2 | H2 | C2 | C2 | C2 | C2 | C2 | L2 | L2 | L2 | L2 | L3 | L3 | L4 | F3 | F4 | F4 | F3 | F3 |
| 29 | F4 | F3 | F4 | F2 | F1 | C2 | C2 | C2 | C3 | C2 | C2 | C2 | C2 | C1 | HC 32 | H2 | H3 | H3 | C5 | F4 | F3 | FF 32 | F4 | F1 |
| 30 | F2 | F2 | F1 | F1 | F4 | LH 22 | H2 | L3 | L3 | L3 | L3 | H1 | H1 | H1 | H2 | H2 | H2 | C2 | C2 | F4 | F3 | F1 | F2 | F4 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | | | | | | | | | | | | | | | | | | | | | | | | |
| MED | | | | | | | | | | | | | | | | | | | | | | | | |
| UQ | | | | | | | | | | | | | | | | | | | | | | | | |
| LQ | | | | | | | | | | | | | | | | | | | | | | | | |

# IONOSPHERIC DATA

JUN. 1968 | $h_pF2$ (km) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N. Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | JR 405 | 355 | JR 340 | 360 | F 400 | 350 | 355 | 345 | 370 | H 425 | 390 | 405 | 355 | 380 | 355 | 350 | 350 | 350 | 345 | 340 | UR 325 | 360 | JR 400 | 355 |
| 2 | JR 405 | JR 355 | JR 385 | F | 380 | JR 310 | 290 | 300 | G | A | G | 395 | 355 | 400 | 390 | 400 | 355 | 350 | 320 | 350 | 355 | 390 | 395 | 380 |
| 3 | F | 365 | 390 | 395 | 380 | 345 | 355 | 350 | 310 | 345 | 425 | 445 | 390 | 390 | 395 | 365 | 375 | 375 | 335 | 345 | 370 | 395 | 410 | 430 |
| 4 | 425 | 395 | JR 335 | 375 | 385 | 315 | 310 | 335 | 325 | 335 | 375 | 360 | 360 | 360 | A | G | 340 | 340 | 345 | A | JR 440 | 390 | 380 | 395 |
| 5 | JR 400 | 380 | 350 | 385 | 405 | 390 | 350 | 340 | 350 | 380 | 410 | 385 | 385 | 350 | 350 | IA 360 | 360 | 320 | IA 340 | 350 | 360 | IA 365 | IR 360 | 365 |
| 6 | 360 | 355 | 350 | 345 | 305 | 320 | 315 | 285 | 270 | G | IR 390 | IA 400 | 390 | 365 | 350 | 360 | 350 | 350 | 355 | 365 | 400 | 400 | 405 | 390 |
| 7 | 430 | 380 | 365 | IR 315 | 375 | 390 | 330 | 335 | 330 | 305 | 380 | 360 | 395 | 385 | 370 | 360 | 350 | 380 | 390 | 340 | 380 | F 395 | F | UF 365 |
| 8 | A | IA 375 | 310 | 390 | 405 | F 405 | 335 | 320 | 355 | A | A | IA 400 | 440 | 395 | 360 | 360 | A | A | 350 | 340 | 360 | 380 | IS 380 | IA 385 |
| 9 | 390 | A | A | 405 | F 350 | 355 | 360 | 330 | 350 | 390 | IA 400 | IA 400 | IA 400 | 360 | 390 | 360 | 350 | 350 | 340 | 310 | 355 | 440 | JR 390 | 405 |
| 10 | 390 | 350 | 320 | 340 | 330 | 340 | 345 | 350 | 370 | 370 | 410 | 355 | 395 | 365 | 370 | A | 365 | A | 380 | 380 | 360 | 335 | 360 | 435 |
| 11 | JR 390 | R | 350 | C | C | 360 | 365 | F 365 | 400 | 465 | R | 475 | 430 | 405 | A | 490 | 375 | 310 | 325 | 430 | 470 | F 460 | F 430 | F 400 |
| 12 | F 390 | F 440 | F 460 | F | C | C | 400 | 440 | A | A | R | A | A | IA 390 | 360 | 340 | 370 | 385 | 350 | 365 | 430 | IR 415 | 440 | IR 385 |
| 13 | 430 | 400 | 405 | F 450 | F 420 | A | IA 415 | A | 380 | A | A | IA 385 | 360 | IA 390 | 365 | 350 | 360 | 360 | 345 | 350 | IA 360 | 420 | 425 | 450 |
| 14 | 415 | F 410 | 405 | 415 | 410 | 400 | IA 400 | A | A | A | A | R | 305 | 355 | A | A | 370 | G | 370 | 370 | 390 | 365 | JR 370 | 370 |
| 15 | 390 | 370 | 405 | 370 | 345 | 340 | 370 | JR 405 | 355 | G | R | R | R | R | G | G | G | 340 | 355 | 350 | UR 350 | 415 | 370 | IR 395 |
| 16 | JR 395 | 375 | R 340 | 360 | 380 | 350 | 350 | 295 | 285 | A | 395 | 380 | 360 | 360 | 370 | 360 | 350 | 320 | 345 | 345 | 365 | 395 | JR 380 | US 410 |
| 17 | 385 | JR 360 | US 360 | 370 | 370 | 350 | 330 | IA 310 | 285 | A | A | A | A | 400 | 360 | 370 | C | C | 420 | 355 | A | IA 380 | A | A |
| 18 | A | UR 420 | R | R | IR 325 | 305 | 340 | A | A | A | IA 430 | 390 | 365 | IA 350 | IA 370 | 355 | 350 | 320 | 360 | 350 | 350 | 350 | 425 | 400 |
| 19 | 395 | 395 | 340 | 365 | 405 | 380 | 350 | 310 | 340 | 365 | 395 | 370 | 365 | 380 | 360 | A | 375 | 370 | 330 | 295 | IA 395 | 415 | F 380 | 395 |
| 20 | 360 | V 350 | JR 320 | 375 | 370 | 290 | 240 | 280 | 360 | C | A | A | 345 | 400 | 360 | 350 | 320 | 365 | 335 | 330 | 360 | IR 400 | 395 | 385 |
| 21 | 395 | 375 | IR 340 | 300 | 355 | 330 | 340 | 370 | 345 | 350 | 385 | 360 | 355 | 360 | 370 | 370 | 355 | 340 | 320 | S 295 | 385 | 365 | IS 365 | JR 370 |
| 22 | 365 | 350 | 305 | 310 | 360 | 355 | UR 310 | US 310 | 260 | 405 | JR 395 | 350 | 365 | 340 | 400 | 365 | 365 | 370 | 350 | S 330 | 340 | JR 405 | IR 400 | UR 400 |
| 23 | JF 400 | F | JR 340 | 380 | 380 | 380 | 365 | 350 | 360 | A | A | A | JR 360 | 355 | G | G | IA 375 | IA 360 | IA 345 | JR 350 | 350 | 405 | F | JF 400 |
| 24 | F | JR 325 | 390 | F 415 | 395 | F 365 | 340 | 320 | 345 | A | 400 | IA 385 | A | A | 375 | IR 380 | 350 | IA 350 | 380 | 325 | 360 | IA 355 | 350 | JR 350 |
| 25 | F | F | F 370 | 320 | 330 | 305 | 315 | 310 | 310 | 320 | 415 | 375 | 375 | 365 | IA 400 | 400 | IA 380 | 350 | 350 | 350 | 355 | 355 | 365 | R 400 |
| 26 | IR 380 | S | S | JF 280 | JR 300 | 335 | 310 | 305 | 320 | IA 360 | 395 | 335 | 400 | 435 | 400 | 400 | 380 | 385 | 350 | JR 315 | 330 | 365 | 425 | F 385 |
| 27 | 410 | IR 390 | IR 360 | 385 | 350 | 345 | 350 | 330 | 390 | 370 | 360 | 400 | A | A | A | 350 | 350 | 350 | 360 | 350 | A | JS 405 | JF 345 | US 390 |
| 28 | JF 360 | JR 320 | 360 | F 405 | 365 | 340 | 320 | 300 | 300 | A | 420 | IA 365 | R | 350 | A | A | A | A | 355 | 320 | 355 | 380 | 390 | 370 |
| 29 | JF 385 | F | F | F | JR 320 | 300 | 310 | 305 | 300 | 325 | 300 | IA 390 | IA 370 | 350 | IA 370 | 390 | 400 | 350 | 330 | 345 | 350 | 360 | 355 | 390 |
| 30 | 360 | JR 350 | R | 345 | R 360 | 330 | 340 | 360 | 355 | A | A | 390 | 400 | 400 | 400 | 400 | 350 | 310 | 335 | 350 | 360 | 380 | 400 | 390 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 25 | 24 | 25 | 25 | 28 | 28 | 30 | 27 | 26 | 15 | 19 | 24 | 24 | 27 | 23 | 23 | 26 | 25 | 30 | 29 | 28 | 30 | 27 | 29 |
| MED | 390 | 372 | 350 | 370 | 370 | 345 | 340 | 330 | 345 | 365 | 395 | 385 | 368 | 365 | 370 | 360 | 358 | 350 | 348 | 350 | 360 | 390 | 390 | 390 |
| UQ | 405 | 392 | 385 | 390 | 390 | 362 | 355 | 350 | 360 | 385 | 410 | 400 | 395 | 392 | 390 | 385 | 375 | 365 | 355 | 350 | 382 | 405 | 402 | 400 |
| LQ | 385 | 352 | 340 | 345 | 348 | 325 | 315 | 308 | 310 | 340 | 388 | 362 | 360 | 358 | 360 | 358 | 350 | 340 | 335 | 330 | 352 | 365 | 368 | 380 |

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# IONOSPHERIC DATA

JUN. 1968 | ypF2 (km) | 135° E Mean Time (G. M. T. + 9 h)

Station KOKUBUNJI TOKYO Lat. 35° 42.4' N, Long. 139° 29.3' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | J R 95 | 90 | J R 70 | 95 | F 95 | 105 | 140 | 130 | 130 | H 120 | 130 | 110 | 115 | 115 | 100 | 105 | 95 | 110 | 100 | 110 | U R 90 | 95 | J R 90 | 90 |
| 2 | J R 95 | J R 70 | J R 85 | F | 75 | J R 90 | 60 | 850 | G | A | G | 100 | 90 | 100 | 95 | 95 | 95 | 90 | 95 | 95 | 90 | 105 | 90 | 85 |
| 3 | F | 90 | 105 | 100 | 65 | 110 | 135 | 90 | 85 | 135 | 125 | 110 | 90 | 110 | 105 | 135 | 135 | 120 | 95 | 145 | 140 | 165 | 100 | 130 |
| 4 | 125 | 120 | J R 175 | 120 | 130 | 170 | 135 | 165 | 100 | 105 | 75 | 110 | 100 | 90 | A | G | 100 | 115 | 120 | A | J R 150 | 120 | 155 | 115 |
| 5 | J R 130 | 110 | 120 | 145 | 95 | 155 | 125 | 110 | 150 | 120 | 95 | 115 | 110 | 95 | 95 | I A 95 | 95 | 125 | I A 120 | 105 | 95 | I A 95 | I R 100 | 110 |
| 6 | 95 | 85 | 65 | 100 | 90 | 125 | 90 | 90 | 135 | G | I R 100 | I A 110 | 115 | 100 | 105 | 110 | 115 | 105 | 105 | 130 | 175 | 135 | 130 | 115 |
| 7 | 170 | 105 | 140 | I R 125 | 165 | 110 | 130 | 125 | 95 | 125 | 110 | 85 | 100 | 110 | 90 | 110 | 95 | 115 | 115 | 75 | 115 | F 75 | F | U F 90 |
| 8 | A | I A 85 | 90 | 105 | 90 | F 80 | 110 | 125 | 100 | A | A | I A 150 | 110 | 100 | 110 | 95 | A | A | 95 | 120 | 90 | 115 | I S 120 | I A 90 |
| 9 | 105 | A | A | 90 | F 95 | 115 | 110 | 115 | 105 | 95 | I A 95 | I A 95 | I A 100 | 110 | 105 | 100 | 120 | 110 | 105 | 70 | 115 | 105 | J R 105 | 95 |
| 10 | 105 | 105 | 85 | 105 | 95 | 110 | 100 | 145 | 130 | 125 | 190 | 145 | 90 | 85 | 105 | A | 95 | A | 70 | 140 | 115 | 95 | 105 | 115 |
| 11 | J R 70 | R | 100 | C | C | 130 | 115 | F 115 | 105 | 135 | R | 85 | 110 | 105 | A | 130 | 125 | 105 | 110 | 105 | 95 | F 150 | F 160 | F 170 |
| 12 | F 110 | F 120 | F 140 | F | C | C | 100 | 160 | A | A | R | A | A | I A 95 | 105 | 105 | 105 | 105 | 130 | 125 | 180 | I R 135 | 165 | I R 180 |
| 13 | 170 | 105 | 125 | F 150 | F 120 | A | I A 100 | A | 110 | A | A | I A 105 | 105 | I A 100 | 95 | 140 | 130 | 150 | 145 | 135 | I A 130 | 140 | 105 | 130 |
| 14 | 135 | F 140 | 115 | 95 | 115 | 90 | I A 100 | A | A | A | A | R | 65 | 90 | A | A | 75 | G | 125 | 85 | 80 | 95 | J R 85 | 85 |
| 15 | 105 | 110 | 90 | 100 | 80 | 105 | 100 | J R 105 | 90 | G | R | R | R | R | G | G | G | 70 | 90 | 95 | U R 95 | 85 | 100 | I R 90 |
| 16 | J R 90 | 70 | R 75 | 85 | 90 | 95 | 95 | 105 | 65 | A | 100 | 115 | 85 | 110 | 100 | 95 | 110 | 125 | 100 | 110 | 105 | 100 | J R 80 | U S 90 |
| 17 | 100 | J R 105 | U S 80 | 85 | 100 | 65 | 115 | I A 100 | 60 | A | A | A | A | 80 | 130 | 100 | C | C | 185 | 175 | A | I A 110 | A | A |
| 18 | A | U R 185 | R | R | I R 180 | 170 | 120 | A | A | A | I A 85 | 100 | 145 | I A 130 | I A 115 | 150 | 160 | 110 | 145 | 115 | 160 | 150 | 155 | R 80 |
| 19 | 80 | 155 | 145 | 130 | 90 | 110 | 155 | 150 | 170 | 110 | 75 | 125 | 105 | 115 | 100 | A | 100 | 95 | 75 | 55 | I A 95 | 85 | F 100 | 100 |
| 20 | 100 | V 100 | J R 105 | 100 | 100 | 80 | 55 | 70 | 85 | C | A | A | 95 | 75 | 125 | 120 | 130 | 175 | 110 | 145 | 90 | I R 115 | 95 | 115 |
| 21 | 120 | 160 | I R 110 | 160 | 105 | 135 | 165 | 110 | 135 | 120 | 75 | 110 | 95 | 95 | 100 | 100 | 90 | 110 | 80 | S 80 | 100 | 90 | I S 95 | J R 90 |
| 22 | 90 | 95 | 90 | 85 | 95 | 105 | U R 90 | U S 75 | 95 | 55 | J R 90 | 95 | 100 | 80 | 100 | 105 | 135 | 115 | 95 | S 70 | 105 | J R 90 | I R 80 | U R 80 |
| 23 | J F 95 | F | J R 105 | 75 | 75 | 90 | 115 | 120 | 110 | A | A | A | J R 95 | 70 | G | G | I A 80 | I A 90 | I A 85 | J R 95 | 105 | 90 | F | J F 95 |
| 24 | F | J R 80 | 105 | F 80 | 100 | F 105 | 105 | 95 | 100 | A | 80 | I A 120 | A | A | 130 | I R 110 | 80 | I A 120 | 110 | 165 | 155 | I A 130 | 160 | J R 165 |
| 25 | F | F | F 115 | 130 | 110 | 140 | 135 | 110 | 90 | 75 | 145 | 165 | 110 | 110 | I A 80 | 95 | I A 105 | 110 | 120 | 120 | 75 | 125 | 95 | R 80 |
| 26 | I R 90 | S | S | J F 65 | J R 95 | 120 | 85 | 90 | 100 | I A 120 | 115 | 125 | 100 | 70 | 115 | 105 | 105 | 120 | 110 | J R 125 | 165 | 135 | 155 | F 135 |
| 27 | 120 | I R 145 | I R 135 | 115 | 130 | 120 | 160 | 120 | 100 | 100 | 95 | 95 | A | A | A | 95 | 95 | 95 | 110 | 110 | A | J S 65 | J F 100 | U S 70 |
| 28 | J F 95 | J R 85 | 110 | F 90 | 95 | 75 | 125 | 95 | 110 | A | 80 | I A 90 | R | 95 | A | A | A | A | 100 | 80 | 100 | 80 | 105 | 100 |
| 29 | J F 100 | F | F | F | J R 80 | 95 | 90 | 90 | 55 | 130 | 95 | I A 85 | I A 95 | 95 | I A 95 | 105 | 100 | 105 | 110 | 110 | 105 | 100 | 115 | 105 |
| 30 | 95 | J R 95 | R | 100 | R 90 | 90 | 105 | 135 | 65 | A | A | 80 | 100 | 95 | 105 | 100 | 85 | 90 | 120 | 95 | 95 | 90 | 95 | 105 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 25 | 24 | 25 | 25 | 28 | 28 | 30 | 27 | 26 | 15 | 19 | 24 | 24 | 27 | 23 | 23 | 26 | 25 | 30 | 29 | 28 | 30 | 27 | 29 |
| MED | 100 | 105 | 105 | 100 | 95 | 108 | 110 | 110 | 100 | 120 | 95 | 110 | 100 | 95 | 105 | 105 | 100 | 110 | 110 | 110 | 105 | 102 | 100 | 100 |
| UQ | 120 | 120 | 120 | 120 | 108 | 122 | 130 | 128 | 110 | 125 | 112 | 118 | 110 | 110 | 108 | 110 | 120 | 120 | 120 | 125 | 135 | 130 | 125 | 115 |
| LQ | J 95 | 88 | 90 | 90 | 90 | 90 | 100 | 95 | 90 | 102 | 82 | 95 | 95 | 90 | 98 | 98 | 95 | 105 | 95 | 95 | 95 | 90 | 95 | 90 |

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# IONOSPHERIC DATA

JUN. 1968 | $f_0F2$ (0.1) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N. Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S | S 84 | I S 85 | J S 77 | F 66 | F 62 | S 72 | 82 | 87 | 82 | 88 | 96 | 106 | 98 | 94 | 96 | 97 | I S 100 | I S 106 | S 108 | S 84 | I S 80 | S | S |
| 2 | U S 84 | 83 | 77 | 73 | 72 | 71 | S 73 | I A 70 | I A 72 | 79 | 86 | 86 | 83 | 90 | 90 | 93 | 99 | 96 | 86 | S 89 | 83 | 69 | I S 79 | S |
| 3 | S | 72 | F | F | 71 | F | F 76 | 87 | 84 | 77 | 74 | 83 | 93 | 98 | 109 | 112 | 110 | S 114 | J S 119 | R 109 | U S 95 | I S 92 | 91 | J S 90 |
| 4 | 88 | F | F | F | F 67 | F 71 | 72 | S 74 | 78 | 79 | J R 84 | 85 | 95 | 100 | 102 | 106 | I S 110 | S 111 | 107 | I S 102 | U S 97 | I S 95 | S 96 | J S 99 |
| 5 | 103 | J S 99 | J S 98 | S 87 | U S 80 | 76 | 88 | S 106 | S 96 | 91 | 97 | 106 | 106 | 106 | 103 | 98 | 103 | 108 | 95 | U S 96 | S 94 | 93 | F | J S 101 |
| 6 | J S 103 | J S 105 | 102 | J S 99 | 78 | 74 | 77 | 81 | 78 | H 78 | 81 | 91 | 100 | 104 | 98 | 93 | S 95 | 102 | 104 | S 104 | U S 98 | S 99 | I S 102 | S 105 |
| 7 | I S 106 | F | S 100 | F 92 | 77 | 81 | 90 | 83 | 80 | 84 | 81 | 85 | 94 | 102 | 107 | 99 | 94 | S 94 | S 96 | S 99 | S 98 | U F 94 | S 93 | S |
| 8 | S | F | S 108 | F | F | F | F 78 | F 89 | 84 | F 77 | V 83 | 93 | I A 102 | 113 | S 120 | S 117 | 111 | 109 | 101 | S 97 | I S 95 | I S 90 | 90 | S 90 |
| 9 | F | S | F | F | F | F 70 | F 72 | I A 82 | 82 | 89 | I A 90 | 91 | 94 | 107 | 110 | 112 | S 104 | 106 | 101 | S 96 | J S 84 | S 83 | J S 84 | F |
| 10 | I S 86 | F | F | F 66 | F 54 | F 51 | 60 | 73 | 83 | 84 | 91 | 99 | R 97 | 96 | 102 | 97 | 94 | 92 | J R 101 | I S 95 | I S 99 | I S 93 | 92 | I S 96 |
| 11 | I S 95 | I S 102 | J S 103 | I S 79 | 46 | 45 | 61 | 82 | 88 | 99 | I A 82 | I A 80 | I A 78 | 77 | 76 | 84 | 96 | 81 | 64 | 67 | 75 | S 77 | 77 | U S 75 |
| 12 | 71 | 65 | 60 | 59 | 63 | 59 | 47 | A | 53 | I A 52 | I C 59 | 66 | 74 | R 81 | 86 | 82 | 93 | 101 | 104 | S 94 | S 82 | S 79 | 80 | I S 78 |
| 13 | F | S | J S 85 | 72 | 65 | 57 | 67 | I A 62 | A | A | 67 | 77 | 95 | I A 107 | 121 | 121 | 116 | S 117 | I S 116 | S 94 | S 84 | F | 90 | I S 92 |
| 14 | I S 94 | J S 100 | F 92 | F | S 76 | S 63 | F 63 | 59 | 53 | F 59 | 59 | 62 | 64 | 63 | 65 | 62 | 66 | 65 | 71 | 77 | 83 | 84 | S 90 | I S 87 |
| 15 | U S 84 | U S 84 | S 84 | S 82 | S 80 | 61 | F | 83 | H 80 | I A 72 | 72 | 65 | 65 | 67 | 73 | 68 | 68 | 66 | 67 | 68 | 74 | 75 | 72 | S 73 |
| 16 | S 77 | S 80 | 78 | 65 | 63 | I C 65 | 79 | 101 | 69 | 68 | 72 | 82 | 93 | 97 | 98 | 106 | 98 | 100 | 97 | 98 | S 90 | J S 84 | U S 86 | J S 86 |
| 17 | J S 88 | I S 87 | S 85 | F 75 | F 76 | 72 | 67 | 73 | 64 | H 61 | 72 | 81 | 76 | R 88 | 105 | 101 | 92 | S 81 | R 92 | J S 101 | J S 98 | F 72 | S | A |
| 18 | S | S | S | S | F | F | 62 | 69 | 77 | I A 82 | 88 | R 93 | 96 | I A 98 | J R 101 | 108 | 108 | 105 | 105 | 110 | U S 108 | J S 87 | S 92 | J S 95 |
| 19 | I S 94 | I S 91 | U S 88 | S 70 | S 59 | 60 | 69 | 77 | 65 | I A 68 | I A 76 | 77 | 85 | 90 | 93 | 95 | R 96 | 104 | 105 | U R 90 | 80 | J S 84 | I S 89 | I S 90 |
| 20 | S 94 | I S 92 | U S 87 | U S 75 | F 67 | F 70 | 68 | 63 | 72 | 87 | 84 | 84 | 96 | 98 | 109 | 115 | 99 | 96 | S 98 | S 100 | S 92 | I S 86 | J S 89 | S 90 |
| 21 | 91 | 88 | S 86 | 66 | F 60 | F 57 | 65 | 78 | 77 | 87 | 88 | 87 | 94 | 86 | 89 | 93 | 105 | S 109 | 110 | 90 | 85 | I S 92 | I S 102 | I S 103 |
| 22 | I S 102 | J S 101 | S 104 | 87 | 73 | 71 | U S 81 | S 98 | 77 | 72 | 70 | 78 | C | C | C | C | C | U C 107 | I C 109 | C 110 | S 86 | S 77 | I S 78 | C |
| 23 | C | C | F 82 | F 68 | F 64 | F 68 | F 72 | 88 | 87 | 87 | 93 | 84 | 93 | 95 | 85 | 86 | 81 | 86 | 89 | S 88 | I S 88 | J S 85 | S 86 | 85 |
| 24 | F | S | I S 82 | F | F | F | F | I A 86 | 89 | 84 | 87 | A | A | 95 | I A 96 | I A 98 | 93 | S 87 | 89 | J R 87 | S 86 | S 86 | F | F |
| 25 | S | S | J S 98 | S 77 | F 68 | 69 | 87 | 89 | 76 | R 69 | 72 | 82 | U R 87 | 83 | R 84 | 86 | 91 | S 91 | 94 | U S 98 | 89 | J S 87 | 91 | J S 96 |
| 26 | J S 96 | I S 101 | S 104 | S 72 | 67 | F 66 | S 88 | S 81 | 67 | 71 | 84 | 78 | F 78 | 75 | 82 | 93 | I C 94 | 88 | R 94 | J S 100 | I S 94 | S 87 | I S 84 | J R 86 |
| 27 | F | S | U S 90 | F | 79 | F 70 | 75 | 83 | 86 | 85 | 82 | 89 | 98 | 105 | 100 | 95 | 88 | 89 | S 97 | 99 | S 92 | S 86 | I S 92 | S |
| 28 | S | S | S 73 | I S 74 | U S 75 | F 70 | 77 | 81 | V 71 | I A 69 | 79 | 89 | 102 | 100 | 93 | 95 | 99 | 104 | 112 | 100 | U S 85 | 81 | 87 | F |
| 29 | F | S | F 77 | F 72 | F 63 | Z 61 | 62 | 69 | 76 | 74 | 78 | 83 | 83 | 84 | 93 | 100 | 99 | 107 | 105 | 106 | I S 95 | J S 87 | S 91 | F |
| 30 | S | I S 97 | 90 | I S 83 | I S 83 | J S 87 | S 93 | 86 | 92 | 80 | 84 | 84 | 84 | 87 | 91 | 103 | 110 | 114 | 99 | S 84 | S 84 | 86 | 86 | S 86 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 17 | 17 | 25 | 22 | 26 | 26 | 28 | 29 | 29 | 29 | 30 | 29 | 28 | 29 | 29 | 29 | 29 | 30 | 30 | 30 | 30 | 29 | 26 | 20 |
| MED | S 94 | S 91 | S 87 | 74 | 68 | 68 | 72 | 82 | 78 | 79 | 82 | 84 | 94 | 96 | 96 | 97 | 97 | 100 | 100 | S 98 | S 88 | S 86 | S 90 | S 90 |
| UQ | U S 96 | U S 100 | S 98 | S 82 | 76 | 71 | 78 | 86 | 84 | 84 | 87 | 89 | 96 | 100 | 103 | 106 | 104 | 107 | 105 | S 101 | U S 95 | S 90 | S 92 | S 96 |
| LQ | S 86 | S 84 | S 82 | 70 | F 63 | 61 | 66 | 73 | 72 | 71 | 72 | 80 | 83 | 86 | 89 | 93 | 93 | 89 | 94 | S 90 | S 84 | S 81 | S 84 | S 86 |

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# IONOSPHERIC DATA

JUN. 1968 | foF1 (0.01) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | L | L | A | 540 | 540 | 540 | H 550 | 540 | L | A | I A 490 | A | | | | | |
| 2 | | | | | | | | A | A | 540 | I A 540 | 540 | I A 560 | 540 | H 530 | 520 | 490 | H 480 | L | | | | | |
| 3 | | | | | | | L | L | L | A | L | H 570 | U R 600 | L | H 580 | H 520 | 520 | L 520 | L | | | | | |
| 4 | | | | | | | | L | L | A | 550 | 580 | H 560 | 530 | H 560 | A | A | L | L | | | | | |
| 5 | | | | | | | | A | A | L | 580 | 530 | 590 | A | 580 | A | A | A | A | | | | | |
| 6 | | | | | | | | L | L 420 | L | H 520 | L | 540 | 550 | L 550 | 520 | L 540 | 470 | A | | | | | |
| 7 | | | | | | | L | A | A | L | L | L | 560 | 560 | A | 520 | L | L | A | A | | | | |
| 8 | | | | | | | | | A | L | L | A | A | 540 | I A 530 | 510 | H 520 | 490 | L | A | | | | |
| 9 | | | | | | | | A | A | A | A | 530 | L | A | 560 | H 520 | L | L | L | | | | | |
| 10 | | | | | | | | L | L 490 | 550 | A | A | H 580 | L | 540 | H 510 | 520 | L 530 | L | L | | | | |
| 11 | | | | | | | A | L | L | A | A | A | A | I R 520 | R 500 | R 490 | 480 | 450 | L | L | | | | |
| 12 | | | | | | | L | A | 460 | A | C | 520 | 520 | A | A | A | L | L | L | A | | | | |
| 13 | | | | | | | 360 | A | A | A | L | 520 | A | A | 550 | A | A | 510 | L | | | | | |
| 14 | | | | | | | L | A | A | R 460 | I A 490 | R 510 | H 510 | H 500 | H 520 | H 520 | H 510 | L 480 | L | L | | | | |
| 15 | | | | | | | | L | 470 | I A 500 | 510 | 520 | I A 520 | R 510 | I A 520 | 500 | 500 | 520 | L | | | | | |
| 16 | | | | | | | L | 430 | 450 | L | A | 520 | I A 530 | 540 | I A 550 | 500 | L 510 | A | A | | | | | |
| 17 | | | | | | | L | U L 410 | 500 | L 490 | 520 | 500 | L 580 | 540 | 520 | 490 | 500 | L 510 | I A 440 | | | | | |
| 18 | | | | | | | | A | A | A | A | L | 550 | I A 530 | 510 | 520 | A | A | A | | | | | |
| 19 | | | | | | | L | L 440 | 500 | A | A | 520 | I A 520 | 520 | A | A | I A 530 | I A 480 | L 420 | | | | | |
| 20 | | | | | | | | L | L 510 | 520 | I A 520 | L | A | A | A | 520 | 500 | L | L | | | | | |
| 21 | | | | | | | L | L | A | 460 | H 560 | I A 540 | 510 | 500 | 510 | 520 | 500 | A | A | | | | | |
| 22 | | | | | | | | L | L | 480 | L | 520 | C | C | C | C | L | I C 460 | L 430 | | | | | |
| 23 | | | | | | | L | A | L | H 590 | 530 | L | H 520 | 540 | A | A | L | 460 | I A 420 | | | | | |
| 24 | | | | | | | L | A | A | A | A | A | A | A | A | A | 490 | L 490 | L 420 | | | | | |
| 25 | | | | | | | L | L | A | R 530 | R 560 | I A 540 | 540 | 550 | 520 | 520 | 500 | 450 | U L 440 | | | | | |
| 26 | | | | | | | L | L | A | A | A | A | H 540 | 540 | 540 | 510 | I C 500 | I A 480 | L 380 | L | | | | |
| 27 | | | | | | | | L | L 480 | 510 | A | A | A | 530 | R 530 | 490 | H 520 | 460 | A | A | | | | |
| 28 | | | | | | | | L 450 | L | A | 540 | 540 | A | A | 590 | I A 540 | I A 530 | I A 480 | A | | | | | |
| 29 | | | | | | | | L | L | L | I A 550 | 540 | I A 540 | H 530 | H 520 | I A 500 | 490 | A | A | | | | | |
| 30 | | | | | | | | L | L | 640 | 530 | 520 | H 550 | 520 | I A 520 | I A 500 | 490 | 460 | A | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | | 1 | 4 | 9 | 12 | 15 | 19 | 21 | 20 | 23 | 21 | 20 | 20 | 7 | | | | | |
| MED | | | | | | | 360 | L 435 | 480 | 515 | 540 | 530 | 540 | 535 | 530 | 520 | 500 | 480 | L 420 | | | | | |
| UQ | | | | | | | | L 445 | L 500 | 545 | 550 | 540 | 560 | 540 | 550 | 520 | 520 | 500 | L 435 | | | | | |
| LQ | | | | | | | | 420 | 460 | 485 | 520 | 520 | 520 | 520 | 520 | 500 | 495 | 460 | L 420 | | | | | |

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# IONOSPHERIC DATA

JUN. 1968 | foE (0.01) | 135° E Mean Time (G. M. T. + 9h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | 200 | 280 | 320 | 345 | 360 | A | A | R 370 | 365 | 365 | I A 335 | 300 | 250 | B | | | | |
| 2 | | | | | | | 190 | 270 | 320 | 350 | 370 | 385 | 390 | 380 | 380 | A | A | A | A | B | | | | |
| 3 | | | | | | | H 210 | H 280 | H 320 | 345 | 360 | R 375 | I R 380 | R 380 | 360 | 370 | I A 340 | 300 | A | B | | | | |
| 4 | | | | | | | 235 | 280 | 320 | I A 345 | I A 355 | 375 | 380 | R 385 | R 380 | 360 | 340 | 300 | A | B | | | | |
| 5 | | | | | | | 210 | 290 | H 320 | 335 | 360 | 385 | A | A | A | A | 340 | 300 | A | B | | | | |
| 6 | | | | | | | 205 | I A 270 | 320 | I A 340 | 350 | 400 | R 400 | 400 | 380 | 365 | 340 | 310 | 240 | S | | | | |
| 7 | | | | | | | 200 | 270 | 310 | I A 345 | R 370 | 385 | 390 | I R 390 | 390 | 370 | 345 | 305 | 250 | S | | | | |
| 8 | | | | | | | 190 | 270 | 310 | A | A | 370 | R 380 | R 390 | R 385 | 380 | 345 | 300 | 250 | B | | | | |
| 9 | | | | | | | 200 | 270 | 320 | 365 | R 390 | 390 | 400 | A | A | A | A | A | A | B | | | | |
| 10 | | | | | | | 220 | I A 275 | 320 | 350 | 370 | A | A | 370 | 390 | 370 | 340 | 310 | 270 | 140 | | | | |
| 11 | | | | | | | 210 | 280 | 320 | 350 | 380 | 380 | 380 | I R 380 | R 375 | 360 | 340 | 310 | 250 | B | | | | |
| 12 | | | | | | | 210 | 270 | 300 | 320 | I C 340 | A | A | A | 370 | 350 | H 330 | 295 | H 260 | 150 | | | | |
| 13 | | | | | | | 190 | 270 | 315 | 340 | I A 365 | A | A | A | A | A | A | 300 | I A 250 | 170 | | | | |
| 14 | | | | | | | 185 | 260 | 310 | 340 | 365 | 370 | R 400 | I A 380 | 380 | 370 | 340 | 310 | 260 | 155 | | | | |
| 15 | | | | | | | 200 | 270 | 320 | 345 | 370 | 375 | A | A | A | A | I A 340 | 300 | 255 | B | | | | |
| 16 | | | | | | | 200 | 280 | 310 | 350 | 360 | 365 | 370 | A | A | A | A | A | A | B | | | | |
| 17 | | | | | | | 190 | A | A | A | A | A | A | R 385 | I A 380 | I A 370 | 340 | 310 | 255 | B | | | | |
| 18 | | | | | | | 215 | 275 | 310 | 340 | 355 | 370 | R 385 | A | A | 345 | A | A | A | B | | | | |
| 19 | | | | | | | 205 | A | A | A | 340 | A | A | A | A | A | A | A | A | B | | | | |
| 20 | | | | | | | A | 280 | 330 | 350 | 365 | R 380 | 400 | 390 | 380 | A | A | A | A | B | | | | |
| 21 | | | | | | | 210 | 280 | 310 | 340 | A | A | A | A | A | A | 340 | 300 | 240 | B | | | | |
| 22 | | | | | | | 210 | 280 | 315 | 350 | 360 | 370 | C | C | C | A | A | 300 | A | B | | | | |
| 23 | | | | | | | 200 | 270 | 300 | I A 330 | 360 | 370 | 390 | 390 | 375 | 360 | 335 | H 310 | 260 | S | | | | |
| 24 | | | | | | | A | 280 | 310 | 330 | 365 | 365 | 370 | 360 | 350 | A | A | A | A | B | | | | |
| 25 | | | | | | | 225 | I A 260 | I A 300 | A | A | A | A | R 380 | 355 | I A 350 | 350 | A | A | A | | | | |
| 26 | | | | | | | 200 | A | A | A | 380 | 380 | A | A | A | A | I C 350 | I A 310 | A | A | | | | |
| 27 | | | | | | | A | A | A | A | A | A | A | A | A | 370 | 355 | 310 | 250 | 190 | | | | |
| 28 | | | | | | | 200 | H 270 | 310 | 340 | I A 345 | 355 | 345 | 350 | 350 | 340 | 300 | A | A | S | | | | |
| 29 | | | | | | | 190 | 280 | H 320 | I A 340 | 350 | 360 | 360 | 350 | 360 | 360 | 340 | 300 | 250 | A | | | | |
| 30 | | | | | | | A | A | A | A | A | A | R 390 | R 390 | 375 | 350 | 330 | 305 | 250 | S | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | | 26 | 25 | 25 | 23 | 24 | 20 | 17 | 18 | 19 | 18 | 21 | 21 | 16 | 5 | | | | |
| MED | | | | | | | 200 | 275 | 315 | 345 | 360 | 375 | 385 | 380 | 375 | 362 | 340 | 300 | 250 | 155 | | | | |
| UQ | | | | | | | 210 | 280 | 320 | 350 | 370 | 382 | 390 | R 390 | 380 | 370 | 340 | 310 | 258 | 170 | | | | |
| LQ | | | | | | | 200 | 270 | 310 | 340 | 355 | 370 | 380 | 370 | 362 | 350 | 340 | 300 | 250 | 150 | | | | |

# IONOSPHERIC DATA

JUN. 1968

**foEs (0.1)**

135 E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N. Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 23 | J X 42 | J X 34 | 25 | 19 | J X 26 | J X 37 | 42 | J X 73 | J X 86 | 81 | 50 | J X 52 | 44 | 54 | J X 50 | 75 | J X 103 | J X 62 | 80 | J X 82 | J X 85 | 94 | 92 |
| 2 | J X 51 | J X 34 | J X 34 | J X 23 | 20 | E B 12 | 35 | 90 | J X 110 | J X 140 | 98 | 53 | 75 | 43 | G | 65 | 47 | 74 | J X 41 | 42 | J X 91 | 105 | J X 62 | 89 |
| 3 | J X 68 | J X 49 | J X 43 | J X 30 | J X 19 | J X 14 | 24 | 34 | 51 | J X 82 | M 71 | 43 | 53 | J X 77 | 44 | G 36 | J X 34 | G 21 | J X 40 | J X 62 | J X 39 | J X 51 | J X 51 | J X 50 |
| 4 | J X 64 | J X 51 | J X 33 | 21 | J X 19 | E B 15 | G 20 | 30 | 41 | J X 65 | J X 50 | 44 | 43 | M 105 | 49 | 68 | M 117 | M 109 | M 166 | M 45 | 23 | 23 | J X 29 | J X 29 |
| 5 | J X 61 | J X 33 | J X 25 | J X 27 | J X 25 | J X 28 | J X 27 | J X 50 | J X 64 | 45 | J X 55 | 43 | J X 62 | J X 64 | M 74 | J X 54 | 57 | J X 106 | M 60 | 59 | J X 83 | J X 51 | J X 63 | J X 26 |
| 6 | J X 23 | J X 22 | J X 21 | J X 26 | J X 28 | 19 | G | J X 61 | 36 | J X 55 | 38 | 49 | 46 | 49 | 48 | 44 | J X 59 | J X 50 | J X 59 | J X 41 | J X 37 | 56 | J X 38 | J X 21 |
| 7 | J X 20 | J X 54 | J X 44 | J X 38 | J X 26 | E B 14 | J X 65 | J X 96 | J X 86 | 69 | G | 44 | 46 | 49 | 61 | 45 | 48 | 41 | J X 66 | 47 | J X 31 | J X 70 | 121 | 107 |
| 8 | J X 65 | 127 | J X 61 | J X 75 | 45 | J X 38 | J X 48 | J X 52 | J X 86 | J X 53 | J X 77 | J X 138 | 140 | 56 | J X 96 | G | 41 | 41 | J X 44 | J X 36 | J X 60 | J X 29 | J X 52 | J X 36 |
| 9 | 73 | J X 92 | J X 53 | 20 | E | E B 12 | 29 | J X 138 | 182 | J X 90 | 122 | 96 | J X 65 | J X 140 | 51 | 49 | J X 61 | J X 44 | J X 41 | J X 36 | J X 96 | 92 | 60 | J X 65 |
| 10 | J X 35 | J X 20 | 24 | J X 27 | J X 24 | J X 23 | J X 29 | 38 | 38 | 46 | J X 69 | J X 64 | J X 56 | 47 | J X 73 | 41 | G | G 23 | 35 | 22 | J X 54 | J X 63 | J X 25 | J X 33 |
| 11 | J X 62 | J X 40 | J X 27 | J X 38 | J X 31 | J X 36 | 46 | J X 53 | J X 134 | J X 147 | J X 100 | J X 96 | J X 101 | G | 43 | 47 | 45 | J X 53 | 34 | 26 | J X 32 | J X 27 | 23 | J X 25 |
| 12 | J X 31 | J X 31 | 29 | J X 33 | J X 83 | J X 64 | J X 45 | J X 54 | J X 52 | D | C | 44 | 55 | J X 82 | J X 72 | J X 76 | G | G | J X 57 | J X 75 | J X 71 | J X 101 | J X 51 | J X 26 |
| 13 | J X 64 | J X 61 | J X 84 | J X 28 | J X 47 | J X 54 | J X 84 | 93 | D | 135 | D | 106 | 124 | 131 | J X 86 | 95 | 93 | J X 46 | J X 34 | G | 25 | 76 | 70 | J X 85 |
| 14 | J X 79 | J X 63 | 73 | J X 44 | J X 41 | 22 | 34 | J X 74 | J X 53 | 48 | J X 61 | 44 | G | 44 | 41 | G 33 | 46 | G | 35 | J X 37 | 25 | J X 65 | J X 31 | J X 24 |
| 15 | J X 20 | 24 | J X 23 | 22 | J X 19 | 24 | J X 27 | J X 54 | J X 55 | J X 83 | J X 59 | J X 59 | J X 70 | 48 | J X 58 | 52 | G 32 | J X 48 | J X 30 | J X 31 | J X 40 | J X 39 | J X 41 | J X 27 |
| 16 | J X 25 | 23 | J X 30 | J X 21 | J X 24 | C | 25 | 32 | 39 | J X 53 | 64 | 61 | 59 | 72 | 79 | 56 | 42 | J X 76 | J X 54 | J X 49 | J X 30 | J X 26 | J X 27 | J X 34 |
| 17 | J X 69 | 22 | J X 39 | J X 34 | 23 | E B 12 | 25 | J X 34 | J X 54 | J X 63 | J X 62 | 43 | 51 | 48 | J X 61 | J X 39 | G 29 | 32 | M 54 | J X 31 | J X 26 | J X 100 | J X 61 | M 135 |
| 18 | M 166 | J X 86 | M 106 | J X 63 | J X 53 | J X 62 | 34 | J X 65 | J X 84 | J X 88 | J X 66 | J X 70 | J X 63 | M 103 | J X 51 | J X 47 | M 67 | J X 84 | M 89 | J X 64 | J X 42 | J X 37 | J X 26 | J X 17 |
| 19 | 20 | E B 15 | E B 15 | 20 | 23 | 21 | J X 26 | J X 32 | 49 | J X 149 | J X 82 | 47 | J X 64 | J X 52 | J X 60 | J X 76 | J X 56 | J X 49 | J X 38 | J X 42 | M 35 | J X 24 | 18 | J X 24 |
| 20 | J X 34 | J X 29 | J X 29 | J X 29 | J X 36 | J X 26 | 30 | J X 51 | 41 | 57 | J X 74 | G | J X 89 | J X 112 | 73 | 100 | J X 68 | 94 | 56 | J X 45 | 21 | J X 25 | J X 26 | J X 30 |
| 21 | J X 26 | 17 | 20 | 20 | 45 | J X 62 | 26 | 40 | J X 54 | 50 | J X 72 | J X 68 | J X 60 | 47 | 48 | 55 | J X 75 | 57 | J X 66 | J X 64 | J X 74 | J X 37 | J X 36 | J X 33 |
| 22 | J X 29 | J X 20 | J X 19 | J X 21 | J X 22 | 22 | 25 | 34 | J X 52 | 38 | 50 | J X 81 | C | C | C | J X 50 | 38 | J X 34 | J X 26 | J X 43 | J X 29 | J X 24 | J X 19 | 48 |
| 23 | J X 31 | J X 35 | J X 34 | J X 24 | J X 23 | 20 | 32 | J X 50 | J X 47 | J X 42 | 42 | J X 66 | G | 55 | 68 | J X 107 | 134 | J X 54 | J X 59 | J X 35 | 18 | 92 | J X 64 | J X 39 |
| 24 | J X 62 | J X 76 | J X 86 | J X 41 | J X 40 | J X 51 | J X 34 | J X 141 | 167 | J X 84 | J X 99 | J X 107 | M 112 | J X 74 | J X 102 | M 168 | J X 38 | J X 48 | J X 42 | M 34 | J X 60 | J X 36 | J X 84 | J X 65 |
| 25 | J X 85 | J X 61 | J X 27 | J X 30 | J X 28 | J X 23 | 25 | J X 79 | J X 84 | J X 65 | J X 44 | J X 76 | J X 45 | 41 | J X 48 | J X 61 | 38 | J X 36 | J X 35 | J X 41 | J X 37 | J X 28 | J X 23 | J X 20 |
| 26 | J X 22 | J X 36 | J X 35 | J X 21 | J X 24 | J X 27 | 27 | J X 49 | J X 62 | J X 56 | J X 70 | M 82 | J X 67 | J X 67 | J X 54 | J X 60 | C | J X 50 | J X 37 | J X 34 | J X 25 | J X 22 | J X 29 | J X 40 |
| 27 | J X 51 | J X 99 | J X 22 | J X 28 | J X 27 | 23 | J X 32 | J X 36 | 39 | 44 | J X 60 | J X 99 | 62 | 54 | 42 | 41 | 44 | J X 56 | J X 74 | J X 86 | 134 | 84 | J X 62 | J X 100 |
| 28 | J X 60 | J X 38 | J X 34 | J X 34 | J X 25 | J X 22 | 22 | G | 40 | J X 138 | J X 90 | 69 | 83 | 83 | J X 58 | J X 68 | J X 64 | J X 74 | J X 79 | J X 64 | J X 62 | J X 34 | J X 44 | 25 |
| 29 | J X 25 | J X 90 | J X 85 | 46 | J X 34 | J X 37 | 28 | 34 | 36 | J X 48 | J X 72 | J X 66 | J X 65 | J X 49 | G 33 | 59 | 46 | J X 74 | J X 74 | 88 | 92 | 91 | J X 56 | J X 64 |
| 30 | J X 24 | 25 | J X 27 | E B 15 | J X 33 | J X 29 | J X 61 | J X 44 | 74 | J X 87 | 82 | 61 | 45 | 51 | J X 81 | J X 77 | J X 74 | 42 | 40 | J X 41 | 16 | J X 29 | J X 25 | J X 38 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 30 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 29 | 30 | 29 | 29 | 29 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| MED | J X 43 | J X 37 | J X 34 | J X 28 | J X 26 | J X 23 | 29 | J X 50 | J X 54 | J X 65 | J X 70 | 62 | 62 | 54 | 58 | 54 | 47 | J X 50 | J X 49 | J X 42 | J X 38 | J X 45 | J X 42 | J X 35 |
| UQ | J X 64 | J X 61 | J X 44 | J X 34 | J X 36 | J X 36 | J X 35 | J X 65 | J X 84 | J X 88 | J X 82 | J X 81 | J X 70 | 77 | J X 73 | 68 | 67 | J X 74 | J X 62 | J X 62 | J X 71 | J X 84 | J X 62 | J X 65 |
| LQ | J X 25 | J X 24 | J X 25 | J X 21 | J X 23 | 20 | 25 | 34 | 41 | J X 50 | J X 59 | 44 | 51 | 48 | 48 | 45 | 38 | 41 | J X 37 | J X 35 | J X 26 | J X 28 | J X 26 | J X 26 |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968

**$f_bEs$ (0.1)**

135 E Mean Time (G. M. T. + 9$^h$)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | E | 25 | 18 | E | E | 19 | 17 | 37 | 46 | 64 | 46 | 50 | 50 | 44 | 48 | G | 56 | 60 | 54 | 66 | 65 | 52 | 62 | 51 |
| 2 | 35 | 16 | 19 | 15 | E | E B 12 | 33 | A | A | 48 | 63 | 52 | 61 | 41 | G | 41 | 45 | 31 | 29 | 35 | 27 | 29 | 18 | 51 |
| 3 | E | 20 | 24 | 21 | 14 | 13 | G | 33 | 43 | 57 | 53 | 43 | 53 | 44 | G | G 33 | 34 | G 21 | 37 | 42 | 22 | 33 | 28 | 50 |
| 4 | 54 | 26 | 18 | 15 | 14 | E B 15 | G 17 | 30 | 39 | 60 | 42 | 44 | E R 43 | 50 | 42 | 60 | 100 | 45 | 34 | 27 | E | E | 19 | 19 |
| 5 | 46 | 22 | 16 | 16 | 22 | 24 | 19 | 45 | 51 | 45 | 53 | E R 43 | 50 | 60 | 53 | 54 | 52 | 99 | 51 | 54 | 51 | 28 | 30 | 15 |
| 6 | 16 | 15 | E | 20 | 23 | 18 | G | 45 | G 29 | 38 | E R 38 | 48 | 46 | 47 | 45 | 42 | 46 | 42 | 53 | 37 | 27 | 17 | 35 | 21 |
| 7 | E | 40 | 24 | 30 | 16 | E B 14 | 26 | 50 | 48 | 45 | G | 41 | 45 | 47 | 58 | 42 | 47 | G | 44 | 43 | 17 | 24 | 55 | E |
| 8 | 60 | 75 | 42 | 56 | 30 | 23 | 41 | 41 | 52 | 42 | 49 | 55 | A | 53 | 89 | G | 38 | 40 | 44 | 28 | 38 | 20 | 24 | 18 |
| 9 | 53 | 64 | 40 | E | E | E B 12 | G | A | 65 | 59 | A | 49 | 53 | 66 | 46 | 46 | 41 | 40 | E R 41 | 25 | 54 | 41 | 32 | 51 |
| 10 | 30 | E | E | 16 | 15 | E | 18 | 33 | 36 | 38 | 62 | 64 | 48 | 43 | 51 | G | G | G 21 | 33 | E R 22 | 17 | 26 | 19 | 27 |
| 11 | 27 | 23 | 23 | 34 | 24 | 18 | E R 46 | 38 | 48 | 63 | A | A | A | G | 41 | 43 | 42 | 35 | 30 | 20 | 28 | 16 | E | 19 |
| 12 | 18 | 28 | 18 | 26 | 45 | 30 | 31 | A | 40 | A | C | 43 | 48 | 62 | 63 | 68 | G | G | 39 | 40 | E S 71 | 55 | 40 | 17 |
| 13 | 18 | 36 | 50 | 14 | 46 | 39 | 24 | A | A | A | 51 | 50 | 61 | A | 45 | 70 | 54 | 28 | 26 | G | E | 28 | 37 | 40 |
| 14 | 47 | 30 | 43 | 33 | 27 | 18 | 27 | 43 | 44 | 41 | 52 | 42 | G | 41 | G | G 33 | G | G | 33 | 26 | 21 | 61 | 28 | 15 |
| 15 | E | E | E | 15 | 15 | 15 | G | 37 | 38 | A | 48 | 47 | 62 | 48 | 53 | 44 | G 31 | 41 | 23 | 28 | 30 | 21 | 26 | E |
| 16 | E | E | 16 | 15 | E | C | G | G 23 | 36 | 50 | 55 | 51 | 56 | 52 | 64 | 45 | 34 | 73 | 48 | 47 | 24 | 23 | 20 | 19 |
| 17 | 17 | E | 25 | 26 | 13 | E B 12 | 18 | 30 | 37 | 44 | 51 | 43 | 50 | 47 | 45 | 38 | G 28 | 24 | 50 | 26 | 24 | E | F S 61 | A |
| 18 | 55 | 34 | 53 | 26 | 25 | 34 | G | 63 | 65 | A | 61 | 58 | 54 | A | 50 | 43 | 51 | 75 | 88 | 46 | 37 | 37 | 17 | E |
| 19 | F | E B 15 | E B 15 | E | 16 | E | 18 | 28 | 38 | A | A | 47 | 58 | 51 | 52 | 56 | 56 | 49 | 34 | 39 | 35 | E | E | 19 |
| 20 | 25 | 19 | E | 18 | 20 | 16 | 24 | 33 | 40 | 42 | 57 | G | 86 | 85 | 64 | 50 | 48 | 40 | 37 | 42 | E | E | E | 17 |
| 21 | E | E | E | E | 14 | 18 | 15 | 34 | 46 | 39 | 48 | 60 | 45 | 43 | 43 | 51 | 48 | 45 | 64 | 52 | 35 | 34 | 28 | 25 |
| 22 | 16 | 15 | E | 20 | 18 | E | G | 32 | 41 | G | 50 | 51 | C | C | C | 50 | 36 | 26 | E R 26 | 39 | 26 | E | E | 48 |
| 23 | 17 | 18 | 25 | 22 | 15 | 17 | 30 | 46 | 39 | 38 | 40 | 44 | G | 51 | 66 | 76 | 42 | G | 52 | 26 | 14 | 40 | 53 | 18 |
| 24 | 54 | 32 | 54 | 33 | 29 | 40 | 24 | A | 63 | 55 | 66 | A | A | 72 | A | A | 37 | 37 | 36 | 30 | 47 | 33 | 22 | 20 |
| 25 | 60 | 48 | 17 | 27 | 26 | 22 | 19 | 35 | 48 | 44 | 44 | 61 | 45 | G | 44 | 46 | 34 | 34 | 31 | 40 | 30 | 26 | 17 | 16 |
| 26 | E | 29 | 30 | 18 | 15 | 19 | G | 33 | 52 | 54 | 63 | 68 | 47 | 46 | 41 | 42 | C | 47 | 32 | 26 | 23 | 20 | E | 35 |
| 27 | 27 | 29 | 18 | 27 | 20 | E | 26 | 31 | 38 | 41 | 60 | 86 | 52 | 51 | E R 42 | 35 | 39 | 43 | 72 | 78 | 78 | 29 | E | 50 |
| 28 | 35 | 25 | 15 | 27 | 17 | E | G | G | 38 | A | 51 | 53 | 73 | 68 | 56 | 65 | 53 | 74 | 54 | 46 | 37 | 20 | 29 | E |
| 29 | 18 | 27 | 25 | 26 | 24 | 25 | G | G | G | 48 | 59 | 52 | 63 | 45 | G 33 | 57 | 45 | 65 | 72 | 87 | E S 92 | 24 | 28 | 50 |
| 30 | E | 14 | 22 | E B 15 | 27 | 24 | 25 | 34 | 36 | 48 | 47 | 48 | 43 | 50 | 60 | 66 | 43 | 41 | 39 | 37 | 15 | 18 | 19 | 17 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 30 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 29 | 30 | 29 | 29 | 29 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| MED | 18 | 24 | 18 | 20 | 18 | 18 | 18 | 36 | 42 | 48 | 52 | 50 | 52 | 50 | 48 | 46 | 42 | 40 | 38 | 38 | 27 | 25 | 24 | 19 |
| UQ | 46 | 30 | 25 | 27 | 25 | 23 | 26 | 46 | 51 | 63 | 61 | 58 | 61 | 60 | 58 | 57 | 48 | 47 | 52 | 46 | 38 | 33 | 31 | 48 |
| LQ | E | 15 | 15 | 15 | 14 | E E 12 | G | 32 | 38 | 42 | 48 | 44 | 46 | 44 | 42 | 41 | 34 | 26 | 33 | 26 | 21 | 18 | 17 | 17 |

# IONOSPHERIC DATA

JUN. 1968

f-min (0.1)

135 E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130 37.1 E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F S 15 | 14 | 12 | 14 | E | E | 12 | 13 | 15 | 15 | 16 | 18 | 20 | 21 | 18 | 16 | 16 | 15 | 15 | 11 | E | E S 15 | F S 15 | E S 15 |
| 2 | F S 15 | 12 | 13 | E | E | 12 | 15 | 14 | 15 | 15 | 18 | 17 | 19 | 17 | 19 | 16 | 17 | 15 | 12 | 12 | F S 12 | E S 15 | E S 15 | E S 15 |
| 3 | E S 15 | E S 14 | 12 | E | E | E | 12 | 14 | 15 | 18 | 19 | 19 | 32 | 19 | 18 | 18 | 15 | 15 | 11 | 11 | E S 14 | E S 15 | E S 15 | E S 15 |
| 4 | F S 15 | E S 15 | 12 | E | E | 15 | E S 15 | 15 | 15 | 18 | 16 | 17 | 19 | 19 | 19 | 17 | 17 | 15 | 16 | 15 | E S 13 | E S 15 | E S 11 | E S 15 |
| 5 | E S 15 | 11 | 13 | E | E | 11 | 12 | 14 | 15 | 15 | 17 | 20 | 18 | 19 | 19 | 17 | 18 | 16 | 15 | 14 | E S 15 | E S 14 | E S 15 | E S 12 |
| 6 | E S 15 | 12 | 13 | E | E | 12 | E S 15 | 14 | 15 | 17 | 17 | 18 | 18 | 17 | 16 | 18 | 15 | 15 | 15 | E S 15 | E S 11 | E S 15 | E S 15 | E S 15 |
| 7 | E S 15 | 11 | E | E | E | 14 | E S 15 | 15 | 15 | 15 | 16 | 19 | 19 | 19 | 19 | 18 | 19 | 16 | E S 12 | E S 15 | E S 14 | E S 15 | E S 15 | E S 15 |
| 8 | 15 | E S 15 | 13 | 15 | E | E S 15 | 14 | 15 | 14 | 15 | 18 | 17 | 19 | 17 | 18 | 18 | 16 | 15 | 15 | 14 | E S 15 | E S 15 | E S 15 | E S 15 |
| 9 | F S 15 | E S 15 | 13 | 12 | E | 12 | E S 14 | 14 | 16 | 17 | E C 29 | E C 24 | E C 24 | 18 | 19 | 19 | 17 | 15 | E C 29 | 15 | E S 15 | E S 15 | E S 15 | E S 15 |
| 10 | E S 14 | E S 14 | E | E | E | 14 | E S 15 | 12 | 15 | 15 | 16 | 17 | 19 | 19 | 19 | 16 | 15 | 15 | 14 | 11 | E | E S 15 | E S 15 | E S 15 |
| 11 | E S 13 | 11 | 13 | 13 | E | E | 15 | 15 | 16 | 16 | 19 | 19 | 19 | 18 | 20 | 18 | 16 | 15 | 11 | 15 | E | 11 | E S 15 | E S 13 |
| 12 | 12 | E S 14 | E | 12 | E | E | 14 | 15 | 15 | 16 | C | 20 | 22 | 20 | 20 | 18 | 19 | 15 | 14 | 12 | E S 15 | E S 13 | E S 15 | 11 |
| 13 | F S 15 | 12 | E | E | E | 11 | 13 | 15 | 17 | 17 | 16 | 26 | 19 | 18 | 18 | 18 | 17 | 14 | 15 | E S 14 | E S 15 | E S 15 | E S 15 | E S 15 |
| 14 | E S 15 | E S 15 | 14 | E | E | 11 | E S 15 | 13 | 15 | 15 | 17 | 21 | 18 | 18 | 17 | 23 | 15 | 14 | 17 | 12 | E S 15 | E S 15 | E S 15 | E S 14 |
| 15 | E S 15 | E S 15 | 15 | E | E | E | E S 15 | 12 | 14 | 15 | 17 | 20 | 21 | 19 | 20 | 17 | 15 | 15 | 15 | 15 | E S 15 | E S 15 | E S 15 | E S 15 |
| 16 | F S 15 | E S 15 | 14 | E | 13 | C | E S 15 | 16 | 15 | 15 | 18 | 18 | 18 | 18 | 17 | 16 | 16 | 15 | 15 | 15 | E S 15 | E S 15 | E S 15 | E S 15 |
| 17 | E S 15 | 15 | E | E | 12 | 12 | E S 14 | 14 | 14 | 18 | 17 | 17 | 19 | 18 | 17 | 17 | 16 | 15 | 17 | 15 | E S 12 | E S 15 | E S 15 | E S 12 |
| 18 | E S 15 | E S 15 | E | E | E | 11 | 15 | 15 | 15 | 17 | 17 | 19 | 24 | 22 | 22 | 18 | 17 | 15 | 15 | 15 | E S 15 | E S 15 | E S 12 | E S 15 |
| 19 | E S 15 | 15 | 15 | 15 | E | E S 15 | E S 15 | E S 15 | 16 | 15 | 17 | 18 | 18 | 20 | 19 | 17 | 18 | 15 | 15 | 15 | 14 | E S 15 | E S 15 | E S 15 |
| 20 | E S 15 | 15 | 14 | E | E | E | 11 | 12 | 15 | 18 | 19 | 18 | 22 | 20 | 21 | 15 | 15 | 16 | 14 | 15 | E S 15 | E S 15 | E S 15 | E S 13 |
| 21 | E S 15 | E S 14 | 15 | 14 | E | E | 11 | 14 | 14 | 15 | 18 | 17 | 17 | 17 | 17 | 16 | 18 | 14 | 13 | 14 | E S 13 | E S 15 | E S 15 | E S 15 |
| 22 | E S 14 | E S 12 | 13 | E | E | 14 | 14 | 15 | 15 | 15 | 15 | 20 | C | C | C | E C 20 | 18 | 14 | 15 | 11 | E S 13 | E S 15 | E S 15 | E S 14 |
| 23 | E S 15 | E S 13 | E | E | E | E | 15 | 15 | 15 | 15 | 17 | 17 | 19 | 18 | 19 | 19 | 15 | 14 | 14 | E S 15 | E | E S 13 | E S 14 | E S 12 |
| 24 | E S 13 | E S 13 | E | E | E | E | E S 15 | 14 | 15 | 15 | 18 | 18 | 19 | 20 | 19 | 20 | 15 | 14 | 14 | 11 | E S 11 | E S 15 | E S 15 | E S 15 |
| 25 | E S 15 | 14 | 11 | 14 | E | 12 | 16 | 15 | 15 | 16 | 18 | 22 | 22 | 19 | 25 | 18 | 15 | 15 | 15 | 15 | E S 15 | E S 13 | E S 15 | E S 15 |
| 26 | E S 16 | 15 | 12 | 13 | E | 11 | 17 | 16 | 16 | 18 | 20 | 18 | 19 | 19 | 16 | 19 | C | 15 | 18 | 11 | 12 | E S 13 | E S 15 | E S 13 |
| 27 | E S 15 | 14 | 13 | 15 | E | 15 | 11 | 11 | 14 | 15 | 17 | 19 | 19 | 19 | 19 | 17 | 18 | 16 | 14 | 14 | E S 15 | E S 14 | E S 15 | E S 15 |
| 28 | E S 15 | E S 11 | E | E | E | 15 | E S 15 | 14 | 16 | 13 | 17 | 18 | 24 | 19 | 18 | 17 | 16 | 15 | 14 | E S 13 | E S 15 | E S 13 | E S 14 | E S 15 |
| 29 | E S 14 | E S 13 | 13 | E | E | E | E S 14 | E S 14 | 15 | 15 | 16 | 15 | 17 | 16 | 17 | 16 | 15 | 15 | 12 | 12 | E S 15 | E S 15 | E S 13 | E S 14 |
| 30 | E S 14 | E S 11 | 13 | 15 | 12 | 16 | E S 15 | 15 | 15 | 15 | 18 | 17 | 18 | 18 | 17 | 16 | 14 | 15 | 14 | E S 14 | E | E S 12 | E S 15 | E S 15 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 30 | 30 | 30 | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 29 | 30 | 29 | 29 | 29 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| MED | E S 15 | E S 14 | 13 | E | E | 11 | 15 | 14 | 15 | 15 | 17 | 18 | 19 | 19 | 19 | 18 | 16 | 15 | 14 | 13 | E S 14 | E S 15 | E S 15 | E S 15 |
| UQ | E S 15 | E S 15 | 13 | 13 | E | 13 | E S 15 | 15 | 15 | 17 | 18 | 20 | 20 | 19 | 19 | 18 | 17 | 15 | 15 | 15 | E S 15 | E S 15 | E S 15 | E S 15 |
| LQ | E S 15 | E S 12 | E | E | E | E | U 12 | 14 | 15 | 15 | 17 | 17 | 18 | 18 | 17 | 16 | 15 | 15 | 14 | 12 | E S 12 | E S 14 | E S 15 | E S 13 |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968

M(3000) F2(0.01)

135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | S | S 275 | I S 295 | U S 300 | F | F 260 | S 295 | 280 | 310 | 260 | 260 | 245 | 275 | 275 | 265 | 265 | 270 | I S 280 | I S 280 | S 295 | S 285 | I S 240 | S | S |
| 2 | U S 265 | 260 | 260 | 260 | 270 | 285 | S 315 | I A 300 | I A 285 | 265 | 260 | 270 | 255 | 260 | 270 | 265 | 275 | 290 | 280 | S 280 | 275 | 270 | I S 255 | S |
| 3 | S | 270 | F | F | 275 | F | F 290 | 285 | 305 | 295 | 265 | 255 | 260 | 260 | 265 | 270 | 265 | S 275 | J S 285 | R 295 | U S 280 | I S 260 | 260 | J S 255 |
| 4 | 265 | F | F | F | F 270 | F 290 | 320 | S 320 | 295 | 315 | J R 305 | 275 | 275 | 275 | 270 | 275 | I S 280 | S 290 | 285 | I S 280 | U S 285 | I S 280 | S 275 | J S 285 |
| 5 | 270 | J S 275 | J S 290 | S 285 | U S 265 | 265 | 270 | S 300 | S 300 | 255 | 255 | 265 | 275 | 275 | 275 | 275 | 275 | 290 | 290 | U S 285 | S 275 | 270 | F | J S 265 |
| 6 | J S 275 | J S 285 | 290 | J S 315 | 320 | 300 | 310 | 310 | 290 | H 270 | 275 | 255 | 270 | 285 | 280 | 275 | S 265 | 275 | 280 | S 280 | U S 280 | S 265 | I S 265 | S 265 |
| 7 | I S 260 | F | S 290 | F 325 | 285 | 290 | 320 | 315 | 290 | 290 | 280 | 275 | 255 | 270 | 285 | 285 | 265 | S 270 | S 275 | S 265 | S 275 | U F 280 | S 280 | S |
| 8 | S | F | S 325 | F | F | F | F 320 | F 305 | 325 | F 280 | V 245 | 245 | I A 245 | 265 | S 275 | S 280 | 280 | 285 | 280 | S 280 | I S 285 | I S 275 | 260 | S 260 |
| 9 | F | S | F | F | F | F 270 | F 290 | I A 290 | 280 | 270 | I A 260 | 255 | 245 | 265 | 275 | 280 | S 270 | 285 | 280 | S 295 | J S 285 | S 245 | J S 255 | F |
| 10 | I S 280 | F | F | F 305 | F 285 | F 265 | 285 | 290 | 300 | 260 | 260 | 260 | R 270 | 260 | 270 | 280 | 275 | 255 | J R 275 | I S 275 | I S 280 | I S 270 | 260 | I S 250 |
| 11 | I S 260 | I S 290 | J S 285 | I S 340 | 265 | 275 | 280 | 290 | 255 | 270 | A | I A 245 | I A 245 | 230 | 230 | 230 | 270 | 295 | 270 | 250 | 245 | S 240 | 255 | U S 255 |
| 12 | 265 | 250 | 250 | 245 | 270 | 290 | 270 | A | 285 | I A 240 | I C 245 | 260 | 265 | R 275 | 275 | 260 | 265 | 275 | 280 | S 275 | S 270 | S 270 | 250 | I S 260 |
| 13 | F | S | J S 280 | 275 | 245 | 245 | 280 | I A 260 | A | A | 270 | 275 | 275 | I A 275 | 275 | 270 | 275 | S 275 | I S 290 | S 280 | S 285 | F | 240 | I S 250 |
| 14 | I S 260 | J S 270 | F 285 | F | S 285 | S 255 | F 255 | 265 | 230 | F 240 | 270 | 260 | 280 | 270 | 285 | 265 | 275 | 265 | 270 | 260 | 265 | 255 | S 260 | I S 255 |
| 15 | U S 250 | U S 275 | S 285 | S 270 | S 330 | 260 | F | 290 | H 275 | I A 285 | 285 | 270 | A | 270 | 290 | 295 | 285 | 290 | 290 | 280 | 280 | 270 | 255 | S 260 |
| 16 | S 255 | S 275 | 310 | 275 | 270 | I C 270 | 295 | 310 | 315 | 280 | 270 | 270 | 270 | 270 | 270 | 285 | 280 | 280 | 280 | 285 | S 300 | J S 265 | U S 270 | J S 265 |
| 17 | J S 275 | I S 280 | S 290 | F 265 | F 290 | 305 | 310 | 330 | 315 | H 230 | 275 | 275 | 265 | R 250 | 285 | 290 | 285 | S 245 | R 250 | J S 285 | J S 300 | F 255 | S | A |
| 18 | S | S | S | S | F | F | 305 | 295 | 285 | A | 275 | R 270 | 275 | I A 280 | J R 265 | 280 | 300 | 280 | 285 | 290 | U S 295 | J S 270 | S 260 | J S 265 |
| 19 | I S 270 | I S 280 | U S 295 | S 290 | S 270 | 275 | 295 | 320 | 275 | I A 260 | A | 285 | 270 | 270 | 280 | 275 | R 280 | 285 | 305 | U R 300 | 265 | J S 255 | I S 270 | I S 270 |
| 20 | S 275 | I S 295 | U S 280 | U S 300 | F 275 | F 295 | 325 | 305 | 285 | 300 | 285 | 250 | 265 | 270 | 275 | 285 | 285 | 280 | S 280 | S 290 | S 295 | I S 270 | J S 260 | S 255 |
| 21 | 265 | 280 | S 285 | 280 | F 275 | F 280 | 290 | 295 | 290 | 275 | 260 | 265 | 270 | 260 | 265 | 260 | 275 | S 295 | 300 | 290 | 265 | I S 260 | I S 265 | I S 275 |
| 22 | I S 280 | J S 275 | S 300 | 285 | 275 | 280 | U S 285 | S 330 | 310 | 285 | 285 | 275 | C | C | C | C | C | U C 275 | I C 280 | C 290 | S 300 | S 250 | I S 240 | C |
| 23 | C | C | F 270 | F 285 | F 275 | F 275 | F 255 | 265 | 235 | 255 | 275 | 260 | 275 | 285 | 275 | 280 | 275 | 285 | 275 | S 265 | I S 275 | J S 280 | S 270 | 270 |
| 24 | F | S | I S 285 | F | F | F | F | I A 305 | 300 | 275 | 255 | A | A | 265 | I A 270 | I A 280 | 290 | S 280 | 290 | J R 285 | S 285 | S 280 | F | F |
| 25 | S | S | J S 305 | S 300 | F 295 | 290 | 310 | 325 | 340 | R 280 | 265 | 260 | U R 275 | 255 | R 265 | 270 | 280 | S 280 | 275 | U S 275 | 270 | J S 275 | 265 | J S 270 |
| 26 | J S 275 | I S 290 | S 325 | S 310 | 285 | F 280 | S 325 | S 345 | 330 | 285 | 305 | 265 | F 260 | 240 | 235 | 270 | I C 280 | 275 | R 275 | J S 295 | I S 300 | S 265 | I S 270 | J R 270 |
| 27 | F | S | U S 285 | F | 295 | F 285 | 305 | 285 | 315 | 270 | 250 | A | 255 | 270 | 270 | 275 | 275 | 260 | S 270 | 295 | S 305 | S 265 | I S 270 | S |
| 28 | S | S | S 275 | I S 270 | U S 275 | F 285 | 310 | 320 | V 280 | I A 260 | 270 | 260 | 275 | 275 | 260 | 270 | 265 | 280 | 285 | 300 | U S 270 | 255 | 240 | F |
| 29 | F | S | F 265 | F 290 | F 300 | Z 290 | 325 | 295 | 305 | 270 | 280 | 265 | 270 | 245 | 260 | 270 | 265 | 280 | 275 | 280 | I S 285 | J S 255 | S 270 | F |
| 30 | S | I S 270 | 290 | I S 280 | I S 270 | J S 285 | S 310 | 290 | 285 | 255 | 275 | 275 | 245 | 270 | 245 | 260 | 280 | 300 | 295 | S 275 | S 260 | 255 | 255 | S 265 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | 17 | 17 | 25 | 22 | 26 | 26 | 28 | 29 | 29 | 28 | 28 | 28 | 27 | 29 | 29 | 29 | 29 | 30 | 30 | 30 | 30 | 29 | 26 | 20 |
| MED | S 265 | S 275 | S 285 | 285 | 275 | 280 | 300 | 300 | 290 | 270 | 270 | 265 | 270 | 270 | 270 | 275 | 275 | 280 | 280 | S 282 | S 280 | S 265 | S 260 | S 265 |
| UQ | S 275 | U S 280 | S 295 | S 300 | 285 | 290 | 317 | 315 | 310 | 282 | 278 | 272 | 275 | 275 | 275 | 280 | 280 | 285 | 285 | 290 | S 285 | S 270 | S 270 | J S 270 |
| LQ | U S 260 | S 270 | S 280 | 275 | 270 | 270 | 285 | 290 | 285 | 260 | 260 | 258 | 258 | 260 | 265 | 270 | 270 | 275 | 275 | S 275 | S 270 | S 255 | 255 | S 255 |

# IONOSPHERIC DATA

JUN. 1968

M(3000) F1(0.01)

135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | L | L | A | 350 | 350 | A | H 355 | 370 | L | A | A | A | | | | | |
| 2 | | | | | | | | A | A | 345 | A | A | I A 350 | 365 | H 355 | 345 | A | H 330 | L | | | | | |
| 3 | | | | | | | L | L | L | A | L | H 345 | A | L | H 305 | H 330 | 340 | L 320 | L | | | | | |
| 4 | | | | | | | | L | L | A | 360 | 360 | H 330 | A | H 330 | A | A | L | L | | | | | |
| 5 | | | | | | | | A | A | L | A | 370 | 325 | A | A | A | A | A | A | | | | | |
| 6 | | | | | | | | L | L 405 | L | H 350 | L | 355 | 345 | L 330 | 355 | L 315 | A | A | | | | | |
| 7 | | | | | | | L | A | A | L | L | L | 355 | 340 | A | 355 | L | L | A | A | | | | |
| 8 | | | | | | | | | A | L | L | A | A | A | A | 355 | H 330 | 335 | L | A | | | | |
| 9 | | | | | | | | A | A | A | A | A | L | A | 305 | H 345 | L | L | L | | | | | |
| 10 | | | | | | | | L | L 350 | 340 | A | A | H 330 | L | A | H 370 | 340 | L 330 | L | L | | | | |
| 11 | | | | | | | A | L | L | A | A | A | A | I R 365 | R 360 | R 345 | 350 | 355 | L | L | | | | |
| 12 | | | | | | | L | A | A | A | C | 365 | A | A | A | A | L | L | A | A | | | | |
| 13 | | | | | | | 320 | A | A | A | A | A | A | A | 335 | A | A | 315 | L | | | | | |
| 14 | | | | | | | L | A | A | R 350 | I A 365 | R 355 | H 370 | H 370 | H 365 | H 365 | H 340 | L 315 | L | L | | | | |
| 15 | | | | | | | | L | 375 | A | A | 385 | A | R 360 | A | 360 | 345 | 310 | L | | | | | |
| 16 | | | | | | | L | 360 | 390 | L | A | A | A | A | A | 360 | L 350 | A | A | | | | | |
| 17 | | | | | | | L | U L 370 | 360 | L 390 | A | 385 | L 320 | 355 | 345 | 375 | 350 | L 315 | A | | | | | |
| 18 | | | | | | | | A | A | A | A | L | A | A | A | 350 | A | A | A | | | | | |
| 19 | | | | | | | L | L 365 | 350 | A | A | 360 | A | A | A | A | A | A | L 335 | | | | | |
| 20 | | | | | | | | L | L 335 | 335 | A | L | A | A | A | A | A | L | L | | | | | |
| 21 | | | | | | | L | L | A | 400 | H 340 | I A 350 | 370 | 400 | 370 | A | A | A | A | | | | | |
| 22 | | | | | | | | L | L | 395 | L | A | C | C | C | C | L | I C 340 | L 325 | | | | | |
| 23 | | | | | | | L | A | L | H 330 | 360 | L | H 385 | A | A | A | L | 340 | A | | | | | |
| 24 | | | | | | | L | A | A | A | A | A | A | A | A | A | 345 | L 330 | A | | | | | |
| 25 | | | | | | | L | L | A | R 350 | R 325 | A | 365 | 370 | 385 | 365 | 340 | 355 | U L 340 | | | | | |
| 26 | | | | | | | L | L | A | A | A | A | H 360 | 365 | 340 | 355 | I C 340 | I A 330 | L 355 | L | | | | |
| 27 | | | | | | | | L | L 365 | 360 | A | A | A | A | R 340 | 345 | H 325 | 350 | A | A | | | | |
| 28 | | | | | | | | L 360 | L | A | A | A | A | A | A | A | A | A | A | | | | | |
| 29 | | | | | | | | L | L | L | A | A | A | H 360 | H 345 | A | A | A | A | | | | | |
| 30 | | | | | | | | L | L | 345 | 340 | 345 | H 345 | A | A | A | 345 | A | A | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | | 1 | 4 | 8 | 11 | 8 | 11 | 13 | 12 | 15 | 16 | 14 | 15 | 4 | | | | | |
| MED | | | | | | | 320 | L 362 | 362 | 350 | 350 | 360 | 355 | 362 | 345 | 355 | 340 | 330 | L 338 | | | | | |
| UQ | | | | | | | | L 368 | 382 | 375 | 360 | 368 | 365 | 368 | 362 | 362 | 345 | 340 | L 348 | | | | | |
| LQ | | | | | | | | 360 | 350 | 342 | 340 | 350 | 330 | 355 | 332 | 345 | 340 | L 318 | L 330 | | | | | |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | h'F2 (km) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N. Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | 280 | 290 | 375 | 370 | 375 | 345 | 335 | 355 | 360 | 350 | 305 | 300 | | | | | |
| 2 | | | | | | | | A | A | 395 | 355 | 360 | EA 390 | 390 | 375 | 375 | 345 | 305 | 280 | | | | | |
| 3 | | | | | | | 275 | 300 | 245 | 315 | 350 | 400 | 395 | 390 | 365 | 340 | 340 | 335 | 290 | | | | | |
| 4 | | | | | | | | 250 | 250 | 285 | 305 | 365 | 355 | 350 | 345 | 340 | EA 400 | 315 | 275 | | | | | |
| 5 | | | | | | | | 260 | 260 | 280 | 355 | 350 | 350 | 350 | 350 | 345 | 340 | EA 380 | 280 | | | | | |
| 6 | | | | | | | | 255 | 235 | 330 | 340 | 365 | 350 | 345 | 335 | 345 | 350 | 325 | 300 | | | | | |
| 7 | | | | | | | 245 | 255 | 260 | 330 | 310 | 350 | 365 | 355 | 340 | 325 | 350 | 325 | 305 | 295 | | | | |
| 8 | | | | | | | | | 275 | 300 | 380 | 395 | A | 355 | 355 | 320 | 330 | 305 | 300 | 270 | | | | |
| 9 | | | | | | | | A | 325 | 345 | A | 370 | 360 | 375 | 345 | 330 | 340 | 300 | 300 | | | | | |
| 10 | | | | | | | | 300 | 290 | 355 | 350 | 355 | 350 | 375 | 355 | 330 | 345 | 360 | 320 | 290 | | | | |
| 11 | | | | | | | EA 340 | 280 | 400 | 330 | A | A | A | 505 | 520 | 465 | 355 | 285 | 270 | 350 | | | | |
| 12 | | | | | | | 330 | A | 400 | A | C | 450 | 415 | 385 | 350 | EA 400 | 355 | 330 | 300 | 280 | | | | |
| 13 | | | | | | | 335 | A | A | A | 390 | 370 | 355 | IA 350 | 345 | 325 | 325 | 325 | 280 | | | | | |
| 14 | | | | | | | 360 | 400 | 545 | 495 | 430 | 450 | 400 | 410 | 395 | 455 | 400 | 400 | 350 | 340 | | | | |
| 15 | | | | | | | | 295 | 280 | A | 355 | 410 | IA 480 | 410 | 365 | 360 | 360 | 370 | 325 | | | | | |
| 16 | | | | | | | 275 | 260 | 255 | L 350 | 405 | 360 | 350 | 360 | 350 | 320 | 320 | EA 350 | 295 | | | | | |
| 17 | | | | | | | 280 | 270 | 325 | 300 | 390 | 345 | 390 | 405 | 330 | 305 | 330 | 420 | 390 | | | | | |
| 18 | | | | | | | | EA 380 | 360 | IA 315 | 345 | 350 | 345 | IA 350 | 320 | 310 | 295 | 330 | EA 350 | | | | | |
| 19 | | | | | | | 300 | 270 | 330 | IA 435 | IA 360 | 325 | 370 | 365 | 350 | 360 | 330 | 300 | 275 | | | | | |
| 20 | | | | | | | | 255 | 345 | 320 | 300 | 395 | EA 445 | 400 | 345 | 300 | 300 | 295 | 290 | | | | | |
| 21 | | | | | | | 290 | 300 | 285 | 320 | 400 | 360 | 350 | 345 | 370 | 370 | 340 | 300 | 280 | | | | | |
| 22 | | | | | | | | 260 | 260 | 300 | L 400 | 375 | C | C | C | C 400 | 355 | 325 | 300 | | | | | |
| 23 | | | | | | | 300 | 295 | 500 | 405 | 325 | 400 | 360 | 330 | 355 | EA 400 | 350 | 330 | 320 | | | | | |
| 24 | | | | | | | 300 | IA 280 | 300 | 305 | 400 | A | A | 390 | A | A | 310 | 340 | 300 | | | | | |
| 25 | | | | | | | 270 | 255 | 255 | 340 | 450 | 405 | 340 | 405 | 375 | 380 | 340 | 325 | 315 | | | | | |
| 26 | | | | | | | 255 | 240 | 255 | 325 | 320 | EA 400 | 405 | 470 | 455 | 360 | IC 340 | 340 | 305 | 265 | | | | |
| 27 | | | | | | | | 250 | 275 | 315 | EA 360 | IA 415 | 385 | 350 | 345 | 340 | 350 | 325 | 355 | EA 340 | | | | |
| 28 | | | | | | | | 260 | 255 | IA 360 | 385 | 380 | 350 | 330 | 395 | 345 | 350 | 350 | 300 | | | | | |
| 29 | | | | | | | | 300 | 300 | 340 | 355 | 375 | 355 | 405 | 390 | 345 | 350 | 325 | 305 | | | | | |
| 30 | | | | | | | | 295 | 285 | 400 | 330 | 345 | 445 | 340 | 410 | 360 | 330 | 295 | 265 | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| CNT | | | | | | | 14 | 25 | 28 | 27 | 27 | 28 | 26 | 29 | 28 | 29 | 30 | 30 | 30 | 8 | | | | |
| MED | | | | | | | 290 | 270 | 285 | 330 | 355 | 371 | 358 | 365 | 355 | 345 | 341 | 325 | 300 | 288 | | | | |
| UQ | | | | | | | U 315 | 295 | 328 | 358 | 390 | 400 | 392 | 400 | 375 | 365 | 350 | 338 | 310 | 340 | | | | |
| LQ | | | | | | | 275 | 255 | 258 | 315 | 342 | 358 | 350 | 350 | 345 | 330 | 330 | 305 | 280 | 275 | | | | |

The Radio Research Laboratories, Japan

# IONOSPHERIC DATA

JUN. 1968 | $h'F$ (km) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31°12.1'N, Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 295 | 295 | 250 | 235 | 300 | 305 | 245 | 235 | A | A | 215 | A | A | H 210 | 255 | H 205 | A | A | A | 280 | E A 305 | A | A | E A 350 |
| 2 | 305 | 300 | 300 | 300 | 295 | 270 | 230 | A | A | A | A | A | I A 200 | 200 | H 215 | E A 240 | A | H 240 | 255 | 295 | 255 | 300 | 330 | E A 350 |
| 3 | 295 | 300 | 300 | 290 | 250 | 295 | 250 | 235 | I A 230 | I A 215 | A | H 200 | A | E A 245 | H 250 | H 220 | 220 | H 200 | I A 260 | 270 | 250 | 300 | 340 | 350 |
| 4 | 350 | 300 | 250 | 265 | 290 | 270 | 225 | H 205 | 225 | A | 205 | 220 | H 200 | I A 210 | H 200 | A | A | A | 255 | 260 | 250 | 270 | 295 | 285 |
| 5 | 340 | 295 | 270 | 250 | 290 | 300 | 235 | A | A | E A 240 | A | 230 | A | A | A | A | A | A | A | 300 | 310 | 305 | 325 | 310 |
| 6 | 290 | 270 | 265 | 245 | 230 | 240 | 225 | E A 250 | 210 | H 200 | H 255 | E A 250 | E A 250 | E A 250 | E A 250 | 225 | A | A | I A 270 | 260 | 250 | 290 | 330 | 305 |
| 7 | 300 | 330 | 255 | 245 | 250 | 280 | 235 | A | A | E A 250 | 205 | H 200 | 215 | 250 | I A 245 | 230 | I A 250 | H 225 | I A 255 | I A 265 | 255 | 275 | E A 310 | 350 |
| 8 | 350 | E A 300 | 250 | E A 390 | 350 | 300 | 255 | 250 | A | 240 | A | A | A | A | A | 230 | H 240 | E A 250 | A | A | 280 | 250 | 300 | 310 |
| 9 | 350 | 340 | 295 | 305 | 255 | 240 | 260 | A | A | A | A | A | A | A | A | E A 250 | E A 250 | A | A | 270 | E A 330 | 350 | 350 | 345 |
| 10 | 275 | 260 | 245 | 225 | 250 | 280 | 250 | 240 | 230 | 215 | A | A | H 250 | H 200 | I A 205 | H 205 | 220 | 230 | 255 | 270 | 260 | 285 | H 300 | 310 |
| 11 | 345 | 270 | 225 | 240 | E A 295 | 280 | A | 260 | 270 | A | A | A | A | 245 | H 225 | E A 275 | E A 255 | 250 | E A 250 | 305 | 350 | 350 | 285 | 300 |
| 12 | H 280 | 340 | 365 | 390 | E A 350 | 270 | E A 295 | A | I A 250 | I A 250 | I C 240 | 225 | A | A | A | A | H 210 | H 205 | A | A | A | 355 | 355 | 280 |
| 13 | 350 | 350 | 330 | 300 | E A 400 | E A 400 | 260 | A | A | A | A | A | A | 250 | A | A | A | 240 | H 250 | 265 | 250 | 340 | 380 | 350 |
| 14 | E A 380 | 300 | 290 | 275 | 250 | 290 | A | A | A | E A 270 | A | 230 | H 205 | H 200 | H 200 | H 225 | H 205 | 245 | 280 | 300 | 300 | E A 395 | 330 | 255 |
| 15 | 305 | 295 | 275 | 240 | 225 | 250 | H 225 | E A 250 | 240 | A | A | 230 | I A 230 | E A 290 | A | 250 | 220 | E A 260 | 240 | 275 | 300 | 290 | 305 | 305 |
| 16 | 325 | 285 | 250 | 290 | 295 | I C 290 | 250 | 225 | 200 | A | A | A | A | A | A | E A 250 | 225 | A | A | 285 | 250 | 300 | 300 | 300 |
| 17 | 335 | 270 | 275 | 315 | 260 | 225 | 240 | 225 | 225 | 190 | A | 215 | A | E A 250 | E A 250 | 220 | 230 | 225 | A | 280 | 240 | 255 | E A 420 | A |
| 18 | A | 275 | 330 | 240 | 235 | 265 | 220 | A | A | A | A | A | A | A | I A 225 | 240 | A | A | A | 290 | 260 | 265 | 295 | 305 |
| 19 | 290 | 280 | 250 | 235 | 295 | 300 | 250 | 220 | 220 | A | A | E A 260 | A | A | A | A | A | A | E A 255 | 265 | 300 | 310 | 315 | 295 |
| 20 | 305 | 255 | 240 | 250 | 295 | 260 | 240 | 225 | 250 | 245 | A | H 215 | A | A | A | A | A | E A 250 | A | 270 | 250 | 275 | 300 | 325 |
| 21 | 300 | 270 | 245 | 215 | 275 | 260 | 255 | 235 | A | 200 | E A 255 | A | E A 240 | 205 | 220 | A | A | A | A | 250 | 300 | 320 | 300 | 290 |
| 22 | 280 | 280 | 255 | 220 | 245 | 290 | 240 | 230 | E A 245 | 200 | I A 210 | A | C | C | C | C | 210 | 225 | 250 | 280 | 245 | 270 | 315 | 400 |
| 23 | 300 | 265 | 230 | 270 | 255 | 290 | 255 | I A 260 | H 245 | H 210 | 200 | H 205 | H 195 | A | A | A | H 250 | 215 | I A 260 | 255 | 265 | 300 | E A 340 | 310 |
| 24 | 350 | 300 | 330 | 290 | 275 | 320 | 250 | A | A | A | A | A | A | A | A | A | 225 | 250 | E A 275 | 275 | 300 | 300 | 305 | 290 |
| 25 | E A 370 | 305 | 240 | 235 | 275 | 275 | 250 | 230 | A | 230 | H 230 | I A 210 | 250 | 200 | 205 | E A 250 | 250 | 230 | 250 | 280 | 255 | 255 | 295 | 305 |
| 26 | 295 | 290 | 245 | 200 | 255 | 295 | 245 | 240 | A | A | A | A | E A 250 | E A 225 | 210 | 230 | I C 240 | I A 240 | 235 | 255 | 250 | 260 | 300 | 315 |
| 27 | 355 | 330 | 250 | 290 | 250 | 255 | 250 | 230 | 240 | 225 | A | A | A | A | 245 | 250 | H 200 | I A 230 | I A 215 | A | I A 270 | 300 | 280 | E A 350 |
| 28 | 265 | 250 | 265 | 305 | 265 | 275 | 235 | 215 | 220 | A | A | A | A | A | A | A | A | A | I A 250 | 260 | 265 | 310 | 350 | 325 |
| 29 | 270 | 300 | 300 | 270 | 260 | 255 | 240 | H 225 | H 210 | A | A | A | A | H 210 | H 200 | A | A | A | A | E A 350 | A | 290 | 320 | 350 |
| 30 | 275 | 275 | 270 | 260 | 300 | 270 | 240 | H 210 | H 210 | 260 | I A 280 | A | H 220 | A | A | A | A | A | A | 275 | 275 | 300 | 300 | 300 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | 29 | 30 | 30 | 30 | 30 | 30 | 28 | 21 | 17 | 16 | 10 | 13 | 12 | 15 | 17 | 17 | 17 | 18 | 18 | 27 | 28 | 29 | 29 | 29 |
| MED | 302 | 294 | 260 | 258 | 264 | 276 | 244 | 230 | 228 | 220 | 217 | 218 | U 214 | 205 | 220 | 225 | 222 | 232 | 252 | 272 | 260 | 300 | 305 | 308 |
| UQ | 345 | 300 | 295 | 290 | 292 | 292 | 250 | 238 | 245 | 242 | 255 | 228 | A 250 | E A 248 | 250 | E A 250 | 245 | 245 | A 258 | 281 | 295 | 308 | 330 | 350 |
| LQ | 290 | 270 | 250 | 240 | 250 | 260 | 235 | 225 | 220 | 205 | 205 | H 210 | H 202 | 202 | 205 | 225 | 220 | 225 | 245 | 265 | 250 | 275 | 300 | 300 |

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# IONOSPHERIC DATA

JUN. 1968 | $h'Es$ (km) | 135° E Mean Time (G. M. T. + 9 h)

Station YAMAGAWA Lat. 31° 12.1' N, Long. 130° 37.1' E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 100 | 100 | 95 | 95 | 100 | 100 | 100 | 125 | 115 | 110 | 110 | 105 | 105 | 110 | 125 | 140 | 125 | 115 | 115 | 110 | 105 | 105 | 105 | 105 |
| 2 | 100 | 100 | 100 | 100 | 100 | B | 125 | 115 | 110 | 115 | 110 | 115 | 110 | 125 | G | 105 | 100 | 105 | 100 | 100 | 115 | 115 | 110 | 105 |
| 3 | 105 | 100 | 100 | 100 | 100 | 100 | 150 | 125 | 125 | 115 | 115 | 130 | 120 | 115 | 120 | 100 | 100 | 100 | 105 | 125 | 115 | 115 | 105 | 105 |
| 4 | 105 | 105 | 100 | 95 | 95 | B | 105 | 145 | 125 | 110 | 120 | 120 | 120 | 115 | 120 | 130 | 115 | 110 | 110 | 105 | 110 | 105 | 100 | 105 |
| 5 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 120 | 115 | 110 | 110 | 120 | 110 | 110 | 105 | 110 | 110 | 105 | 105 | 110 | 110 | 105 | 105 | 100 |
| 6 | 100 | 100 | 100 | 100 | 100 | 105 | G | 125 | 140 | 105 | 130 | 145 | 150 | 140 | 140 | 130 | 120 | 120 | 115 | 105 | 105 | 105 | 105 | 105 |
| 7 | 105 | 100 | 100 | 105 | 105 | B | 125 | 120 | 110 | 115 | G | 135 | 130 | 130 | 125 | 125 | 120 | 125 | 115 | 110 | 105 | 105 | 100 | 100 |
| 8 | 100 | 100 | 100 | 100 | 95 | 125 | 110 | 115 | 110 | 110 | 110 | 130 | 115 | 120 | 115 | G | 130 | 115 | 115 | 110 | 105 | 100 | 100 | 95 |
| 9 | 100 | 100 | 100 | 100 | E | B | 125 | 115 | 110 | 115 | 110 | 110 | 110 | 105 | 105 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 115 | 110 |
| 10 | 105 | 105 | 100 | 100 | 95 | 95 | 100 | 130 | 130 | 120 | 110 | 100 | 100 | 115 | 125 | 150 | G | 100 | 110 | 105 | 110 | 105 | 105 | 100 |
| 11 | 100 | 100 | 100 | 100 | 100 | 100 | 120 | 115 | 110 | 110 | 110 | 105 | 105 | G | 130 | 120 | 115 | 110 | 110 | 110 | 100 | 100 | 100 | 100 |
| 12 | 100 | 105 | 105 | 105 | 105 | 105 | 115 | 110 | 120 | 105 | C | 135 | 120 | 110 | 110 | 115 | G | G | 125 | 110 | 105 | 105 | 105 | 105 |
| 13 | 105 | 100 | 100 | 100 | 100 | 120 | 115 | 110 | 105 | 110 | 110 | 105 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | G | 100 | 110 | 105 | 105 |
| 14 | 105 | 105 | 105 | 105 | 105 | 140 | 125 | 125 | 130 | 130 | 125 | 125 | G | 110 | 150 | 105 | 120 | G | 145 | 130 | 120 | 110 | 110 | 105 |
| 15 | 100 | 100 | 95 | 95 | 95 | 100 | 125 | 125 | 125 | 115 | 110 | 115 | 105 | 105 | 105 | 105 | 100 | 100 | 100 | 115 | 110 | 100 | 95 | 100 |
| 16 | 100 | 100 | 100 | 95 | 95 | C | 125 | 125 | 120 | 120 | 110 | 110 | 110 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 95 | 95 |
| 17 | 100 | 100 | 95 | 95 | 100 | B | 150 | 105 | 105 | 115 | 105 | 105 | 125 | 125 | 115 | 100 | 100 | 140 | 115 | 110 | 105 | 105 | 105 | 105 |
| 18 | 105 | 105 | 100 | 100 | 100 | 100 | 130 | 115 | 115 | 110 | 105 | 110 | 110 | 105 | 105 | 105 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 19 | 100 | B | B | 100 | 100 | 100 | 100 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 100 | 105 | 105 | 100 | 100 | 100 | 105 | 125 | 105 |
| 20 | 105 | 100 | 100 | 100 | 95 | 100 | 130 | 120 | 120 | 120 | 120 | G | 110 | 110 | 105 | 105 | 100 | 110 | 100 | 100 | 100 | 100 | 100 | 100 |
| 21 | 100 | 100 | 100 | 100 | 100 | 100 | 150 | 125 | 115 | 115 | 105 | 100 | 125 | 140 | 130 | 120 | 115 | 125 | 115 | 105 | 105 | 100 | 100 | 95 |
| 22 | 95 | 105 | 105 | 105 | 100 | 105 | 145 | 135 | 125 | 150 | 120 | 110 | C | C | C | 110 | 105 | 100 | 100 | 100 | 100 | 115 | 100 | 105 |
| 23 | 105 | 100 | 100 | 100 | 100 | 105 | 115 | 110 | 110 | 100 | 115 | 115 | G | 145 | 125 | 120 | 115 | 125 | 120 | 115 | 110 | 105 | 100 | 100 |
| 24 | 110 | 100 | 100 | 100 | 100 | 100 | 100 | 115 | 110 | 110 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 105 | 110 | 100 | 100 | 100 | 110 | 105 |
| 25 | 105 | 105 | 100 | 95 | 95 | 95 | 95 | 105 | 105 | 105 | 105 | 100 | 105 | 120 | 110 | 105 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 26 | 100 | 100 | 100 | 100 | 100 | 95 | 130 | 120 | 115 | 115 | 110 | 105 | 105 | 105 | 105 | 105 | C | 105 | 125 | 110 | 110 | 100 | 105 | 100 |
| 27 | 100 | 105 | 100 | 95 | 95 | 100 | 100 | 105 | 135 | 105 | 120 | 110 | 105 | 105 | 105 | 160 | 150 | 125 | 115 | 115 | 110 | 105 | 105 | 105 |
| 28 | 100 | 100 | 100 | 95 | 95 | 95 | 140 | G | 120 | 125 | 105 | 105 | 100 | 105 | 105 | 105 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 95 |
| 29 | 95 | 105 | 105 | 110 | 110 | 110 | 115 | 155 | 150 | 110 | 110 | 110 | 105 | 110 | 105 | 145 | 140 | 125 | 120 | 115 | 110 | 110 | 115 | 110 |
| 30 | 105 | 105 | 100 | B | 100 | 100 | 125 | 105 | 105 | 105 | 105 | 105 | 135 | 125 | 120 | 115 | 115 | 120 | 115 | 110 | 110 | 105 | 105 | 105 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | 30 | 29 | 29 | 29 | 29 | 24 | 29 | 29 | 30 | 30 | 28 | 29 | 27 | 28 | 28 | 29 | 27 | 28 | 30 | 29 | 30 | 30 | 30 | 30 |
| MED | 100 | 100 | 100 | 100 | 100 | 100 | 125 | 120 | 115 | 110 | 110 | 110 | 110 | 110 | 110 | 105 | 105 | 105 | 110 | 110 | 105 | 105 | 105 | 105 |
| UQ | 105 | 105 | 100 | 100 | 100 | 105 | 130 | 125 | 125 | 115 | 115 | 120 | 120 | 122 | 125 | 120 | 118 | 120 | 115 | 110 | 110 | 105 | 105 | 105 |
| LQ | 100 | 100 | 100 | 95 | 95 | 100 | 105 | 110 | 110 | 110 | 105 | 105 | 105 | 105 | 105 | 105 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

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# IONOSPHERIC DATA

JUN. 1968 | Types of Es | 135° E Mean Time (G. M. T. + 9 h)

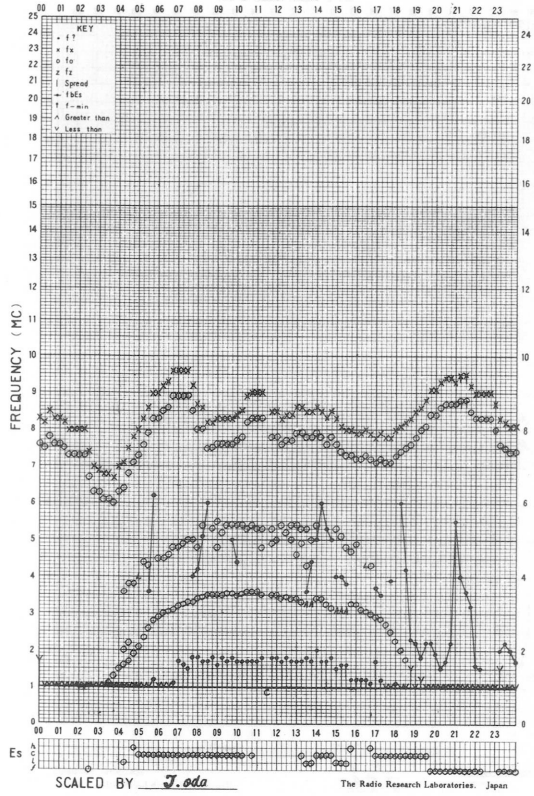
Station YAMAGAWA Lat. 31°12.1'N. Long. 130°37.1'E Sweep 1.0 Mc to 20.0 Mc in 20 sec in automatic operation

| Hour / Day | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | F 2 | F 4 | F 3 | FF 11 | F 1 | F 3 | LH 31 | HL 32 | C 3 | C 3 | C 2 | L 1 | L 2 | C 1 | HC 21 | H 2 | HL 22 | C 4 | C 3 | CL 51 | FF 54 | F 3 | FF 31 | F 4 |
| 2 | F 6 | F 5 | F 3 | F 2 | F 1 | | H 4 | C 5 | C 4 | C 2 | C 2 | C 1 | C 2 | C 1 | | L 1 | L 2 | L 3 | LH 21 | LC 52 | FF 23 | FF 33 | FF 31 | F 3 |
| 3 | F 3 | F 5 | F 3 | F 6 | F 2 | F 1 | H 2 | H 2 | H 3 | C 2 | C 2 | H 1 | C 1 | C 2 | C 1 | L 1 | L 2 | L 1 | LL 21 | HL 25 | FF 13 | FF 23 | F 3 | FF 67 |
| 4 | FF 25 | FF 34 | F 2 | F 1 | F 1 | | L 1 | HL 12 | HL 22 | CL 31 | C 1 | C 1 | C 1 | CL 11 | CL 11 | HC 21 | C 3 | CH 31 | C 2 | L 4 | F 1 | F 2 | F 4 | F 3 |
| 5 | F 4 | F 3 | F 2 | F 3 | F 4 | F 4 | L 3 | C 4 | C 2 | C 1 | C 2 | C 1 | C 2 | C 2 | L 2 | L 2 | C 2 | C 5 | L 2 | L 5 | F 4 | F 3 | F 5 | F 3 |
| 6 | F 2 | F 2 | F 1 | F 3 | F 3 | F 1 | | HL 14 | HL 21 | L 2 | H 1 | H 1 | H 1 | H 1 | H 1 | H 1 | C 2 | C 2 | C 4 | L 3 | F 5 | FF 41 | F 5 | F 3 |
| 7 | F 2 | F 6 | F 5 | F 7 | F 5 | | H 3 | C 3 | C 2 | C 2 | | H 1 | H 1 | H 1 | H 3 | H 1 | C 2 | H 3 | C 4 | C 4 | F 5 | F 4 | F 4 | F 4 |
| 8 | F 5 | F 6 | F 7 | F 3 | F 3 | FF 23 | C 6 | C 4 | C 3 | C 2 | C 2 | HC 12 | C 3 | C 1 | C 5 | | H 1 | CL 22 | C 2 | C 6 | F 5 | F 6 | F 3 | F 3 |
| 9 | F 4 | F 3 | F 4 | F 1 | | | H 3 | C 3 | C 2 | C 2 | C 2 | C 2 | C 2 | L 3 | L 2 | L 2 | L 2 | L 4 | L 1 | L 3 | F 5 | F 5 | FF 15 | FF 24 |
| 10 | FF 73 | F 3 | F 1 | F 2 | F 2 | F 1 | LH 33 | HL 23 | HL 22 | C 1 | C 3 | L 2 | L 1 | C 1 | H 1 | H 1 | | L 1 | C 4 | C 2 | FF 33 | FF 32 | F 2 | F 5 |
| 11 | F 5 | F 7 | F 6 | F 4 | F 7 | F 3 | C 2 | C 3 | C 2 | C 3 | C 4 | C 3 | C 3 | | H 1 | C 1 | C 3 | C 2 | C 4 | C 3 | F 5 | F 6 | F 2 | F 3 |
| 12 | F 3 | F 7 | F 2 | F 7 | FF 52 | FF 51 | C 4 | C 3 | C 3 | C 3 | | HL 11 | CL 11 | CL 21 | C 2 | C 2 | | | H 3 | C 5 | F 5 | F 3 | F 4 | F 5 |
| 13 | F 4 | F 3 | F 5 | F 2 | F 3 | FF 61 | C 3 | C 2 | C 2 | C 7 | C 2 | C 2 | C 3 | L 5 | L 2 | L 4 | L 2 | L 3 | L 4 | | F 1 | FF 13 | FF 44 | FF 34 |
| 14 | FF 23 | FF 34 | FF 32 | FF 43 | FF 43 | F 4 | HL 31 | H 3 | H 2 | H 2 | H 2 | H 1 | | L 1 | H 1 | L 1 | C 1 | | H 1 | H 4 | F 4 | F 4 | F 5 | F 2 |
| 15 | F 2 | F 2 | F 3 | F 1 | F 1 | F 2 | H 4 | H 3 | H 3 | C 3 | C 2 | C 1 | L 2 | L 1 | L 2 | L 2 | L 1 | L 2 | LH 12 | CL 41 | FF 36 | F 4 | F 6 | F 3 |
| 16 | F 2 | F 1 | F 2 | F 2 | F 1 | | H 2 | HL 21 | H 2 | C 2 | C 3 | C 2 | C 2 | C 2 | L 4 | L 2 | L 2 | L 5 | L 2 | L 3 | F 6 | F 4 | F 6 | F 3 |
| 17 | FF 32 | F 2 | F 4 | F 4 | F 1 | | HL 22 | L 3 | L 2 | CL 12 | L 3 | L 1 | HL 11 | H 1 | CL 11 | L 1 | L 1 | HL 11 | C 2 | C 4 | F 4 | F 2 | F 3 | F 4 |
| 18 | F 4 | F 3 | F 5 | F 5 | F 4 | F 3 | H 2 | C 6 | C 3 | C 3 | C 2 | C 2 | C 2 | C 2 | L 1 | C 2 | L 3 | L 4 | L 2 | L 4 | F 4 | F 3 | F 2 | F 1 |
| 19 | F 1 | | | F 1 | F 1 | F 1 | LH 22 | C 2 | C 2 | C 4 | C 5 | C 1 | C 2 | C 1 | L 2 | L 2 | L 2 | L 3 | L 3 | L 5 | F 7 | F 2 | FF 11 | F 4 |
| 20 | F 5 | F 4 | F 2 | F 3 | F 2 | F 2 | HL 21 | C 3 | C 2 | C 1 | C 3 | | C 2 | C 4 | C 2 | L 2 | L 2 | CL 23 | L 3 | L 4 | F 2 | F 2 | F 2 | F 6 |
| 21 | F 3 | F 1 | F 1 | F 1 | F 2 | F 5 | HL 21 | H 3 | C 2 | C 1 | L 2 | L 3 | HL 11 | HL 11 | HL 11 | CL 21 | C 2 | HL 22 | C 2 | L 4 | F 5 | F 3 | F 3 | F 3 |
| 22 | F 3 | F 2 | F 1 | F 4 | F 2 | F 1 | H 1 | H 2 | H 2 | H 1 | C 1 | C 2 | | | | C 1 | L 1 | L 1 | L 2 | L 3 | F 4 | FF 33 | F 2 | F 4 |
| 23 | F 2 | F 2 | F 5 | F 6 | F 3 | F 5 | C 6 | C 3 | C 3 | L 2 | C 1 | C 1 | | H 1 | H 3 | H 3 | C 2 | H 1 | C 2 | C 2 | F 3 | F 6 | F 4 | F 2 |
| 24 | F 5 | F 5 | F 5 | F 6 | F 5 | F 6 | LH 42 | C 5 | C 3 | C 3 | C 4 | C 5 | C 4 | C 2 | C 4 | C 5 | L 2 | CL 22 | CL 22 | L 4 | F 4 | F 4 | FF 33 | FF 32 |
| 25 | F 5 | F 5 | F 2 | F 3 | F 2 | F 2 | L 1 | C 3 | C 3 | L 2 | L 2 | L 2 | L 1 | C 1 | C 1 | C 2 | L 1 | L 2 | L 3 | L 3 | F 5 | F 3 | F 2 | F 2 |
| 26 | F 2 | F 3 | F 2 | F 3 | F 2 | F 1 | H 1 | CL 22 | C 2 | C 2 | C 3 | C 3 | C 1 | C 1 | L 1 | L 2 | | L 3 | HL 22 | CL 32 | FF 41 | F 3 | FF 21 | F 4 |
| 27 | F 3 | F 2 | F 1 | F 3 | F 1 | F 1 | LH 31 | LH 31 | HL 22 | L 2 | HL 31 | C 3 | L 2 | L 1 | L 2 | HL 11 | HL 11 | H 2 | C 3 | C 6 | F 3 | F 3 | F 2 | F 4 |
| 28 | F 4 | F 5 | F 2 | F 3 | F 3 | F 1 | H 1 | | C 1 | HC 13 | L 2 | C 3 | C 3 | C 3 | C 2 | C 4 | C 3 | L 3 | L 3 | L 3 | F 4 | F 3 | F 4 | F 2 |
| 29 | F 3 | F 3 | FF 23 | FF 28 | FF 36 | FF 52 | C 3 | H 2 | H 1 | C 1 | C 3 | C 2 | C 2 | C 1 | L 1 | HL 31 | HL 12 | HL 42 | CL 31 | CL 42 | FF 44 | FF 22 | FF 35 | FF 42 |
| 30 | F 1 | F 1 | F 4 | | F 3 | F 2 | HL 13 | L 3 | L 2 | L 2 | L 1 | L 3 | H 1 | H 1 | C 3 | C 4 | C 2 | C 2 | C 2 | C 5 | F 1 | F 4 | F 4 | F 2 |
| 31 | | | | | | | | | | | | | | | | | | | | | | | | |

| | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CNT | | | | | | | | | | | | | | | | | | | | | | | | |
| MED | | | | | | | | | | | | | | | | | | | | | | | | |
| UQ | | | | | | | | | | | | | | | | | | | | | | | | |
| LQ | | | | | | | | | | | | | | | | | | | | | | | | |

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JUN. 1.1968

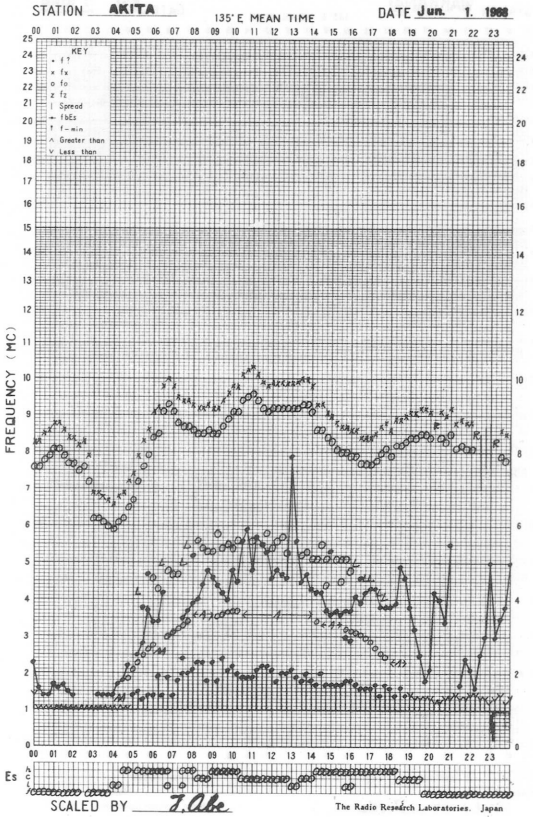



SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jun. 1. 1968

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The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

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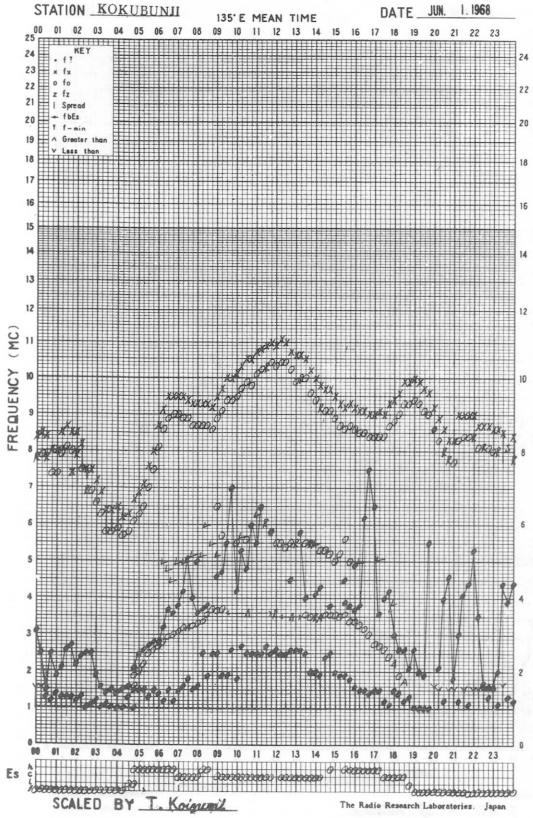


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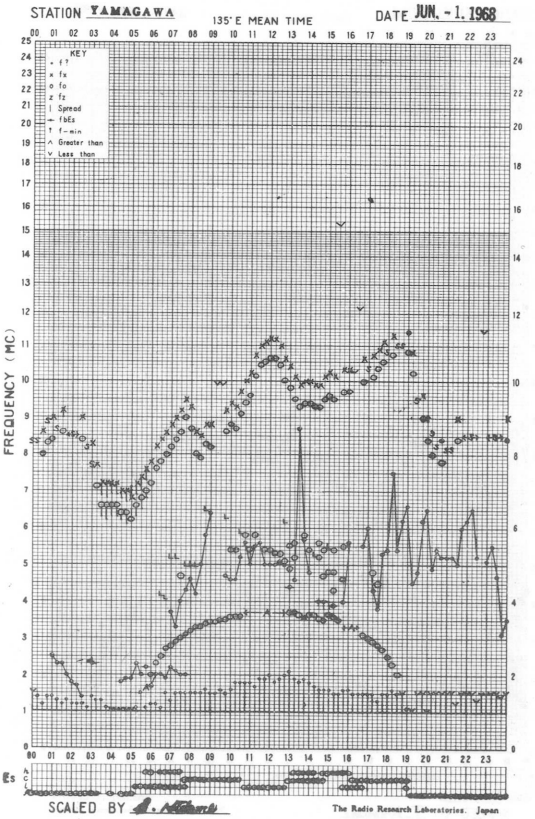


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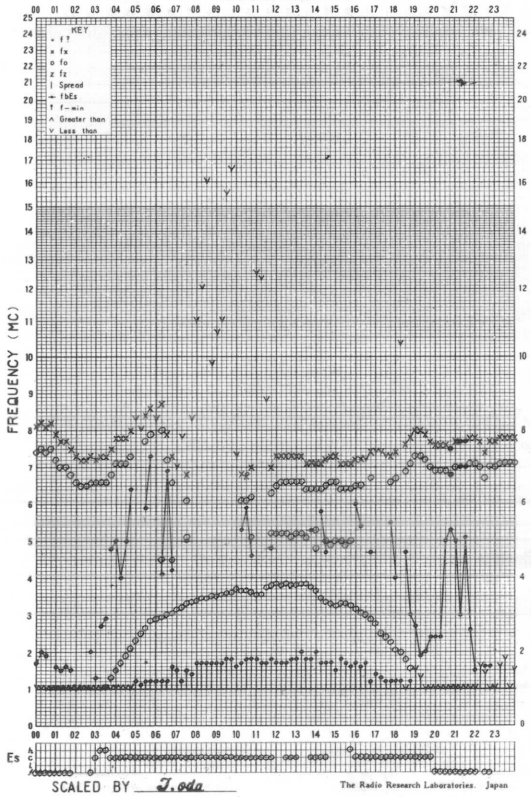


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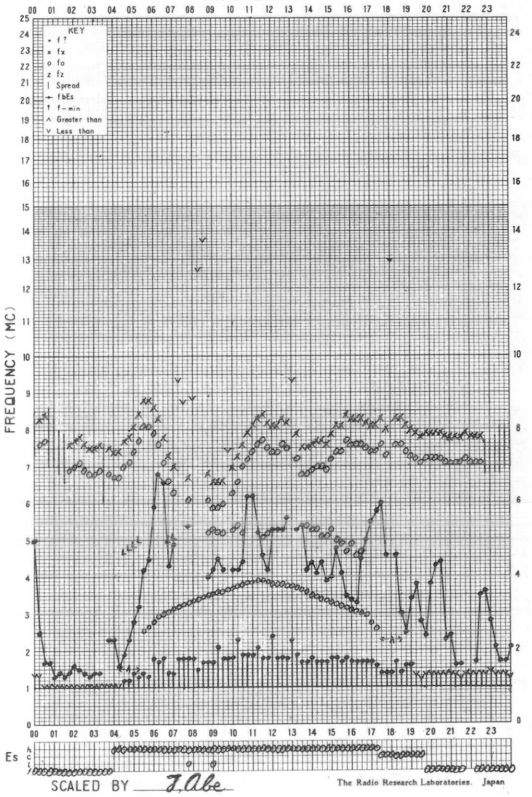


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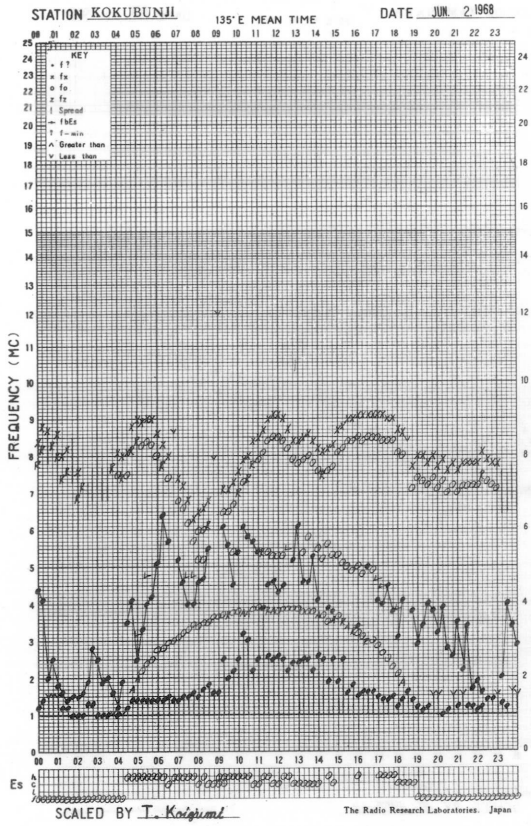


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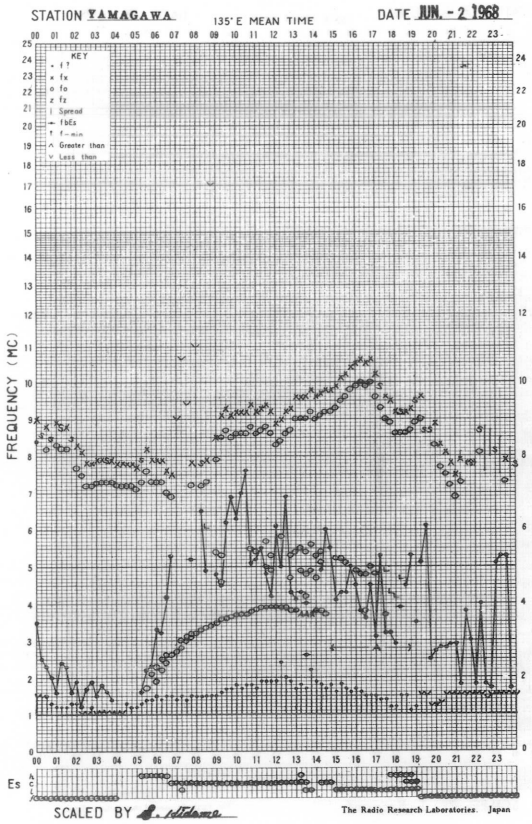

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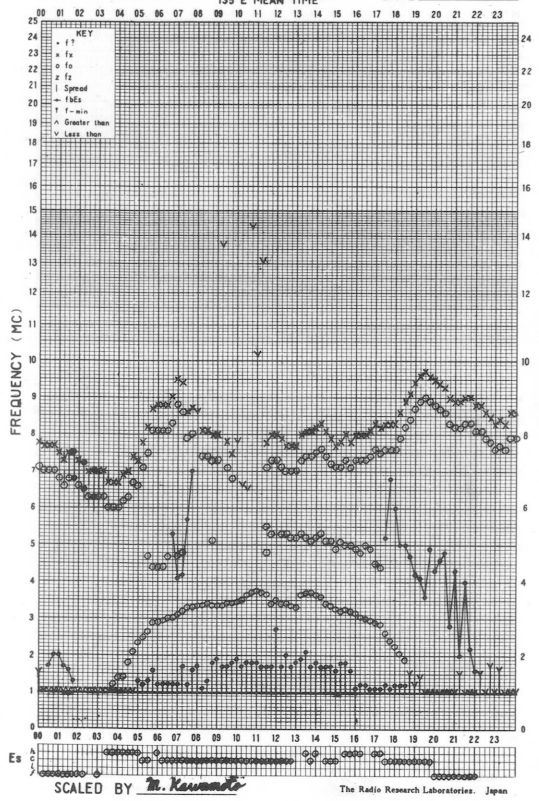


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The Radio Research Laboratories. Japan

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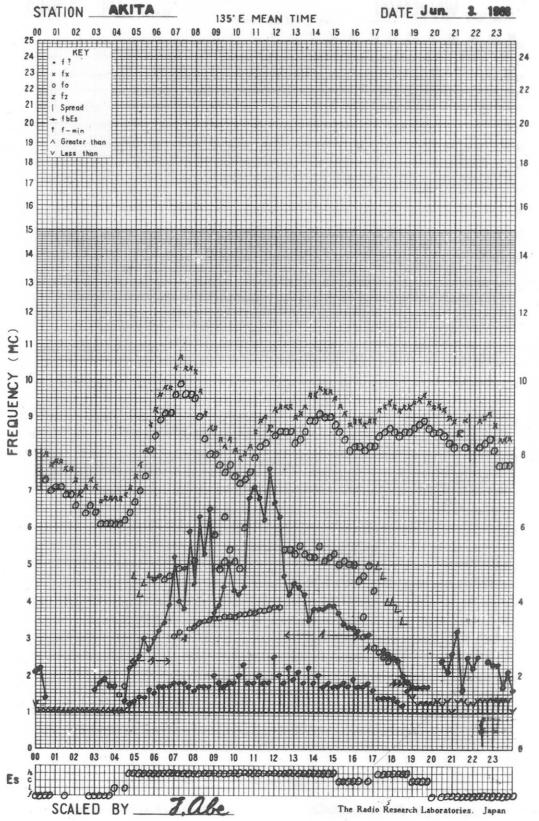


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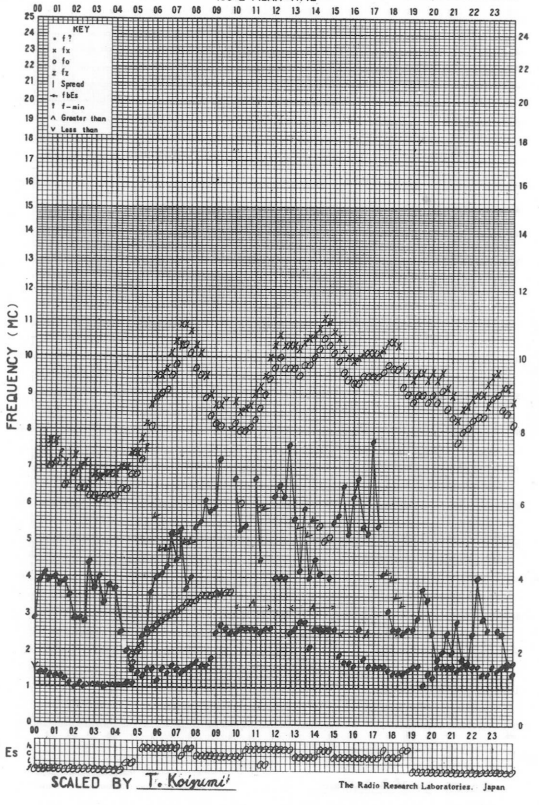
f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JUN. 3.1968

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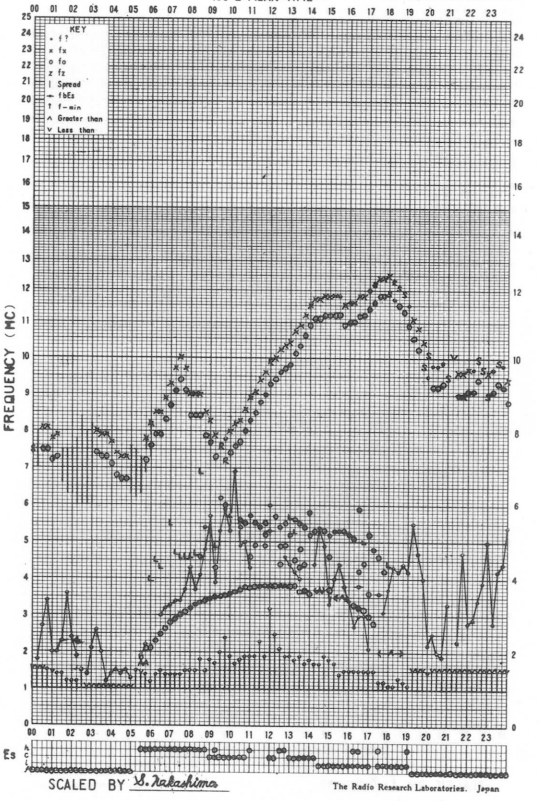
f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE JUN. -3. 1968

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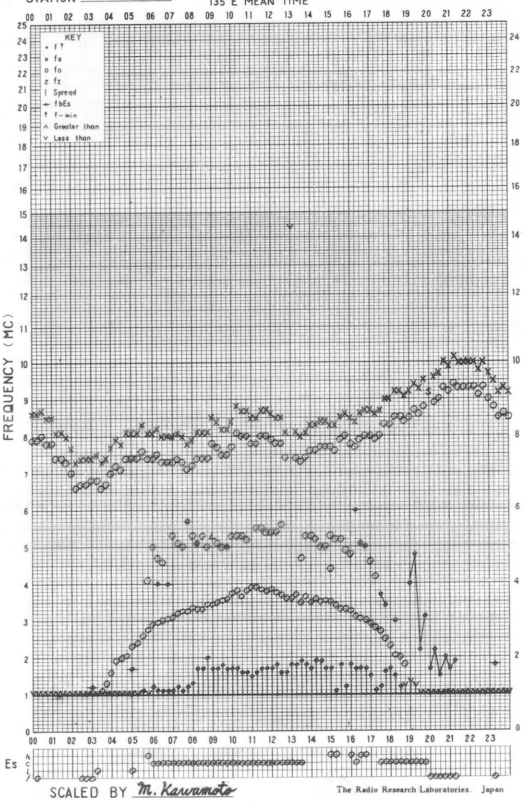
f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JUN. 4.1968




SCALED BY M. Kawamoto

The Radio Research Laboratories. Japan

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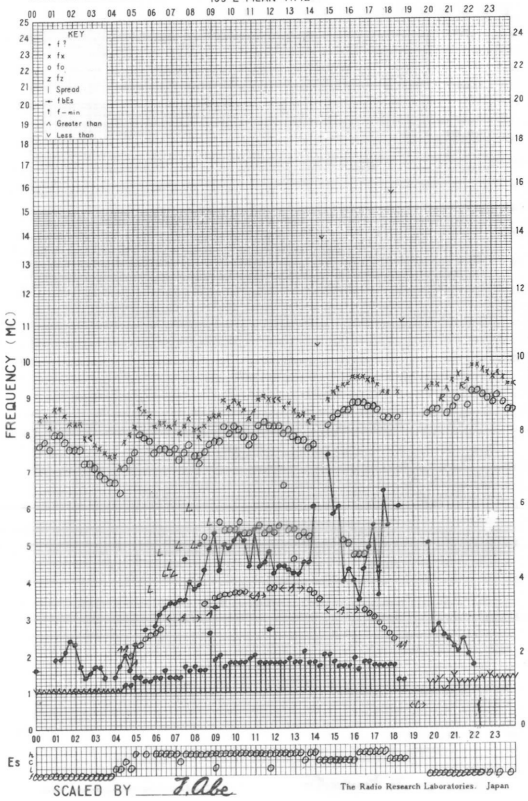
STATION AKITA 135°E MEAN TIME DATE Jun. 4. 1968




SCALED BY T. Abe

The Radio Research Laboratories. Japan

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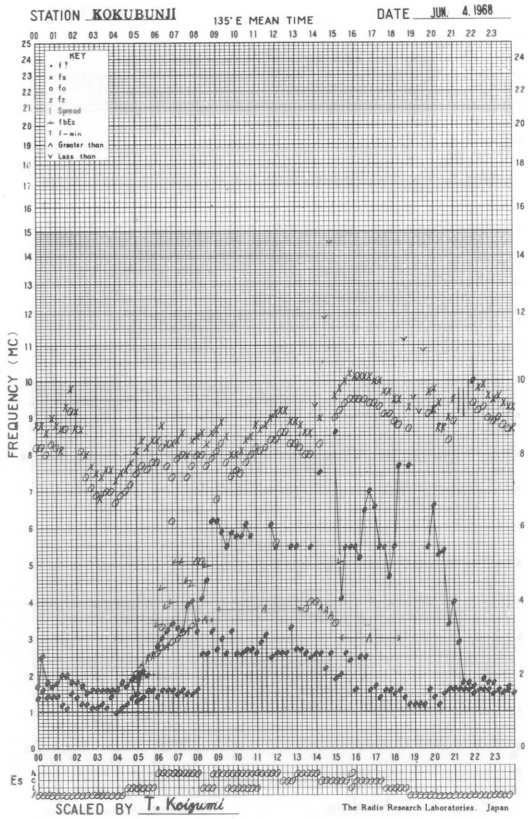


SCALED BY T. Koigumi

The Radio Research Laboratories. Japan

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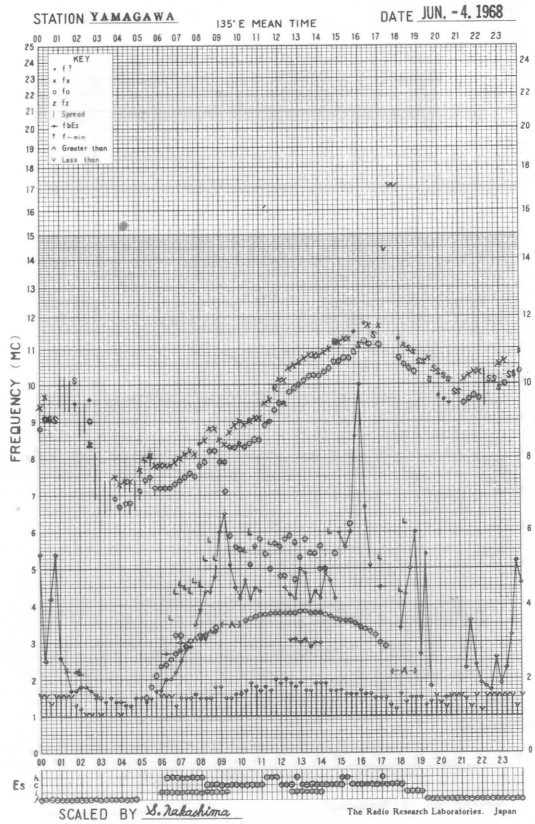


SCALED BY S. Nakashima

The Radio Research Laboratories. Japan

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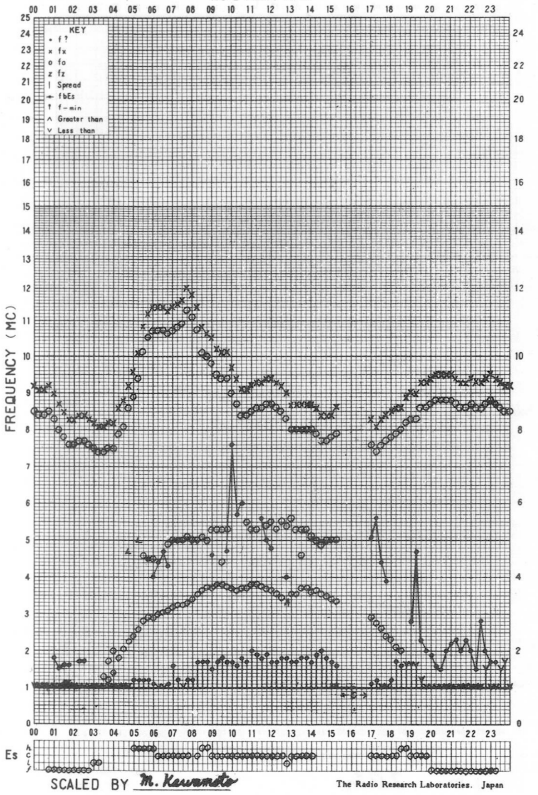


SCALED BY M. Kawamoto The Radio Research Laboratories. Japan

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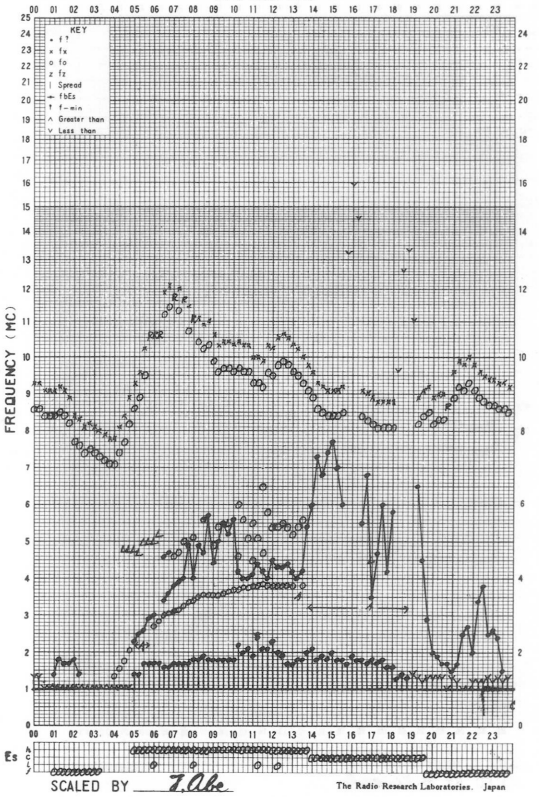


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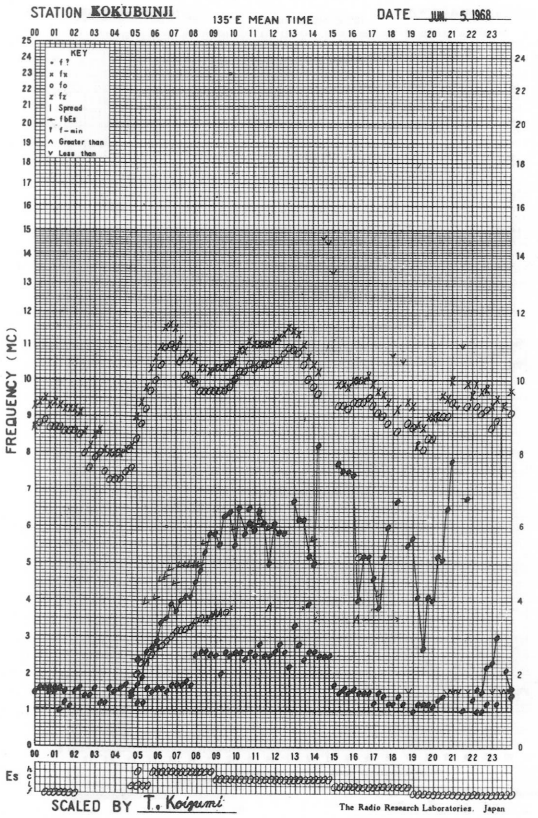


SCALED BY T. Koizumi The Radio Research Laboratories. Japan

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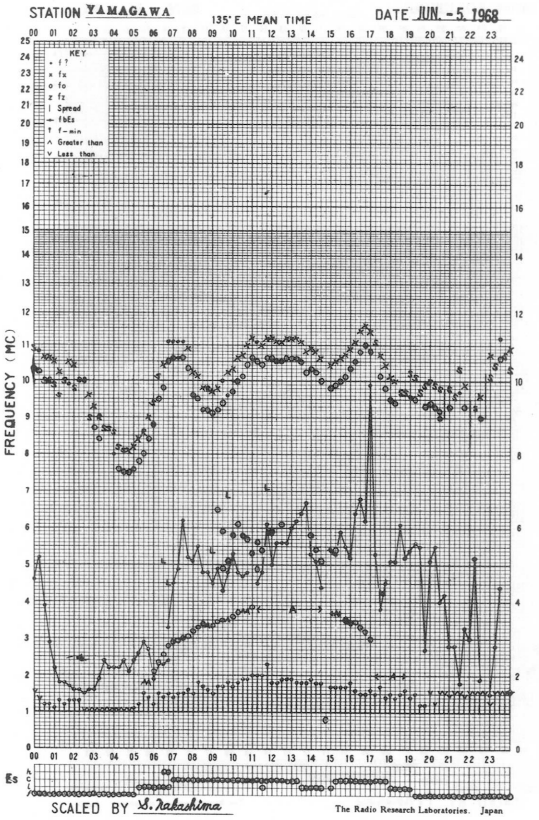


SCALED BY S. Takashima The Radio Research Laboratories. Japan

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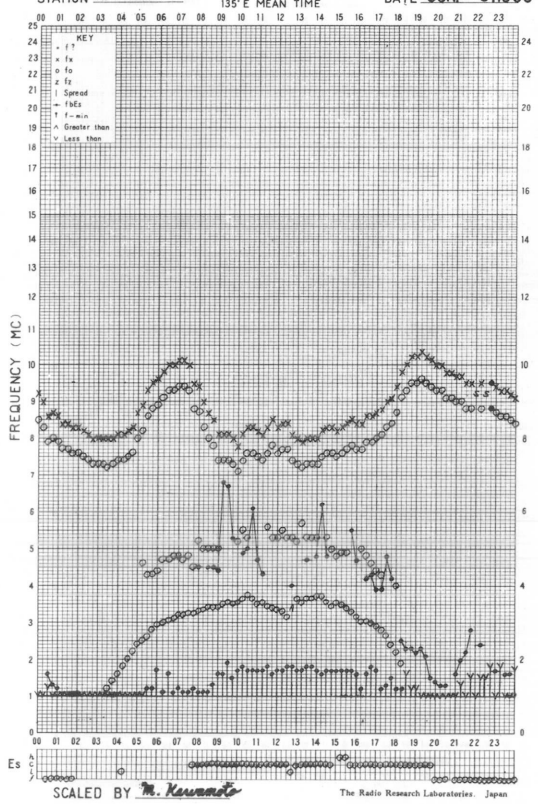


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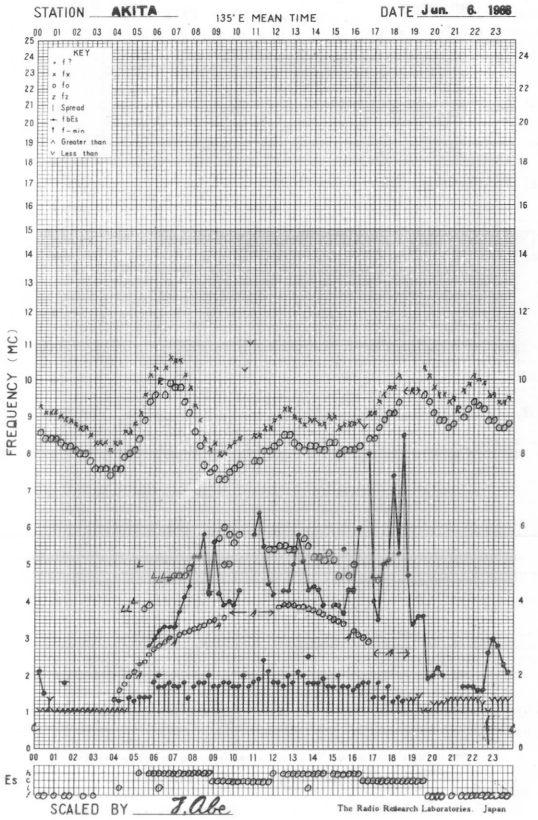


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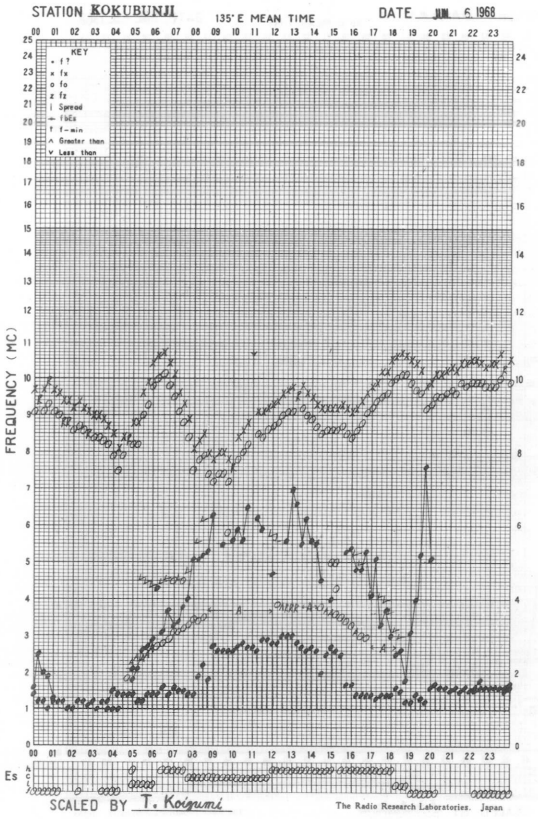


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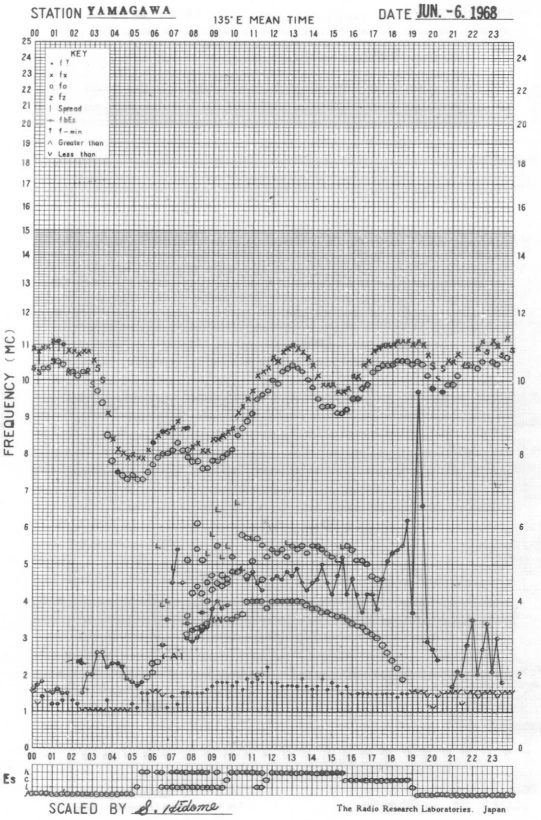

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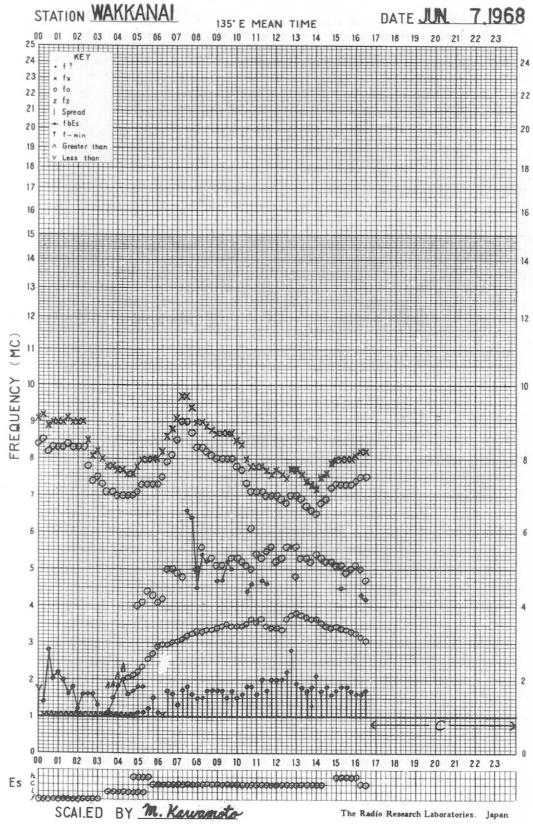


SCALED BY M. Kawamoto

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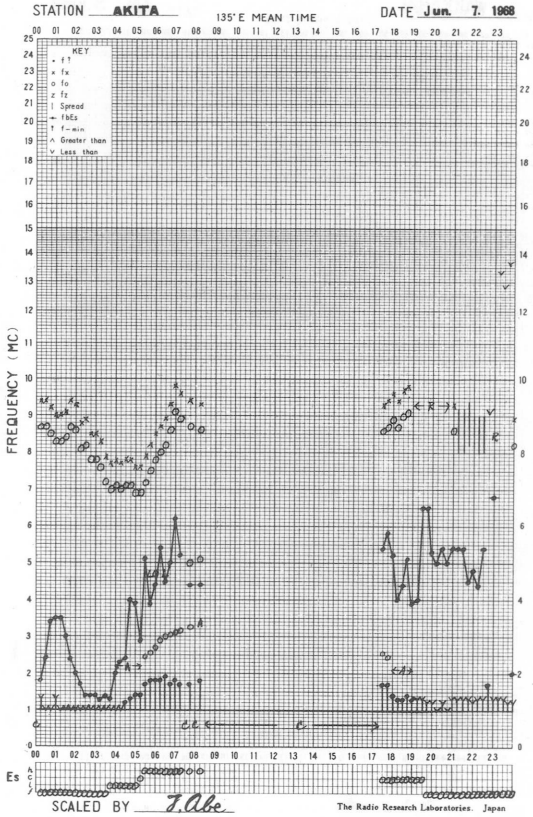


SCALED BY T. Abe

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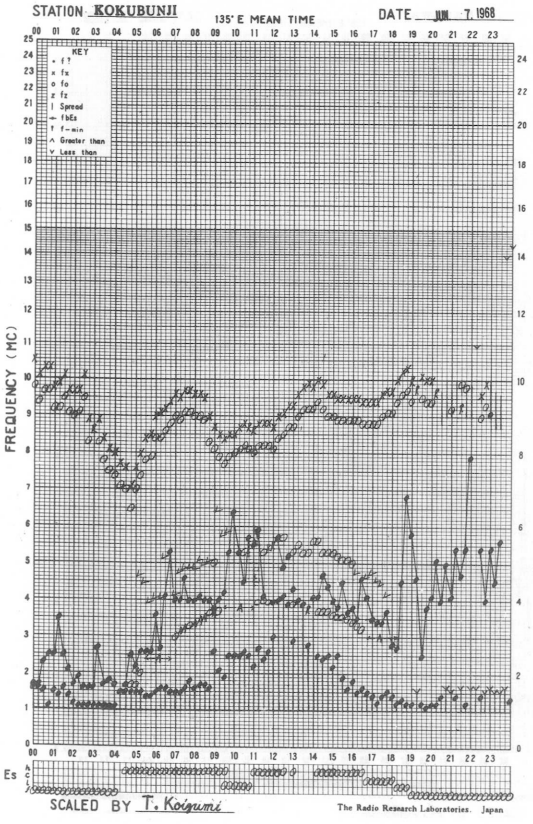


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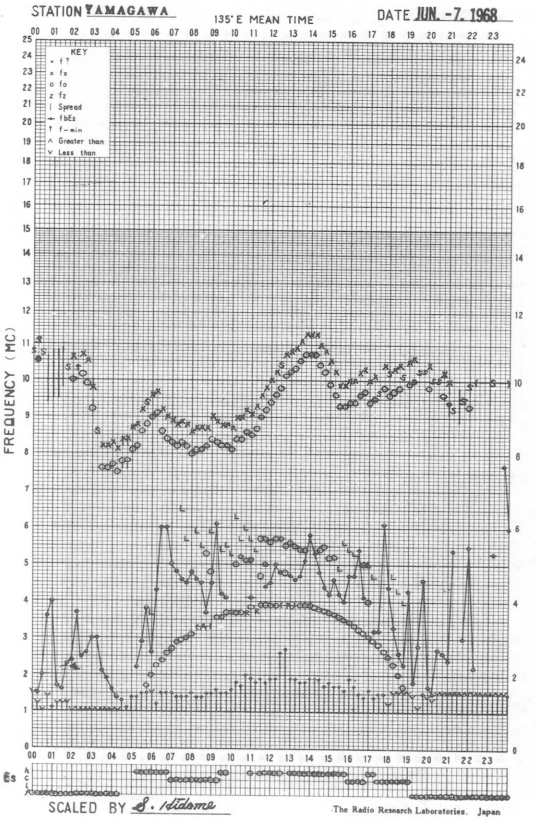


SCALED BY S. Hidoma

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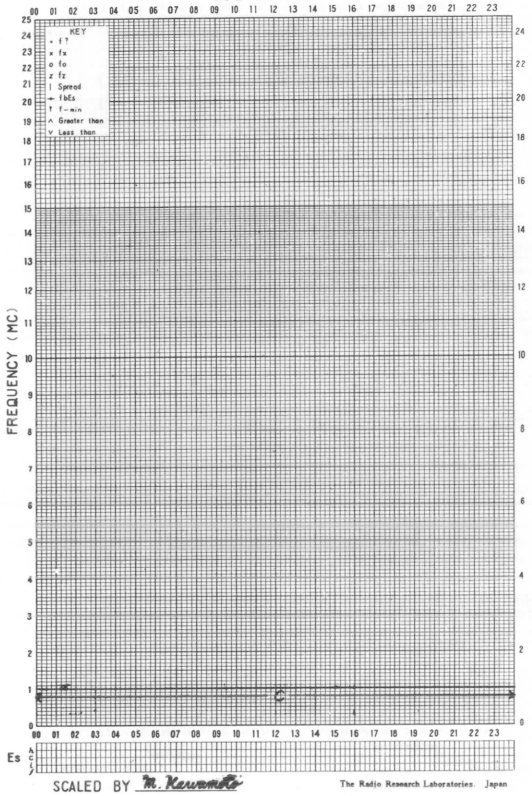


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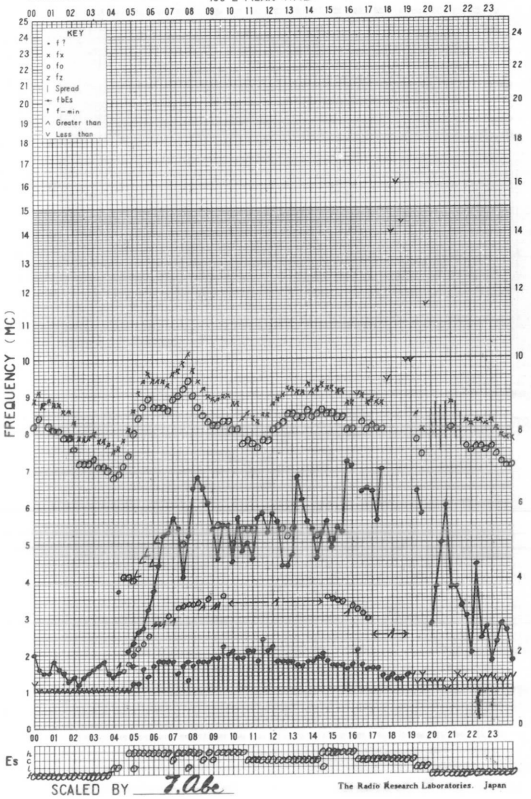


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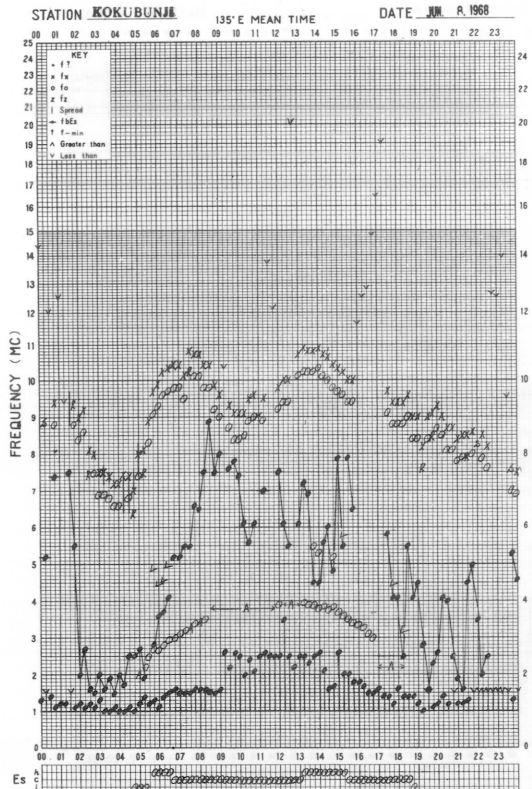


SCALED BY T. Koizumi

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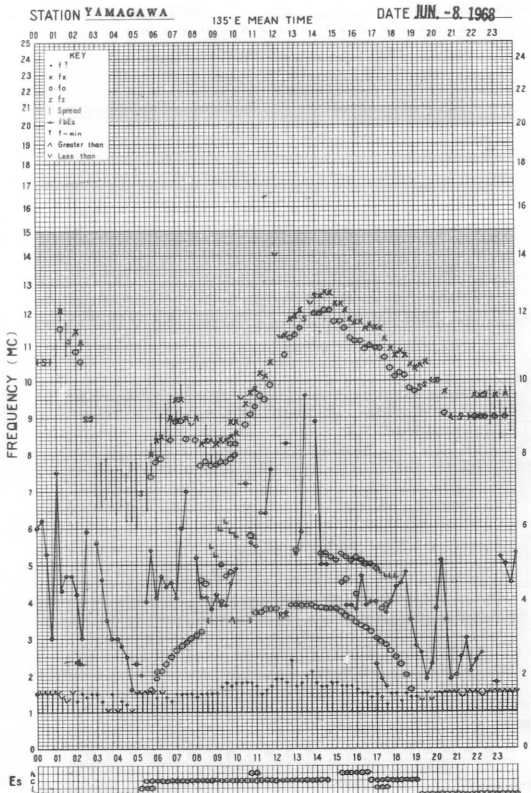


SCALED BY S. Uchiyama

The Radio Research Laboratories. Japan

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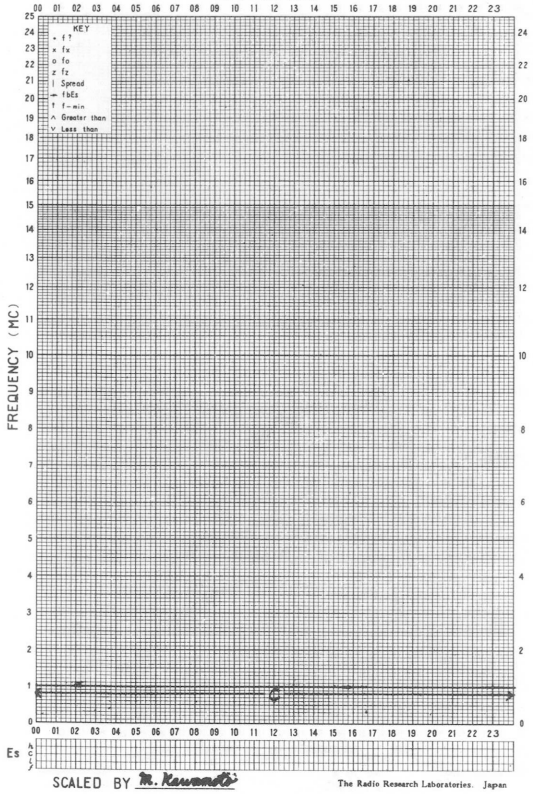


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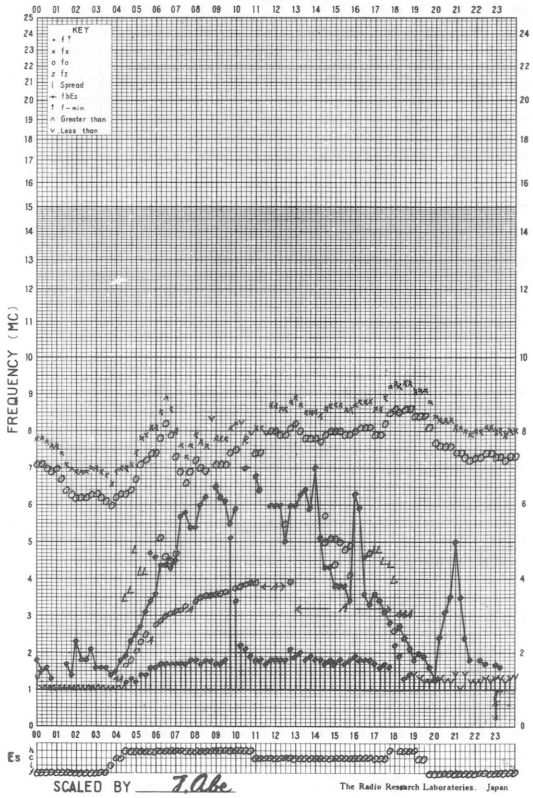


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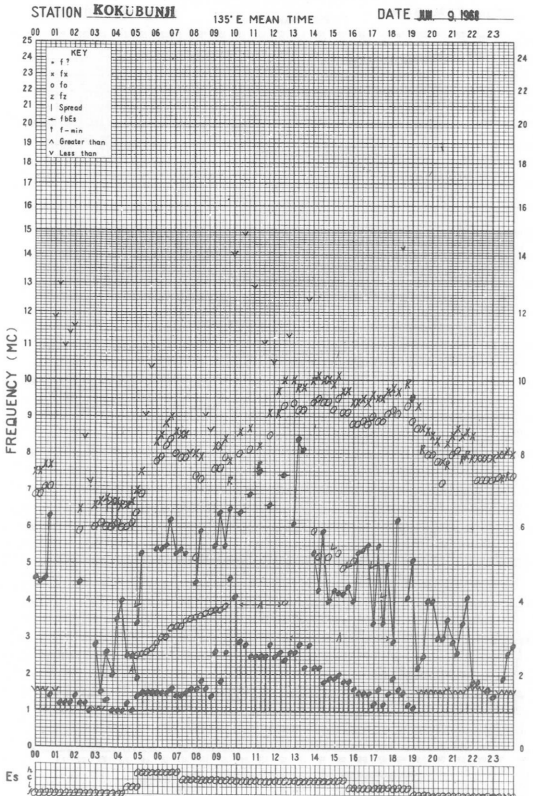


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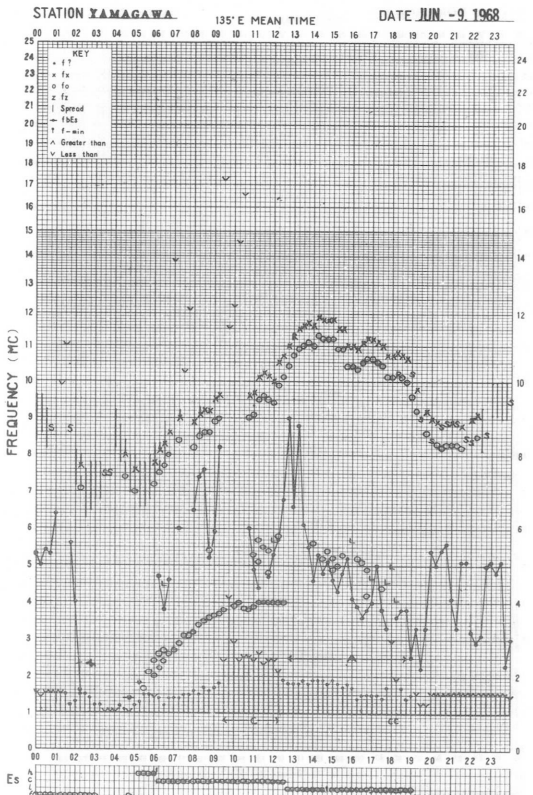


SCALED BY S. Sidooka The Radio Research Laboratories. Japan

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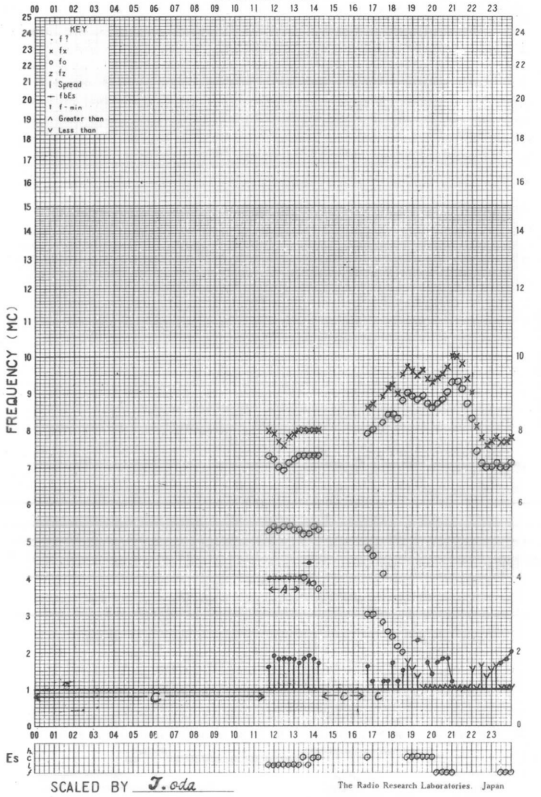


SCALED BY T. Oda

The Radio Research Laboratories. Japan

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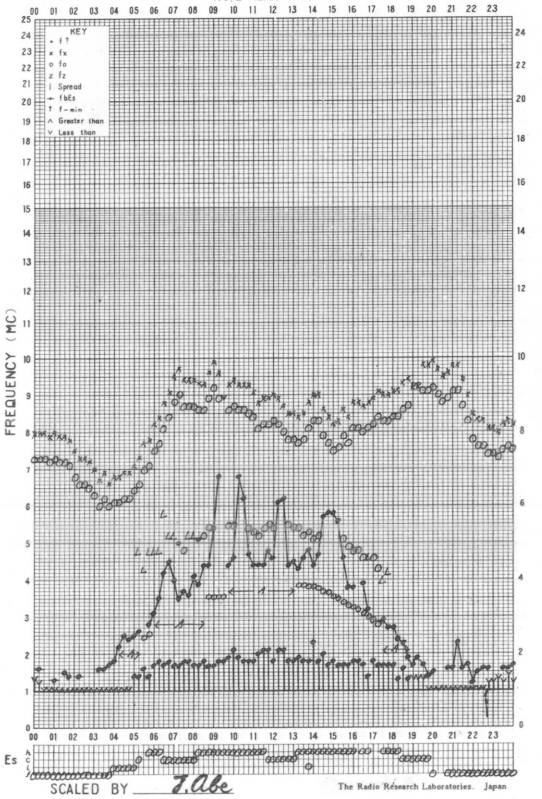


SCALED BY T. Abe

The Radio Research Laboratories. Japan

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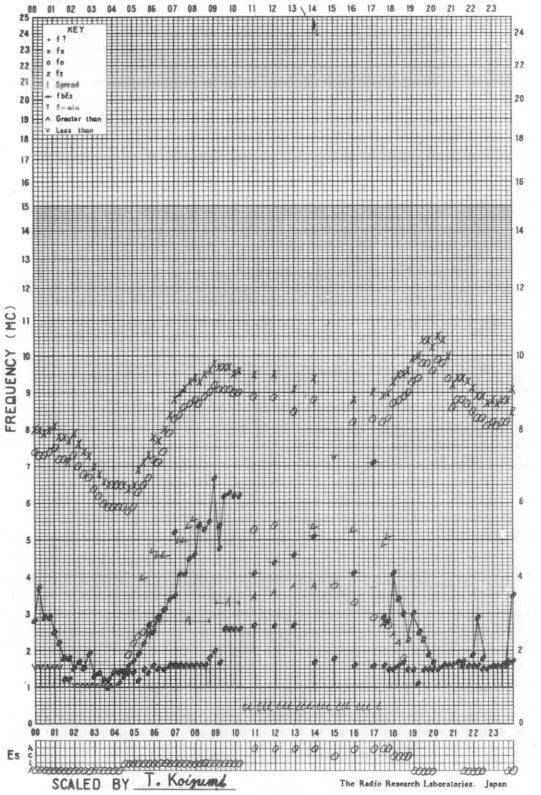


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The Radio Research Laboratories. Japan

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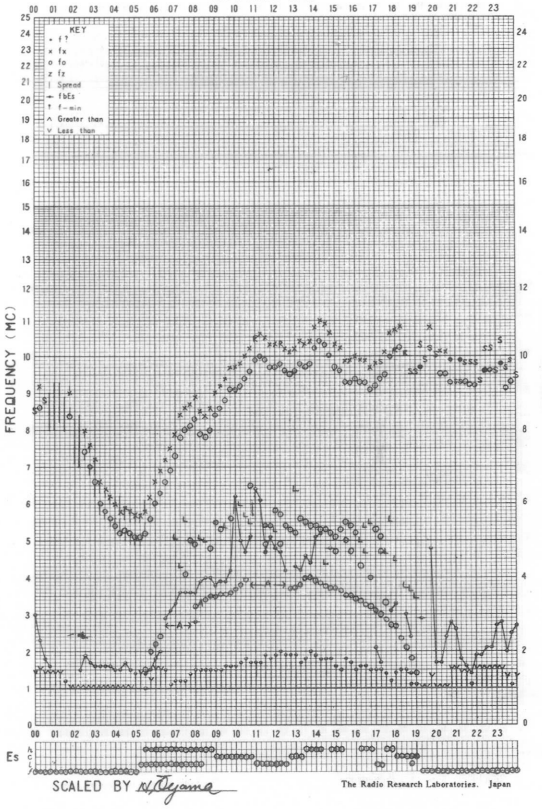


SCALED BY H. Ogyama

The Radio Research Laboratories. Japan

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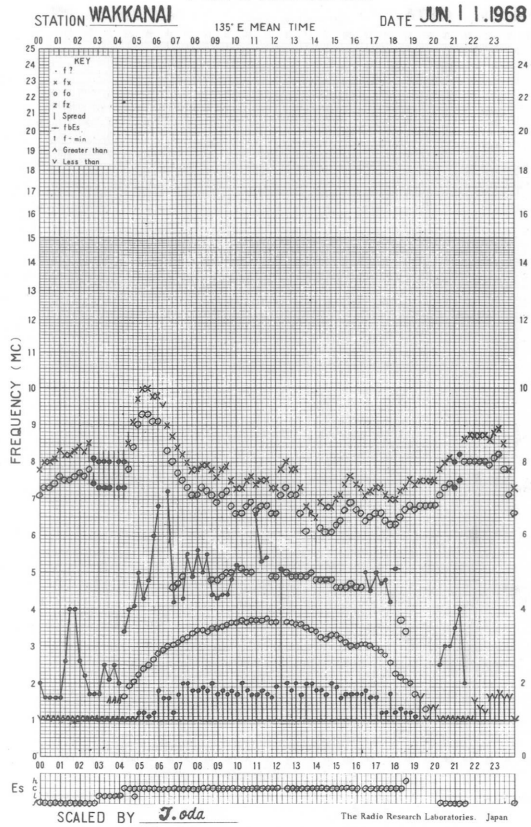


SCALED BY J. oda

The Radio Research Laboratories. Japan

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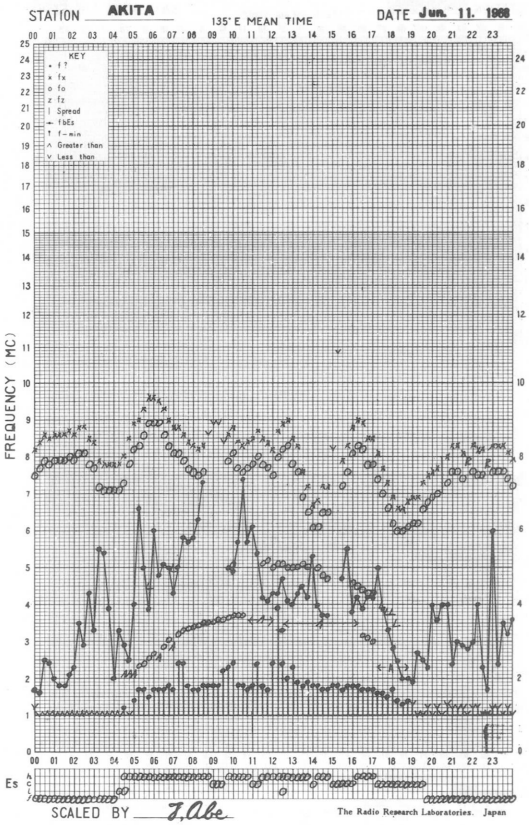


SCALED BY T. Abe

The Radio Research Laboratories. Japan

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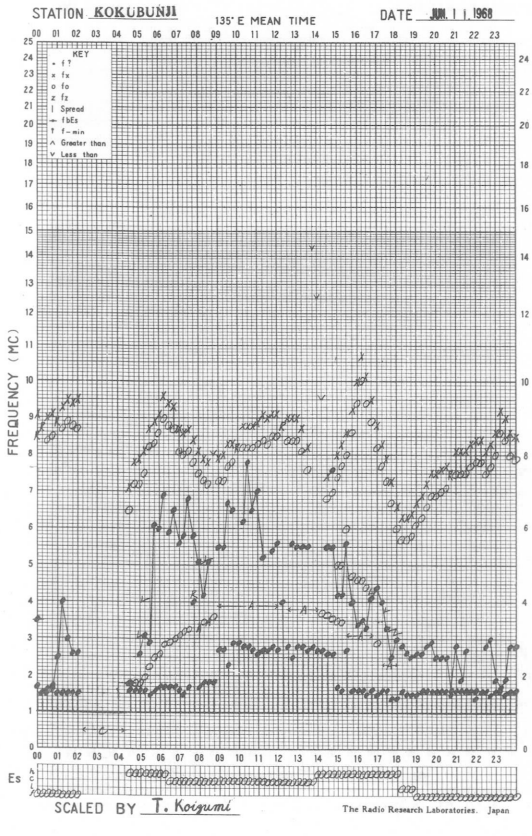


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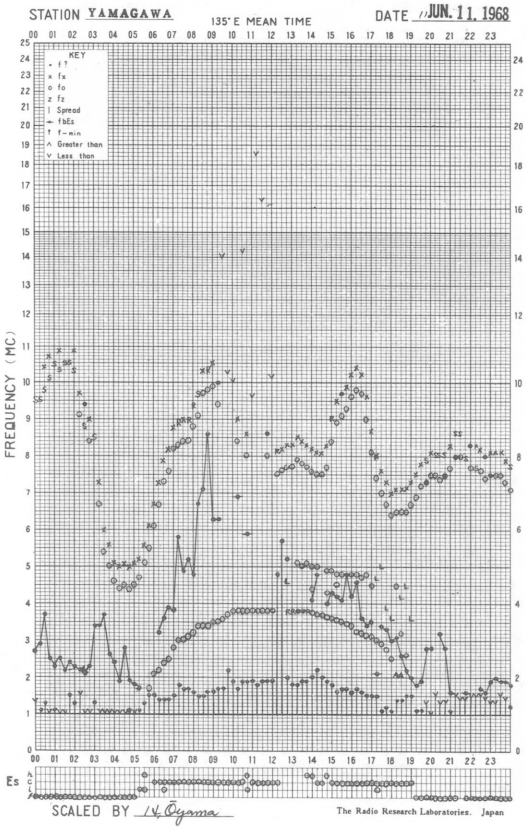


SCALED BY H. Ogama

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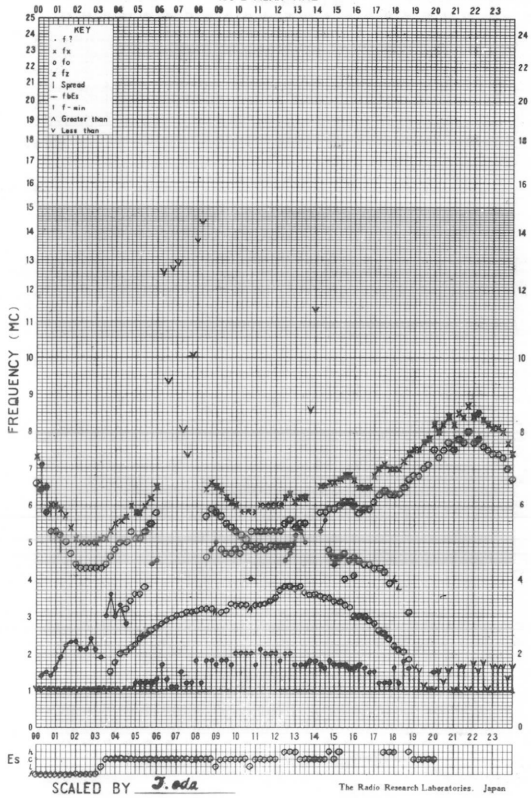


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The Radio Research Laboratories. Japan

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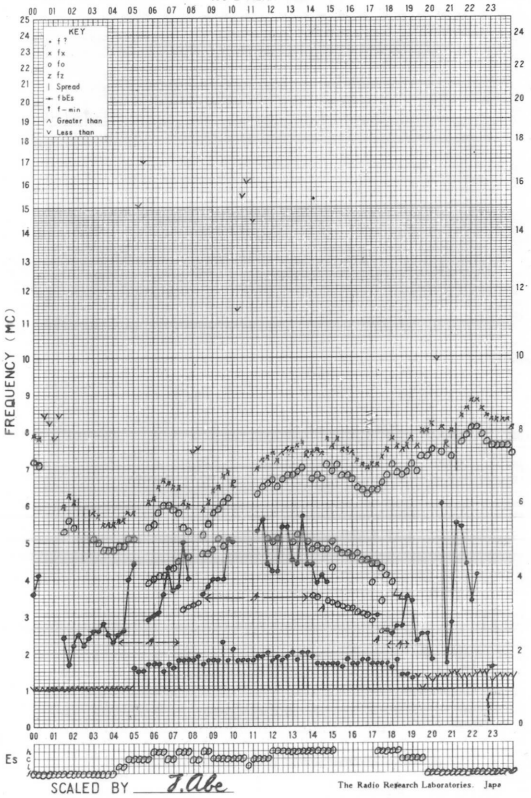


SCALED BY T. Abe

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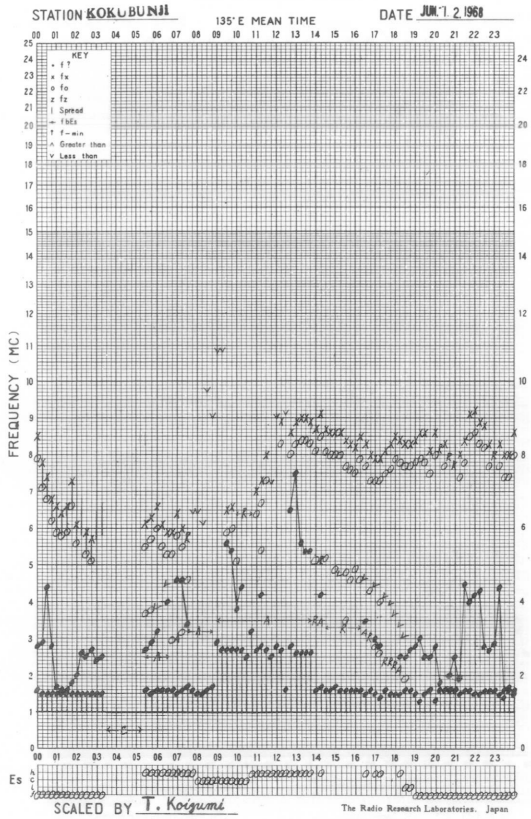


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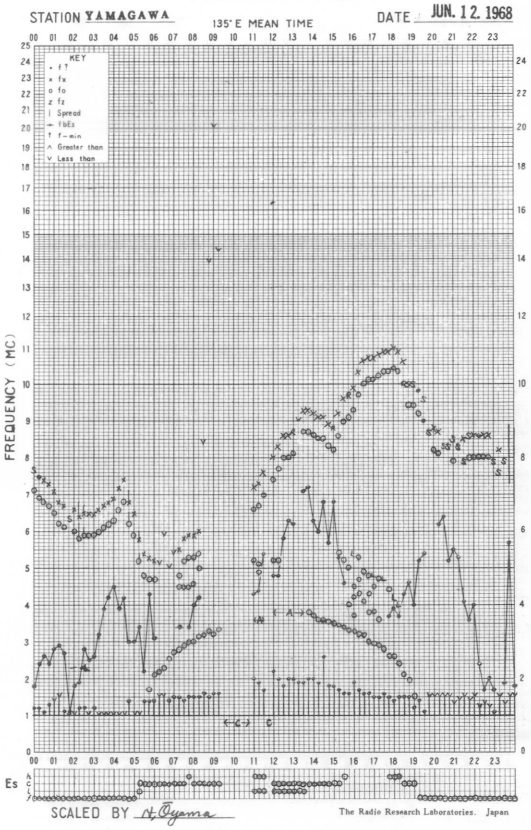


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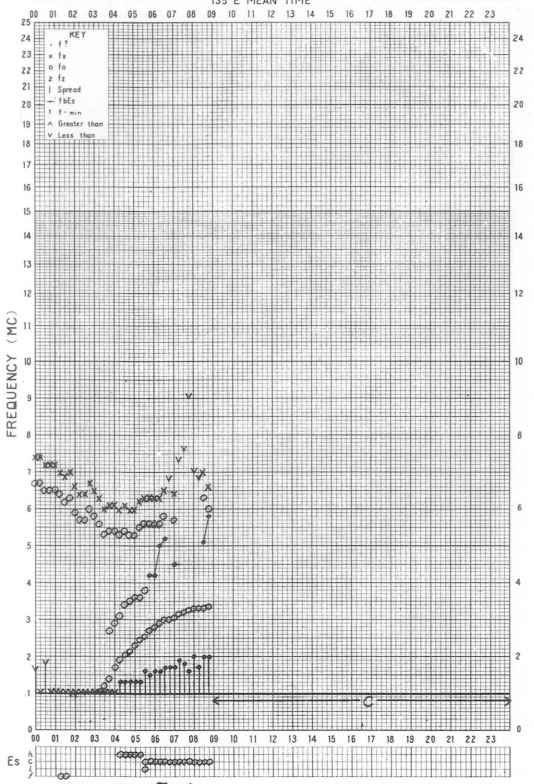


SCALED BY T. oda

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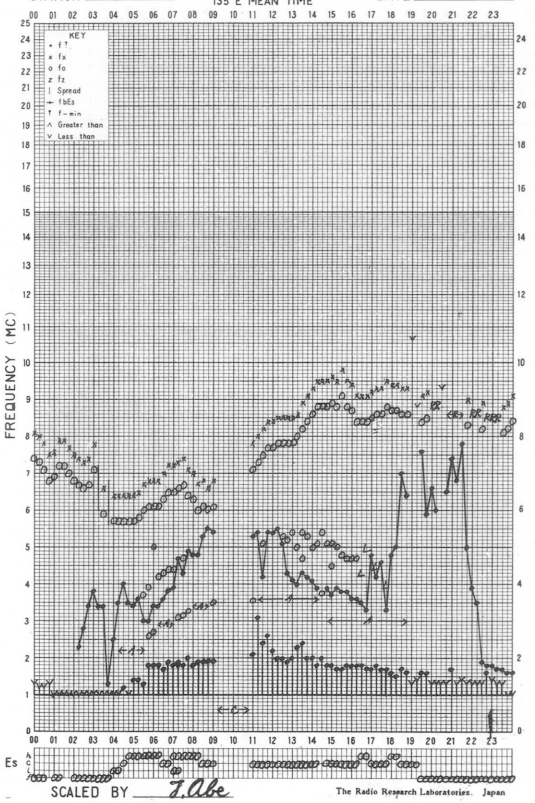


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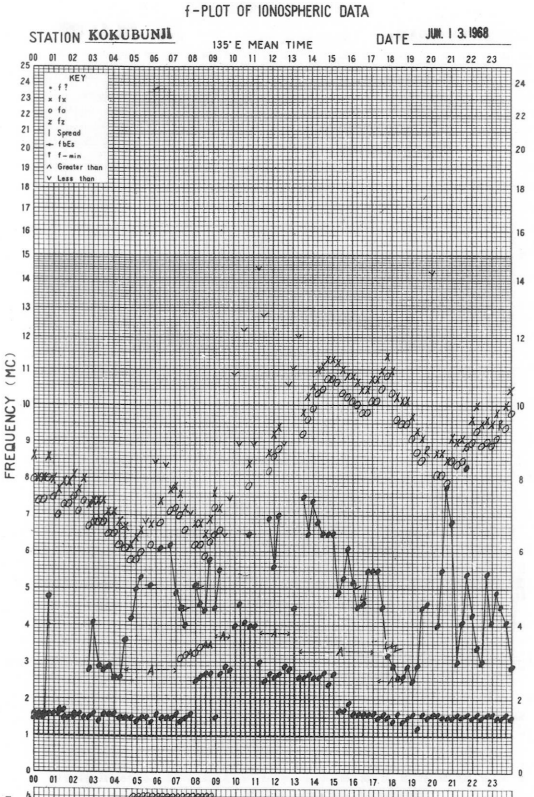


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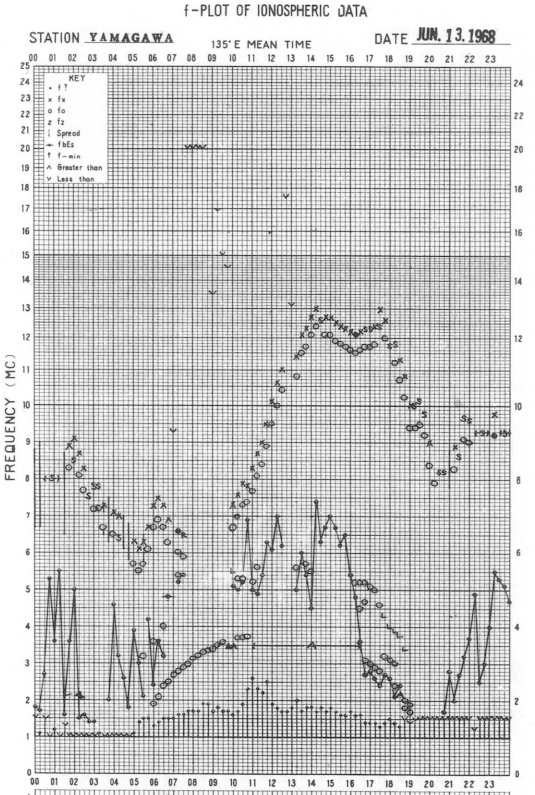


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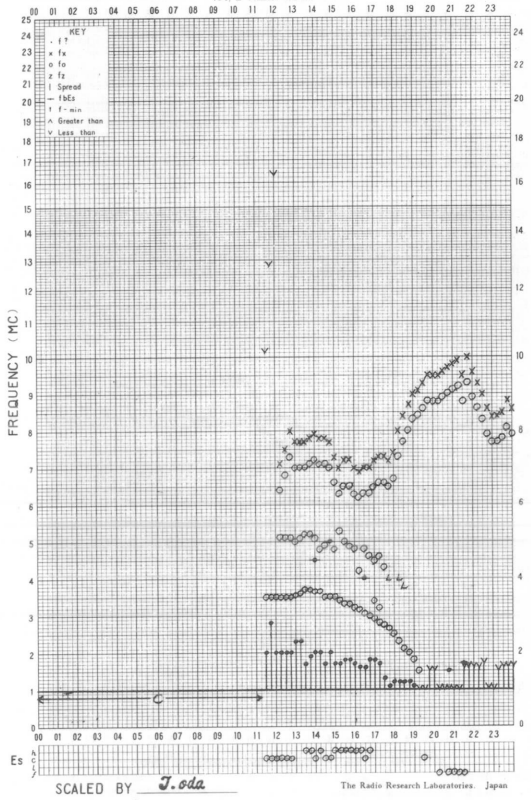


SCALED BY T. oda

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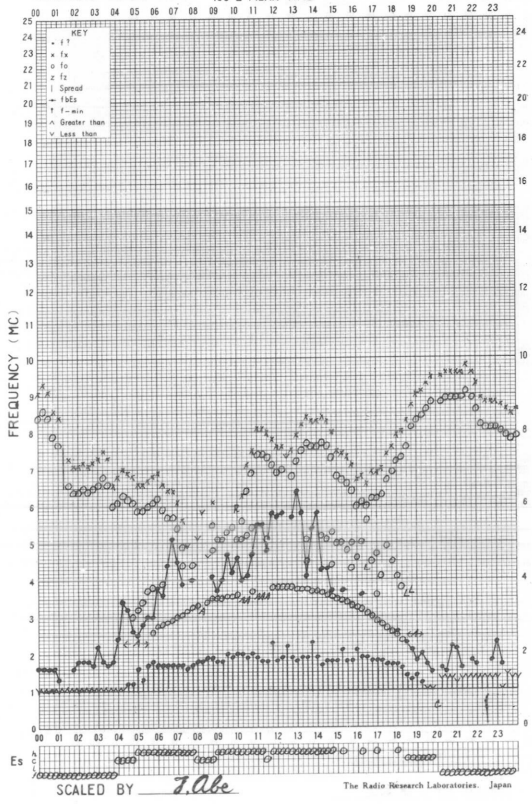


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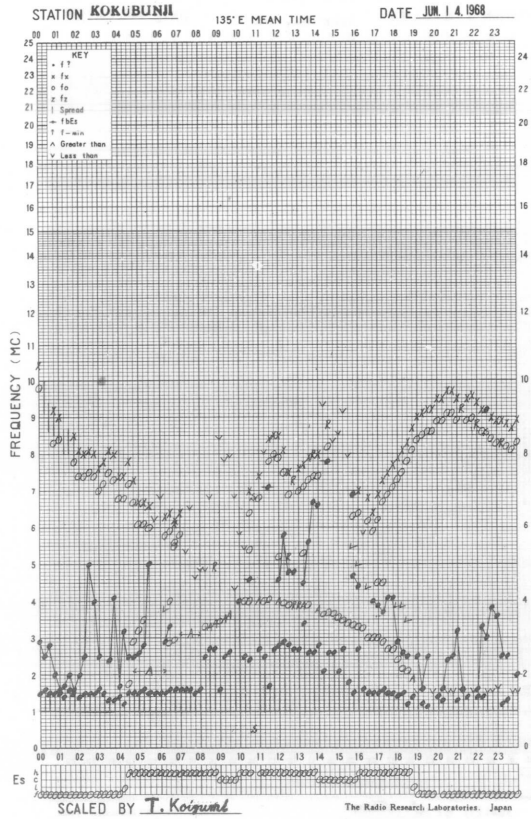


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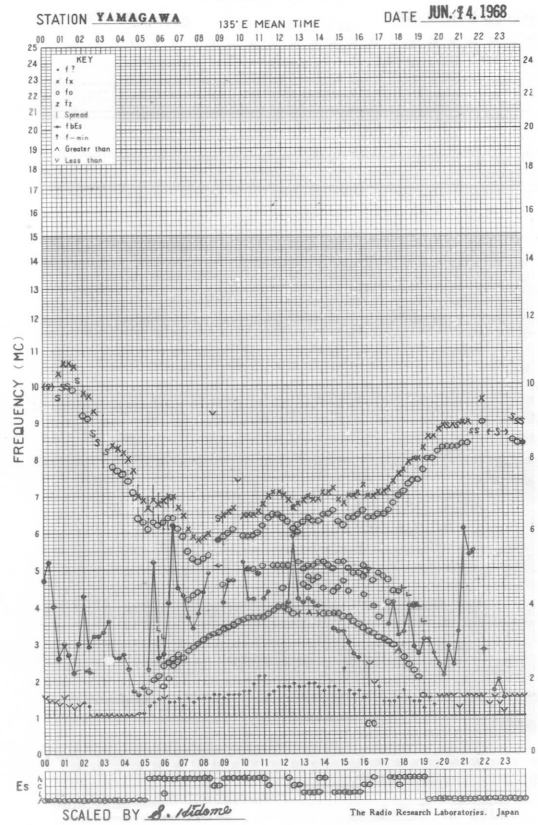


SCALED BY S. Shidama

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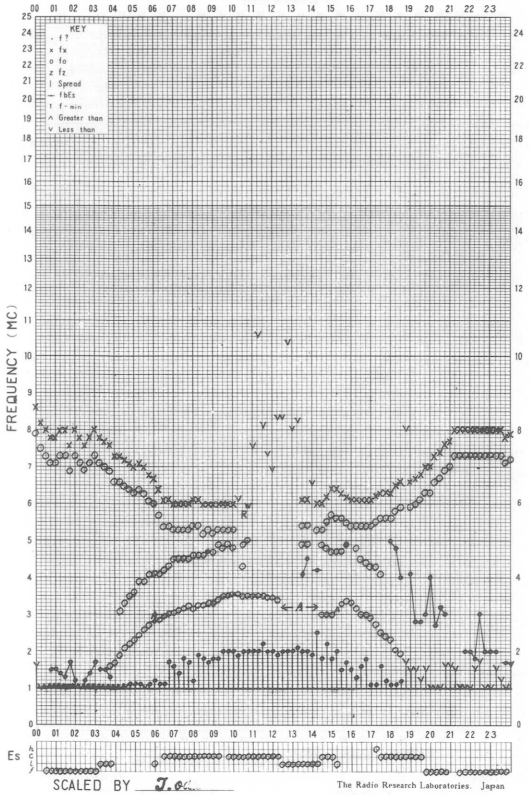


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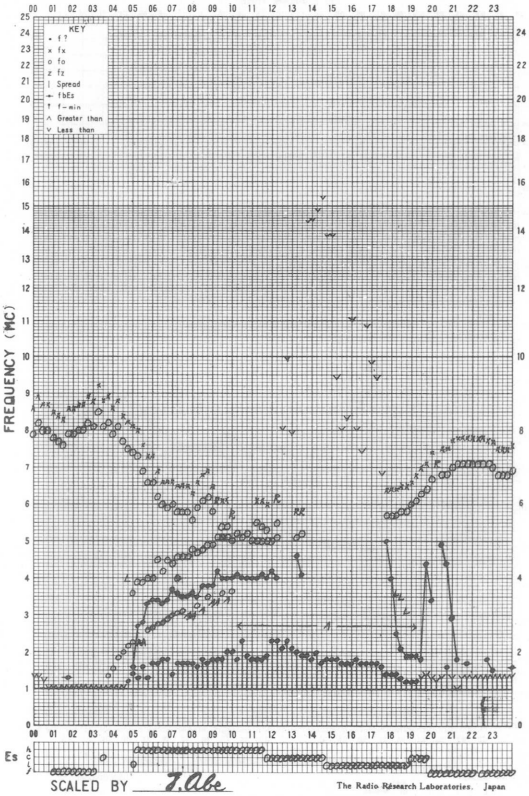


SCALED BY T. Abe

The Radio Research Laboratories. Japan

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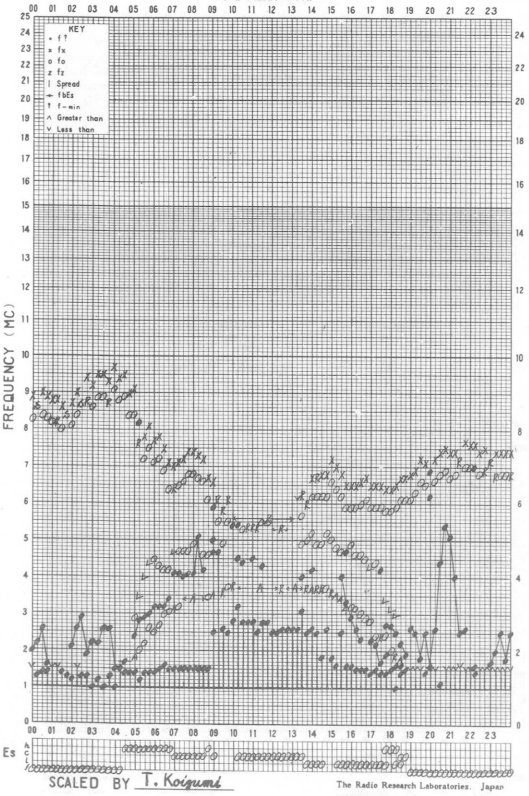


SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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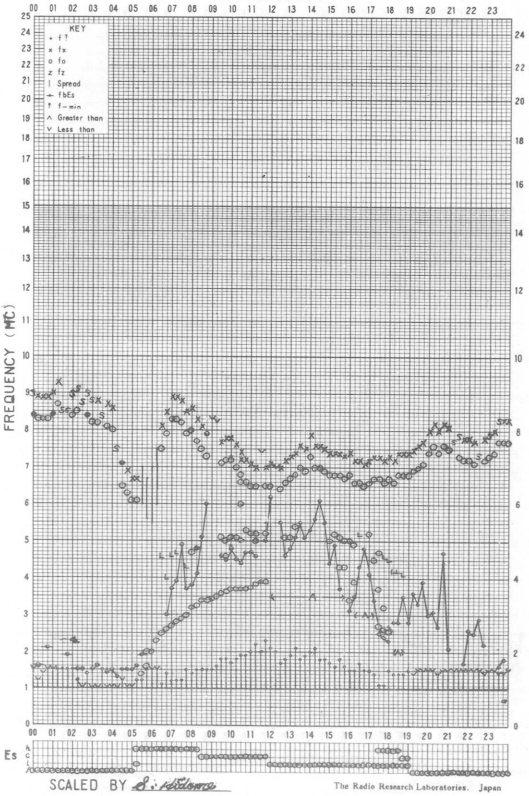


SCALED BY S. Kitamura

The Radio Research Laboratories. Japan

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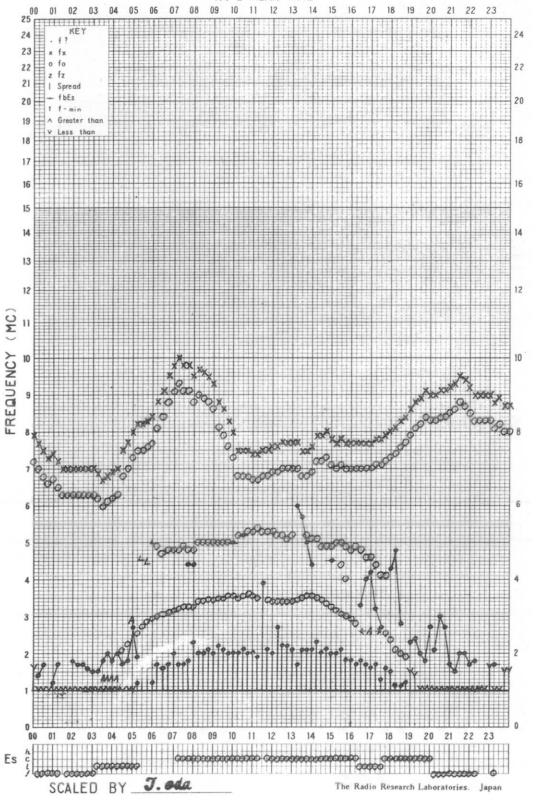


SCALED BY T. oda

The Radio Research Laboratories. Japan

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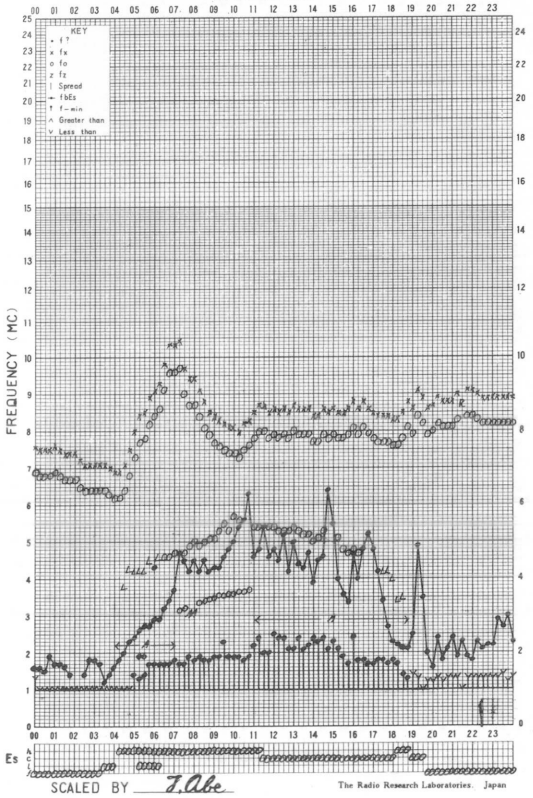


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The Radio Research Laboratories. Japan

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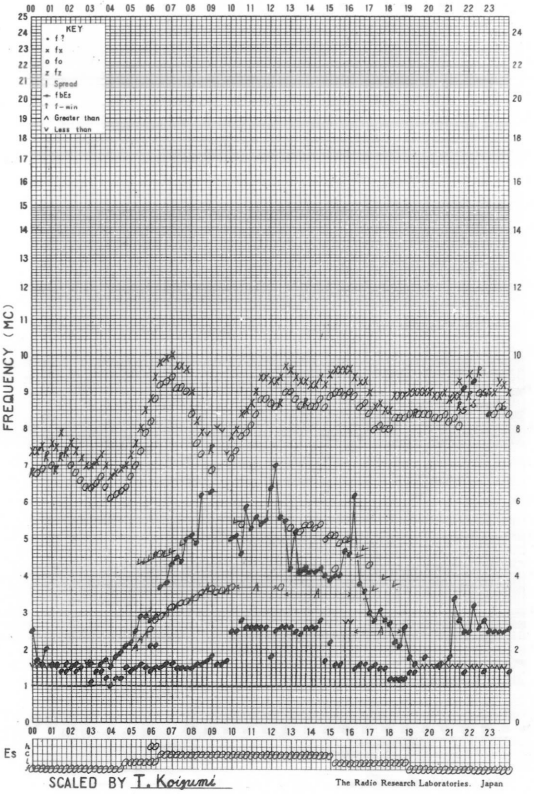


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The Radio Research Laboratories. Japan

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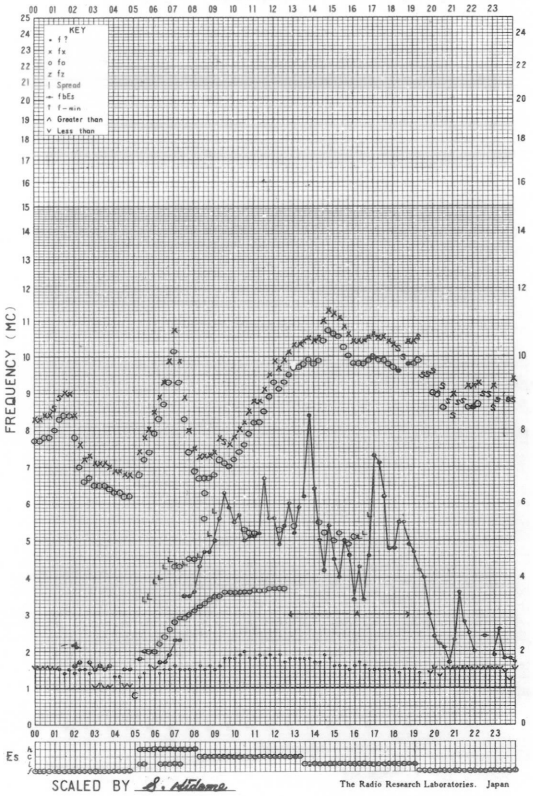


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The Radio Research Laboratories. Japan

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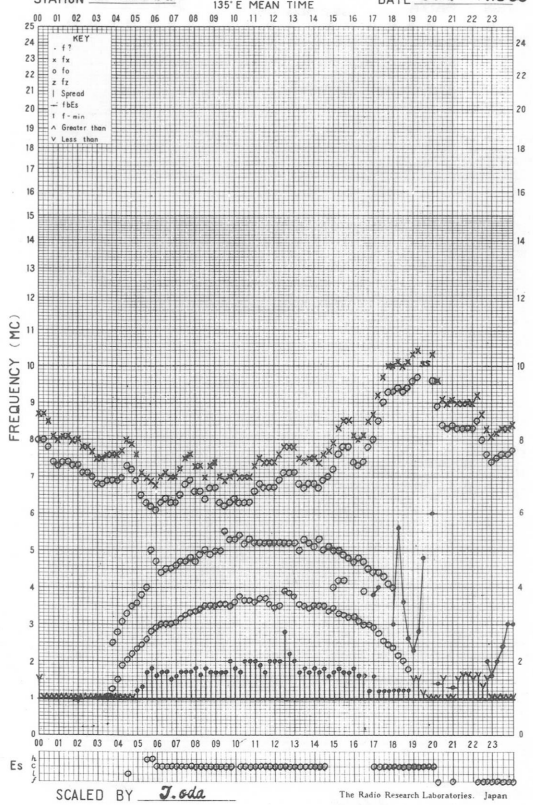


SCALED BY T. Oda

The Radio Research Laboratories. Japan

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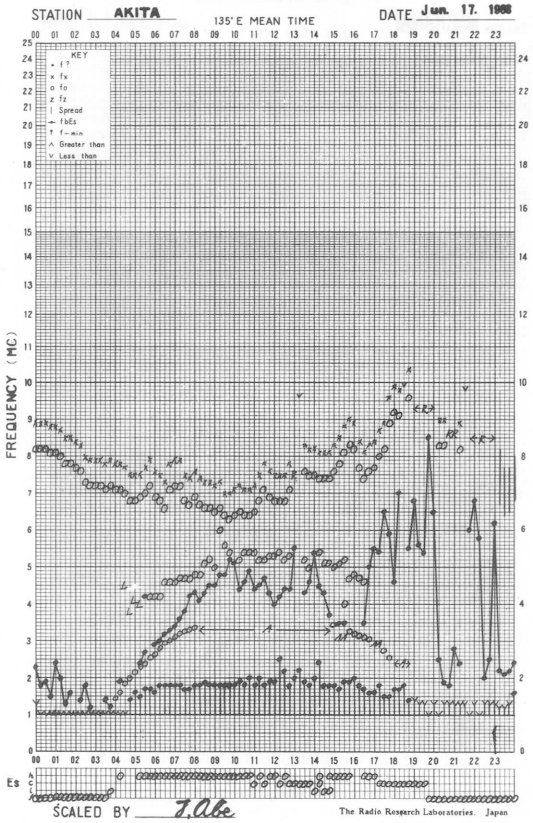


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The Radio Research Laboratories. Japan

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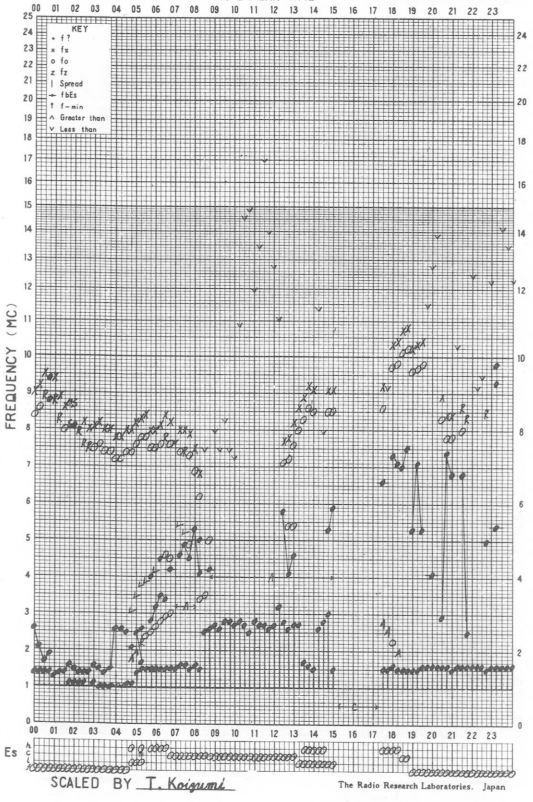


SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

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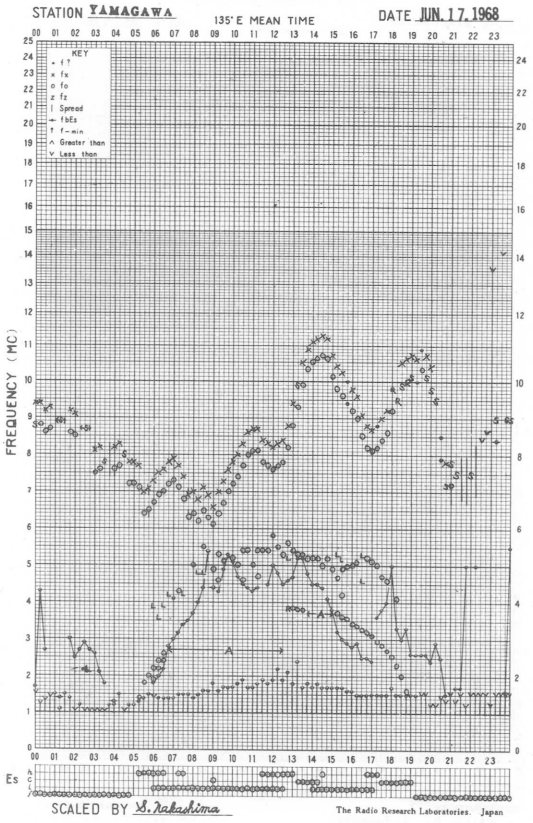


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The Radio Research Laboratories. Japan

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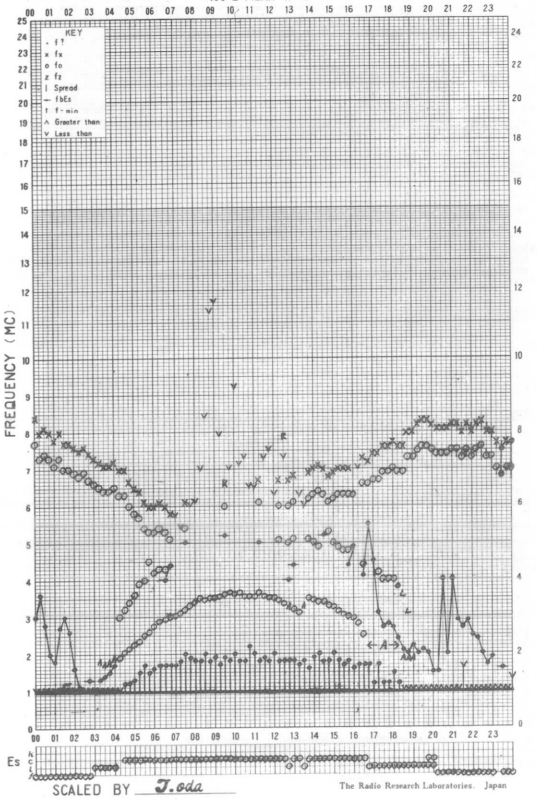


SCALED BY T. Oda

The Radio Research Laboratories. Japan

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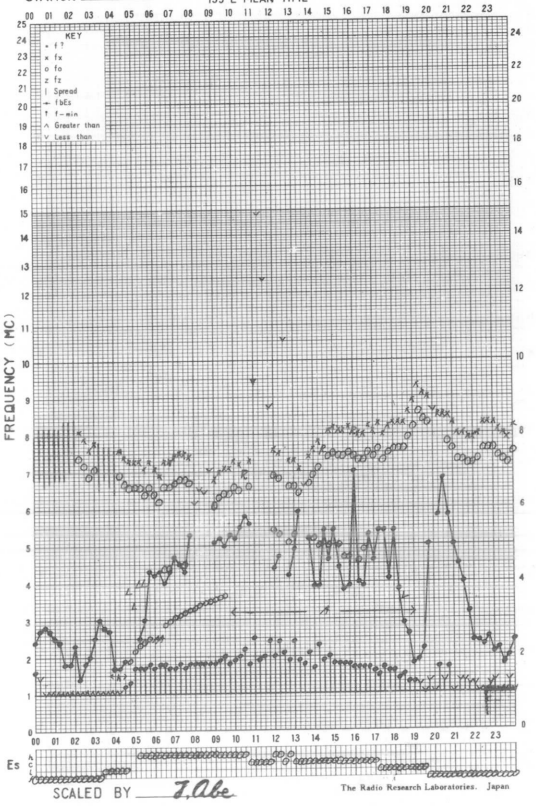


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The Radio Research Laboratories. Japan

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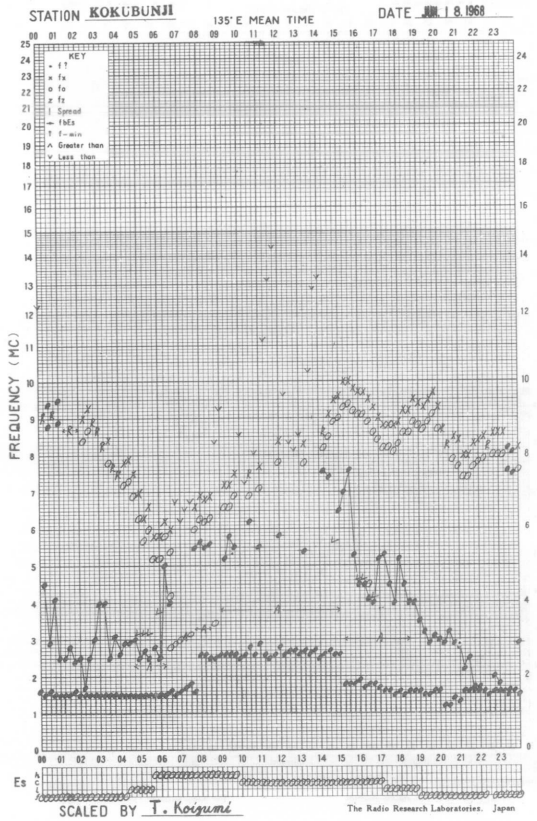


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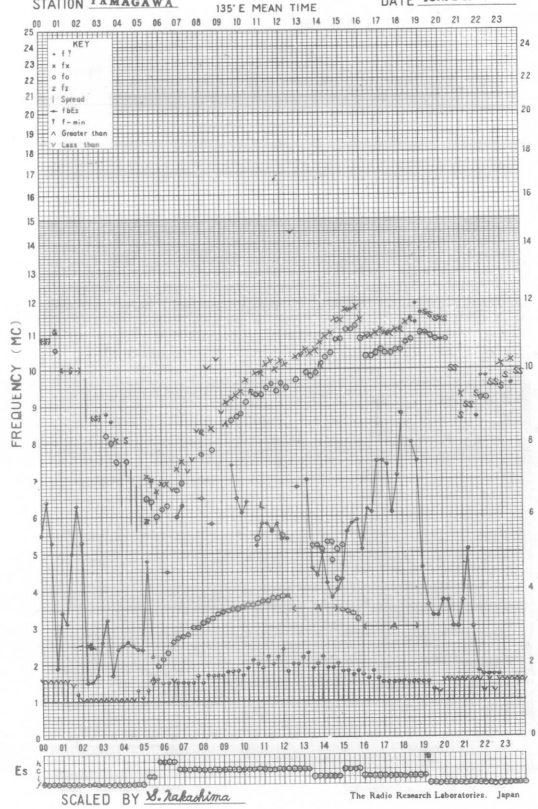
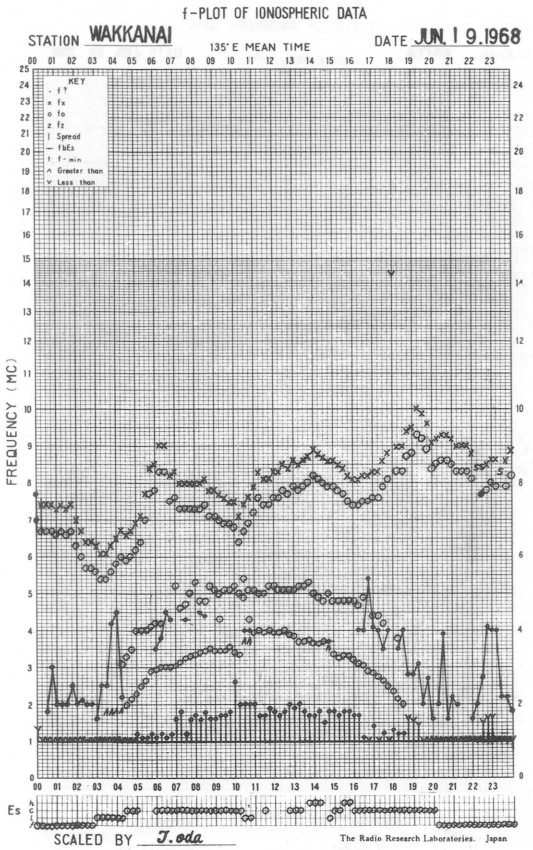



SCALED BY S. Nakashima

The Radio Research Laboratories. Japan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DATE JUN. 19.1968
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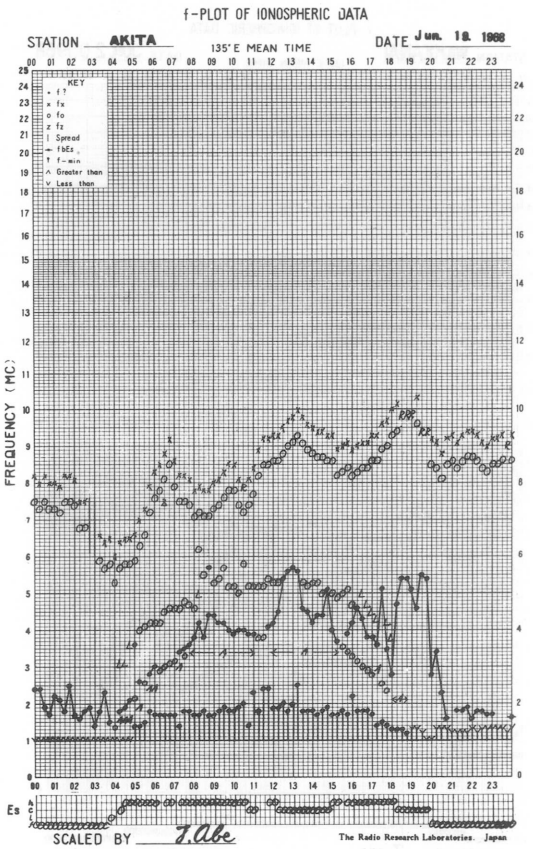
The Radio Research Laboratories. Japan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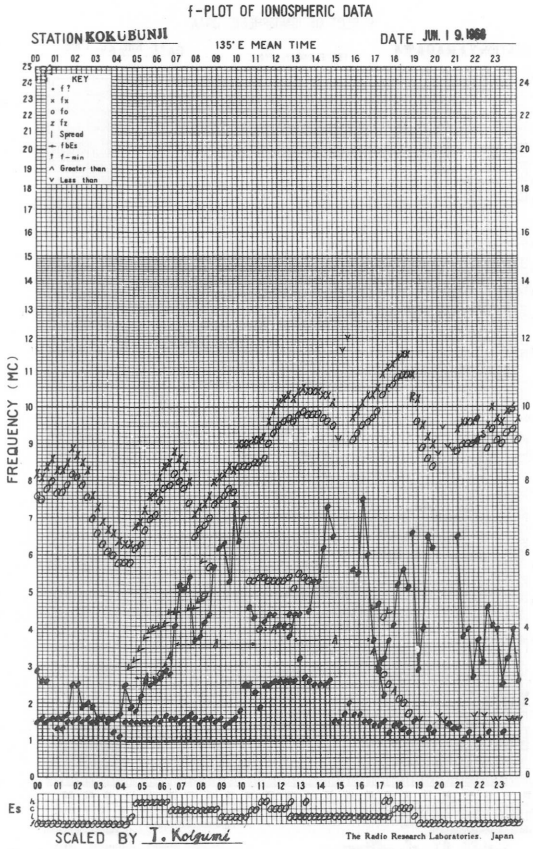
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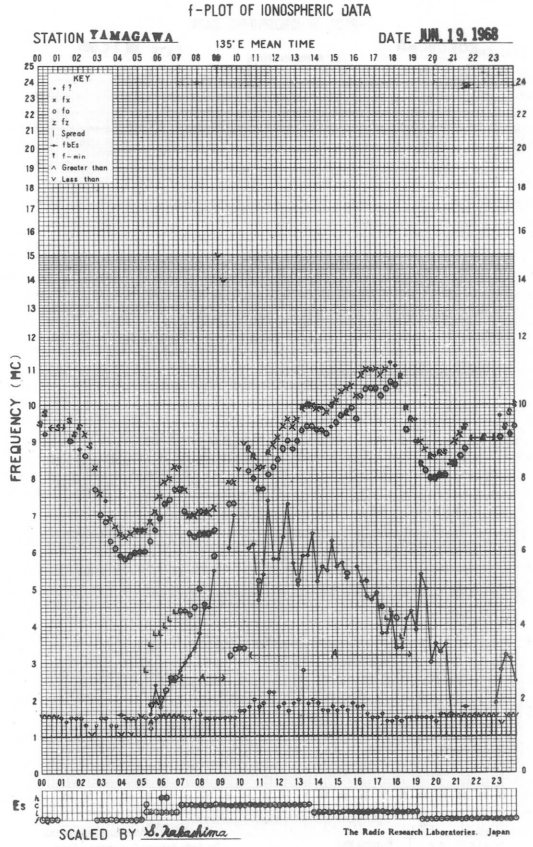
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The Radio Research Laboratories. Japan

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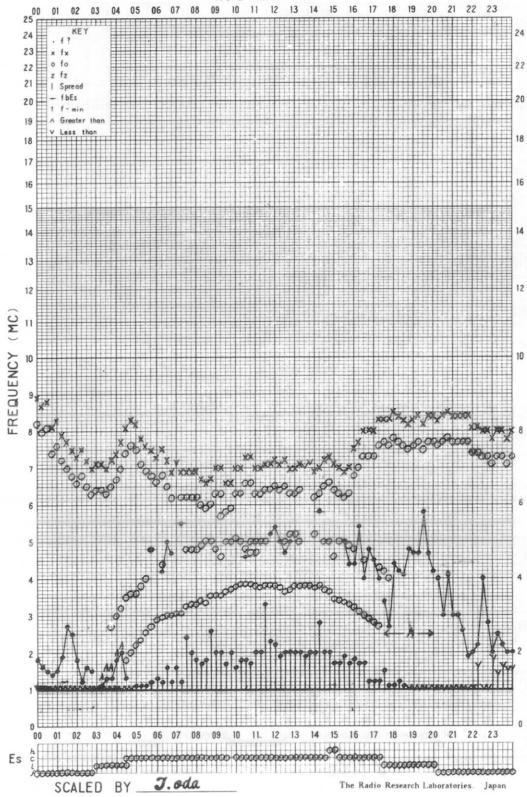


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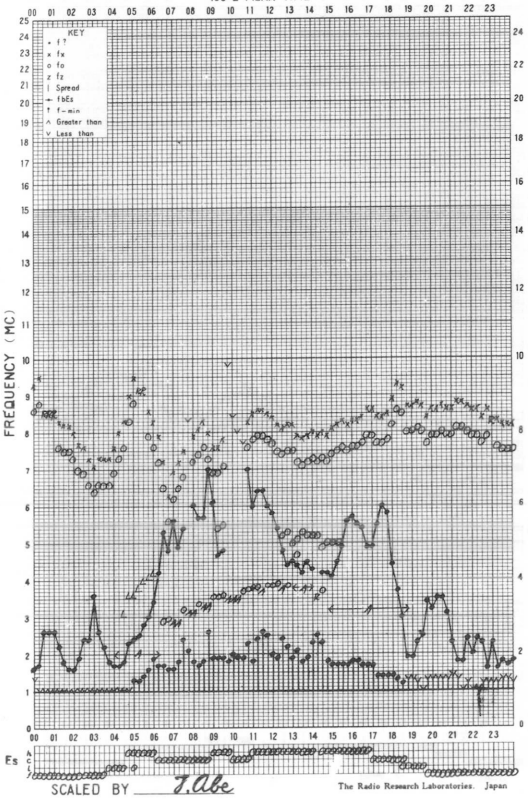


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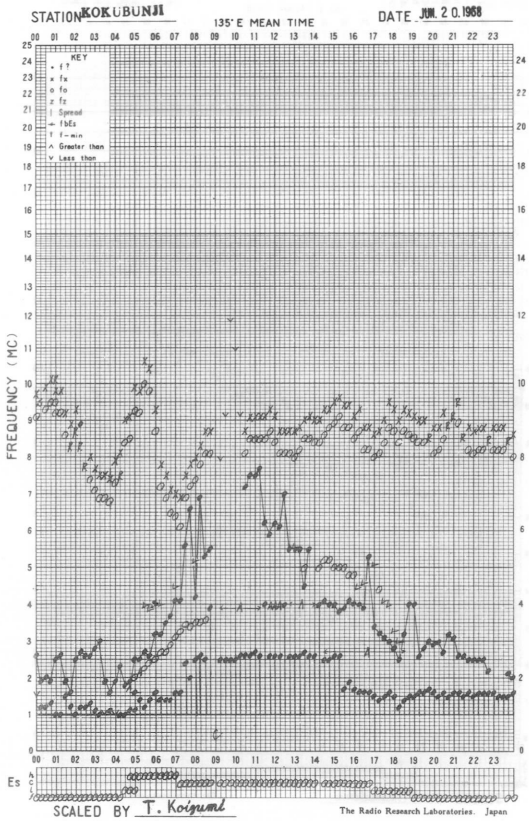


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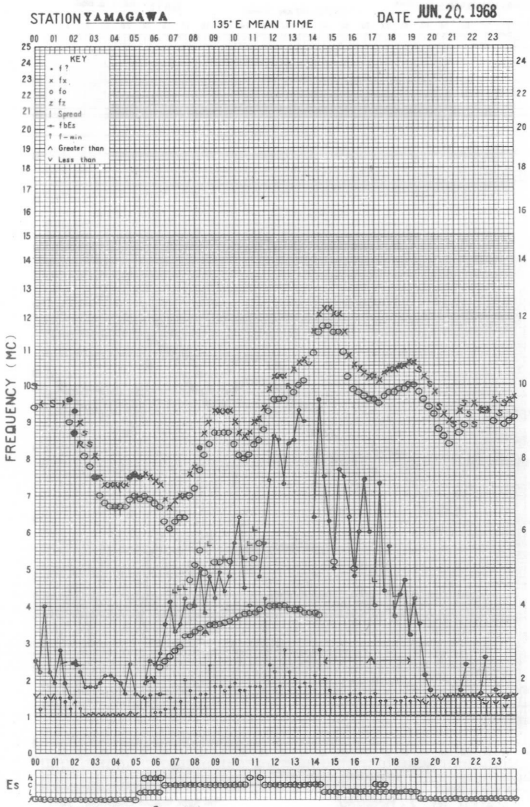


SCALED BY S. Uda

The Radio Research Laboratories. Japan

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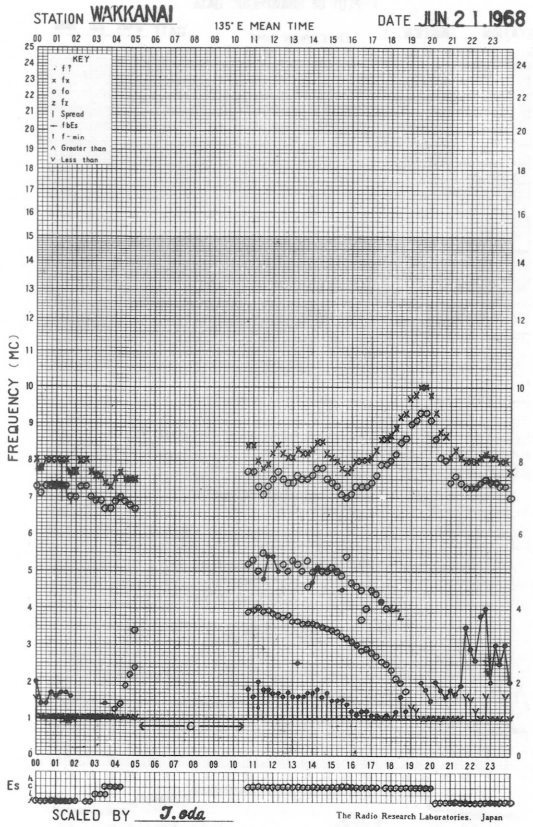


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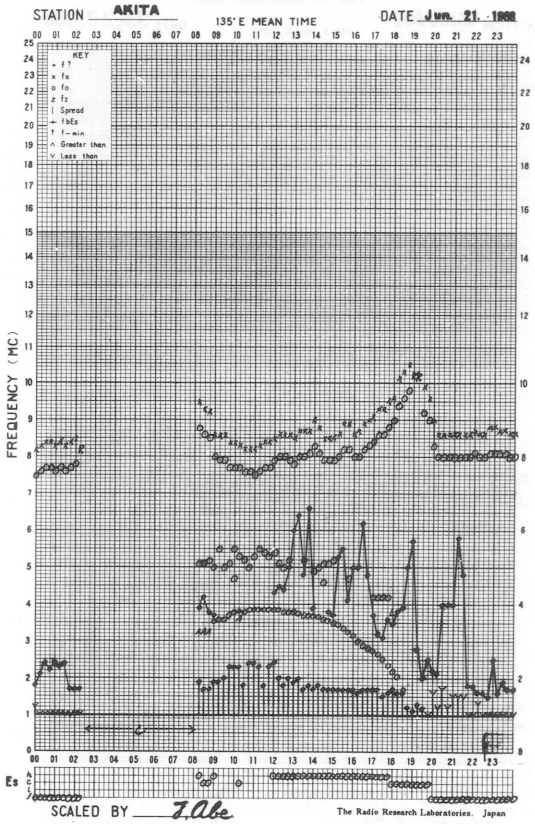


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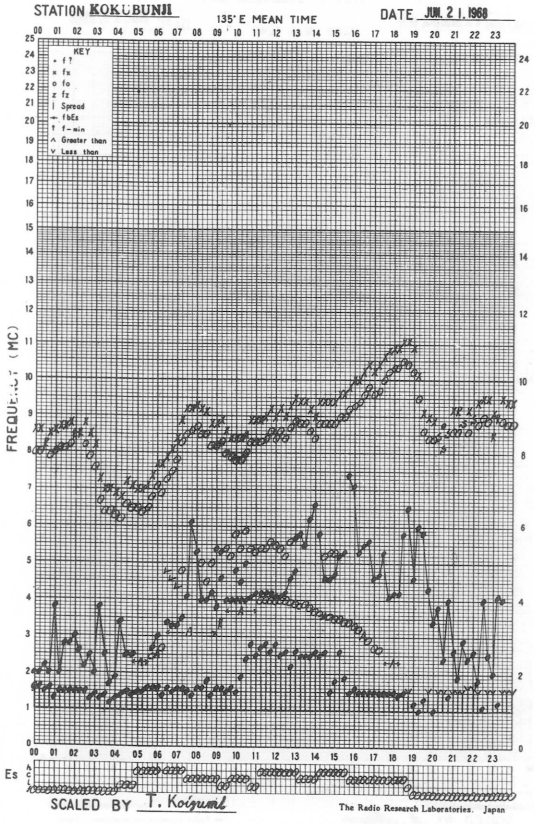


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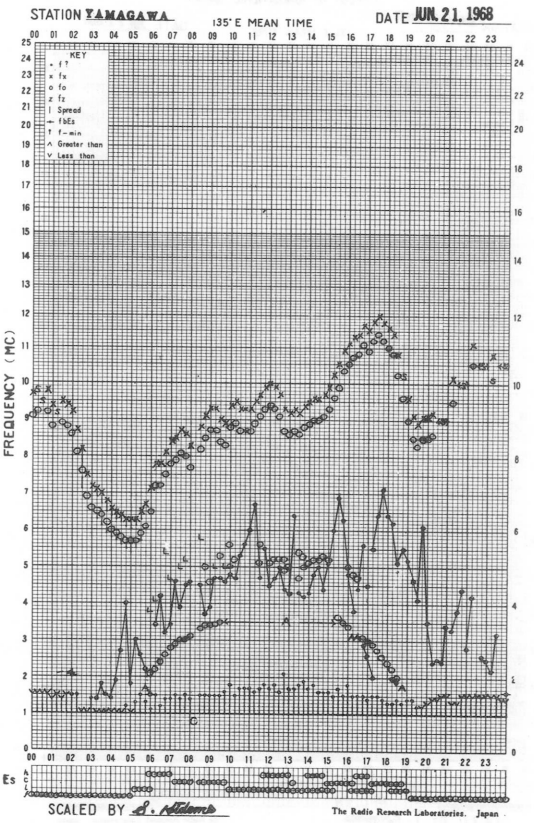

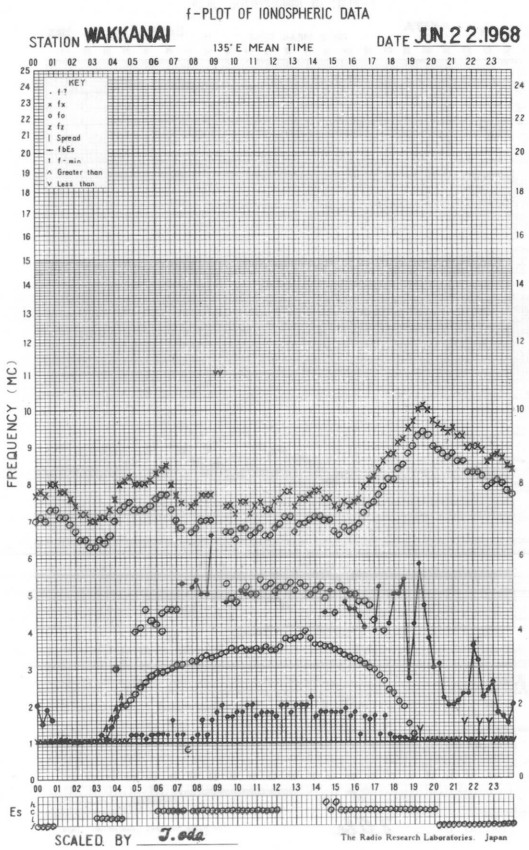
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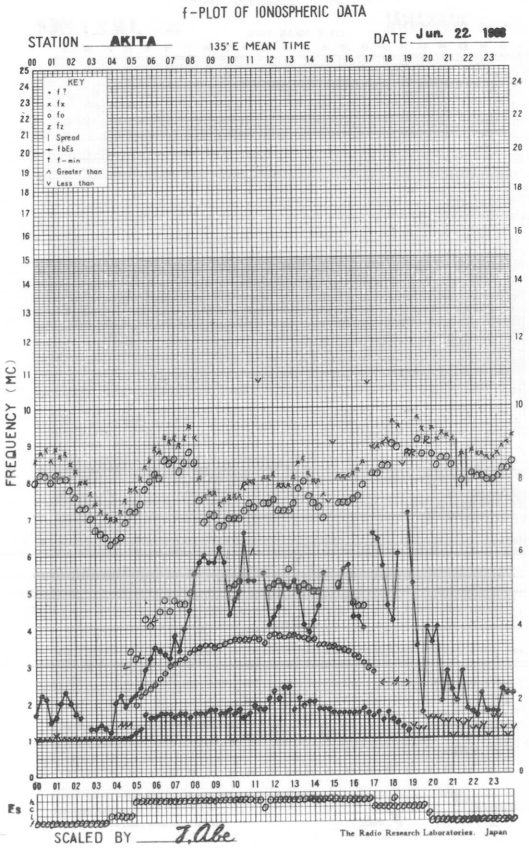
SCALED BY T. oda
The Radio Research Laboratories. Japan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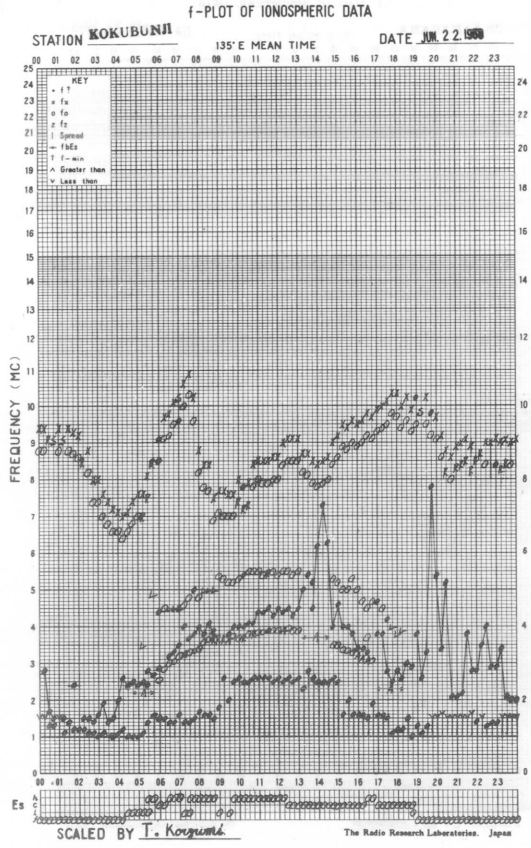
The Radio Research Laboratories. Japan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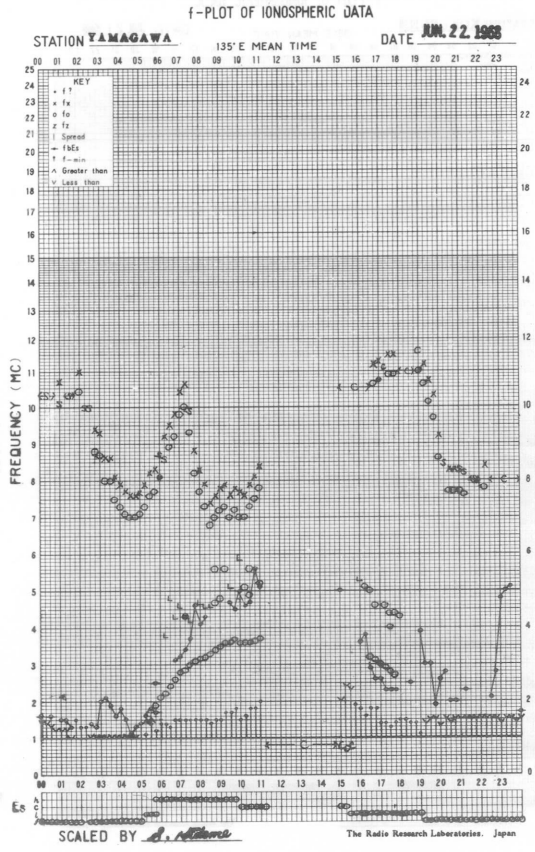
The Radio Research Laboratories. Japan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The Radio Research Laboratories. Japan

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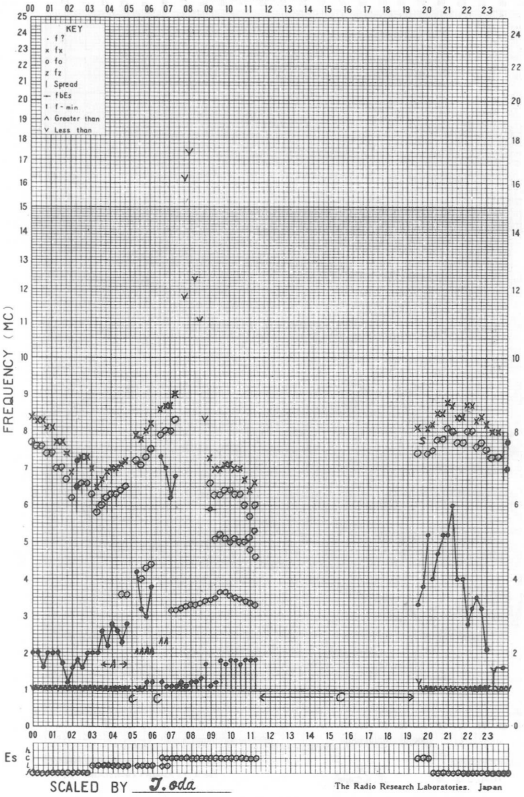


SCALED BY T. Oda

The Radio Research Laboratories. Japan

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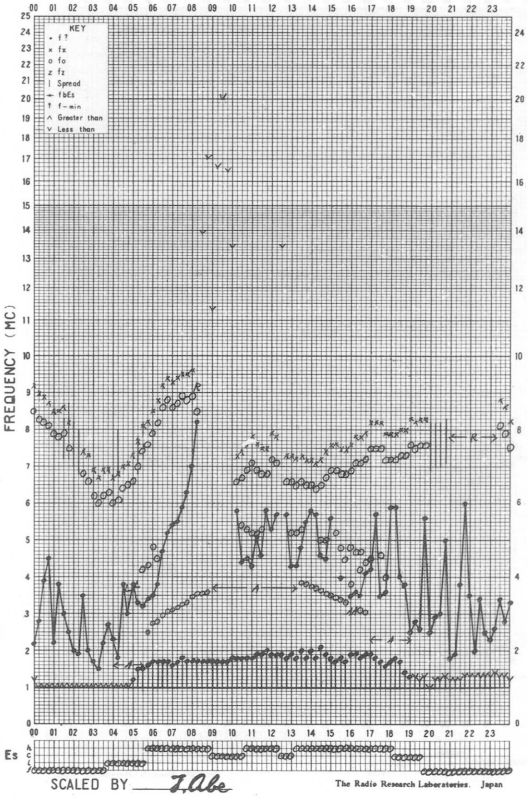


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The Radio Research Laboratories. Japan

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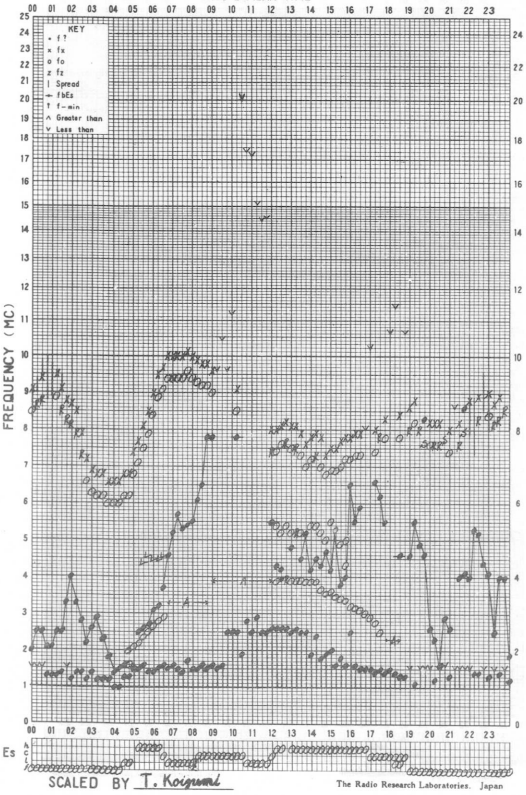


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The Radio Research Laboratories. Japan

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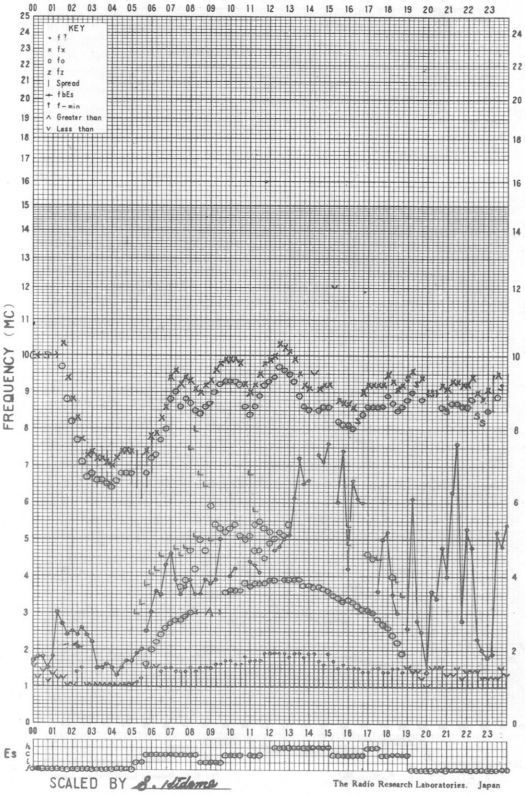
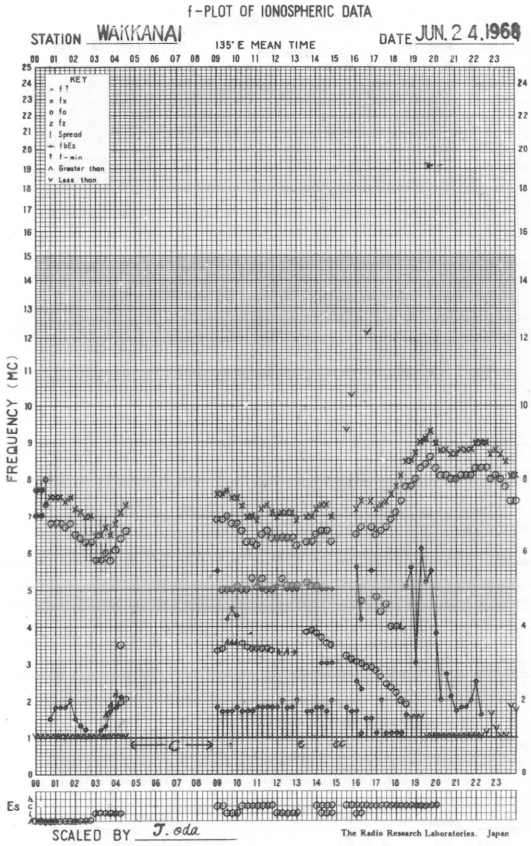



SCALED BY S. Ichikawa

The Radio Research Laboratories. Japan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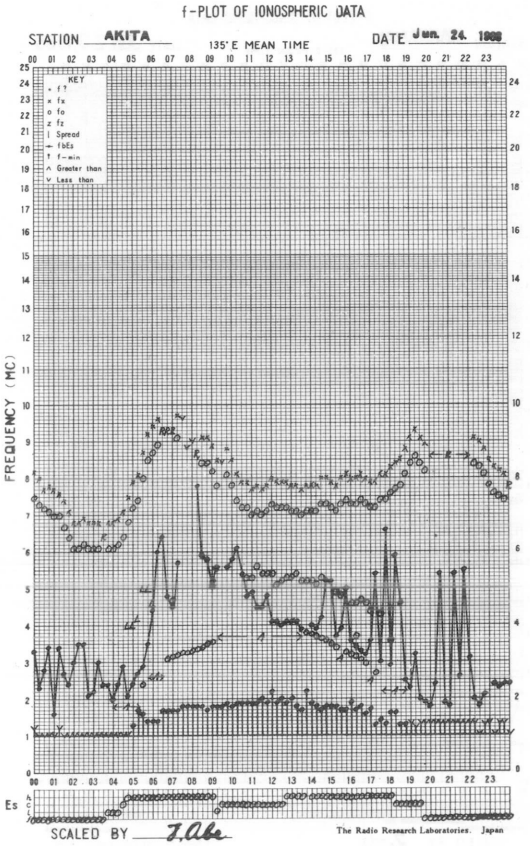
SCALED BY T. oda
The Radio Research Laboratories. Japan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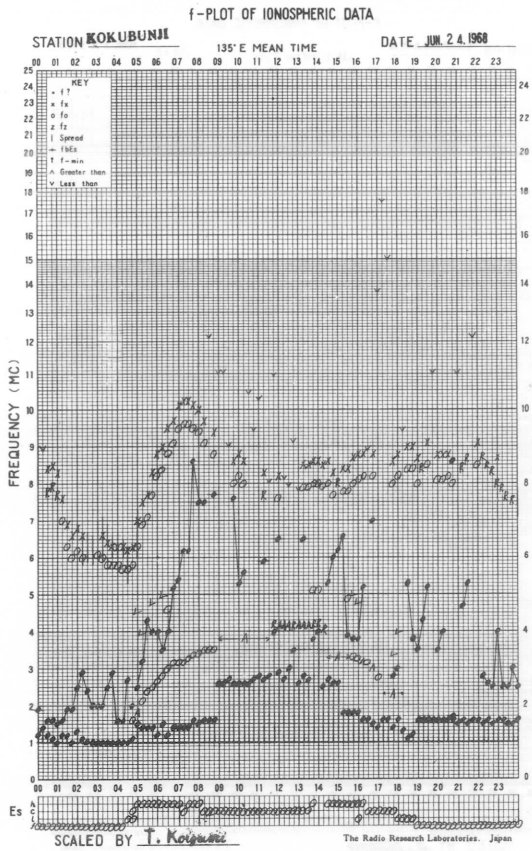
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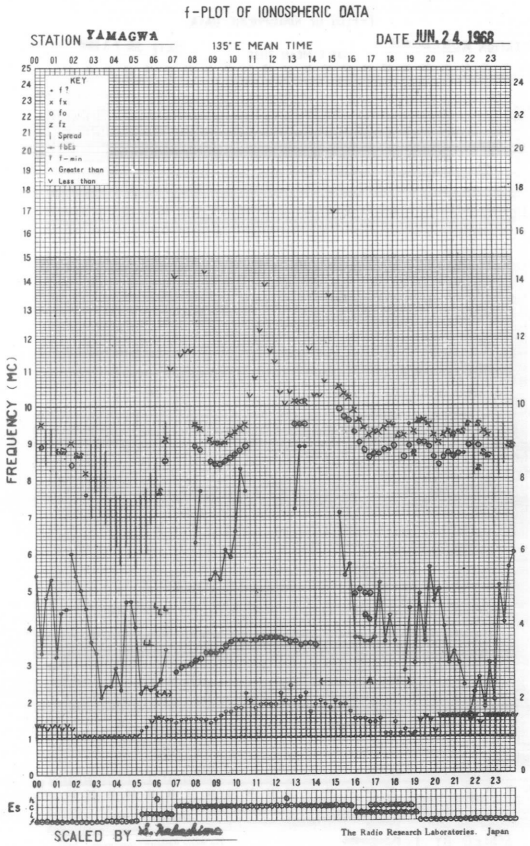
The Radio Research Laboratories. Japan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The Radio Research Laboratories. Japan

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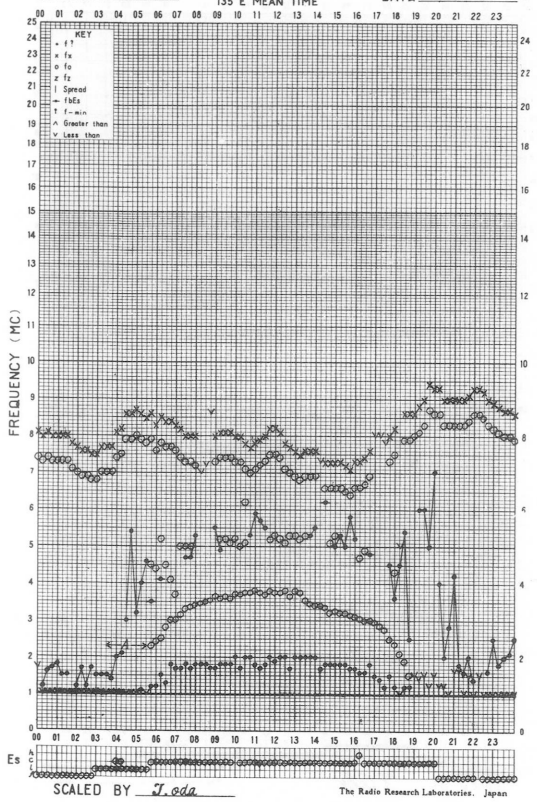


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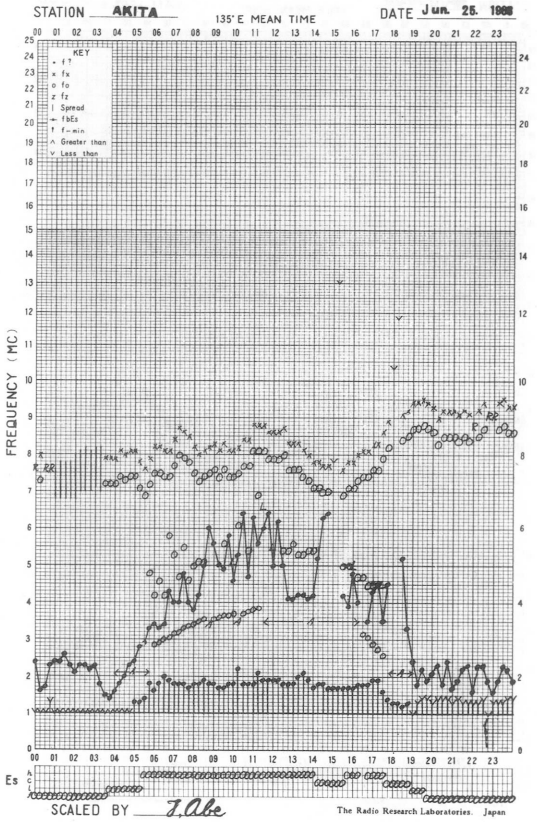


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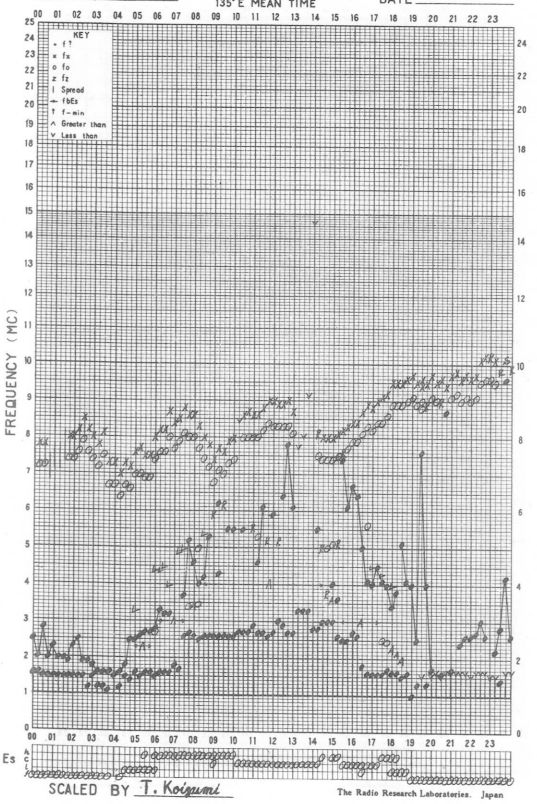


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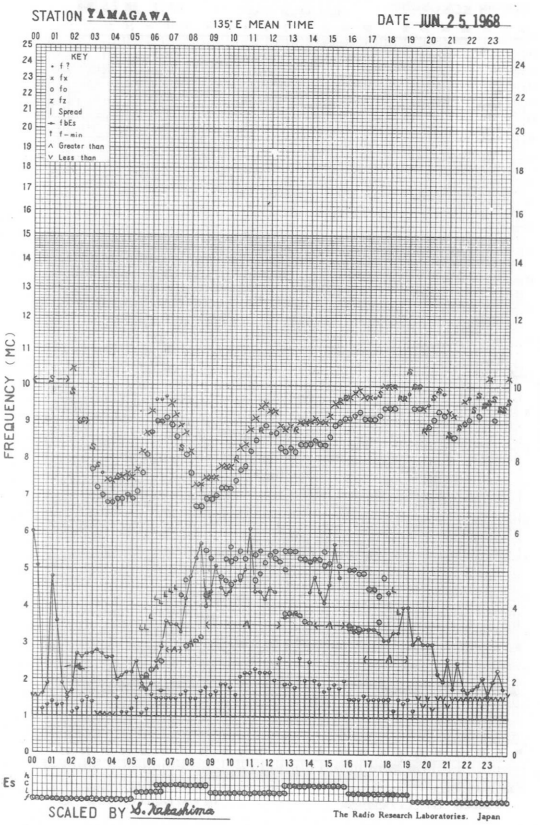
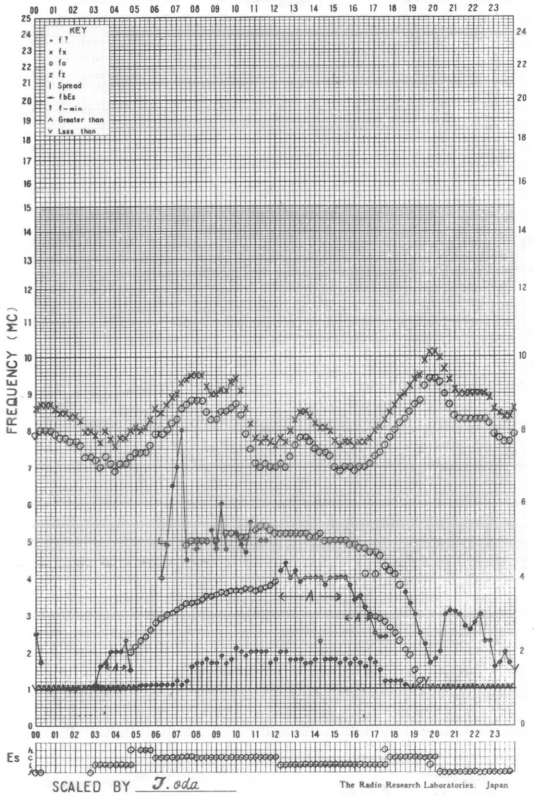



SCALED BY S. Takashima The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE JUN. 26. 1968

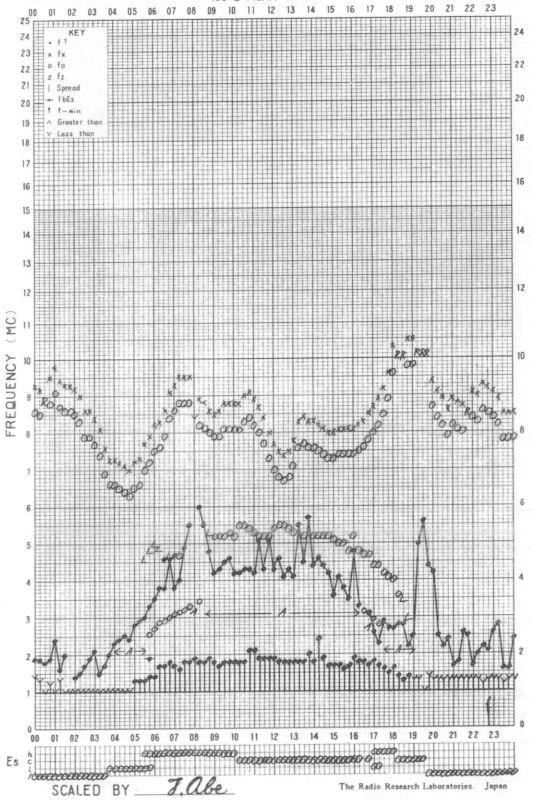



SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE Jun. 26. 1968

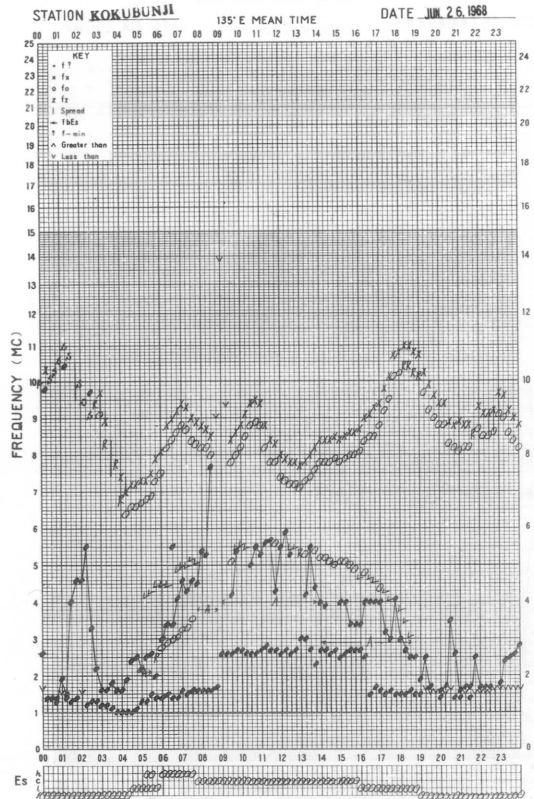



SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE JUN. 26. 1968




SCALED BY T. Koizumi

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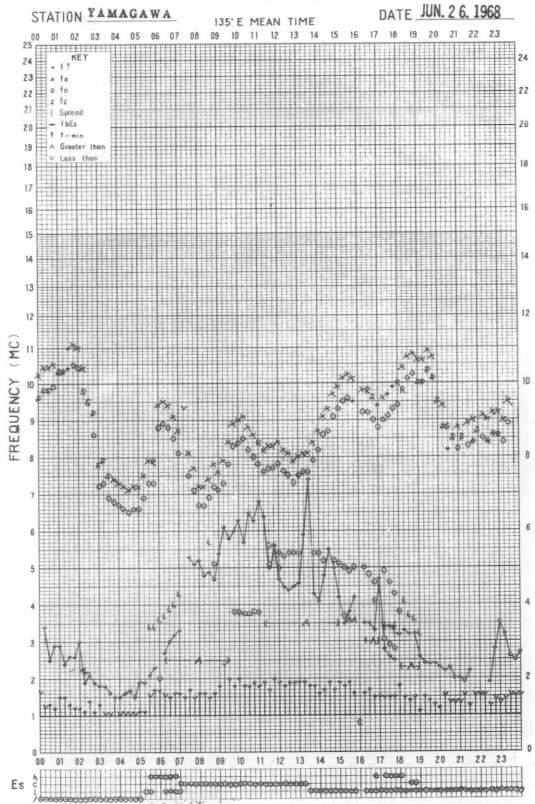
f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE JUN. 26. 1968

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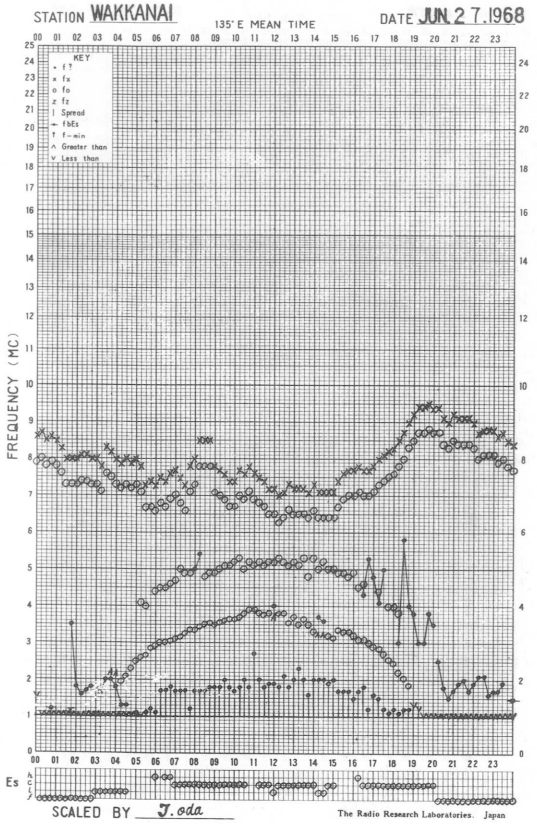
f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JUN. 27.1968

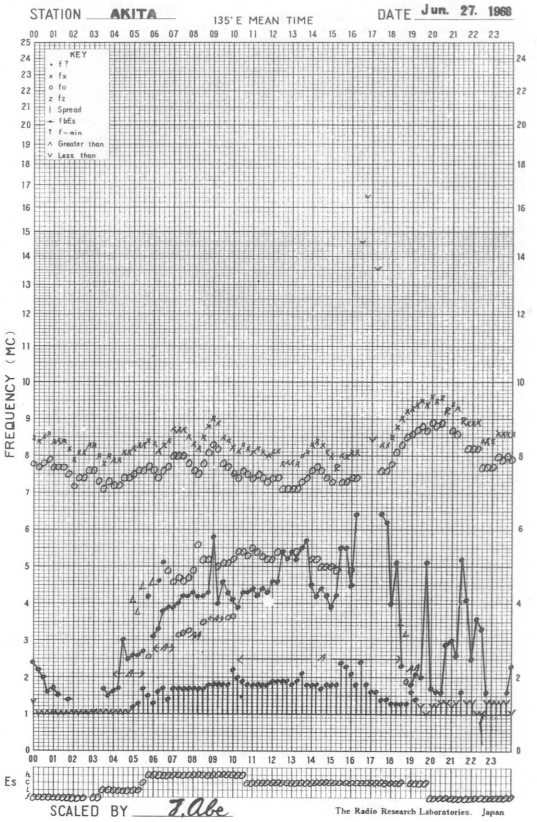



SCALED BY J. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jun. 27. 1968




SCALED BY T. Abe

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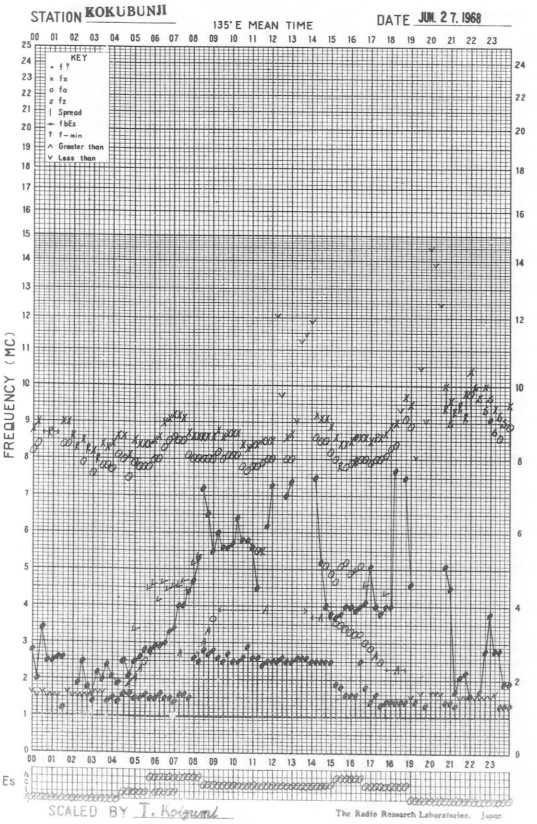
f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JUN. 27. 1968

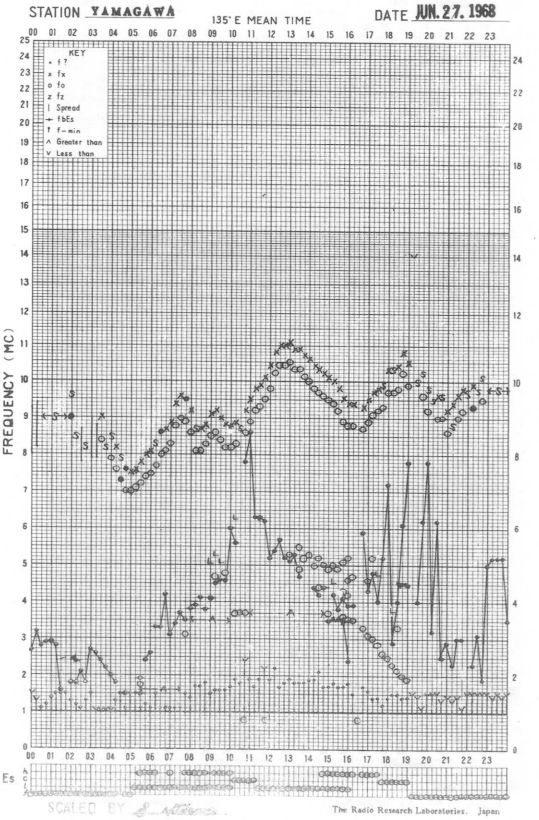



SCALED BY T. Koyama

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE JUN. 27. 1968

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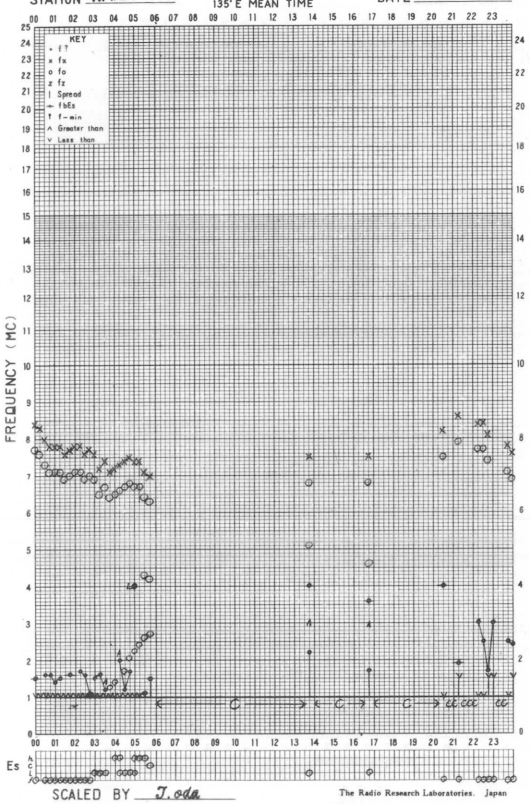
f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE JUN. 28. 1968

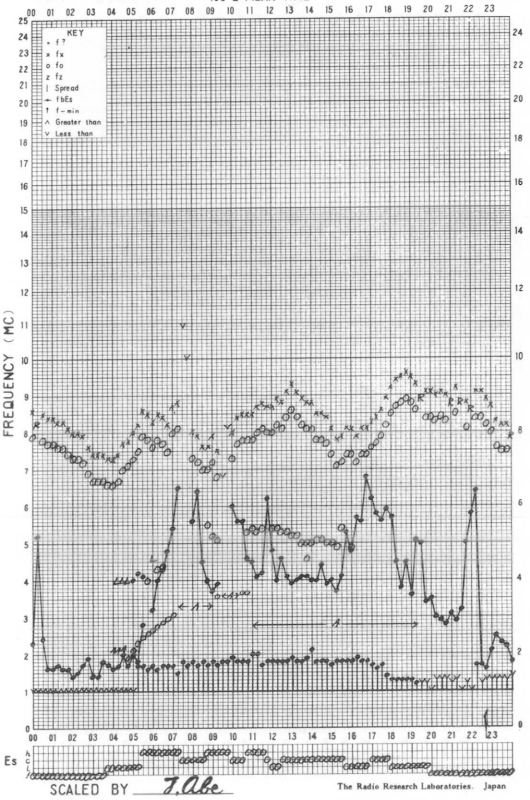



SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE Jun. 28. 1968

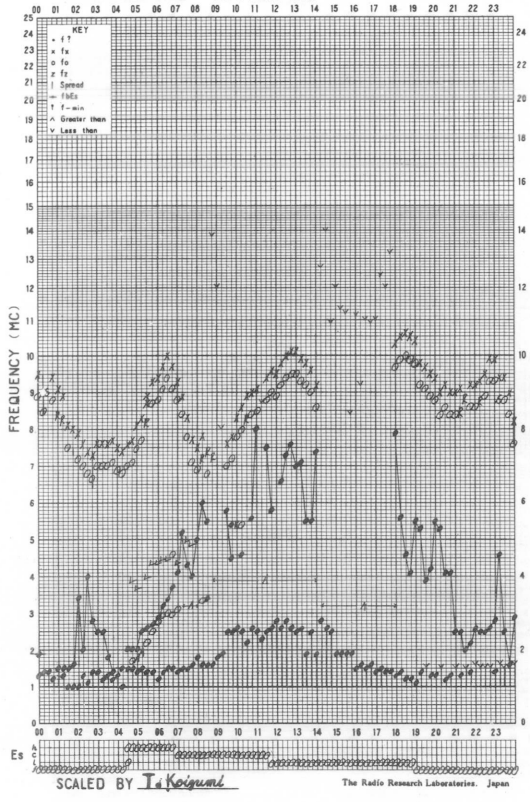



SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE JUN. 28. 1968

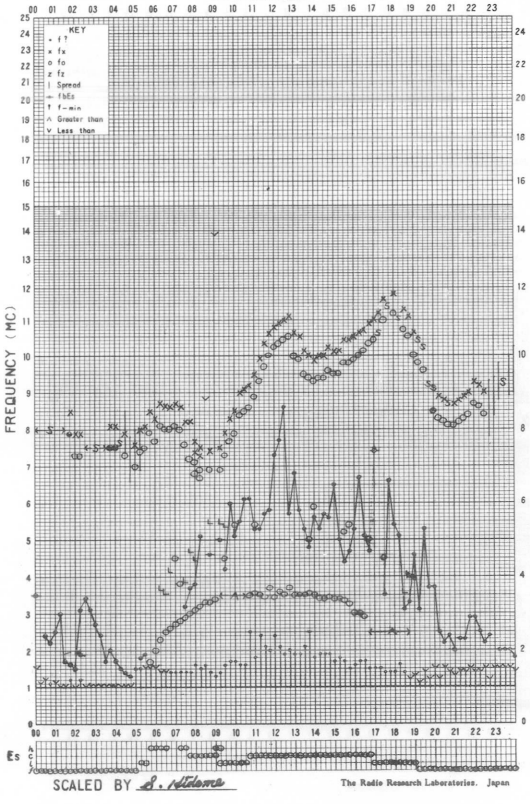



SCALED BY I. Koiguni

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE JUN. 28. 1968

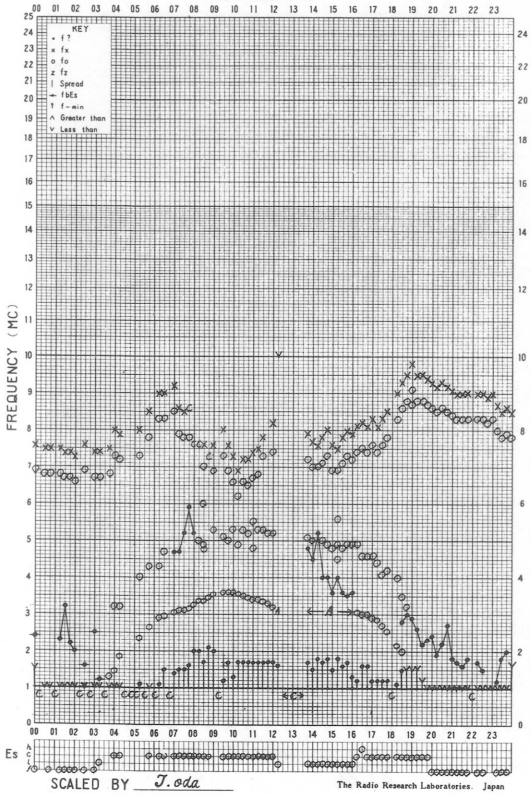



SCALED BY S. Nitoma

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135° E MEAN TIME DATE JUN. 29, 1968

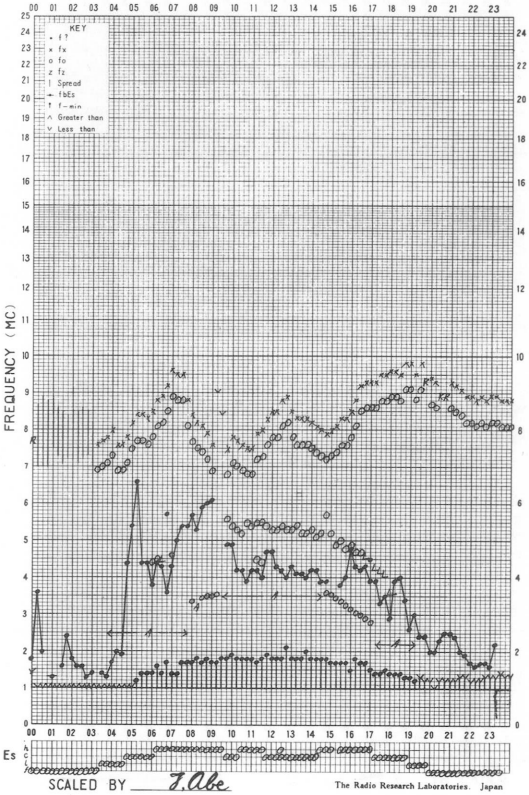



SCALED BY T. oda

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135° E MEAN TIME DATE Jun. 28. 1968

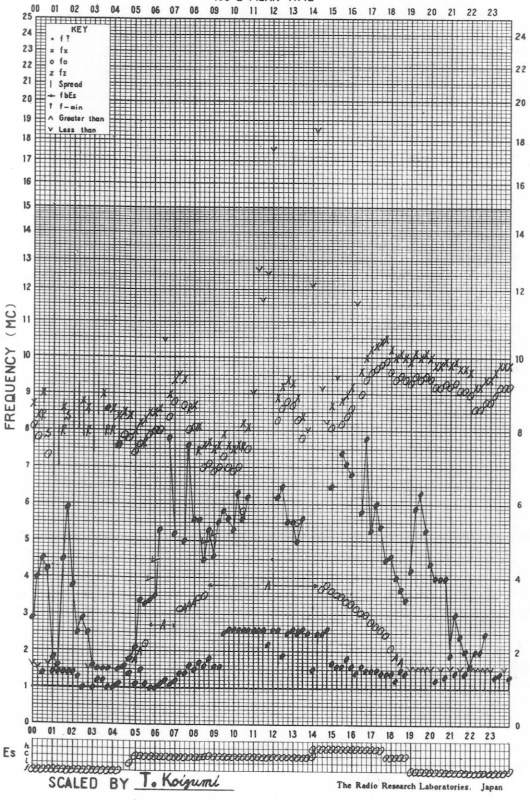



SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135° E MEAN TIME DATE JUN. 29. 1968

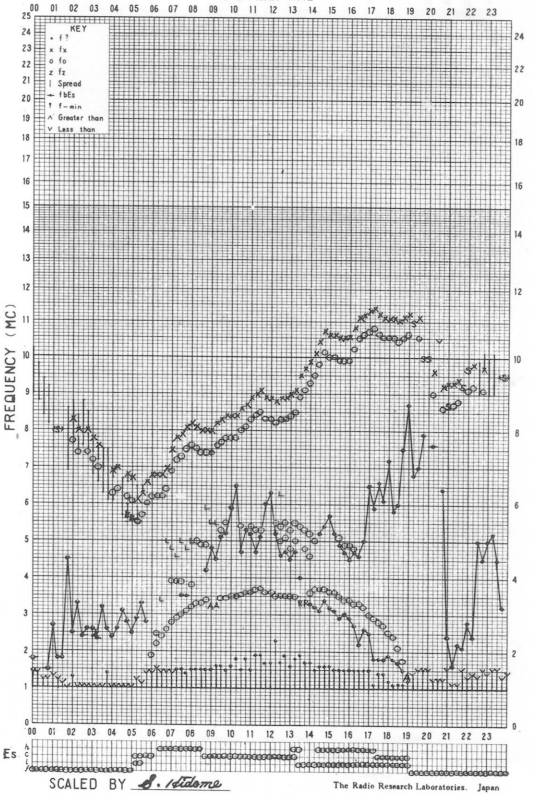



SCALED BY T. Koizumi

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135° E MEAN TIME DATE JUN. 29, 1968

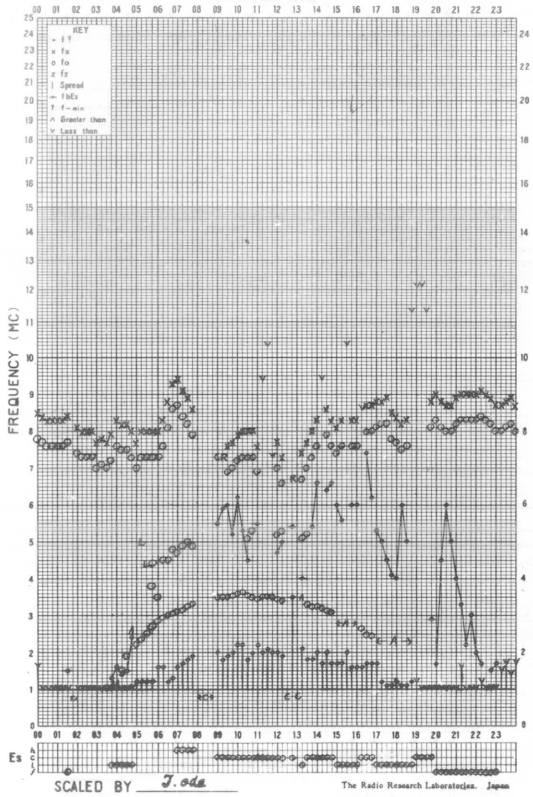



SCALED BY A. Ishidome

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION WAKKANAI 135°E MEAN TIME DATE JUN. 30. 1968

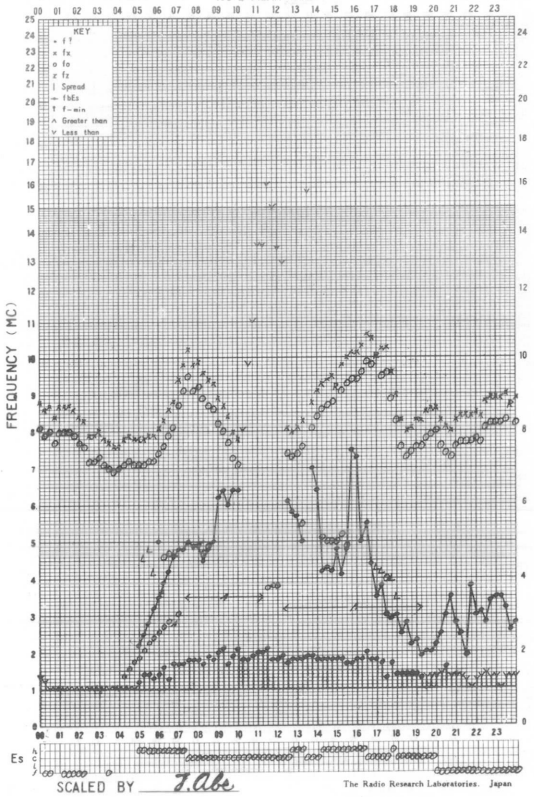



SCALED BY T. ode

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION AKITA 135°E MEAN TIME DATE Jun. 30. 1968

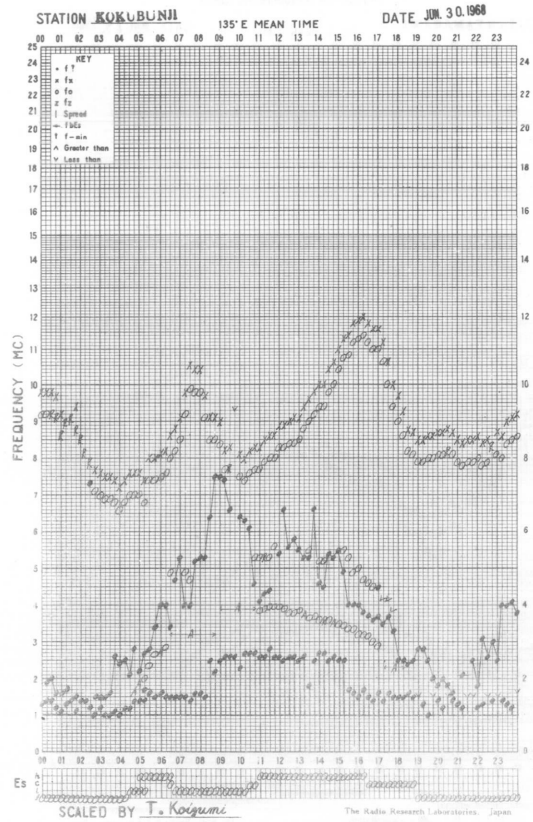



SCALED BY T. Abe

The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION KOKUBUNJI 135°E MEAN TIME DATE JUN. 30. 1968

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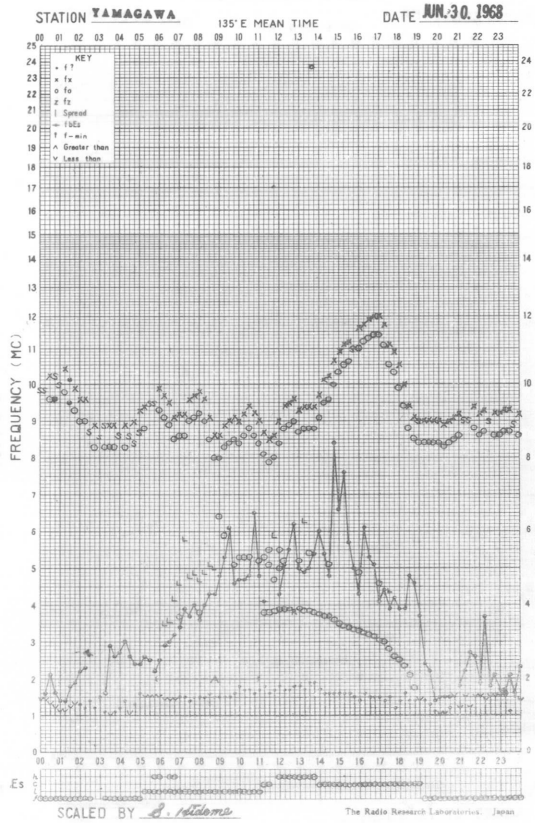
The Radio Research Laboratories. Japan

f-PLOT OF IONOSPHERIC DATA

STATION YAMAGAWA 135°E MEAN TIME DATE JUN. 30. 1968




SCALED BY S. Nishioma

The Radio Research Laboratories. Japan

SOLAR RADIO EMISSION

Flux Density and Variability

Month: June 1968
Observing station: Hiraiso Frequency: 200 MHz

| | Flux density $10^{-22}Wm^{-2}(Hz)^{-1}$ | | | | | Variability 0 to 3 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| UT | 00-03 | 03-06 | 06-09 | 21-24 | Day | 00-03 | 03-06 | 06-09 | 21-24 | Day |
| Date | | | | | | | | | | |
| 1 | 18 | 11 | 8 | 11 | 12 | 1 | 1 | 1 | 1 | 1 |
| 2 | 8 | 8 | 7 | 8 | 8 | 1 | 1 | 1 | 1 | 1 |
| 3 | 6 | 6 | 6 | 8 | 7 | 1 | 0 | 0 | 1 | 1 |
| 4 | 34 | 13 | 9 | 8 | 16 | 1 | 1 | 1 | 1 | 1 |
| 5 | 9 | 7 | 7 | 6 | 8 | 1 | 0 | 1 | 0 | 1 |
| 6 | 6 | 7 | 7 | 7 | 7 | 1 | 1 | 1 | 1 | 1 |
| 7 | 7 | 7 | 7 | 7 | 7 | 1 | 1 | 1 | 1 | 1 |
| 8 | 7 | 7 | 6 | 11 | 7 | 1 | 1 | 0 | 1 | 1 |
| 9 | 16 | 12 | 12 | 22 | 13 | 2 | 1 | 2 | 2 | 2 |
| 10 | 10 | 9 | 10 | 9 | 13 | 2 | 1 | 1 | 1 | 2 |
| 11 | 12 | 8 | 7 | 7 | 9 | 2 | 1 | 0 | 0 | 1 |
| 12 | 7 | 7 | 7 | 8 | 7 | 1 | 0 | 1 | 1 | 1 |
| 13 | 8 | 8 | 9 | 7 | 8 | 1 | 1 | 1 | 1 | 1 |
| 14 | 7 | 7 | 7 | 9 | 7 | 1 | 1 | 1 | 1 | 1 |
| 15 | 8 | 7 | 7 | 9 | 8 | 1 | 1 | 1 | 1 | 1 |
| 16 | 7 | 7 | 7 | 9 | 7 | 1 | 1 | 0 | 1 | 1 |
| 17 | 7 | 7 | 7 | 7 | 7 | 0 | 1 | 0 | 0 | 1 |
| 18 | 7 | 7 | 10 | 9 | 8 | 1 | 1 | 2 | 1 | 1 |
| 19 | 8 | 8 | 8 | - | 8 | 1 | 1 | 1 | - | 1 |
| 20 | 8 | 11 | 10 | 8 | 9 | 1 | 2 | 1 | 1 | 1 |
| 21 | 10 | 13 | 13 | 15 | 11 | 1 | 2 | 2 | 2 | 2 |
| 22 | 13 | 17 | 31 | (8) | 19 | 1 | 2 | 2 | (0) | 2 |
| 23 | 7 | 7 | 7 | 10 | 7 | 0 | 1 | 0 | 1 | 0 |
| 24 | 9 | 9 | 9 | 10 | 9 | 1 | 1 | 1 | 1 | 1 |
| 25 | 9 | 9 | 9 | - | 9 | 0 | 1 | 1 | - | 1 |
| 26 | 7 | 7 | 6 | 8 | 7 | 1 | 1 | 1 | 1 | 1 |
| 27 | 8 | 7 | 7 | 8 | 8 | 1 | 0 | 1 | 1 | 1 |
| 28 | 6 | (6) | 7 | 7 | 7 | 0 | (0) | 0 | 0 | 0 |
| 29 | 6 | 6 | 6 | 7 | 6 | 0 | 0 | 0 | 1 | 0 |
| 30 | 6 | 6 | 7 | 6 | 7 | 1 | 1 | 1 | 1 | 1 |

Note No observations during the following periods:

| | | | | | |
|---|---|---|---|---|---|
| 14th | 0800- | 1000 | 22nd | 1920- | 2310 |
| 17th | 0800- | 1000 | 25th | 1920- | 2400 |
| 19th | 1920- | 2400 | 28th | 0400- | 0600 |
| 21st | 0200- | 0300 | | | |

# SOLAR RADIO EMISSION

## Flux Density

Month: June 1968
Observing station: Hiraiso Frequency: 500 MHz

Flux density $10^{-22}$ $Wm^{-2}(Hz)^{-1}$

| UT | 00-03 | 03-06 | 06-09 | 21-24 | Day |
|---|---|---|---|---|---|
| Date | | | | | |
| 1 | 29 | 31 | 30 | 31 | 30 |
| 2 | 28 | 28 | 29 | 30 | 29 |
| 3 | 29 | 29 | 28 | 27 | 29 |
| 4 | 32 | 29 | 27 | 26 | 29 |
| 5 | 26 | 26 | 25 | 25 | 26 |
| 6 | 26 | 25 | 26 | 26 | 26 |
| 7 | 27 | 26 | 26 | 27 | 26 |
| 8 | 27 | 28 | 28 | 30 | 27 |
| 9 | 29 | 29 | 30 | 31 | 30 |
| 10 | 30 | 32 | 30 | 28 | 30 |
| 11 | 28 | 28 | 27 | 27 | 28 |
| 12 | 27 | 27 | 26 | 28 | 27 |
| 13 | 29 | 30 | 29 | - | 29 |
| 14 | 29 | 28 | 27 | 28 | 28 |
| 15 | 29 | 28 | 27 | 30 | 28 |
| 16 | 30 | 29 | 25 | 25 | 29 |
| 17 | 26 | 28 | 26 | 27 | 26 |
| 18 | 28 | 29 | 28 | 29 | 28 |
| 19 | 31 | 31 | (28) | - | 30 |
| 20 | - | 36 | 34 | 28 | 35 |
| 21 | 33 | 30 | 29 | 29 | 30 |
| 22 | 33 | 28 | 30 | 30 | 30 |
| 23 | 29 | 27 | 28 | 30 | 29 |
| 24 | 28 | 28 | 30 | 27 | 29 |
| 25 | 28 | 31 | 32 | 31 | 29 |
| 26 | - | - | - | 27 | (31) |
| 27 | 34 | 32 | 30 | 27 | 31 |
| 28 | 28 | 28 | 29 | 26 | 28 |
| 29 | 28 | 27 | 28 | 26 | 27 |
| 30 | 27 | 29 | 28 | 27 | 28 |

Note No observations during the following periods:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 13th | 1920- | 14th | 0010 | 19th | 1920- | 20th | 0300 |
| 16th | 0700- | | 0800 | 24th | 0000- | | 0100 |
| 19th | 0600- | | 0800 | 26th | 0000- | | 1000 |

## Distinctive Events

(single-frequency observations)

Month: June 1968
Observing station: Hiraiso
Normal observing period: 1920 - 1000 (sunrise to sunset)

| Date | Frequency | Starting time | Time of maximum | Duration | Type | Flux density $10^{-22}Wm^{-2}(Hz)^{-1}$ | | Remarks |
|---|---|---|---|---|---|---|---|---|
| | MHz | UT | UT | minutes | | peak | mean | |
| 3 | 500 | 2340.0 | 2352.8 | 43.0 | C | 230 | 10 | |
| 4 | 500 | 2307.7 | 2308.0 | 6.0 | C | 230 | 5 | |
| | 200 | 2309.5 | 2311.0 | 1.5 | C | 140 | 10 | |
| | | 2312.0 | 2312.0 | 2.0 | C | 25 | 5 | |
| | | 2324.0 | 2327.0 | 9.0 | C | 70 | 25 | |
| 7 | 200 | 0454.0 | 0455.0 | 4.0 | C | 600 | 20 | |
| 9 | 500 | 0028.0 | 0038.3 | 49.0 | C | 30 | 5 | |
| | | 0838.0 | 0854.5 | 42.0 | C | 1760 | 100 | |
| | 200 | 0838.0 | 0847.5 | 42.0 | C | 1770 | 70 | |
| 10 | 200 | 2114.0 | 2114.5 | 1.0 | C | 850 | 150 | |
| 26 | 200 | 0511.7 | 0511.7 | 1.0 | C | 1250 | 360 | |
| 27 | 500 | 0728.0 | 0728.5 | 3.5 | C | 80 | 10 | |
| | 200 | 0729.0 | 0729.0 | 2.0 | C | 650 | 40 | |

MEASUREMENT OF H.F. FIELD STRENGTH ( UPPER SIDE-BAND OF WWV )

JUN 1968 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

| UT DAY | 00H 15M | 01H 15M | 02H 15M | 03H 15M | 04H 15M | 05H 15M | 06H 15M | 07H 15M | 08H 15M | 09H 15M | 10H 15M | 11H 15M | 12H 15M | 13H 15M | 14H 15M | 15H 15M | 16H 15M | 17H 15M | 18H 15M | 19H 15M | 20H 15M | 21H 15M | 22H 15M | 23H 15M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -1 | 7 | 7 | 7 | 10 | 20 | 25 | 17 | 19 | 22 | 12 | 7 | 18 | 27 | 23 | 17 | 23 | 19 | 4 | -1 | 5 | 9 | -4 | 0 |
| 2 | -11 | 5 | 3 | 9 | 14 | 13 | 14 | 9 | 3 | 18 | 18 | 0 | 19 | 23 | 11 | 14 | 7 | 14 | 12 | 5 | 15 | 11 | 9 | 4 |
| 3 | 12 | 6 | 6 | 6 | 13 | 21 | 3 | 1 | 1 | 2 | 0 | 0 | 13 | 14 | 12 | 17 | 11 | 2 | 17 | 2 | -3 | 2 | 2 | 4 |
| 4 | 0 | -4 | 2 | 3 | 8 | 6 | 8 | -4 | -1 | 1 | 4 | 6 | 15 | 33 | 29 | 19 | 16 | 20 | 8 | 14 | 2 | 10 | 11 | 1 |
| 5 | 4 | -1 | -2 | 4 | 7 | 11 | 15 | 14 | 11 | 10 | 13 | 0 | 18 | 16 | 20 | 19 | 19 | 21 | 13 | 11 | 10 | 2 | 2 | -1 |
| 6 | -4 | 1 | 4 | 2 | 7 | 11 | 22 | 21 | 16 | 12 | 12 | 8 | 23 | 25 | 19 | 21 | 15 | 11 | 9 | 2 | 8 | 1 | 0 | 1 |
| 7 | 0 | -1 | -1 | 0 | 5 | 10 | 20 | 2 | 1 | 7 | 8 | 6 | 16 | 16 | 28 | 29 | 20 | 10 | 15 | 16 | S | S | 11 | 0 |
| 8 | 0 | 0 | 0 | 0 | 11 | 9 | 16 | 19 | 16 | 21 | 16 | 5 | 4 | 18 | 26 | 14 | 7 | 19 | 15 | 13 | 5 | S | 5 | -2 |
| 9 | -6 | -2 | -1 | 1 | 6 | 10 | 6 | 15 | 1 | 5 | 6 | 2 | 5 | 15 | 15 | 22 | 19 | 15 | 8 | 12 | 11 | 8 | 6 | 6 |
| 10 | -4 | 3 | 4 | 4 | 5 | 4 | -7 | 3 | 13 | 8 | US 2 | ES 3 | 11 | 15 | 5 | 12 | 13 | 17 | 15 | -13 | -13 | 2 | 2 | -1 |
| 11 | 6 | 2 | 3 | UC 3 | 4 | -9 | -8 | 6 | 4 | ES -13 | -6 | ES -2 | ES -2 | ES 0 | 6 | 8 | ES -11 | ES -9 | S | -15 | -12 | 0 | ES -7 | ES -14 |
| 12 | ES -30 | ES -30 | 0 | -12 | ES -12 | ES -20 | ES -2 | -12 | ES -12 | -7 | ES -8 | 0 | 19 | 22 | 15 | -3 | 0 | -12 | ES -4 | ES -7 | ES -14 | ES -9 | 15 | 1 |
| 13 | -12 | -5 | 13 | 10 | 10 | -3 | -8 | -2 | 2 | 16 | 19 | 7 | 3 | ES -3 | 12 | 9 | 7 | 3 | ES -6 | ES -19 | -13 | ES -17 | ES -29 | ES -29 |
| 14 | -2 | -8 | -5 | -3 | -2 | -3 | 13 | 11 | -8 | ES -14 | -6 | 2 | 13 | 11 | 4 | 8 | 2 | -13 | ES 12 | -13 | ES -3 | ES -4 | -2 | 13 |
| 15 | 3 | -13 | -5 | -5 | 2 | - | 12 | 15 | -6 | -10 | 5 | 3 | 5 | 25 | 27 | 15 | 11 | 12 | 5 | 13 | 3 | 3 | 1 | 1 |
| 16 | 6 | 2 | 6 | -4 | 8 | 14 | 16 | 15 | 15 | 21 | 20 | 14 | 18 | 16 | 28 | 24 | 14 | 1 | 5 | 15 | 2 | 5 | 3 | 0 |
| 17 | 2 | 0 | -3 | 6 | 2 | 5 | 0 | ES -9 | -6 | 14 | 1 | -6 | 9 | 31 | 11 | 2 | -1 | 2 | 10 | 2 | -3 | -10 | -2 | -5 |
| 18 | -11 | -8 | 1 | -2 | 10 | 13 | 13 | -1 | -6 | -6 | -4 | -2 | 7 | 27 | 12 | 8 | 12 | 16 | ES -3 | -3 | 7 | 14 | 10 | 1 |
| 19 | -3 | 2 | -1 | 5 | 2 | 15 | 2 | -2 | 2 | 3 | 8 | 0 | 4 | C | C | 17 | 11 | 7 | ES -15 | 7 | 12 | 5 | 12 | ES -5 |
| 20 | -10 | 2 | 6 | 4 | 10 | 9 | 6 | -2 | 3 | 14 | 13 | 16 | 11 | 17 | 20 | 22 | 13 | 4 | 6 | 11 | 10 | 4 | 5 | 8 |
| 21 | 7 | 3 | 4 | 2 | 8 | 12 | 13 | 15 | 16 | 13 | 11 | 8 | 19 | 21 | 20 | 12 | 10 | 14 | 11 | 10 | 9 | 5 | 3 | -6 |
| 22 | -5 | 0 | 1 | 5 | 8 | 16 | 15 | 15 | 13 | 0 | 3 | 4 | 20 | 26 | 20 | 18 | 14 | 0 | -3 | -15 | -10 | ES 4 | 3 | 1 |
| 23 | -6 | -4 | -4 | 1 | -1 | 4 | 8 | 10 | -1 | 5 | 4 | 4 | 19 | 27 | 16 | 20 | 18 | 15 | 9 | 13 | 9 | 2 | 10 | 1 |
| 24 | 5 | -1 | -1 | 1 | 8 | 14 | 16 | 15 | 20 | 24 | 28 | 22 | 23 | 26 | 19 | 22 | 8 | 15 | 10 | 13 | 2 | 2 | -2 | -5 |
| 25 | -7 | -5 | 1 | 2 | 6 | 9 | 10 | 16 | 20 | 28 | 30 | 20 | 26 | 29 | 23 | 19 | 20 | 18 | 13 | 7 | 4 | 0 | -2 | -5 |
| 26 | -6 | 5 | 0 | 2 | 6 | 14 | 16 | 14 | 11 | 3 | 4 | 0 | 17 | 17 | 23 | 17 | 14 | 4 | 6 | 7 | 13 | 13 | 6 | 0 |
| 27 | 4 | 0 | -1 | -7 | 4 | 11 | 16 | 14 | 16 | 20 | 19 | 13 | 21 | 23 | 14 | 21 | 13 | 11 | 3 | 12 | 4 | 10 | 4 | 2 |
| 28 | 3 | 3 | 1 | 0 | 5 | 21 | 13 | 19 | 18 | 6 | -4 | 5 | 27 | 28 | 22 | 18 | 21 | 18 | 4 | 10 | 7 | 5 | 1 | -3 |
| 29 | -2 | 2 | 2 | 7 | 6 | 7 | 13 | 18 | 16 | 3 | 8 | 4 | 23 | 24 | 21 | 21 | 19 | 21 | 7 | 10 | 12 | 3 | 6 | 5 |
| 30 | 4 | 1 | 5 | 3 | 4 | 9 | 15 | 15 | 13 | 0 | 18 | ES 6 | ES 10 | 26 | 24 | 16 | 17 | 15 | 8 | 3 | 7 | 11 | 6 | -3 |
| CNT | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 29 | 30 | 30 | 30 | 29 | 30 | 29 | 28 | 30 | 30 |
| MED | -2 | 0 | 1 | 2 | 6 | 10 | 13 | 14 | 8 | 6 | 8 | US 4 | 16 | 23 | 20 | 17 | 13 | 13 | US 8 | 7 | 5 | US 4 | 3 | 0 |
| UD | 6 | 5 | 6 | 7 | 11 | 20 | 20 | 19 | 19 | 22 | 20 | 16 | 23 | 29 | 28 | 22 | 20 | 20 | 15 | 14 | 12 | 11 | 11 | 6 |
| LD | -11 | -8 | -4 | -5 | -1 | -3 | ES -7 | -4 | -6 | -10 | -6 | ES -2 | ES 4 | 11 | 6 | 8 | 0 | ES -9 | ES -4 | ES -15 | ES -13 | ES -9 | -4 | ES -6 |

MEASUREMENT OF H.F. FIELD STRENGTH ( UPPER SIDE-BAND OF WWVH )

JUN 1968 FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M

MEASURED AT HIRAISO

| UT DAY | 00H 45M | 01H 45M | 02H 45M | 03H 45M | 04H 45M | 05H 45M | 06H 45M | 07H 45M | 08H 45M | 09H 45M | 10H 45M | 11H 45M | 12H 45M | 13H 45M | 14H 45M | 15H 45M | 16H 45M | 17H 45M | 18H 45M | 19H 45M | 20H 45M | 21H 45M | 22H 45M | 23H 45M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | -5 | -2 | S | 3 | 9 | 11 | 15 | 22 | 21 | 20 | 21 | 18 | 20 | 18 | 20 | 19 | 14 | 14 | 8 | 4 | 2 | -5 | -9 | ES -16 |
| 2 | ES -11 | -2 | -2 | -6 | 5 | 13 | 14 | 21 | 18 | 22 | 20 | 18 | 16 | 17 | 16 | 19 | 14 | 11 | 14 | 9 | -1 | 2 | -1 | -4 |
| 3 | -7 | -7 | -7 | 0 | 9 | 18 | 17 | 17 | 25 | 25 | 25 | 21 | 22 | 19 | 17 | 22 | 20 | 15 | 4 | 2 | -3 | -4 | ES 2 | ES -15 |
| 4 | -6 | -5 | -4 | -1 | 4 | 9 | 19 | 16 | 23 | 20 | 20 | 21 | 22 | 22 | 15 | 11 | 18 | 21 | 4 | 2 | 4 | 0 | 0 | -5 |
| 5 | -9 | -6 | -1 | 4 | 9 | 12 | 18 | 18 | 21 | 18 | 21 | 20 | 18 | 15 | 16 | 17 | 21 | 12 | 14 | 10 | 3 | 0 | -4 | ES -15 |
| 6 | -4 | -7 | -2 | -4 | 10 | 13 | 19 | 22 | 22 | 23 | 22 | 22 | 21 | 19 | 18 | 19 | 16 | 21 | 10 | 9 | 10 | 1 | -4 | -2 |
| 7 | -5 | -9 | -3 | -3 | 8 | 13 | 16 | 22 | 21 | 22 | 21 | 19 | 21 | 21 | 21 | 20 | 21 | 16 | 11 | 13 | S | S -6 | | -4 |
| 8 | -5 | -8 | -1 | -2 | 4 | 10 | 15 | 22 | 25 | 23 | 29 | 19 | 18 | 18 | 16 | 17 | 15 | 15 | 6 | 4 | S | S -3 | | -3 |
| 9 | ES -20 | ES 1 | -4 | 1 | 10 | 10 | 19 | 16 | 16 | 22 | 26 | 22 | 21 | 21 | 19 | 16 | 12 | 13 | 6 | 2 | 11 | -4 | -4 | 0 |
| 10 | -7 | -6 | 2 | -1 | 10 | 12 | 17 | 21 | 21 | 24 | 22 | 26 | 21 | 13 | 17 | 17 | 11 | 9 | 5 | 12 | 5 | 8 | ES -8 | ES -14 |
| 11 | -6 | -3 | -8 | -3 | 3 | 14 | 18 | 18 | 24 | 23 | 17 | 21 | 22 | 16 | 15 | 2 | 0 | -2 | S | 0 | 2 | 2 | -1 | -12 |
| 12 | -4 | ES -30 | ES -30 | ES -20 | 10 | 11 | 16 | 19 | 21 | 21 | 18 | 20 | 22 | 22 | 16 | 21 | 17 | 12 | 2 | 6 | 0 | -5 | -12 | -14 |
| 13 | -26 | -14 | -8 | 0 | 6 | 15 | 17 | 23 | 24 | 26 | 26 | 22 | 24 | 22 | 14 | 17 | 21 | 3 | 1 | -3 | ES -6 | 2 | ES -29 | -6 |
| 14 | -11 | -8 | -3 | -2 | 7 | 11 | 14 | 18 | 21 | 22 | 17 | 17 | 20 | 20 | 11 | 6 | 1 | 10 | 13 | 11 | -1 | -5 | -6 | ES -8 |
| 15 | -19 | -19 | -7 | -5 | 3 | 19 | 17 | 18 | 18 | 18 | 18 | 20 | 22 | 17 | 15 | 11 | 7 | 13 | 6 | 4 | 6 | -1 | -4 | -9 |
| 16 | 0 | -4 | 0 | 7 | 15 | 14 | 17 | 18 | 20 | 20 | 22 | 21 | 16 | 21 | 22 | 20 | 21 | 18 | 10 | 4 | 4 | 0 | -7 | ES -15 |
| 17 | -19 | ES -6 | 0 | 3 | 11 | 16 | 16 | 21 | 20 | 21 | 24 | 21 | 21 | 24 | 14 | 18 | 22 | 17 | 9 | 7 | 0 | -4 | ES -20 | ES -16 |
| 18 | -3 | -7 | -1 | 4 | 4 | 14 | 15 | 22 | 15 | 27 | 29 | 28 | 27 | 17 | 21 | 24 | 10 | 17 | -7 | 6 | -2 | 3 | -4 | -7 |
| 19 | -6 | -5 | -1 | -2 | 8 | 12 | 17 | 18 | 18 | 24 | 23 | 22 | 22 | C | C | 21 | 17 | -3 | 5 | 9 | -2 | -2 | -11 | ES -28 |
| 20 | 4 | -3 | -2 | 2 | 9 | 10 | 16 | 23 | 15 | 9 | 15 | 19 | 15 | 16 | 17 | 20 | 13 | 15 | 10 | 3 | 2 | 6 | -7 | ES -2 |
| 21 | -5 | -1 | -2 | -11 | 9 | 11 | 15 | 16 | 24 | 22 | 14 | 18 | 19 | 20 | 15 | 18 | 18 | 18 | 8 | 4 | 5 | 2 | 1 | -2 |
| 22 | -4 | -4 | 0 | 3 | 8 | 15 | 19 | 25 | 22 | 26 | 19 | 23 | 19 | 19 | 20 | 21 | 25 | 14 | 9 | 13 | 9 | -1 | -1 | ES -4 |
| 23 | -7 | ES -6 | -3 | -3 | 8 | 10 | 12 | 20 | 22 | 18 | 24 | 23 | 20 | 21 | 14 | 14 | 18 | 1 | 7 | 11 | 2 | 2 | -2 | ES -6 |
| 24 | -9 | -12 | -5 | 3 | 7 | 14 | 15 | 17 | 22 | 26 | 23 | 21 | 21 | 18 | 16 | 15 | 26 | 14 | 12 | 7 | 1 | 1 | -4 | -7 |
| 25 | -7 | -5 | -3 | 5 | 9 | 9 | 15 | 22 | 21 | 22 | 23 | 23 | 25 | 24 | 14 | 14 | 19 | 17 | 7 | 10 | 6 | -3 | -4 | ES -1 |
| 26 | ES -7 | -2 | -2 | 2 | 11 | 11 | 20 | 21 | 24 | 23 | 16 | 16 | 13 | 10 | 6 | 13 | 15 | 13 | 9 | 14 | 5 | 4 | 0 | -5 |
| 27 | -5 | -5 | -5 | -5 | 2 | 9 | 15 | 19 | 22 | 20 | 21 | 23 | 21 | 19 | 17 | 11 | 4 | 9 | 5 | 7 | 0 | 1 | -5 | -11 |
| 28 | -7 | -5 | -2 | 3 | 6 | 11 | 16 | 15 | 20 | 20 | 22 | 26 | 21 | 21 | 18 | 16 | 22 | 14 | 12 | 7 | 3 | 2 | -1 | -2 |
| 29 | -11 | -4 | 0 | 3 | 8 | 13 | 17 | 19 | 22 | 22 | 24 | 21 | 27 | 21 | 31 | 22 | 19 | 21 | 12 | 0 | 14 | 0 | 0 | 0 |
| 30 | -6 | 0 | -1 | 1 | 10 | 9 | 13 | 19 | 21 | 21 | 22 | 21 | 19 | 18 | 19 | 21 | 22 | 22 | 9 | 10 | 3 | -3 | -5 | -5 |
| CNT | 30 | 30 | 29 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 29 | 29 | 30 | 30 | 30 | 29 | 30 | 28 | 28 | 30 | 30 |
| MED | -6 | US -5 | -2 | 0 | 8 | 12 | 16 | 19 | 21 | 22 | 22 | 21 | 21 | 19 | 16 | 18 | 18 | 14 | 8 | 7 | 2 | 0 | US -4 | ES -6 |
| UD | -3 | ES -1 | 0 | 4 | 11 | 16 | 19 | 23 | 24 | 26 | 26 | 26 | 25 | 22 | 21 | 22 | 22 | 21 | 13 | 13 | 10 | 4 | ES 0 | ES -1 |
| LD | ES -19 | ES -14 | -8 | -6 | 3 | 9 | 14 | 16 | 16 | 18 | 16 | 18 | 16 | 15 | 14 | 11 | 4 | 1 | 2 | 0 | -2 | -5 | ES -12 | ES -16 |

# RADIO PROPAGATION QUALITY FIGURES

HIRAISO

Time in U.T.

| June 1968 | Whole Day Index | H B 06-12 | H B 12-18 | H B 18-24 | W W V 00-06 | W W V 06-12 | W W V 12-18 | W W V 18-24 | S F 00-06 | S F 06-12 | S F 12-18 | S F 18-24 | W W V H 00-06 | W W V H 06-12 | W W V H 12-18 | W W V H 18-24 | Warning 00-06 | Warning 06-12 | Warning 12-18 | Warning 18-24 | Principal magnetic storms Start | Principal magnetic storms End | Principal magnetic storms ΔH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4+ | 5 | 5 | 4 | 4 | 5 | 5 | 4 | 4 | C | C | 4 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 2 | 4o | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | (4) | C | 4 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 3 | 4o | 4 | 4 | 4 | 4 | 4 | 4 | C | 4 | 4 | 4 | 4 | 4 | 4 | 4 | C | N | N | N | N | | | |
| 4 | 4+ | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 5 | 5- | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | (5) | 5 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 6 | 5o | 5 | 5 | 5 | 5 | 4 | 5 | 5 | (5) | 5 | (5) | 5 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 7 | 4+ | 4 | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | (4) | N | N | N | N | | | |
| 8 | 4+ | 5 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 9 | 4- | (4) | (3) | (4) | 4 | 4 | 4 | 4 | (3) | 4 | 4 | 4 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 10△ | 4- | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 4 | (4) | (4) | 3 | 4 | 4 | 4 | 4 | N | N | U | U | 21.53 | --- | 114γ |
| (11)△* | 3o | (3) | 3 | (3) | 3 | 3 | 3 | 2 | 3 | 3 | (3) | (3) | 4 | 4 | 3 | (3) | U | U | U | U | --- | --- | |
| (12) | 3- | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | C | (2) | 3 | 4 | 4 | (3) | U | U | U | U | --- | --- | |
| (13) | 3o | (3) | 3 | 3 | 3 | 4 | 3 | 2 | 3 | (4) | C | (3) | 4 | 4 | 4 | 3 | U | U | U | U | --- | 24xx | |
| 14 | 3o | (3) | (3) | 3 | 3 | 3 | 3 | 2 | 3 | 3 | (3) | (3) | 4 | 4 | 3 | 3 | U | U | U | U | 03.42 | --- | 84γ |
| 15 | 4- | C | (4) | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | (4) | 4 | 4 | 4 | 4 | U | N | N | N | --- | 10xx | |
| 16 | 4+ | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | (4) | N | N | N | N | | | |
| 17 | 4- | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 18 | 4o | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 19 | 4- | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 4 | (4) | (4) | C | 5 | 4 | (4) | 3 | N | N | N | N | | | |
| 20 | 4o | (3) | 4 | 4 | 4 | 4 | 4 | 4 | (4) | 4 | 5 | 5 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 21 | 5- | 4 | 4 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 22 | 4+ | 5 | 4 | 4 | 5 | 4 | 4 | 3 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 23 | 4+ | 4 | 4 | (5) | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 24 | 5- | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 4 | (5) | 5 | 5 | 4 | 4 | (4) | 4 | N | N | N | N | | | |
| 25 | 5- | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 5 | (5) | 4 | 4 | 4 | 4 | 4 | N | N | N | N | 16.17 | --- | 68γ |
| 26 | 5- | 4 | 5 | 5 | 5 | 4 | 5 | 5 | 4 | (4) | 5 | 4 | 4 | 4 | 4 | 5 | N | N | N | N | --- | --- | |
| 27 | 4+ | 4 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | C | 4 | 4 | 4 | 4 | 4 | N | N | N | N | --- | --- | |
| 28 | 4+ | 4 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 5 | (5) | 4 | 4 | 4 | 4 | 4 | N | N | N | N | --- | 04xx | |
| 29 | 4+ | 5 | 4 | 4 | 4 | 4 | 5 | 5 | 4 | 5 | C | C | 4 | 4 | 4 | 4 | N | N | N | N | | | |
| 30 | 4+ | 4 | 4 | (4) | 5 | 4 | 4 | (4) | 4 | 5 | 5 | 4 | 4 | 4 | 4 | C | N | N | N | N | | | |

IQSY GEOALERT and ADALERT (Western Pacific Region)

* = MAGSTORM

o = MAGCALME

△ = COSMIC EVENT

( ) = Regular World Day

\- = impossible to evaluate

( ) = inaccurate

C = artificial accident

--- = continuing magnetic storm

# SUDDEN IONOSPHERIC DISTURBANCES

## (S.I.D.)

HIRAISO

Time in U.T.

| June 1968 | S W F | | | | | | | | | | Correspondence | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Drop-out Intensities (db) | | | | | | Start-time | Dura-tion | Type | Imp. | Flare | Solar Noise | Mag. |
| | CO | SF | HA | TO | HB | SH | | | | | | | |
| 9 | 25 | | | | | | 00.28 | 61 | S | 2- | x | x | |
| | -" | | | | | | | | | | | | |
| 9 | | 23 | | | 35 | | 08.41 | 65 | G | 3 | x | x | |
| 11 | 27" | 35 | | | | | 03.14 | 16 | S | 2+ | x | x | |
| 15 | - | 18 | | | | | 21.56 | 18 | S | 1+ | | | |
| 19 | | 16 | | | | | 23.38 | 22 | Slow | 1 | | | |
| 20 | | 11 | | | 14 | | 04.58 | 32 | Slow | 1 | x | x | |

IONOSPHERIC DATA IN JAPAN FOR JUNE 1968

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