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IONOSPHERIC DATA IN JAPAN

FOR MARCH 1969

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RADIO RESEARCH LABORATORIES

NUKUI-KITAMACHI, KOGANEI-SHI, TOKYO, JAPAN

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SITE OF THE RADIO WAVE OBSERVATORIES AND HIRAIISO 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_oF2	}	The ordinary wave critical frequency for the $F2$, $F1$ and E layers, respectively.
f_oF1		
f_oE		
f_oE_s		The ordinary wave top frequency corresponding to highest frequency at which a mainly continuous trace is observed.
f_oE_s		The lowest ordinary wave frequency at which the E_s 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.
$h'E_s$		The lowest virtual height of the trace used to give the f_oE_s .
h_pF2		The virtual height of the $F2$ layer measured on the ordinary

wave component at a frequency equal to $0.834f_0F2$.
 $ypF2$ The semi-thickness of the $F2$ 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 $hpF2$ and the virtual height at $0.969f_0F2$).

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 E_s .
- 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 E_s

The eight standard types of E_s 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 E_s trace that does not correspond to any of the eight types.

F An E_s 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 E_s traces observed in the daytime are classified according to their virtual height: *H* or *L*.

L A flat E_s 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 E_s 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 E_s 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 E_s trace lying clearly above the high frequency end of the normal *E* trace. (Usually a daytime type.)

Q An E_s 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 E_s 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 E_s 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 E_s trace which rises steadily with frequency and usually emerges from another type E_s 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 E_s trace such as E_s-L or E_s-F , at frequencies which greatly exceed the E layer critical frequency, whereas at low latitudes it usually rises from E_s-Q E_s-C or E_s-H at frequencies near the regular E critical frequency. Type S is never used to determine f_oE_s and $h'E_s$. The slant trace is sometimes observed to start at f_oE without echoes clearly identifiable as E_s echoes being seen.

N The designation 'N' is used to denote an E_s 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 E_s

When the ionogram shows the presence of multiple reflections from E_s 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 500MHz 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 $10^{-22} \text{ W} \cdot \text{m}^{-2} \text{ Hz}^{-1}$ 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.

Bracket 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 Hiraíso 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	$\lambda/2$ vertical	$\lambda/2$ 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)	4=normal
2=poor (disturbed)	5=good
3=rather poor (unstable)	

The tabulated circuits contain Hamburg (commercial circuit), WWV (10, 15 and 20 MHz frequencies broadcast from Fort Collins, Colorado), Lima (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 Lima .

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)
L M	.....	Various frequencies of commercial circuit (Lima)
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

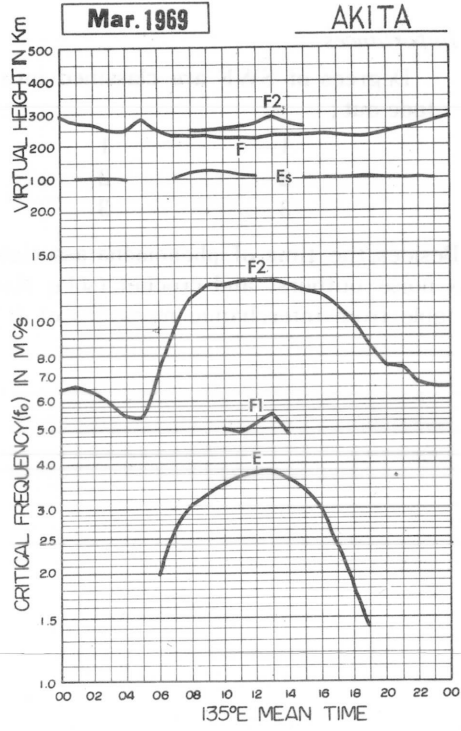
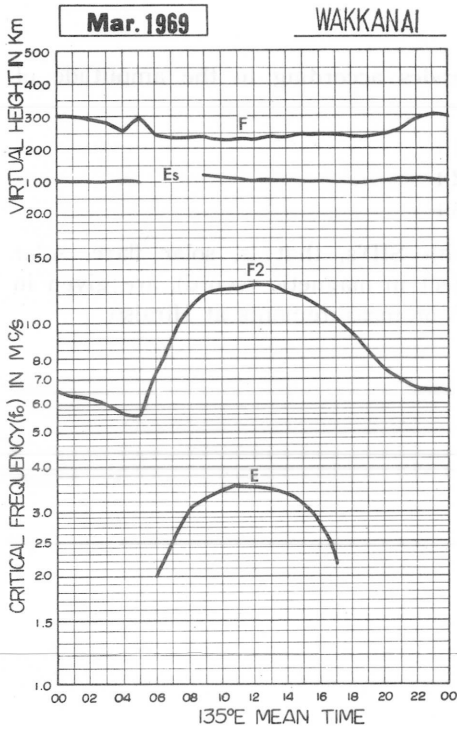
Importances

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

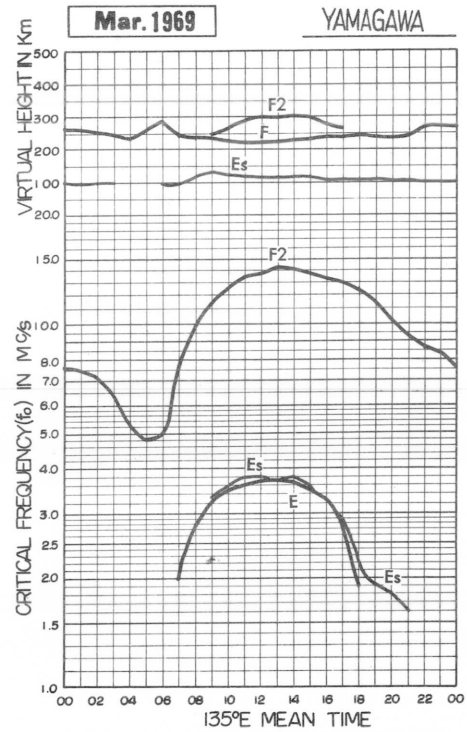
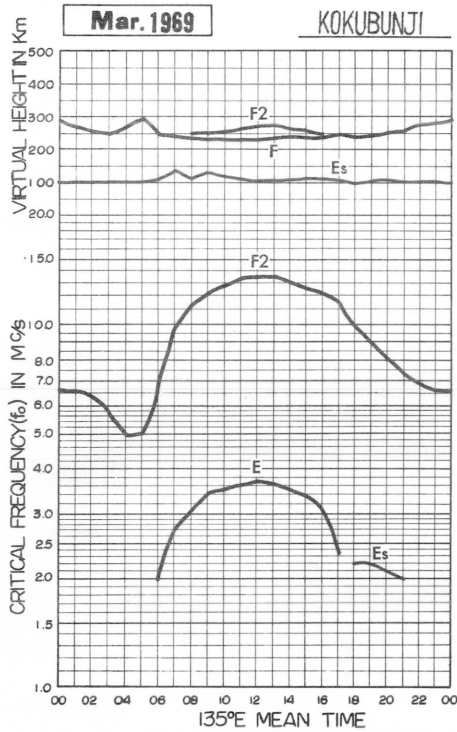
1-	1	1+
2-	2	2+
3-	3	3+

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

MAR. 1969

foF2 (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	60	62	62	58	58	58	68	89	107	114	125	135	136	126	118	120	114	107	88	75	69	63	61	60	
2	60	60	58	53	51	53	60	94	113	115	118	122	133	127	122	115	110	100	87	73	68	65	58	58	
3	58	61	60	61	56	54	61	91	103	125	122	129	129	127	113	112	105	104	90	70	63	63	62	61	
4	57	F 56	F	F	F	U 57	F	84	99	110	111	118	123	127	116	111	110	100	81	67	63	63	F 58	F 57	
5	F 57	57	58	58	55	53	65	88	101	114	127	133	133	130	128	125	118	107	94	77	67	64	61	61	
6	63	61	59	62	56	53	58	C	C	C	127	121	126	126	123	111	108	101	89	73	67	64	63	64	
7	69	63	61	F 56	F 57	60	66	88	113	135	121	120	123	120	123	118	106	97	89	70	66	63	F 67	F 63	
8	F	F	F	F 60	51	53	58	87	109	123	108	121	118	120	119	117	115	103	82	64	60	64	63	63	
9	71	71	70	68	62	61	71	80	101	110	116	131	122	121	120	120	114	103	76	57	53	54	53	50	
10	50	49	46	45	41	F 40	58	81	105	109	120	116	129	129	123	117	103	96	86	70	62	58	58	57	
11	I 58	C	56	53	49	45	43	55	80	103	114	116	114	124	119	117	107	103	88	73	66	56	58	60	
12	63	63	F 58	60	52	44	57	82	111	118	121	123	127	122	115	118	113	104	93	81	73	68	65	69	
13	67	65	63	58	55	53	75	93	105	109	114	116	122	121	123	113	97	93	78	69	60	55	55	54	
14	52	50	50	48	46	48	65	78	100	110	119	120	110	109	115	100	99	95	86	71	71	70	67	63	
15	62	61	62	59	55	56	74	88	110	118	123	121	125	123	125	116	110	101	89	86	71	63	66	63	
16	63	60	56	56	52	51	66	93	115	125	126	122	130	123	114	113	110	104	93	80	78	70	65	67	
17	59	62	54	54	54	55	82	116	123	123	124	118	114	133	124	115	111	108	102	84	74	78	73	67	
18	67	70	62	53	53	55	75	98	120	120	123	120	123	118	121	118	114	112	104	83	77	74	70	69	
19	68	66	63	60	59	61	83	111	124	125	131	139	140	134	128	120	116	113	101	88	83	80	76	68	
20	66	65	66	64	59	61	83	97	110	134	140	141	137	137	141	130	120	107	105	100	95	91	86	78	
21	68	67	64	62	58	60	77	90	103	127	131	I 132	132	137	130	127	123	121	110	92	81	76	73	72	
22	69	67	67	64	65	66	I 92	C	117	123	134	C	C	C	C	134	130	124	118	106	96	81	74	74	74
23	74	70	68	67	64	65	78	98	108	120	130	128	125	123	120	116	113	111	108	88	80	78	75	73	
24	71	67	63	61	57	55	65	79	83	66	88	86	96	106	114	106	96	100	97	94	105	98	90	71	
25	71	60	57	59	60	67	87	109	123	133	131	130	131	126	116	113	106	106	95	93	86	77	68	66	
26	63	67	68	64	58	55	75	95	112	121	128	126	131	130	120	115	107	105	100	91	86	77	70	72	
27	70	66	66	66	61	63	82	106	118	122	129	137	141	137	130	123	117	112	104	85	81	770	74	73	
28	71	70	66	65	60	63	83	C	C	124	123	127	127	124	120	113	108	105	104	91	86	80	74	70	
29	70	64	64	62	61	67	80	93	99	109	117	117	123	124	123	119	112	111	107	88	84	71	69	68	
30	66	63	62	61	60	66	83	91	108	113	116	125	I 136	128	116	110	110	107	98	87	79	73	70	66	
31	64	63	63	61	53	55	83	101	118	130	123	123	127	130	124	118	112	103	98	88	82	80	76	75	
	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	29	30	30	31	30	29	29	30	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31
MED	65	63	62	60	56	55	74	91	109	120	123	123	127	126	121	117	110	104	94	83	74	70	67	66	
UQ	69	67	64	62	60	61	82	98	115	125	127	130	132	130	124	120	114	108	103	88	82	78	74	70	
LQ	60	60	58	56	53	53	65	87	103	113	117	120	123	122	117	113	107	101	88	72	66	63	62	61	

IONOSPHERIC DATA

MAR. 1969

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																								
2																								
3																								
4																								
5																								
6																								
7														440										
8																								
9													460											
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
20																								
21												B	B											
22											C	C	C	C										
23																								
24																								
25																								
26																								
27												B												
28											B													
29																								
30													B	B										
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	1											
MED												460	440											
UQ																								
LQ																								

IONOSPHERIC DATA

MAR. 1969

foE (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

Time	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	220	275	305	I A 325	340	355	350	330	305	250	195	S					
2							S	240	295	320	335	345	330	350	330	305	250	A	A					
3							S	210	285	305	325	330	330	340	325	300	250	A						
4							S	220	290	305	330	345	345	345	320	300	245	S	S					
5							E	230	285	305	340	340	345	340	320	300	260	S	S					
6							E	C	C	C	325	335	340	330	325	300	250	180	E					
7							S	230	280	310	315	345	340	330	320	300	250	A	A					
8							S	200	285	305	325	320	335	330	320	300	265	195	S					
9							S	240	290	310	325	340	340	330	315	290	245	S	S					
10							E	225	300	315	325	355	350	335	320	300	245	S	S					
11							F	230	290	310	325	340	350	345	330	300	265	180	S					
12							S	230	295	320	340	360	355	355	335	300	260	200	S					
13							S	240	300	325	350	340	I A 340	345	330	305	275	A	A					
14							180	255	305	325	345	350	350	340	330	305	270	A	A					
15							S	245	300	325	345	I A 360	I A 355	350	345	320	280	200	A					
16							S	I A 240	I A 310	I A 340	345	350	370	370	350	315	270	200	A					
17							S	275	305	325	335	380	375	345	340	320	290	210	S					
18							S	245	305	335	345	365	370	345	340	330	290	220	S					
19							S	260	310	340	350	I A 360	365	350	340	325	290	A	A					
20							195	275	305	325	350	355	345	345	335	315	290	I A 220	S					
21							200	280	315	330	345	B	B	B	A	A	295	230	S					
22							205	290	315	345	C	C	C	C	A	345	300	A	S					
23							220	280	315	340	350	335	I B 370	380	360	335	B	A	A					
24							E	220	270	310	340	360	365	370	375	350	320	300	215	S				
25							E	190	265	315	340	350	380	375	I A 350	340	I B 330	295	215	A				
26							E	180	270	315	335	350	355	390	390	340	335	300	230	A				
27							E	200	290	320	350	360	B	B	I B 400	370	335	300	235	A				
28							A	205	C	C	350	I B 360	385	395	I A 390	360	330	300	235	A				
29							E	205	280	320	355	380	I A 375	390	365	370	335	290	235	S				
30							S	225	280	320	335	350	360	B	B	365	330	300	230	S				
31							205	275	315	335	355	350	350	340	340	330	290	250	A					
CNT						5	17	29	29	30	30	28	27	28	29	30	30	19	1					
MED						E	200	245	305	325	345	350	350	345	335	315	278	215	E					
UQ						E	205	275	315	340	350	360	370	360	345	330	295	230						
LQ						E	180	230	290	310	325	340	342	340	325	300	250	200						

IONOSPHERIC DATA

MAR. 1969

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

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	E	E	E	13	14	E ₁₆	G	G	G	34	G	G	G	G ₁₈	G ₁₇	G ₁₈	G	21	23	E ₁₇	E ₁₇	E	19	
2	18	E	E	E	E	E	E ₁₅	G	G	G	G	G	G	G	G	G ₂₆	G ₂₅	26	J ₂₅	19	23	E ₁₆	E	E ₁₆	
3	20	19	E	E	15	E	E ₁₅	G	G	G	30	31	G	G	G ₂₄	G	G	G	20	E ₁₆	22	E	E	E	
4	E	E	E	E	E	E	E ₁₃	G	G	G	G	G	G	G	G	G	G	E ₂₀	E ₁₆	24	E ₁₅	E	E	E	
5	E ₁₅	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	E ₂₀	J ₂₁	E ₁₅	E ₁₆	E ₁₅	E	E ₁₅	
6	E	E	E	14	18	E	14	C	C	C	G	G ₃₃	G	G	G	G	G	G	E	E ₁₂	E	E	E	E	
7	J ₂₃	J ₂₀	E	E	13	15	E ₁₅	G	G	G	G	G	G	G	G	G	G	G	20	19	E	E ₁₅	E ₁₅	E ₁₅	
8	E ₁₅	E	E	E	E	E	E ₁₆	G	G	G	G	33	G	G	G	G ₂₀	G ₂₂	G	G	E ₁₅	E ₁₅	E ₁₅	E	E	
9	E ₁₇	E	E	E	E	E	E ₁₇	G	G	G	G	G	G	G	G	G	G ₁₈	G ₁₅	G	E ₂₀	E ₁₃	E	E	E ₁₆	
10	E ₁₅	15	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E ₂₀	E ₁₅	E	E	E	E ₁₅	
11	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₅	E ₁₃	E	E	E	E	
12	E ₁₅	E	E	E	E	E	E ₁₇	G	G	G	G	G	G	G	G	G	G	G	E	E ₁₅	E ₁₅	22	E	E	
13	J ₂₁	15	22	E	E	E	G	G	34	G	41	J ₄₆	J ₅₅	G	G	G	G	G	G	J ₂₃	J ₃₃	J ₃₃	E ₁₅	J ₂₃	
14	23	J ₂₃	J ₂₃	J ₂₁	J ₂₄	17	G	G	G	G	G	G	G	G	G	G	G	G	G	J ₃₀	J ₂₄	J ₂₃	E	E	
15	17	J ₂₅	J ₂₃	E	E	E	G	G	G	G	30	42	42	32	30	G	G	G	G	15	E ₁₂	E	E	E ₁₅	
16	J ₂₅	J ₂₃	J ₂₃	14	14	E	G	30	34	J ₄₆	G	G	G	G	G	G	G	G	G	J ₂₅	J ₂₁	E	E	E ₁₅	
17	J ₂₃	J ₂₄	E	20	E	E	22	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₄	E	18	16	E	
18	E ₁₅	E	17	J ₂₃	J ₂₃	22	G	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₇	E	E ₁₇	
19	E ₁₃	E	E	J ₂₃	16	E	G	G	G	G	G	37	G	G	G	G	G	G	J ₃₀	J ₂₃	E ₁₆	E	E ₁₅	E	
20	E ₁₅	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₅	E	E	E	E	
21	E ₁₆	E	E	E	E	E	G	G	G	39	39	B	E ₅₄	E ₄₃	42	J ₄₇	30	G	E ₁₅	J ₂₃	J ₂₃	E ₁₅	22	J ₂₅	
22	20	J ₂₃	E	E	J ₄₃	20	G	G	G	40	C	C	C	C	40	31	31	30	J ₃₃	J ₂₄	J ₂₄	J ₂₄	J ₂₁	E ₁₈	
23	E	15	20	J ₂₃	J ₂₁	E	G	G	G	39	38	43	E ₄₈	G	G	G	G	E ₃₆	J ₂₈	J ₂₇	J ₂₄	E	E	E	
24	E	18	15	13	13	E	G	G	36	40	40	G	G	G	G	G	G	G	E ₁₆	E ₁₅	E ₁₅	E	E	18	
25	E ₁₅	J ₃₀	J ₂₄	15	E	E	G	G	G	G	40	G	G	38	27	E ₃₆	G	G	G	E ₁₅	21	21	E	E	
26	E	J ₂₄	14	18	E	G	G	G	35	41	J ₅₃	G	G	G	G	G	G	G	J ₂₅	J ₂₃	J ₂₃	E	E ₁₇	E	
27	E	E	16	18	16	E	G	G	G	G	43	E ₅₆	E ₄₅	E ₄₇	G	G	G	G	G	J ₂₈	E	J ₂₅	23	E ₁₆	
28	E	E	E	E	E	16	G	C	C	G	E ₇₀	G	G	J ₅₀	G	G	G	G	G	E ₁₅	E ₁₂	E	E ₁₅	E	
29	E ₁₇	E	E	E	E	E	G	G	G	G	44	48	G	G	G	G	G	G	E ₁₅	E	E	E	E	E	
30	E	J ₂₄	J ₂₅	E	E	E ₁₃	G	G	G	36	40	G	B	E ₄₅	G	G	G	G	E ₁₇	E ₁₅	E	E	E	25	
31	E	J ₂₆	J ₂₃	J ₃₁	J ₂₃	J ₂₁	G	G	G	40	44	39	39	G	G	G	G	G	G	E	J ₂₂	E	J ₃₃	J ₃₃	J ₃₃
	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	31	31	31	31	31	31	31	29	29	30	30	29	29	30	31	31	31	31	31	31	31	31	31	31	
MED	E ₁₅	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	U	G	E ₁₅	E ₁₂	E	E	
UQ	18	J ₂₃	18	16	16	E ₁₃	E ₁₅	G	G	36	40	33	E ₃₀	U	G	G	G	G	G	J ₂₂	23	E ₁₇	E ₁₆	E ₁₅	
LQ	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₅	E ₁₂	E	E	E	

IONOSPHERIC DATA

MAR. 1969

f_oF₂ (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

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	E	E	E	E	E S 14	E S 16	G	G	G	34	G	G	G	G 18	G 17	G 17	G	E	E	E S 17	E S 17	E	17
2	14	E	E	E	E	E S 15	E S 15	G	G	G	G	G	G	G	G	G 26	G 23	27	23	18	E	E S 16	E	E S 16
3	16	15	E	E	E	E S 15	E S 15	G	G	G	30	30	G	G 24	G	G	G	20	E S 16	E	E	E	E	E
4	E	E	E	E	E	E S 13	E S 13	G	G	G	G	G	G	G	G	G	G E 20	E S 16	16	E S 15	E	E	E	E
5	E S 15	E	E	E	E	E	E	G	G	G	G	G	G 28	G	G	G	G	E S 20	E	E S 15	E S 16	E S 15	E	E S 15
6	E	E	E	E	15	E	14	C	C	C	G	G 30	G	G	G	G	G	E	E S 12	E	E	E	E	E
7	E	E	E	E	E	E S 15	E S 15	G	G	G	G	G	G	G	G	G	G	20	15	E	E S 15	E S 15	E S 15	E S 15
8	E S 15	E	E	E	E	E S 16	E S 16	G	G	G	G	30	G	G	G 20	G 21	G	G	E S 15	E S 15	E S 15	E	E	E
9	E S 17	E	E	E	E	E S 17	E S 17	G	G	G	G	G	G	G	G 20	G 15	G E 20	E S 13	E	E	E S 16	E	E	E
10	E S 15	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G E 20	E S 15	E	E	E	E S 15	E	E
11	E	E	E	E	E	E	G	G	G	G	G	G	G 28	G 20	G 22	G 19	G 15	G 13	E S 15	E S 13	E	E	E	E
12	E S 15	E	E	E	E	E S 17	E S 17	G	G	G	G	G	G 29	G	G	G	G	G	E S 15	E S 15	E	E	E	17
13	E	E	E	E	E	E	G	G	G	G	G	G	40	G 28	G	G 22	G 21	23	30	30	E S 15	20	E	E S 15
14	E	16	16	12	16	11	G	G	G	G	G	G	G	G	G	G 19	G 18	22	16	E	E	E	E	E
15	E	20	16	E	E	E	G	G	G	G	30	38	38	31	28	G 21	G	G	15	E S 12	E	E S 16	E	E S 15
16	E	16	17	E	E	E	G	28	34	45	G	G	G	G	G	G	G 20	G 15	20	E	E	E	E S 15	E
17	19	20	E	14	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E S 14	E	17	E	E	E
18	E S 15	E	15	12	13	E	G	G	G	G	G	G 29	G	G 23	G 20	G 15	G 16	G	E S 14	E S 14	E S 17	E	E S 17	E
19	E S 13	E	E	20	14	E	G	G	G	G	G	37	G	G 26	G 22	G 25	24	24	18	E S 16	E	E S 15	E	E
20	E S 15	E	E	E	E	E	G	G	G	G	G	G	G 27	G	G	G	G 16	23	E S 15	E	E	E	E	E
21	E S 16	E	E	E	E	E	G	G	G	G	G	B E 54	E B 43	38	47	26	G	E S 15	17	20	E S 15	20	19	19
22	16	17	E	E	19	15	17	G	G	G	C	C	C	C	36	G 25	24	25	22	E	22	19	19	E S 18
23	E	16	16	E	18	E	G	G	G	G	G	G	E B 48	G	G	G	E B 36	26	20	20	E	E	E	E
24	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G 30	G 20	G 18	E S 16	E S 15	E S 15	E	E	17
25	E S 15	17	17	E	E	E	G	G	G	G	G	G	G	38	26	E B 36	G	G	15	16	E	E	E	20
26	E	15	E	14	E	G	G	G	G	G	G	G	G	G	G	G	G 16	17	19	E	E	E S 17	E	E
27	E	E	12	E	E	E	G	G	G	G	G	E B 56	E B 45	E 47	30	G 27	G 23	G 20	16	26	E	20	17	E S 16
28	E	E	E	E	E	12	G	C	C	G	E B 70	G	G	39	G	G	G	G	16	E S 15	E S 12	E	E S 15	E
29	E S 17	E	E	E	E	E	G	G	G	G	G	44	G	G	G	G	G	G	E S 15	E	E	E	E	E
30	E	15	15	E	E	E S 13	G	G	G	G	G	G	B E 45	G	G	G	G	15	E S 17	E S 15	E	E	E	E
31	E	17	E	18	17	15	G	G	G	G	G	G	G	G	G 20	G 29	G 20	G 16	20	E	20	30	18	17
	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	31	31	31	31	31	31	31	29	29	30	30	29	29	30	31	31	31	31	31	31	31	31	31	31
MED	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G 15	E G 15	G	E	E	E	E	E	E
UQ	E S 15	16	E E 12	E	E	E	E S 14	G	G	G	G	E G 29	E G 28	U G 23	G	G 24	G 20	G	20	17	E S 16	E S 15	E S 16	E S 16
LQ	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E S 15	E	E	E	E	E

IONOSPHERIC DATA

MAR. 1969

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

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	E	E	E	E	E	E _{S16}	14	15	16	17	19	22	21	12	E	E	14	E _{S15}	E _{S15}	E _{S17}	E _{S17}	E _{S12}		
2	E	E	E	E	E	E	E _{S15}	20	17	16	17	18	23	20	20	17	16	E	E	E	E _{S16}	E _{S16}	E _{S16}		
3	E	E	E	E	E	E	E _{S15}	14	15	19	20	17	16	19	20	20	20	E	E _{S16}	E _{S15}	E	E	E	E	
4	E	E	E	E	E	E	E _{S13}	15	20	17	20	27	22	20	20	20	16	E _{S20}	E _{S16}	E _{S15}	E _{S15}	E	E	E	
5	E _{S15}	E	E	E	E	E	E	12	16	16	19	20	20	19	18	18	17	E _{S20}	E _{S16}	E _{S15}	E _{S16}	E _{S15}	E	E _{S15}	
6	E	E	E	E	E	E	E	C	C	C	18	18	19	18	15	15	15	13	E	E _{S12}	E	E	E	E	
7	E	E	E	E	E	E	E _{S15}	12	16	16	16	17	20	17	18	15	16	12	E	E	E _{S15}	E _{S15}	E _{S15}	E _{S15}	
8	E _{S15}	E	E	E	E	E	E _{S16}	11	11	15	16	17	18	15	16	12	16	15	E _{S15}	E _{S15}	E _{S15}	E	E	E	
9	E _{S17}	E	E	E	E	E	E _{S17}	13	11	16	16	17	15	16	13	E	15	E _{S20}	E _{S13}	E	E	E _{S16}	E	E	
10	E _{S15}	E	E	E	E	E	E	12	16	16	20	13	16	12	E	E	E _{S20}	E _{S15}	E	E	E	E _{S15}	E	E	
11	E	E	E	E	E	E	E	12	15	15	17	16	15	12	E	E	E	E _{S15}	E _{S13}	E	E	E	E	E	
12	E _{S15}	E	E	E	E	E	E _{S17}	12	E	15	18	17	20	18	20	16	11	E	E _{S15}	E _{S15}	E _{S14}	E	E	E _{S14}	
13	E _{S15}	E	E	E	E	E	E _{S15}	15	13	15	15	17	20	18	20	12	11	E	E	E _{S15}	E _{S15}	E	E _{S16}	E _{S15}	
14	E	E	E	E	E	E	E	17	18	16	22	22	18	16	11	E	E	E	E _{S16}	E	E	E	E	E	
15	E	E	E	E	E	E	E _{S15}	14	16	20	20	21	21	22	20	15	16	E	E	E _{S12}	E _{S16}	E	E _{S15}	E _{S15}	
16	E	E	E	E	E	E	E _{S14}	14	17	18	18	24	18	17	14	20	E	E	E	E _{S16}	E	E	E _{S15}	E	
17	E _{S13}	E	E	E	E	E	E _{S15}	13	16	19	18	19	22	20	18	19	16	13	E _{S14}	E	E	E	E	E	
18	E _{S15}	E	E	E	E	E _{S15}	E _{S15}	11	11	20	20	21	19	15	12	11	E	13	E _{S14}	E _{S14}	E _{S17}	E	E _{S17}	E	
19	E _{S13}	E	E	E	E	E	E _{S17}	11	13	16	17	20	22	19	17	13	E	E	E	E _{S16}	E	E _{S15}	E	E	
20	E _{S15}	E	E	E	E	E	F	15	12	16	16	20	17	18	19	14	11	14	E _{S15}	E	E	E	E	E	
21	E _{S16}	E	E	E	E	E	14	17	18	20	21	B	54	43	21	19	17	16	E _{S15}	E	E	E _{S15}	E _{S15}	E	
22	E	E	E	E	E	E	12	16	17	18	C	C	C	C	20	17	14	E	E _{S15}	E _{S17}	E _{S17}	E	E _{S17}	E _{S18}	
23	E	E	E	E	E	E	15	17	19	18	19	20	48	20	19	17	36	11	E	E	E	E	E	E	
24	E	E	E	E	E	E	16	12	15	20	24	20	24	20	20	18	15	E	E _{S16}	E _{S15}	E _{S15}	E	E	E	
25	E _{S15}	E	E	E	E	E	15	14	17	18	19	20	22	20	20	36	14	E	E	E _{S15}	E	E	E	E	
26	E	E	E	E	E	E	15	15	16	17	20	24	24	25	20	20	16	E	E	E	E _{S15}	E	E _{S17}	E	
27	E	E	E	E	E	E	14	17	20	18	27	56	45	47	22	20	18	13	E	E	E	E	E	E _{S16}	
28	E	E	E	E	E	E	E	C	C	17	70	24	24	24	20	18	12	16	E	E _{S15}	E _{S12}	E	E _{S15}	E	
29	E _{S17}	E	E	E	E	E	15	12	18	20	20	22	25	26	17	17	16	16	E _{S15}	E	E	E	E	E	
30	E	E	E	E	E	E _{S13}	14	12	12	17	22	28	B	45	30	18	E	E	E _{S17}	E _{S15}	E	E	E	E _{S16}	
31	E	E	E	E	E	E	12	12	12	17	18	20	28	16	13	12	E	E	E	E	E	E	E	E	
CNT	31	31	31	31	31	31	31	29	29	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31	31
MED	E	E	E	E	E	E	E _{S15}	13	16	17	18	20	22	19	19	17	15	E	E	E _{S14}	E _{S14}	E	E	E	
UQ	E _{S15}	E	E	E	E	E	E _{S15}	15	17	18	20	22	24	21	20	18	16	14	E _{S15}	E _{S15}	E _{S15}	E _{S15}	E _{S15}	E _{S14}	
LQ	E	E	E	E	E	E	E _{S12}	12	12	16	16	18	19	17	16	12	E	E	E	E	E	E	E	E	

IONOSPHERIC DATA

MAR. 1969

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

Time of 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	245	245	275	260	260	260	295	325	320	290	300	305	305	300	275	285	300	300	295	280	275	265	270	265
2	270	275	275	265	260	265	285	330	320	300	305	295	295	300	295	295	300	300	300	285	285	290	260	260
3	260	275	285	280	285	275	300	335	320	310	310	300	300	305	290	305	300	310	300	285	285	285	280	280
4	280	F ₂ 270	F ₂	F ₂	F ₂	F ₂ U ₂ 280	F ₂	325	335	325	305	295	295	300	295	305	310	310	315	290	285	285	F ₂ 275	F ₂ 265
5	F ₂ 260	265	275	285	290	275	295	315	315	300	305	305	305	290	295	300	305	300	300	295	275	265	260	245
6	260	270	255	275	285	260	275	C	C	C	315	305	300	300	300	295	305	305	305	290	285	280	270	265
7	275	285	275	F ₂ 250	F ₂ 250	255	290	320	290	330	315	305	310	300	310	305	320	310	305	275	290	270	F ₂ 270	F ₂ 285
8	F ₂	F ₂	F ₂	F ₂ 250	250	265	285	320	315	325	305	305	295	300	305	300	315	310	305	290	265	265	265	260
9	275	290	285	280	275	275	320	325	295	320	290	310	305	300	300	300	315	320	320	280	265	260	275	260
10	280	270	270	265	290	F ₂ 250	310	335	295	310	310	300	300	310	300	310	300	315	310	290	275	260	250	265
11	F ₂ 285	295	285	275	275	280	310	315	320	325	310	305	300	300	305	310	300	315	305	300	275	255	255	255
12	255	270	F ₂ 275	270	275	270	280	280	295	315	315	295	300	285	285	295	300	310	290	285	275	270	265	275
13	270	265	285	260	265	260	310	325	315	310	305	300	280	300	300	305	310	315	310	290	285	275	275	275
14	270	270	270	265	265	275	330	330	310	310	305	305	305	285	305	300	310	315	305	280	280	285	275	265
15	265	250	265	270	270	265	325	315	310	305	300	285	295	290	295	295	295	305	295	295	280	260	260	260
16	265	255	250	265	255	255	300	325	315	320	315	295	300	310	300	300	295	310	300	290	290	265	265	285
17	270	275	275	265	265	265	300	330	315	310	305	290	270	290	285	280	285	290	295	300	250	270	275	245
18	255	270	265	235	230	245	305	320	320	310	310	290	295	280	280	280	290	305	295	280	285	275	260	265
19	265	270	270	250	250	260	295	320	315	295	295	290	295	290	290	275	285	300	295	280	285	285	290	265
20	260	250	260	265	260	275	320	310	290	290	285	285	275	275	280	285	270	275	270	270	260	275	265	280
21	250	250	230	225	225	240	300	300	290	305	280	I _B 280	275	250	275	275	275	285	285	285	275	270	250	260
22	260	245	255	250	250	270	I _B 300	300	295	300	C	C	C	C	290	270	275	280	285	275	270	255	245	250
23	255	250	245	245	250	260	290	305	315	300	295	290	295	280	285	285	285	290	295	295	275	280	265	250
24	255	260	235	245	250	235	290	305	315	320	275	255	240	260	265	270	265	245	275	225	255	255	255	240
25	255	240	230	240	245	275	310	310	300	305	300	295	290	285	285	290	290	290	280	280	280	285	245	245
26	230	245	255	280	245	260	305	300	295	305	295	290	290	290	285	285	290	295	290	290	280	275	255	255
27	245	245	250	260	245	255	290	290	305	305	280	280	280	280	280	285	280	285	300	280	275	275	260	260
28	260	255	260	270	265	260	295	C	C	305	295	285	285	285	280	275	285	285	290	280	280	280	260	260
29	260	255	250	245	250	255	295	290	295	295	290	275	275	280	275	275	285	290	300	295	285	260	265	255
30	240	240	240	245	240	245	275	285	295	285	275	I _B 285	285	290	285	285	290	300	300	300	290	275	270	275
31	265	260	270	280	250	255	295	315	305	300	300	275	285	285	290	285	290	300	295	295	275	275	280	270
	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	29	30	30	31	30	29	29	30	30	30	30	30	31	31	31	31	31	31	31	31	31	31
MED	260	262	265	265	258	260	298	315	310	305	302	295	295	290	290	290	295	300	300	285	280	275	265	260
UQ	270	270	275	270	270	272	310	325	315	315	310	305	300	300	300	300	302	310	305	292	285	280	272	268
LQ	255	250	250	250	250	255	290	305	295	300	295	285	285	285	282	282	285	290	292	280	275	265	260	255

IONOSPHERIC DATA

MAR. 1969

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

Time	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																								
2																								
3																								
4																								
5																								
6																								
7														390										
8																								
9													390											
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
20																								
21												B	B											
22											C	C	C	C										
23																								
24																								
25																								
26																								
27												B												
28											B													
29																								
30													B	B										
31																								
Time	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	1										
MED													390	390										
UQ																								
LQ																								

IONOSPHERIC DATA

MAR. 1969

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																								
2																								
3																								
4																								
5																								
6																								
7														250										
8																								
9													250											
10																								
11																								
12																								
13																								
14																								
15																								
16																								
17																								
18																								
19																								
20																								
21												B	260											
22										C	C	C	C											
23																								
24																								
25																								
26																								
27																								
28											275													
29											270													
30													B	250										
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	1	2	2										
MED											270	275	255	250										
UQ																								
LQ																								

IONOSPHERIC DATA

MAR. 1969

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	300	305	270	280	270	290	240	220	220	230	210	230	235	240	240	250	250	235	220	230	255	260	290	300
2	290	270	270	280	300	295	235	235	240	240	245	220	240	230	240	245	245	225	235	240	250	260	250	300
3	300	290	250	250	235	250	240	235	225	220	225	220	240	235	250	240	245	245	225	220	250	260	265	275
4	290	280	270	270	250	260	235	215	225	220	225	210	245	245	245	240	245	230	220	245	250	260	275	290
5	300	280	275	260	240	250	250	220	230	220	225	225	225	225	245	250	245	235	215	240	245	285	300	315
6	310	275	300	260	250	275	270	C	C	C	225	225	225	225	235	235	240	235	220	230	250	265	300	290
7	260	250	250	300	325	310	250	245	225	240	240	220	200	220	210	240	230	225	225	250	250	280	280	260
8	280	300	300	275	250	305	260	240	245	240	225	240	240	240	255	250	245	230	220	240	280	300	290	290
9	290	255	250	250	250	275	225	225	220	245	220	230	215	230	240	240	250	225	210	245	300	300	300	305
10	300	285	270	285	250	305	250	220	225	225	240	230	210	250	220	245	240	245	220	225	260	295	300	300
11	275	260	250	255	225	275	250	225	210	235	230	235	240	220	245	240	240	240	220	240	245	300	320	305
12	300	275	250	265	240	290	260	250	245	235	240	225	210	245	235	250	250	245	240	250	270	260	280	300
13	270	270	250	250	260	300	250	240	240	240	250	225	260	245	225	245	235	235	245	270	250	295	300	300
14	295	300	300	300	270	265	225	230	240	230	240	215	250	225	240	245	245	245	240	250	265	260	270	290
15	295	330	300	250	245	275	245	235	240	240	225	230	220	245	245	240	250	245	245	245	250	280	305	305
16	290	300	320	280	260	300	260	245	245	245	225	225	225	240	240	240	250	240	245	250	250	265	265	260
17	285	300	245	300	275	300	250	245	240	225	225	235	225	240	250	245	250	245	235	220	300	300	260	325
18	305	260	240	340	370	350	250	240	240	235	240	220	230	220	240	250	250	245	220	240	250	270	290	300
19	285	275	275	320	300	310	245	240	240	240	235	210	225	235	225	245	245	245	240	250	260	260	260	270
20	295	300	300	275	250	260	245	240	245	245	240	245	225	225	235	245	245	250	260	250	285	250	255	250
21	275	300	340	350	360	325	260	240	235	250	220	B	B	250	260	265	250	260	235	240	255	260	295	300
22	300	300	300	300	310	280	240	225	230	225	C	C	C	C	240	250	255	245	245	245	255	290	320	310
23	300	295	305	295	300	300	250	250	245	225	240	240	260	240	245	245	250	250	245	220	250	260	270	290
24	300	295	320	300	260	345	225	245	235	220	230	250	260	235	245	250	260	295	265	370	295	260	215	250
25	290	270	345	305	265	260	240	240	240	240	235	230	225	235	225	245	245	245	250	260	250	250	250	305
26	390	340	295	250	200	285	245	240	230	240	245	240	225	210	235	245	245	245	245	250	260	250	280	300
27	310	310	310	280	245	250	230	240	245	240	240	B	B	B	255	250	245	250	240	245	250	280	285	300
28	300	295	285	250	250	295	245	C	C	245	230	200	245	245	245	240	250	250	250	240	260	255	260	280
29	300	300	300	300	295	320	245	245	240	240	245	240	245	230	245	240	250	260	245	225	250	245	275	300
30	310	345	350	305	310	310	250	240	240	245	225	250	B	B	245	245	250	250	245	240	245	255	265	275
31	300	305	280	265	305	310	240	235	240	240	240	220	225	250	250	240	250	245	245	240	265	300	275	285
	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	31	31	31	31	31	31	31	29	29	30	30	28	28	29	31	31	31	31	31	31	31	31	31	31
MED	300	295	285	280	260	295	245	240	240	240	232	228	225	235	240	245	245	245	240	240	250	260	280	300
UQ	300	300	300	300	300	308	250	240	240	240	240	238	242	245	245	250	250	248	245	250	262	288	298	300
LQ	290	275	260	260	250	275	240	230	230	225	225	220	225	225	235	240	245	235	220	240	250	260	265	282

IONOSPHERIC DATA

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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	E	E	E	E	105	100	S	G	G	G	110	G	G	G	100	100	100	G	100	100	S	S	E	110
2	110	E	E	E	E	E	S	G	G	G	G	G	G	G	G	100	100	100	100	100	100	S	E	S
3	100	105	E	E	100	E	S	G	G	G	110	110	G	110	G	G	G	100	S	100	E	E	E	E
4	E	E	E	E	E	E	S	G	G	G	G	G	G	G	G	G	S	S	100	S	E	E	E	E
5	S	E	E	E	E	E	E	G	G	G	G	G	110	G	G	G	G	S	100	S	S	S	E	S
6	E	E	E	100	100	E	160	C	C	C	G	110	G	G	G	G	G	G	E	S	E	E	E	E
7	110	105	E	E	110	100	S	G	G	G	G	G	G	G	G	G	G	100	100	E	S	S	S	S
8	S	E	E	E	E	E	S	G	G	G	G	110	G	G	100	100	G	G	S	S	S	E	E	E
9	S	E	E	E	E	E	S	G	G	G	G	G	G	G	100	100	G	S	S	E	E	S	E	E
10	S	115	E	E	E	E	G	G	G	G	G	G	G	G	G	G	100	S	S	E	E	E	S	E
11	E	E	E	E	E	E	G	G	G	G	G	G	105	105	105	100	100	100	S	S	E	E	E	E
12	S	E	E	E	E	E	S	G	G	G	G	G	105	G	G	G	G	G	S	S	140	E	E	105
13	105	105	105	E	E	E	G	G	125	G	120	110	110	105	G	100	100	100	100	100	S	100	105	S
14	105	105	105	105	105	105	G	G	G	G	G	G	G	G	G	100	100	100	100	110	E	E	E	E
15	105	100	105	E	E	E	G	G	G	G	110	105	105	105	105	G	G	100	S	E	S	E	S	S
16	105	105	105	100	105	E	G	110	110	105	G	G	G	G	G	100	100	100	100	E	E	S	E	E
17	105	100	E	100	E	E	160	G	G	G	G	G	G	G	G	140	G	S	E	120	120	E	E	E
18	S	E	100	100	100	100	G	G	G	G	G	105	G	105	100	100	100	G	S	S	S	E	S	E
19	S	E	E	100	100	E	G	G	G	G	G	105	G	105	105	110	100	100	100	S	E	S	E	E
20	S	E	E	E	E	E	G	G	G	G	G	G	100	G	G	G	105	110	S	E	E	E	E	E
21	S	E	E	E	E	E	G	G	G	125	120	B	B	B	110	110	110	G	S	105	105	S	110	110
22	110	110	E	E	100	105	105	G	G	120	C	C	C	C	105	105	105	105	100	105	100	100	100	S
23	E	100	105	105	105	E	G	G	G	125	120	110	B	G	G	G	B	100	100	100	E	E	E	E
24	E	105	105	100	100	E	G	G	125	125	120	G	G	G	G	105	105	100	S	S	S	E	E	110
25	S	105	105	105	E	E	G	G	G	115	G	G	G	110	105	B	G	105	100	100	E	E	E	110
26	E	110	110	105	E	G	G	G	140	120	110	G	G	G	G	G	G	100	100	100	100	E	S	E
27	E	E	105	105	105	E	G	G	G	G	120	B	B	B	110	110	110	110	105	115	E	110	110	S
28	E	E	E	E	E	100	G	C	C	G	B	G	G	110	G	G	G	G	105	S	S	E	S	E
29	S	E	E	E	E	E	G	G	G	G	120	110	G	G	G	100	G	G	S	E	E	E	E	E
30	E	105	105	E	E	S	G	G	G	125	115	G	B	B	G	G	G	100	S	S	E	E	E	110
31	E	105	100	100	105	105	G	G	G	120	115	115	115	G	100	100	100	100	100	E	110	110	110	110
CNT	9	15	12	12	13	7	3	1	4	8	13	10	7	8	12	16	16	17	16	13	7	5	5	7
MED	105	105	105	100	105	100	160	110	125	122	115	110	105	105	105	100	100	100	100	100	105	110	110	110
UQ	110	105	105	105	105	105	160		132	125	120	110	110	110	105	105	105	100	100	105	115	110	110	110
LQ	105	105	105	100	100	100	132		118	120	110	105	105	105	100	100	100	100	100	100	100	100	105	110

IONOSPHERIC DATA

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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					F ₁	F ₁					L ₁				L ₁	L ₁	L ₁		F ₁	F ₁				F ₁	
2	F ₁															L ₁	L ₁	L ₁	L ₂	F ₁	F ₁				
3	F ₁	F ₁			F ₁						L ₁	L ₁		L ₁				L ₁		F ₁					
4																				F ₁					
5													L ₁						L ₁						
6				F ₁	F ₁		H ₁					L ₁													
7	F ₁	F ₁			F ₁	F ₁													L ₁	L ₁					
8												L ₁				L ₁	L ₁								
9																L ₁	L ₁								
10		F ₁															L ₁								
11													L ₁	L ₁	L ₁	L ₁	L ₁	L ₁							
12													L ₁									F ₁			F ₁
13														L ₁											
14	F ₁	F ₁	F ₁						C ₁		C ₁	C ₁	L ₁	L ₁		L ₁	L ₁	L ₁	L ₃	F ₄		F ₁	F ₁		
15	F ₁	F ₂	F ₁	F ₁	F ₂	F ₁										L ₁	L ₁	L ₁	L ₁	L ₁	F ₁				
16	F ₁	F ₁	F ₁	F ₁	F ₂			L ₁	L ₁	L ₁								L ₁	L ₁	L ₁	F ₁				
17	F ₂	F ₃		F ₁			H ₁											H ₁				F ₁	F ₁		
18			F ₁	F ₂	F ₁	F ₁						L ₁		L ₁	L ₁	L ₁	L ₁								
19				F ₂	F ₂							L ₁		L ₁	L ₁	L ₁	L ₁	L ₁	L ₁						
20													L ₁				L ₁	L ₁							
21										C ₁	C ₁				L ₁	L ₂	L ₁			F ₁	F ₂		F ₁	F ₁	
22	F ₁	F ₁			F ₂	F ₂	L ₁			C ₁					L ₁	L ₁	L ₁	L ₂	L ₂	F ₁	F ₂	F ₁	F ₁		
23		F ₁	F ₁	F ₁	F ₂					C ₁	C ₁	C ₁						L ₁	L ₂	F ₁					
24		F ₁	F ₁	F ₁	F ₁				C ₁	C ₁	C ₁					L ₁	L ₁	L ₁						F ₁	
25		F ₃	F ₂	F ₁						C ₁				L ₁	L ₁			L ₁	L ₁	F ₁				F ₂	
26		F ₁	F ₁	F ₂				H ₁	C ₁	C ₂								L ₁	L ₂	F ₁	F ₁				
27			F ₂	F ₁	F ₁					C ₁					L ₁	L ₁	L ₁	L ₁	L ₁	L ₁	F ₃		F ₂	F ₂	
28					L ₁										L ₁					L ₁					
29										C ₁	L ₁					L ₁									
30		F ₁	F ₁							C ₁	C ₁							L ₁							F ₁
31		F ₂	F ₁	F ₂	F ₂	F ₂				C ₁	C ₁	C ₁	C ₁		L ₁	L ₁	L ₁	L ₁	L ₁		F ₂	F ₃	F ₂	F ₁	
	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

MAR. 1969

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

Year 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	58	59	61	52	55	C	C	C	C	C	126	133	134	127	I _R 114	I _R 112	I _R 114	110	91	72	68	67	64	64
2	60	61	56	52	50	50	C	C	C	C	112	137	131	125	124	120	I _R 112	I _R 100	91	77	67	63	56	53
3	54	53	56	50	42	42	50	81	R	R	116	125	124	120	121	114	106	96	88	71	63	60	58	60
4	59	57	52	52	51	51	61	86	94	100	107	113	121	123	123	120	I _R 120	I _R 98	81	65	63	62	64	61
5	59	59	60	61	53	54	60	93	97	108	124	136	132	125	130	133	120	I _R 108	92	76	72	65	62	60
6	63	66	57	60	57	52	58	91	I _R 120	126	118	124	131	129	I _R 117	I _R 116	R	R	R	74	66	63	62	64
7	64	66	56	53	54	56	66	96	I _R 111	128	139	126	122	118	118	118	112	I _R 99	86	67	68	65	65	64
8	59	54	53	56	53	F	64	98	116	127	116	120	126	125	120	119	119	I _R 98	86	63	58	60	63	61
9	61	I _R 66	59	57	48	48	64	79	91	105	119	124	126	118	I _R 120	123	116	I _R 106	79	56	58	56	65	65
10	63	65	59	58	54	51	63	94	94	113	126	125	126	131	127	119	I _O 105	I _R 94	I _C 86	70	60	57	59	59
11	65	65	60	49	46	44	53	77	I _R 99	114	I _C 114	I _R 124	I _R 124	121	124	123	113	99	88	70	66	56	56	58
12	58	62	60	56	52	48	56	81	I _R 120	134	124	115	124	129	123	117	114	108	91	74	67	65	60	63
13	67	63	59	47	47	46	60	90	96	113	120	119	121	135	124	126	112	93	84	62	I _C 60	58	57	57
14	54	52	I _C 50	48	45	46	60	87	95	103	116	114	115	115	108	112	99	93	84	70	68	69	67	62
15	64	63	63	61	53	52	69	86	I _C 98	I _C 116	126	136	130	129	131	124	109	105	91	84	72	64	65	65
16	65	61	58	57	54	53	66	95	116	124	121	126	131	129	117	111	108	105	94	85	85	73	68	72
17	64	65	63	56	55	57	78	113	123	121	119	127	116	126	130	I _R 122	113	114	104	91	74	81	81	67
18	69	76	74	53	55	56	78	107	129	C	C	C	120	119	120	119	119	112	104	I _C 90	81	77	74	71
19	75	73	70	62	61	59	81	109	124	128	135	139	143	136	127	121	I _R 118	116	106	89	88	87	71	63
20	66	66	67	66	59	57	77	96	I _R 100	128	135	144	134	140	137	132	123	113	107	I _R 102	92	93	89	86
21	69	68	66	65	62	63	88	104	109	132	140	142	138	141	140	136	131	125	119	93	86	80	74	76
22	75	69	69	69	67	69	I _R 99	109	122	131	135	141	149	153	146	140	139	133	118	101	89	81	79	82
23	79	76	73	71	67	67	89	102	123	126	131	130	135	132	129	126	121	120	114	94	84	85	83	83
24	77	76	70	68	65	57	75	86	112	91	95	114	125	131	122	120	112	98	113	96	105	106	98	75
25	80	71	68	F	F	F	F	106	118	132	138	133	129	128	120	112	115	116	111	94	91	79	67	67
26	62	66	71	64	51	54	76	105	126	126	123	130	134	136	I _C 128	120	I _C 118	113	106	91	83	74	73	73
27	73	68	67	68	61	65	83	101	116	124	132	139	148	145	139	129	123	118	111	94	86	83	83	81
28	79	77	70	66	61	63	82	99	118	125	121	124	132	131	121	117	112	109	109	98	85	82	81	78
29	75	71	68	66	67	69	95	109	114	121	123	127	129	129	131	128	123	111	113	96	82	78	75	74
30	67	66	65	63	63	67	87	106	120	123	119	131	138	138	126	121	119	123	111	92	79	74	72	68
31	67	66	66	63	53	54	80	106	112	116	127	127	127	137	134	128	118	113	102	89	85	86	77	74
	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	31	31	31	30	30	28	28	29	28	27	30	30	31	31	31	31	30	30	30	31	31	31	31	31
MED	65	66	63	59	54	54	72	96	115	124	123	127	129	129	124	120	116	108	98	85	74	73	67	65
UQ	71	68	68	65	61	61	82	106	120	128	131	136	134	136	130	126	120	114	111	94	85	81	76	74
LQ	60	62	58	53	51	50	60	87	98	114	118	124	124	125	120	118	112	99	88	70	66	63	62	62

IONOSPHERIC DATA

MAR. 1969

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										C	C	450	L	L	470	L	L							
2										C	C	L	490	L	L	L	L							
3										L	L	L	440	L	L	L	L							
4										L	L	L	450	U	580	490	L	L						
5										L	L	470	480	470	450	L	L							
6										L	L	L	450	L	L	L	L							
7										L	L	L	L	L	600 ^H	L	L							
8										L	L	U	470	490	520	L	L	L						
9										L	L	L	500	L	470	L	450	L						
10										L	L	U	500	L	500	L	460	L						
11										L	C	L	L	L	L	L	L							
12										L	L	L	U	500	L	450	U	500	L					
13										L	L	L	L	L	550 ^H	L	400	L						
14										L	L	L	L	L	510	L	L	L						
15										C	C	U	540	L	L	550	L	L						
16										L	L	L	L	L	L	L	L	L						
17										L	L	L	L	L	L	L	L	L						
18										L	C	C	C	L	L	L	L	L						
19										L	L	L	U	500	U	510	L	L	L					
20										L	L	U	600	500	L	L	600 ^H	L						
21										L	L	L	B	850	660	L	L	L						
22										L	L	L	490	750 ^H	600	L	L	L						
23										L	L	L	L	L	L	L	L	L						
24										L	L	L	650	L	U	700	L	L	L					
25										L	L	L	L	L	L	L	L	L						
26										L	L	L	L	L	L	L	C	L						
27										L	L	L	L	L	L	L	L	L						
28										L	L	B	L	L	L	L	L	L						
29										L	L	L	L	L	L	L	L	L						
30										L	L	U	480	U	600	B	L	L	L					
31										L	L	L	L	500	550	L	L	L						
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										10	11	10	11	4	1									
MED										500	490	515	550	480	400									
UQ										U	540	500	700	575	550									
LQ										470	465	500	480	455										

IONOSPHERIC DATA

MAR. 1969

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

Time of 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	C	C	C	I A 325	I A 345	360	350	325	290	220								S
2							C	C	C	C	335	355	370	355	345	325	285	215							S
3							S	220	285	315	330	350	360	355	345	325	280	220							S
4							S	230	300	315	335	355	365	350	335	315	275	B							S
5							S	230	285	320	340	360	360	350	335	320	280	220							B
6							S	240	300	I A 315	S 330	350	360	350	335	315	285	210							S
7							S	240	300	320	335	350	360	360	340	325	290	220							S
8							S	240	285	320	330	350	355	355	340	A	A	A	A						S
9							S	235	290	315	335	350	365	350	330	310	275	215	R						S
10							160	235	300	320	335	350	355	365	345	320	280	220							C
11							175	265	305	325	I C 340	355	365	370	350	325	280	230							S
12							170	255	300	320	340	A	A	355	345	325	285	225							S
13							170	255	305	A	A	A	370	360	340	315	285	235							A
14							17n	255	305	325	350	360	370	370	340	320	I A 285	230							S
15							175	250	I C 290	I C 330	355	365	I A 375	I A 370	365	335	300	240							S
16							190	265	310	330	350	365	385	I A 385	360	335	300	235							B
17							190	265	315	I A 335	355	I A 370	390	380	365	340	305	A	A						S
18							20n	265	325	C	C	C	385	395	375	340	315	250							S
19							200	265	310	330	350	375	385	385	360	340	305	A	A						S
20							S	200	275	320	335	I A 360	I A 380	380	380	370	350	305	A	A					S
21							E	190	280	315	I A 340	360	I B 380	I B 390	390	385	I A 360	315	A	A					S
22							E	19n	285	315	335	365	380	I A 390	395	I A 380	I A 360	325	A	A					S
23							E	205	285	320	340	355	370	395	395	380	I A 350	330	275	175					S
24							S	21n	275	315	340	350	I A 370	395	385	370	350	305	250	A					S
25							E	200	280	310	335	355	375	385	390	370	350	320	260	175					S
26							S	220	280	315	345	355	I A 375	395	390	I C 380	360	I C 315	280	A					S
27							S	230	300	320	340	355	I B 375	I A 390	405	380	350	315	260						S
28							E	A	285	320	345	I B 360	385	395	395	385	350	320	270	175					S
29							S	245	280	325	345	I A 360	I A 380	395	400	I A 370	A	A	265	170					S
30							S	225	285	320	340	355	370	I B 390	I B 400	I A 380	345	305	255	A					S
31							E	225	290	330	345	355	I A 370	385	390	375	345	I A 290	I A 250	A					S
	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	21	29	29	27	29	28	30	31	31	29	29	24	4						
MED						E	200	265	310	330	350	368	382	380	360	335	300	235	175						
UQ						E	210	280	320	340	355	375	390	390	375	350	315	258	175						
LQ						E	175	240	300	320	335	352	365	358	342	325	285	220	172						

IONOSPHERIC DATA

MAR. 1969

foEs (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	JX ₁₈	JX ₁₈	E	E	E	C	C	C	C	C	35	JX ₃₆	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	JX ₂₄	JX ₃₄	E ₁₄		
2	E ₁₄	JX ₂₄	JX ₁₄	JX ₁₉	JX ₁₈	E ₁₄	C	C	C	C	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄		
3	E ₁₄	E	E	E	E	E	E ₁₄	G	G	G	G	31	G	G	G	G	JX ₃₀	G	JX ₂₉	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
4	E ₁₄	E	JX ₁₉	JX ₁₈	E	E	E ₁₄	G	G	G	G	G	G	G	G	G	E ₂₂	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	M ₂₂	
5	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	E ₁₇	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
6	E ₁₄	E	E	E	E	E	E ₁₄	G	G	33	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
7	E ₁₄	E	E ₁₄	E	JX ₁₇	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
8	E ₁₄	E ₁₄	E	E	E	E ₁₄	E ₁₅	G	G	G	35	G	G	G	36	JX ₃₅	JX ₄₅	JX ₃₉	JX ₃₂	JX ₂₄	E ₁₄	JX ₁₉	JX ₃₂	E ₁₄	
9	E ₁₄	E ₁₄	E	E	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
10	E ₁₄	E	E	E	E	E ₁₄	G	G	G	G	G	G	G	G	G	G	G	C	E ₁₄	E ₁₄	JX ₂₀	JX ₁₉	E ₁₄	E ₁₄	
11	E ₁₄	E	E	E	E	E	G	G	G	34	C	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	JX ₂₀	E ₁₄	E ₁₄	E ₁₄	
12	E ₁₄	E	E	E	E	E ₁₄	G	G	G	39	40	JX ₃₉	JX ₄₀	G	G	G	G	JX ₂₀	E ₁₄	JX ₁₇	JX ₃₅	E ₁₄	E ₁₄	E ₁₄	
13	E ₁₄	JX ₁₈	JX ₂₅	JX ₁₉	E	E ₁₄	G	G	JX ₄₀	39	JX ₄₂	JX ₃₉	JX ₃₉	G	G	G	JG ₂₄	JX ₂₅	JX ₂₃	E ₁₄	C	M ₂₀	E ₁₄	E ₁₄	
14	E ₁₄	E	C	JX ₁₉	JX ₁₃	E	G	G	G	G	G	JX ₃₈	G	G	G	G	30	26	E ₁₄	JX ₂₁	JX ₁₉	JX ₂₉	JX ₃₀	E ₁₄	
15	E ₁₄	JX ₁₈	E	E	E	E	G	29	C	C	G	G	JX ₄₈	JX ₅₈	G	JX ₃₈	G	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E	
16	JX ₂₀	JX ₁₇	JX ₂₄	JX ₁₈	JX ₁₇	E	G	JX ₃₈	35	36	39	G	JX ₄₀	JX ₄₅	G	38	35	G	JX ₂₈	JX ₁₉	JX ₂₀	E ₁₄	E ₁₄	JX ₁₈	
17	E ₁₄	JX ₁₄	M ₁₇	JX ₁₃	JX ₁₂	E ₁₄	G	G	35	36	32	JX ₄₉	G	G	G	G	G	JX ₂₉	JX ₂₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
18	E ₁₄	E	E	E	E	E	G	30	36	C	C	C	G	G	G	G	JG ₂₆	JG ₁₉	E ₁₄	C	E	E ₁₄	E ₁₄	E ₁₄	
19	E ₁₄	E ₁₄	E	E	E	E ₁₄	G	G	G	G	39	G	G	G	G	G	JG ₃₃	23	27	JX ₂₅	JX ₂₀	JX ₂₄	E ₁₄	E ₁₄	
20	E ₁₄	E	E	E	E	E ₁₄	G	G	G	G	JX ₄₁	JX ₄₄	G	G	G	G	G	JX ₃₆	JX ₄₂	JX ₃₁	JX ₂₀	E ₁₄	E ₁₄	E ₁₄	
21	E ₁₄	E	E	E	E	E	G	G	35	41	43	E ₁₆	E ₅₅	G	G	JX ₄₉	G	JX ₂₉	JX ₄₂	JX ₃₉	JX ₄₀	JX ₁₈	JX ₂₃	E ₁₄	
22	JX ₂₈	JX ₄₄	JX ₃₃	JX ₂₉	JX ₂₉	JX ₂₃	JX ₂₁	G	G	G	G	G	41	G	JX ₄₈	JX ₅₆	G	JX ₂₉	JX ₄₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
23	E ₁₄	E	E	JX ₁₅	JX ₂₃	JX ₁₇	G	G	G	36	39	G	G	G	G	JX ₄₉	G	G	JX ₁₉	JX ₂₀	JX ₁₉	E	JX ₂₀	E ₁₄	
24	E ₁₄	E	E	E	E	E ₁₄	G	G	G	42	41	41	G	G	G	G	G	G	JX ₂₄	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
25	JX ₂₅	JX ₃₄	JX ₂₆	JX ₂₅	JX ₂₉	JX ₂₁	JX ₂₃	G	G	G	G	JX ₄₃	G	G	JX ₄₄	G	G	JG ₂₈	JX ₃₅	G	JX ₂₀	JX ₂₄	JX ₂₀	E ₁₄	
26	E ₁₄	JX ₃₄	JX ₁₉	JX ₁₆	JX ₁₉	E ₁₄	G	G	G	G	41	JX ₄₀	G	G	C	G	C	JX ₃₄	JX ₂₉	JX ₂₆	E ₁₄	JX ₂₅	E ₁₄	E ₁₄	
27	E ₁₄	E	E	E	E	E ₁₄	G	JX ₄₃	36	G	41	E ₅₄	43	G	G	G	JG ₂₅	G	E ₁₄	JX ₆₃	JX ₂₅	JX ₄₀	JX ₂₆	E ₁₄	
28	E ₁₄	JX ₁₅	JX ₂₀	JX ₁₈	JX ₂₅	JX ₂₂	JX ₂₉	JX ₄₄	38	JG ₃₃	E ₅₈	G	G	G	G	G	G	G	G	JX ₁₈	JX ₂₉	JX ₂₃	JX ₂₁	E ₁₄	
29	E ₁₄	E ₁₄	E	E	JX ₂₄	E ₁₄	G	G	35	42	43	41	JX ₄₀	G	JX ₄₃	JX ₄₂	37	G	G	JX ₃₅	JX ₃₀	JX ₂₀	E ₁₄	E ₁₄	
30	E ₁₄	E	E ₁₄	JX ₁₉	JX ₂₅	E ₁₄	JX ₂₈	JG ₂₅	G	37	38	G	E ₆₂	E ₄₂	JX ₃₉	G	G	JG ₂₅	JX ₂₅	JX ₂₅	JX ₂₀	E ₁₄	E ₁₄	E ₁₄	
31	E ₁₄	E	E	E	E	E	G	G	36	39	41	40	G	G	G	33	JX ₃₃	JX ₃₀	JX ₂₉	JX ₂₀	E ₁₄	E ₁₄	JX ₄₆	JX ₄₃	
	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	31	31	30	31	31	30	29	29	28	27	29	30	31	31	30	31	30	31	30	30	30	31	31	31	
MED	E ₁₄	E	E	E	E	14	G	G	G	G	36	G	G	G	G	G	G	G	18	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	
UQ	E ₁₄	JX ₁₆	JX ₁₇	JX ₁₈	JX ₁₈	E ₁₄	E ₁₄	G	35	36	41	40	E ₄₀	G	G	G	33	G	JX ₂₈	JX ₂₈	JX ₂₁	JX ₂₀	JX ₂₀	16	E ₁₄
LQ	E ₁₄	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	

IONOSPHERIC DATA

MAR. 1969

fbEs (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

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	16	E	E	E	C	C	C	C	C	35	35	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E	19	E ₁₄
2	E ₁₄	16	E	E	E	E ₁₄	C	C	C	C	G	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
3	E ₁₄	E	E	E	E	E	E ₁₄	G	G	G	G	G	G	G	G	G	22	G	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
4	E ₁₄	E	14	E	E	E	E ₁₄	G	G	G	G	G	G	G	G	G	E ₂₂	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E
5	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	E ₁₇	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
6	E ₁₄	E	E	E	E	E	E ₁₄	G	G	33	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
7	E ₁₄	E	E ₁₄	E	E	E ₁₄	E ₁₄	G	G	G	G	G	G	G	G	G	G	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
8	E ₁₄	E ₁₄	E	E	E	E ₁₄	E ₁₅	G	G	G	35	G	G	G	36	33	35	33	31	21	E ₁₄	E	26	E ₁₄
9	E ₁₄	E ₁₄	E	E	E	E	E ₁₄	G	G	G	G	G	G	G	G	G	G	G	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
10	E ₁₄	E	E	E	E	E ₁₄	G	G	G	G	G	G	G	G	G	G	G	G	C	E ₁₄	18	16	E ₁₄	E ₁₄
11	E ₁₄	E	E	E	E	E	G	G	G	G	C	G	G	G	G	G	G	E	E ₁₄	E ₁₄	E ₁₄	15	E ₁₄	E ₁₄
12	E ₁₄	E	E	E	E	E ₁₄	G	G	G	34	35	37	40	G	G	G	G	G	19	E ₁₄	E	21	E ₁₄	E ₁₄
13	E ₁₄	E	14	E	E	E ₁₄	G	G	G	34	36	38	34	G	G	G	20	19	16	E ₁₄	C	E	E ₁₄	E ₁₄
14	E ₁₄	E	C	16	E	E	G	G	G	G	G	34	G	G	G	G	29	G	E ₁₄	E	E	19	E	E ₁₄
15	E ₁₄	E	E	E	E	E	G	28	C	C	G	G	39	39	G	25	G	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E
16	E	E	14	14	E	E	G	15	34	35	G	G	32	40	G	G	34	G	19	E	E	E ₁₄	E ₁₄	E
17	E ₁₄	E	E	E	E	E ₁₄	G	G	34	36	32	46	G	G	G	G	G	20	17	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
18	E ₁₄	E	E	E	E	E	G	G	34	C	C	C	G	G	G	G	G	23	G	E ₁₄	C	E	E ₁₄	E ₁₄
19	E ₁₄	E ₁₄	E	E	E	E ₁₄	G	G	G	G	37	G	G	G	G	G	28	G	21	26	17	E	E	E ₁₄
20	E ₁₄	E	E	E	E	E ₁₄	G	G	G	G	39	40	G	G	G	G	G	30	30	28	18	E ₁₄	E ₁₄	E ₁₄
21	E ₁₄	E	E	E	E	E	G	G	G	38	42	E ₁₁₆	E ₅₅	G	G	38	G	29	28	21	26	22	E	22
22	E	E	20	22	17	14	17	G	G	G	G	G	41	G	45	36	G	29	21	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
23	E ₁₄	E	E	E	E	14	G	G	G	35	39	G	G	G	G	41	G	G	14	16	E	E	E	E ₁₄
24	E ₁₄	E	E	E	E	E ₁₄	G	G	G	39	38	39	G	G	G	G	G	G	19	E	E ₁₄	E	E ₁₄	E ₁₄
25	14	19	19	14	16	15	17	G	G	G	37	G	G	33	G	G	G	21	16	G	15	16	E	E ₁₄
26	E ₁₄	15	14	E	E	E ₁₄	G	G	G	G	40	39	G	G	C	G	C	19	20	E	E ₁₄	20	E ₁₄	E ₁₄
27	E ₁₄	E	E	E	E	E ₁₄	G	20	G	G	40	E ₅₄	43	G	G	G	G	20	G	E ₁₄	18	20	19	E
28	E ₁₄	E	15	14	14	14	24	21	G	G	E ₂₈	E ₅₈	G	G	G	G	G	G	G	E	21	19	19	E ₁₄
29	E ₁₄	E ₁₄	E	E	E	E ₁₄	G	G	35	G	40	40	37	G	42	38	34	G	G	25	24	E	E ₁₄	E ₁₄
30	E ₁₄	E	E ₁₄	E	E	E ₁₄	15	24	G	36	38	G	E ₆₂	E ₄₂	39	G	G	G	20	22	18	E	E ₁₄	E ₁₄
31	E ₁₄	E	E	E	E	E	G	G	G	38	40	39	G	G	G	30	31	28	24	15	E ₁₄	E ₁₄	42	26
	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	31	31	30	31	31	30	29	29	28	27	29	30	31	31	30	31	30	31	30	30	30	31	31	31
MED	E ₁₄	E	E	E	E	14	G	G	G	G	35	G	G	G	G	G	G	G	E	G	14	E ₁₄	E ₁₄	E ₁₄
JQ	E ₁₄	E ₁₄	14	E	E	E ₁₄	E ₁₄	G	G	34	38	38	E ₃₃	G	G	E ₂₅	G	21	20	19	15	E ₁₄	E ₁₄	E ₁₄
LQ	E ₁₄	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄

IONOSPHERIC DATA

MAR. 1969

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

no.	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 ₁₄	E ₁₄	E	E	E	C	C	C	C	C	18	18	18	16	15	16	15	16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₃	E ₁₄
2	E ₁₄	E	E	E	E	E ₁₄	C	C	C	C	18	20	21	16	17	16	17	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
3	E ₁₄	E	E	E	E	E	E ₁₄	15	15	19	18	14	15	14	18	18	14	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
4	E ₁₄	E	E	E	E	E	E ₁₄	15	16	17	22	24	24	20	21	19	17	22	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
5	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	16	15	16	18	21	18	16	19	18	17	15	17	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
6	E ₁₄	E	E	E	E	E	E ₁₄	15	16	16	15	17	18	19	20	20	15	15	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
7	E ₁₄	E	E ₁₄	E	E	E ₁₄	E ₁₄	15	16	17	18	25	22	18	16	17	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
8	E ₁₄	E ₁₄	E	E	E	E ₁₄	E ₁₅	15	15	14	18	18	18	17	15	18	14	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
9	E ₁₄	E ₁₄	E	E	E	E	E ₁₄	15	15	15	21	18	22	18	23	14	16	16	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
10	E ₁₄	E	E	E	E	E ₁₄	14	15	14	14	18	17	21	18	16	16	16	15	C	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄
11	E ₁₄	E	E	E	E	E	14	16	15	16	C	21	19	19	20	15	14	15	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄
12	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	13	13	17	14	15	23	17	17	14	14	14	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄	E ₁₄
13	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	14	15	15	21	18	21	21	24	15	14	14	13	E ₁₄	C	E ₁₄	E ₁₄	E ₁₄
14	E ₁₄	E	C	E	E	E	14	13	20	15	15	21	18	15	20	14	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
15	E ₁₄	E	E	E	E	E	14	15	C	C	19	24	21	21	18	15	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E
16	E ₁₄	E	E	E	E	E	14	15	16	15	18	22	20	19	16	18	14	15	17	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
17	E ₁₄	E	E	E	E	E ₁₄	E ₁₄	15	16	15	18	20	23	20	17	14	14	13	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
18	E ₁₄	E	E	E	E	E	14	15	C	C	C	21	15	14	15	14	14	14	E ₁₄	C	E	E ₁₄	E ₁₄	E ₁₄
19	E ₁₄	E ₁₄	E	E	E	E ₁₄	14	13	15	14	18	20	24	18	15	14	14	13	13	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
20	E ₁₄	E	E	E	E	E ₁₄	14	14	15	20	16	18	20	24	20	16	15	14	14	E ₁₄	E ₁₄	E ₁₂	E ₁₄	E ₁₄
21	E ₁₄	E	E	E	E	E	14	15	15	15	22	116	55	25	20	19	15	18	14	E ₁₄	E	E	E ₁₄	E ₁₄
22	E ₁₄	E	E	E	E	E	14	14	15	20	21	16	20	19	20	15	15	13	13	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
23	E ₁₄	E	E	E	E	E	13	13	14	15	18	19	19	20	16	21	19	16	14	E	E ₁₄	E	E ₁₄	E ₁₄
24	E ₁₄	E	E	E	E	E ₁₄	14	14	15	20	20	18	17	19	20	18	15	15	12	E	E ₁₄	E	E ₁₄	E ₁₄
25	E	E	E	E	E	E	14	14	14	18	20	22	23	20	24	14	14	13	E	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄
26	E ₁₄	E	E	E	E	E ₁₄	14	14	14	15	21	19	25	23	C	21	C	14	13	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
27	E ₁₄	E	E	E	E	E ₁₄	14	14	15	20	22	54	24	22	23	18	15	14	E ₁₄	E ₁₄	E ₁₄	E	E ₁₄	E ₁₄
28	E ₁₄	E	E	E	E	E	14	14	14	15	58	21	23	21	22	18	15	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
29	E ₁₄	E ₁₄	E	E	E	E ₁₄	14	14	15	18	21	22	25	25	19	14	15	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
30	E ₁₄	E	E ₁₄	E	E	E ₁₄	15	14	16	15	15	20	62	42	19	14	14	15	E	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
31	E ₁₄	E	E	E	E	E	14	15	15	16	21	21	18	22	19	18	15	14	13	E	E ₁₄	E ₁₄	E ₁₄	E

	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	31	31	30	31	31	30	29	29	28	27	29	30	31	31	30	31	30	31	30	30	30	31	31	31
MED	E ₁₄	E	E	E	E	E ₁₄	14	14	15	15	18	20	21	19	19	16	15	14	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
UQ	E ₁₄	E	E	E	E	E ₁₄	14	15	16	17	21	21	23	22	20	18	15	15	14	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄
LQ	E ₁₄	E	E	E	E	E	E ₁₄	14	15	15	18	18	18	18	16	15	14	14	E ₁₃	E ₁₄	E ₁₄	E ₁₄	E ₁₄	E ₁₄

IONOSPHERIC DATA

MAR. 1969

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	275	275	295	275	265	C	C	C	C	C	300	300	295	300	I ^R 300	I ^R 300	I ^R 310	320	310	290	285	290	280	285
2	285	285	290	280	265	265	C	C	C	C	305	310	290	295	295	305	I ^R 300	I ^R 310	300	300	295	290	290	275
3	280	285	305	305	295	290	305	325	R	R	305	305	300	305	300	315	315	325	310	305	300	285	295	295
4	300	300	290	290	285	285	320	340	340	330	315	310	295	300	305	310	I ^R 305	I ^R 325	310	300	300	295	295	290
5	285	290	285	295	305	300	310	325	335	315	305	305	305	295	290	295	315	I ^R 320	315	290	300	290	295	270
6	285	305	280	295	285	275	295	325	I ^R 320	I ^R 315	310	305	300	305	I ^R 310	I ^R 310	R	R	R	295	295	285	275	280
7	300	305	300	275	260	270	295	335	I ^R 320	I ^R 310	315	315	305	305	300	310	315	I ^R 315	305	290	290	285	285	295
8	290	265	260	270	265	F	285	320	315	315	315	300	300	295	300	300	305	I ^R 310	315	300	275	270	275	275
9	280	I ^R 295	310	305	285	275	315	335	320	305	315	310	305	295	I ^R 300	300	310	I ^R 320	320	285	290	285	285	295
10	285	290	285	275	280	275	310	330	330	300	310	305	300	295	300	300	I ^R 310	I ^R 320	I ^R 315	300	285	280	290	280
11	295	305	315	310	285	270	305	310	I ^R 320	I ^R 315	I ^R 315	I ^R 300	I ^R 305	295	295	305	315	325	320	290	295	285	275	260
12	280	265	275	280	280	290	295	295	I ^R 310	325	315	295	290	295	295	300	310	305	295	285	285	285	270	275
13	300	295	315	280	275	265	315	335	325	325	310	310	290	305	300	310	315	310	320	290	I ^R 290	285	285	290
14	295	285	I ^R 290	290	270	285	315	340	325	320	310	310	305	305	305	315	315	315	310	300	290	300	285	290
15	280	275	290	300	290	280	310	335	I ^R 315	I ^R 300	300	310	285	290	290	300	310	315	310	300	290	280	270	275
16	285	280	270	280	270	275	305	325	315	305	300	305	295	300	300	300	305	305	310	290	295	280	280	290
17	280	275	300	280	275	275	315	325	325	315	305	295	290	280	285	I ^R 295	I ^R 300	305	300	300	270	275	290	265
18	260	285	295	265	240	250	310	315	320	C	C	C	300	295	295	295	295	305	310	I ^R 295	285	280	280	270
19	280	280	285	275	265	265	290	310	310	305	295	295	290	285	285	290	I ^R 295	I ^R 300	310	295	295	310	295	270
20	275	260	285	295	285	285	305	320	I ^R 300	I ^R 295	290	280	275	270	275	275	290	290	290	I ^R 295	285	290	290	295
21	270	255	245	250	245	260	320	320	310	295	280	275	270	270	275	275	280	295	300	290	290	275	290	270
22	280	275	265	270	275	275	I ^R 320	320	310	300	285	275	280	280	270	275	275	285	295	295	285	270	265	270
23	265	270	265	270	260	265	300	310	300	295	285	280	280	280	280	285	290	295	305	300	275	280	280	275
24	275	270	245	255	265	250	310	325	315	310	255	280	265	270	270	275	270	260	285	250	275	275	275	260
25	265	270	250	F	F	F	F	310	305	295	305	295	285	290	295	290	295	310	295	295	285	290	275	250
26	235	255	285	315	255 ^H	275	290	300	295	300	295	285	285	280	I ^R 290	I ^R 285	I ^R 290	I ^R 300	310	295	280	285	270	265
27	260	265	265	280	260	265	315	310	305	295	280	280	285	270	285	280	285	300	300	290	270	270	275	275
28	280	275	275	290	265	275	305	315	315	300	290	285	280	285	290	285	285	305	305	295	290	275	275	280
29	275	270	265	260	265	260	305	300	310	295	290	285	280	280	280	280	300	305	305	295	275	280	270	265
30	255	260	245	255	255	255	280	310	305	295	285	275	280	285	285	285	285	300	305	305	290	280	280	270
31	270	275	275	300	260	250	300	325	315	305	295	290	280	285	285	285	295	305	290	285	285	280	285	275
	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	31	31	31	30	30	28	28	29	28	27	30	30	31	31	31	31	30	30	30	31	31	31	31	31
MED	280	275	285	280	268	275	305	320	315	305	302	298	290	295	295	295	300	305	308	295	290	285	280	275
UQ	285	288	292	295	285	278	315	325	320	315	310	305	300	298	300	302	310	315	310	300	292	288	290	288
LQ	272	270	265	270	260	265	298	310	310	298	290	285	280	280	285	285	290	300	300	290	285	280	275	270

IONOSPHERIC DATA

MAR. 1969

M(3000)F1(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									C	C	385	L	L	370	L	L								
2									C	C	L	370	L	L	L	L								
3									L	L	L	L	390	L	L	L	L							
4									L	L	L	L	380	U	L	365	L	L						
5									L	L	L	370	395	385	380	L	L							
6									L	L	L	L	400	L	L	L	L							
7									L	L	L	L	L	L	360	H	L	L						
8									L	L	L	385	370	370	L	L	L	L						
9									L	L	L	L	L	385	L	380	L							
10									L	L	L	360	L	380	L	370	L							
11									L	C	L	L	L	L	L	L	L							
12									L	L	L	L	U	L	370	360	L							
13									L	L	L	L	L	L	365	H	L	375						
14									L	L	L	L	L	L	375	L	L							
15									C	C	U	L	L	L	365	U	L	L						
16									L	L	L	L	L	L	L	L	L							
17									L	L	L	L	L	L	L	L	L							
18									L	C	C	C	L	L	L	L	L							
19									L	L	L	U	L	380	U	L	L	L						
20									L	L	L	355	380	L	L	355	H	L						
21									L	L	L	L	B	335	335	L	L							
22									L	L	L	L	390	L	H	350	L	L						
23									L	L	L	L	L	L	L	L	L							
24									L	L	L	L	L	U	L	L	L							
25									L	L	L	L	L	L	L	L	L							
26									L	L	L	L	L	L	L	C	L							
27									L	L	L	L	L	L	L	L	L							
28									L	L	B	L	L	L	L	L	L							
29									L	L	L	L	L	L	L	L	L							
30									L	L	L	U	L	380	U	L	B	L	L	L				
31									L	L	L	L	L	380	L	345	L	L						
CNT											10	11	10	11	4	1								
MED											368	380	375	365	365	375								
UQ											380	390	380	370	375									
LQ											U	L	L	340	355	358								

IONOSPHERIC DATA

MAR. 1969

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

Time	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	C	270	250	265	255	250	260								
2									C	C	245	270	260	265	265	260								
3									240	235	245	240	270	265	265	250								
4									245	240	245	255	290	270	255	250								
5									235	250	250	255	250	250	270	260								
6									250	245	250	250	270	265	245	250								
7									250	250	250	245	255	275	270	250								
8									240	230	240	270	280	255	255	260								
9									245	250	265	275	255	250	260	260								
10									230	280	265	270	260	280	255	250								
11										265	I C 265	255	265	270	275	255								
12									255	240	255	255	270	255	270	255								
13									250	250	265	270	265	280	255	255								
14									245	250	255	250	255	270	255	270								
15									C	C	275	255	265	285	270	255								
16									245	255	250	270	270	270	255	250								
17									240	250	245	270	270	290	280	250								
18									250	C	C	C	270	300	285	260								
19									250	250	255	265	265	260	265	290								
20									255	255	280	270	250	265	300	255								
21									250	270	260	I B 270	340	315	305	295								
22									245	255	255	260	325	290	290	300								
23									250	250	275	275	300	300	300	290								
24									250	390	280	350	300	315	255									
25									250	250	270	255	290	280	255	285								
26									250	250	250	255	290	280	I C 270	255								
27									250	255	290	300	290	280	275	270								
28									255	255	255	290	275	290	290	265								
29									250	260	270	265	290	290	290	285								
30									255	255	245	295	280	285	265	295								
31									250	255	255	260	265	300	275	270								
CNT									26	27	30	30	31	31	31	31								
MED									250	250	255	265	270	280	270	260								
UQ									250	255	270	270	290	290	282	270								
LQ									245	250	250	255	265	265	255	255								

IONOSPHERIC DATA

MAR. 1969

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	290	290	250	235	270	C	C	C	C	C	210	205 ^H	220	210	240	230	235	230	215	220	240	255	280	265
2	265	275	250	255	280	295	C	C	C	C	225	215	230	225	230	235	245	230	225	230	240	245	240	285
3	290	275	245	230	210	250	245	230	230	225	230	190	220	225	220	230	235	235	220	225	240	250	265	270
4	270	260	260	255	245	260	235	215	230	220	215	200	225	215	230	230	240	225	220	230	245	255	255	255
5	280	270	250	245	215	250	245	220	225	230	220	205	215	205	230	240	230	230	220	220	240	245	270	310
6	295	250	250	245	220	250	270	230	230	235	225	205	230	230	230	220	240	235	215	225	245	255	280	280
7	270	240	240	270	320	310	250	230	230	230	240	235	225	210 ^H	235	240	230	230	225	240	245	260	275	260
8	255	300	295	270	245	305	270	230	230	230	215	215	240	240	230	220	245	230	230	230	255	290	290	290
9	275	255	235	230	225	270	235	225	230	220	215	230	220	240	220	240	240	225	205	240	265	280	275	260
10	280	255	250	245	220	290	255	230	225	230	230	225	220	230	220	235	240	230	225	220	250	265	270	290
11	270	250	230	225	230	280	250	230	230	210	230 ^I	225	205 ^H	230	225	240	240	225	225	230	240	260	300	305
12	300	275	240	245	240	255	270	240	245	230	230	215	240	220	225	240	245	240	235	230	240	275	280	290
13	255	255	235	220	255	285	260	230	240	240	230	230	225	210 ^H	230	220	240	220	225	225	245	255	270	270
14	255	270	270 ^I	270	250	255	230	225	230	220	230	230	230	230	230	235	240	230	230	230	245	265	260	270
15	280	290	280	245	220	270	240	220	230 ^I	235 ^I	220	230	220	230	240	235	240	240	230	235	230	255	295	285
16	270	265	295	265	235	285	255	230	230	225	230	230	230	235	240	235	245	240	235	240	255	245	255	255
17	235	280	240	250	255	280	245	230	230	230	225	240	230	235	230	235	240	240	235	220	245	285	260	290
18	300	270	230	250	360	340	240	230	240	C	C	C	225	230 ^H	230	235	245	240	225	220	230	270	270	290
19	270	265	255	250	295	310	245	230	230	230	225	225	215	215	230	220 ^H	245	240	235	230	245	245	230	265
20	290	300	270	245	230	240	240	225	230	230	220	215	230	230	220 ^H	240	250	240	250	240	250	245	255	240
21	245	295	320	325	325	305	230	220	230	240	240	240	240	240	240	245	240	245	245	230	245	265	270	295
22	270	295	320	295	290	270	230	220	230	230	215	205	205 ^H	235	250	235	240	240	230	240	245	255	295	290
23	285	280	300	265	250	280	245	240	230	235	205 ^H	250	230	235	235	245	255	255	235	225	245	255	255	275
24	280	270	300	290	255	305	240	230	230	220	230	240	240	240	240	235	245	270	265	315	280	260	250	205
25	290	265	310	305	285	250	235	230	230	225	225	235	240	205 ^H	230	240	240	240	245	230	245	230	235	250
26	380	320	270	215	205 ^H	295	250	235	230	230	225	230	220	215	225 ^I	235	245 ^I	250	240	240	245	250	270	300
27	300	295	295	270	230	270	230	230	230	230	230	240	245	240	220	240	245	245	240	230	245	265	290	285
28	280	265	270	240	240	290	230	240	240	240	230	210	230	230	230	230	240	255	240	235	240	260	270	270
29	280	280	295	280	300	310	240	230	230	230	230	230	225	230	240	245	245	255	240	240	250	250	270	270
30	305	310	340	295	305	315	230	230	235	230	215	210	220	240	240	240	245	255	240	230	230	245	255	265
31	280	275	270	240	255	345	250	225	230	230	225	215	200	210	240	240	240	245	235	235	255	270	260	290
	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	31	31	31	31	31	30	29	29	29	28	30	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	280	275	270	250	250	282	245	230	230	230	225	225	225	230	230	235	240	240	230	230	245	255	270	275
UQ	290	290	295	270	282	305	250	230	230	230	230	230	230	235	240	240	245	245	240	238	248	265	278	290
LQ	270	265	248	242	230	260	235	225	230	225	220	210	220	215	228	232	240	230	225	225	240	250	255	265

IONOSPHERIC DATA

MAR. 1969

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

New 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	E	E	E	C	C	C	C	C	120	110	G	G	G	G	G	G	S	S	S	105	100	S
2	S	105	100	100	100	S	C	C	C	C	G	G	G	G	G	G	G	G	S	S	S	S	S	S
3	S	E	E	E	E	E	S	G	G	G	105	G	G	G	G	G	100	G	100	S	S	S	S	S
4	S	E	100	100	E	E	S	G	G	G	G	G	G	G	G	G	G	B	S	S	S	S	S	105
5	S	E	E	E	E	S	S	G	G	G	G	G	G	G	G	G	G	G	B	S	S	S	S	S
6	S	E	E	E	E	E	S	G	G	120	G	G	G	G	G	G	G	G	S	S	S	S	S	S
7	S	E	S	E	105	S	S	G	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S	S
8	S	S	E	E	E	S	S	G	G	G	130	G	G	G	130	105	100	100	100	100	S	105	105	S
9	S	S	E	E	E	E	S	G	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S	S
10	S	E	E	E	E	S	G	G	G	G	G	G	G	G	G	G	G	G	C	S	105	105	S	S
11	S	E	E	E	E	E	G	G	G	150	C	G	G	G	G	G	G	G	S	S	S	130	S	S
12	S	E	E	E	E	S	G	G	G	140	140	110	110	G	G	G	G	G	130	S	120	120	S	S
13	S	110	100	105	E	S	G	G	130	120	115	120	110	G	G	G	105	105	105	S	C	110	S	S
14	S	E	C	105	105	E	G	G	G	G	G	G	G	G	G	G	120	160	S	105	110	105	105	S
15	S	105	E	E	E	E	G	160	C	C	G	G	105	105	G	105	G	G	S	S	S	S	S	E
16	105	105	105	105	105	E	G	100	145	140	140	G	100	100	G	150	150	G	100	100	100	S	S	105
17	S	105	105	105	100	S	G	G	150	120	110	105	G	G	G	G	G	100	100	S	S	S	S	S
18	S	E	E	E	E	E	G	150	140	C	C	C	G	G	G	G	100	100	S	C	E	S	S	S
19	S	S	E	E	E	S	G	G	G	G	125	G	G	G	G	105	100	120	105	100	100	S	S	S
20	S	E	E	E	E	S	G	G	G	G	110	105	G	G	G	G	G	110	105	105	100	S	S	S
21	S	E	E	E	E	E	G	G	150	140	130	B	B	G	G	105	G	115	110	105	105	100	100	105
22	110	100	100	100	100	105	105	G	G	G	G	G	140	G	105	105	G	105	105	S	S	S	S	S
23	S	E	E	105	105	100	G	G	G	140	140	G	G	G	G	110	G	G	110	110	105	E	105	S
24	S	E	E	E	E	S	G	G	G	130	120	120	G	G	G	G	G	G	100	E	S	E	S	S
25	105	100	100	100	100	100	100	G	G	G	100	G	G	100	G	G	105	100	G	105	100	100	S	100
26	S	105	105	105	100	S	G	G	G	G	130	120	G	G	C	G	C	100	100	100	S	110	S	S
27	S	E	E	E	E	S	G	105	120	G	135	B	130	G	G	G	105	G	S	100	105	105	110	S
28	S	105	105	100	100	100	105	100	120	105	B	G	G	G	G	G	G	G	G	105	110	110	105	S
29	S	S	E	E	105	S	G	G	150	125	125	140	105	G	115	115	115	G	G	110	110	110	S	S
30	S	E	S	105	105	S	100	105	G	120	125	G	B	B	100	G	G	100	100	100	100	S	S	S
31	S	E	E	E	E	E	G	G	140	125	120	120	G	G	G	110	110	110	110	105	S	S	105	105
	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	4	10	9	12	12	4	4	6	9	13	18	10	7	3	4	9	11	13	15	14	13	13	8	5
MED	105	105	100	105	102	100	102	105	140	125	125	115	110	100	110	105	105	105	105	105	105	105	105	105
UQ	108	105	105	105	105	102	105	150	150	140	130	120	120	102	102	122	110	112	110	108	105	110	110	105
LQ	102	100	100	100	100	100	100	100	130	120	115	110	105	100	102	105	100	100	100	100	100	105	102	105

IONOSPHERIC DATA

MAR. 1969

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 ₁	F ₁									C ₁	C ₂										F ₁	F ₃		
2		F ₂	F ₁	F ₁	F ₁																				
3											L ₂						L ₁		L ₁						
4			F ₁	F ₁																				F ₁	
5																									
6										C ₁															
7					F ₁																				
8											H ₁				H ₁	L ₂	L ₂	L ₃	L ₃	F ₂		F ₁	F ₃		
9																									
10																					F ₂	F ₂			
11										H ₁													F ₂		
12										H ₂	H ₁	L ₂	L ₂						C ₂		F ₁	F ₃			
13		F ₁	F ₄	F ₁					H ₁	C ₁	C ₁	C ₂	L ₁				L ₁	L ₁	L ₁			F ₁			
14				F ₂	F ₁							L ₁					C ₁	H ₁		F ₁	F ₁	F ₃	F ₂		
15		F ₁						H ₂					L ₂	L ₂		L ₂									
16	F ₂	F ₂	F ₂	F ₂	F ₁			L ₁	H ₂	HL ₁₂	H ₁		L ₁	L ₂		H ₁	H ₂		L ₁	F ₂	F ₁		F ₁		
17		F ₁	F ₁	F ₁	F ₁				H ₁	C ₁	L ₁	L ₂						LH ₂₁	L ₂						
18								H ₁	H ₁								L ₂		L ₁						
19										H ₁							L ₂	L ₁	C ₂	L ₁	F ₁	F ₁			
20											L ₁	L ₂						L ₃	L ₄	F ₃	F ₁				
21									H ₁	H ₁	H ₁						L ₃	C ₃	L ₆	F ₃	F ₃	F ₃	F ₁	F ₃	
22	F ₁	F ₂	F ₃	F ₂	F ₂	L ₂	L ₂						H ₁		L ₂	L ₂		L ₂	L ₂						
23				F ₂	F ₂	L ₁				H ₁	H ₁								L ₁	F ₁	F ₁		F ₂		
24										H ₂	C ₁	C ₁							L ₂						
25	F ₂	F ₃	F ₃	F ₃	F ₃	L ₁	L ₁				LC ₁₁			L ₁			L ₂	L ₁		F ₁	F ₁	F ₁		F ₃	
26		F ₂	F ₃	F ₁	F ₁						H ₂	C ₁						L ₁	L ₃	F ₁		F ₃			
27								L ₁	C ₁		H ₁		C ₁				L ₁			F ₂	F ₁	F ₂	F ₁		
28		F ₁	F ₂	F ₂	F ₂	L ₂	L ₄	L ₁	C ₁	L ₁										F ₁	F ₃	F ₂	F ₃		
29					F ₁				H ₁	C ₁	H ₁	H ₁	L ₁		C ₂	C ₂	C ₁			F ₃	F ₄	F ₁			
30			F ₂	F ₂		L ₁	L ₂			C ₁	C ₁				L ₁			L ₁	L ₂	F ₂	F ₁				
31									H ₁	H ₂	C ₂	C ₁					L ₂	L ₂	L ₃	L ₃	F ₁		F ₃	F ₅	
CNT																									
MED																									
UQ																									
LQ																									

IONOSPHERIC DATA

MAR. 1969

foF2 (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	60	60	63	48	49	50	58	85	99	115	125	139	134	126	121	115	119	114	94	74	U ₆₈ S	70	71	J ₆₉ S		
2	61	62	59	52	47	46	J ₅₃ R	85	J ₁₀₁ R	111	129	138	138	134	129	128	120	106	98	81	72	63	64	57		
3	57	57	58	50	38	37	46	J ₇₈ R	J ₁₀₄ R	113	120	133	123	119	122	120	107	98	90	72	70	58	60	62		
4	62	57	51	50	46	46	60	J ₇₉ R	90	96	109	120	121	128	132	127	C	C	83	66	65	64	64	59		
5	57	57	58	55	47	47	52	84	99	107	123	133	130	128	132	139	131	113	98	80	J ₇₅ R	68	63	59		
6	60	66	J ₅₃ R	58	49	47	55	86	116	124	127	133	133	134	123	121	117	112	95	71	66	63	60	65		
7	63	66	56	54	51	54	60	94	109	128	139	134	125	121	125	124	119	110	86	72	J ₇₅ R	64	62	62		
8	59	51	J ₅₃ R	51	49	49	58	92	108	120	122	116	128	134	126	124	116	118	83	C	C	C	C	C		
9	C	C	C	C	C	C	C	U ₈₁ S	C	102	111	126	128	128	125	122	125	111	81	59	57	57	60	61		
10	58	58	54	51	C	C	C	C	C	C	C	C	135	135	132	131	129	114	103	95	75	62	61	63	61	
11	66	J ₆₆ R	64	45	41	41	50	J ₇₅ R	100	108	118	128	131	125	126	126	113	101	90	70	65	61	55	55		
12	59	62	59	50	46	45	58	89	124	132	123	113	130	142	131	126	121	116	98	75	R	66	65	65		
13	69	71	62	42	43	41	59	90	100	113	122	128	131	134	141	129	124	105	88	64	62	61	61	60		
14	57	54	55	51	45	45	58	R	95	J ₁₀₅ R	116	120	120	I ₁₁₅ C	113	109	103	96	J ₈₅ R	75	69	71	I ₆₉ R	R ₆₀		
15	67	63	67	66	50	50	66	96	96	115	133	145	137	137	139	134	119	112	U ₉₉ S	88	78	72	R ₆₄	68		
16	J ₆₈ R	64	62	59	53	J ₅₂ R	64	J ₁₀₄ R	109	119	128	129	134	133	124	121	110	108	96	92	86	C	C	C		
17	C	C	C	C	C	C	C	C	C	C	C	C	127	131	128	129	135	129	121	119	110	99	81	R	90	70
18	J ₇₀ R	J ₇₆ R	J ₇₁ R	53	53	55	79	S	105	118	126	136	130	123	126	121	123	120	115	110	88	J ₈₂ R	74	U ₇₆ S	S ₆₉	
19	J ₇₁ R	I ₇₀ R	S	64	59	59	74	J ₁₀₄ R	119	129	135	138	141	136	128	125	123	121	114	96	88	I ₈₆ R	69	64		
20	64	66	69	68	57	51	63	96	109	124	129	140	138	142	138	134	127	116	114	110	95	93	86	S		
21	67	67	64	64	63	J ₆₆ R	I ₈₂ S	105	111	127	143	J ₁₄₅ R	144	144	146	143	138	134	126	J ₁₀₅ R	89	81	67	76		
22	76	R ₆₆	64	66	66	62	83	109	118	132	139	149	154	159	U ₁₅₆ R	156	154	R ₁₄₅	139	119	97	86	J ₈₄ R	R ₈₈		
23	U ₈₂ S	79	R ₇₄	71	68	64	84	108	129	133	129	137	140	143	139	138	134	133	123	J ₁₀₈ R	R ₉₁	R ₉₈	S ₉₄	92		
24	I ₈₆ R	J ₈₀ S	J ₇₁ R	66	69	60	71	R	89	113	109	94	129	131	136	121	124	119	108	129	103	118	111	94	U ₈₂ R	
25	J ₇₂ R	U ₇₅ R	69	67	69	66	82	J ₁₀₄ R	123	131	138	138	134	130	124	113	121	127	121	97	R	R ₇₄	72	64		
26	61	69	R ₇₂	65	43	45	I ₇₂ R	106	119	126	127	134	140	139	134	129	130	124	118	96	82	73	74	J ₇₀ R		
27	J ₇₄ R	71	65	67	60	64	79	98	114	125	134	145	154	153	143	135	131	127	121	101	R	88	81	89	93	
28	84	R	72	69	64	65	84	111	114	120	115	127	135	134	127	121	116	115	116	J ₁₀₅ R	I ₉₂ R	J ₈₅ R	I ₈₅ R	86		
29	R	U ₇₀ R	72	63	67	R	I ₈₇ R	110	115	120	122	130	C	C	C	C	129	126	122	104	S ₈₀	S ₈₄	U ₇₅ S	J ₇₇ S		
30	J ₆₈ R	67	64	61	64	63	85	110	119	122	128	129	140	144	135	127	130	133	124	J ₁₀₂ R	84	75	74	70		
31	70	72	69	62	49	49	J ₇₀ R	110	112	111	126	131	131	140	140	133	130	120	110	I ₉₀ R	R	R ₈₆	R ₇₅	R ₇₄		
	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	28	29	29	28	27	28	28	28	29	30	31	30	30	30	30	30	30	31	30	27	28	29	28		
MED	66	66	64	59	50	50	65	96	112	120	127	133	134	134	130	126	121	115	99	89	80	72	69	66		
UQ	70	70	69	66	64	61	80	106	118	126	133	138	138	140	138	133	130	124	120	102	88	84	76	75		
LQ	60	61	58	51	46	46	58	86	100	111	122	128	128	128	124	122	117	108	92	74	68	64	63	61		

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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 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	L	L	L	L										
2										L	L	L	L	L	L	L									
3										L	L	L	L	L	L	L									
4										L	L	L	L	L	L	L									
5									L	L	L	L	L	L	L	L									
6									L	L	L	L	L	L	L	L									
7									L	L	L	L	L	L	L	L									
8									L	L	L	L	L	L	L	L									
9									C	L	L	L	L	L	L	L	L								
10									C	C	C	L	L	L	L	L	L								
11									L	L	L	L	L	L	L	L									
12									L	L	L	L	L	L	L	L									
13									L	L	L	L	R	L	L	L	L								
14									L	L	L	L	L	C	L	L	L								
15									L	L	L	L	L	L	R	L	L								
16									L	L	L	L	L	L	L	L	L								
17								C	C	C	C	L	L	L	L	L	L								
18									L	L	L	L	L	L	L	L	L								
19									L	L	L	L	L	L	L	L	L	L							
20									L	L	L	L	L	L	L	L	L								
21									L	R	B	B	B	B	L	L	L								
22									L	L	L	L	L	L	L	L	L								
23									L	L	L	L	L	L	L	L	L								
24									L	L	U L 650	L	L	L	L	L	L								
25									L	L	L	L	L	L	L	B	L								
26									L	L	L	L	L	L	L	L	L								
27									L	L	B	B	L	L	L	L	L								
28									L	L	B	L	L	L	L	L	L								
29									L	L	L	L	C	C	C	C									
30									L	L	L	L	B	B		L									
31									L	L	L	L	L	L	L	L	L								
	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		1												
MED											U L 650		450												
UQ																									
LQ																									

IONOSPHERIC DATA

MAR. 1969

foE (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							B	230	280	340	350	370	R	UR	IR		A	A	A						
2							B	UR	245	300	325	365	380	IR	375	365	350	330	285	220					
3							S	220	295	320	IR	340	355	A	355	345	315	285	200						
4							B	185	285	330	IA	345	360	IB	365	355	350	335	C	C					
5							B	210	290	320	350	365	375	R	360	350	335	290	200						
6							B	IA	215	295	325	345	IR	360	375	360	R	A	280	200					
7							B	240	305	310	345	355	375	355	345	330	A	260	210						
8							B	200	290	325	340	350	R	365	370	350	325	A	195						
9							C	220	C	325	350	370	365	355	350	310	A	B							
10							C	C	C	C	C	360	365	370	350	R	285	195							
11								200	235	290	330	350	R	IR	370	365	350	325	A	A					
12							B	270	310	330	IR	350	A	A	A	350	A	A	B						
13							B	265	IA	305	A	355	A	A	A	IA	A	A	220						
14							180	IR	A	A	A	A	IR	IC	IA	350	325	A	A						
15							B	A	A	A	R	R	R	380	375	R	A	A	A						
16							B	260	305	340	370	375	R	380	385	385	360	305	235	E					
17							C	C	C	C	A	R	R	R	A	R	A	305	250	B					
18							B	270	IA	315	340	A	A	R	385	365	345	UR	235	B					
19							210	260	IR	320	345	A	A	R	R	360	350	IA	A						
20							185	265	IR	310	340	R	R	R	IR	370	370	355	300	235	B				
21							200	290	A	IA	360	A	B	B	B	R	A	320	265	S					
22							B	285	320	R	A	R	375	370	IR	380	R	365	325	255	B				
23							205	280	325	360	380	R	R	B	370	R	A	B	A	B					
24							B	280	305	340	370	R	R	R	R	R	355	310	A	B					
25							B	265	IA	305	A	R	R	R	R	R	B	320	250	B					
26							B	270	A	365	A	R	R	R	R	R	IR	350	320	250	B				
27							B	280	325	345	R	B	B	R	R	A	R	A	B						
28							185	280	IR	325	345	B	IR	IR	IR	IR	355	355	330	A	B				
29							A	295	IR	320	360	380	A	C	C	C	C	320	270	B					
30							170	270	325	360	R	R	B	B	B	360	310	250	B						
31							200	280	325	345	A	A	A	A	A	A	A	A	A	B					
	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							9	28	24	24	16	14	15	19	20	18	19	18	1						
MED							207	265	305	340	350	360	370	R	365	350	340	305	235	E					
UQ							200	280	320	345	368	370	R	375	372	368	355	320	250						
LQ							185	232	295	325	345	360	R	365	360	350	325	288	200						

IONOSPHERIC DATA

MAR. 1969

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	JX 21	EB 12	EB 13	E	E	ES 15	EB 14	G	G	36	39	G	G	G	G	35	JX 34	26	JX 17	ES 15	ES 15	ES 15	ES 15	23	
2	22	ES 15	EB 13	JX 30	JX 24	JX 21	19	G	G	G	G	G	G	G	G	G	G	G	ES 16	ES 16	ES 15	ES 15	ES 15	ES 15	
3	ES 15	EB 12	M 21	M 20	E	EB 14	ES 15	G	G	G	G	G 32	40	34	JG 34	G 29	G	G	22	20	ES 15	20	ES 15	ES 15	
4	ES 16	ES 15	ES 15	20	18	ES 15	EB 15	G	JG 26	G	36	G	EB 40	G 31	G 21	G 19	C	C	ES 15	ES 15	21	ES 15	JX 30	JX 25	
5	22	JX 25	ES 15	M 20	ES 15	EB 14	EB 15	G	G	JG 29	G 29	G	G	G 24	G 24	G	G	24	ES 15	ES 15	ES 15	ES 15	ES 15	ES 15	
6	ES 15	19	ES 15	EB 11	EB 12	ES 15	EB 15	24	G	G 26	G	G	G	G 33	G 34	32	G	G	M 19	ES 16	M 28	JX 21	ES 16	21	
7	ES 15	ES 15	EB 13	ES 15	EB 14	19	20	G	G	G	G	G	G	G	G	G	35	G	21	ES 16	ES 16	ES 16	ES 16	ES 16	
8	19	ES 16	ES 16	ES 15	ES 16	ES 16	JB 16	G	31	36	39	G	G	39	G	34	JX 30	G 19	ES 16	C	C	C	C	C	
9	C	C	C	C	C	C	C	G	C	36	G	G	G 21	G	G 21	33	34	29	20	ES 16	21	ES 16	ES 16	ES 16	
10	ES 16	ES 16	ES 16	EB 11	C	C	C	C	C	C	C	G	G	G	G	G	G	21	24	ES 16	21	ES 16	22	22	
11	ES 16	ES 16	ES 16	ES 15	E	ES 16	23	G	JG 25	G	G	G	G	G	G	G	35	25	21	JX 25	22	22	19	ES 15	
12	ES 15	ES 16	ES 16	ES 15	ES 16	ES 16	19	G	G	36	G	35	JX 36	43	G	42	JX 41	22	ES 16	JX 29	41	JX 35	22	ES 16	
13	21	ES 16	EB 12	ES 16	19	ES 16	EB 16	G	36	36	G	JX 41	47	35	35	34	35	G	24	JX 30	JX 25	JX 25	20	ES 16	
14	ES 16	ES 16	ES 15	ES 15	21	21	G	G	31	33	36	JX 41	35	C	35	35	33	JX 25	ES 16	JX 22	ES 16	21	ES 16	JX 25	
15	JX 21	ES 16	ES 15	21	ES 15	ES 16	20	31	36	JX 39	G	G	G	G 34	G 32	JX 57	48	JX 36	JX 30	M 31	19	22	ES 15	ES 15	
16	JX 21	ES 15	ES 15	23	JX 17	23	EB 16	29	34	38	39	G	G	G	43	45	39	G 20	23	22	ES 15	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	39	31	34	44	34	43	G 20	G 21	JX 25	JX 22	23	ES 15	ES 15	ES 15
18	ES 16	ES 15	ES 15	E	ES 15	EB 13	EB 16	G	M 35	G	JX 40	JX 37	G	G 37	G	G 20	G	G	ES 16	ES 16	M 21	18	ES 16	ES 16	
19	ES 16	ES 16	ES 15	EB 12	EB 11	ES 15	G	G	34	36	41	44	34	G	G	G	36	JX 42	JX 29	22	ES 16	ES 16	23	ES 16	
20	ES 16	ES 16	ES 16	E	ES 16	ES 15	G	G	JG 29	JX 38	G	G	G	G 33	G	G	G	G	G	20	36	JX 54	35	ES 15	24
21	22	ES 15	ES 15	ES 15	EB 13	JX 16	G	G	M 37	42	42	EB 106	EB 75	EB 74	G	39	G	G	JX 29	ES 16	22	22	23	22	
22	23	21	21	21	ES 16	ES 16	ES 16	G	G	JX 36	42	G	G	G	G 28	G	G	G	JX 24	21	ES 15	ES 15	22	M 21	
23	ES 16	EB 12	ES 15	EB 11	E	ES 15	G	G	G	G	G	G	EB 59	G	G	JX 43	EB 29	JX 29	36	JX 22	JX 23	22	JX 18	21	
24	ES 15	M 21	EB 13	JX 18	M 22	18	EB 15	G	G	G	39	G	G	G	JX 38	27	JG 29	JX 46	JX 40	M 31	JX 25	JX 38	ES 15	ES 15	
25	JX 23	23	27	JX 23	22	M 18	EB 16	G	32	35	31	G	34	G 34	G 32	G 31	EB 52	G 30	G 18	JX 24	21	18	ES 16	ES 16	ES 16
26	ES 17	JX 22	21	JX 23	42	JX 25	25	30	36	G	41	G	G	G 35	G 29	G	G 32	G 32	G 22	21	20	21	ES 16	M 27	18
27	18	ES 15	EB 12	ES 15	EB 12	ES 15	EB 16	G	G	G	G	EB 75	EB 65	G	G 32	43	29	34	JX 23	JX 25	ES 16	22	ES 16	20	
28	22	ES 16	ES 16	ES 16	EB 14	ES 15	G	G	G	G	EB 75	G	G	G	G	G	JG 29	31	JX 29	JX 25	JX 25	20	ES 16	ES 16	
29	ES 15	ES 16	ES 16	EB 13	ES 16	ES 15	JX 25	JG 26	G	G	49	43	C	C	C	C	37	19	EB 17	JX 25	36	JX 21	M 31	ES 15	
30	M 20	22	ES 15	E	E	18	18	JG 26	JX 33	35	35	G 30	EB 89	EB 50	EB 40	G 24	G	27	22	JX 24	EB 13	ES 15	ES 15	ES 15	
31	ES 16	EB 12	ES 15	E	E	ES 15	G	G	G	39	43	JX 51	43	43	47	42	38	31	JX 24	23	ES 16	21	20	20	
	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	29	29	29	28	28	28	29	28	29	30	31	30	29	30	30	30	30	31	30	30	29	29	29	
MED	ES 16	ES 16	ES 15	ES 15	ES 15	ES 16	16	G	EG 25	G 33	34	G	EG 22	EG 29	EG 21	31	30	G 22	22	22	21	20	ES 16	ES 16	
UQ	21	ES 16	ES 16	20	18	18	18	G	34	36	40	34	U 37	G 34	G 34	40	35	29	JX 24	JX 25	23	22	22	21	
LQ	ES 16	ES 15	ES 15	ES 11	ES 12	ES 15	G	G	G	G	G	G	G	G	G	G	G	G	17	ES 16	ES 16	ES 16	ES 15	ES 15	

IONOSPHERIC DATA

MAR. 1969

fbEs (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	19	E ₁₂ B ₁₃	E ₁₃ B ₁₁	E	E ₁₅ S ₁₅	E ₁₄ B ₁₄	G	G		35	39	G	G	G	G	E ₃₅ R ₃₅	30	23	16	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	17	
2		E ₁₅ S ₁₅	E ₁₃ B ₁₃	21	16	E	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	
3	E ₁₅ S ₁₅	E ₁₂ B ₁₂	E	E	E ₁₄ B ₁₄	E ₁₅ S ₁₅	G	G	G	G	G	G	30	39	27	G	G	G	E	15	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	E ₁₅ S ₁₅	
4	E ₁₆ S ₁₆	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	E ₁₅ S ₁₅	G	G	24	G	35	G	E ₄₀ B ₄₀	E ₃₁ R ₃₁	E ₂₁ R ₂₁	E ₁₉ R ₁₉	C	C	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	25	20	
5	E	25	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	E ₁₄ B ₁₄	E ₁₅ S ₁₅	G	G	28	G	29	G	E ₂₄ R ₂₄	G	G	G	E ₂₄ R ₂₄	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	
6	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	E ₁₁ B ₁₁	E ₁₂ B ₁₂	E ₁₅ S ₁₅	E ₁₅ S ₁₅	23	G	26	G	G	G	G	E ₃₃ R ₃₃	E ₃₄ R ₃₄	31	G	G	E ₁₆ S ₁₆	19	E	E ₁₆ S ₁₆	E	
7	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₃ B ₁₃	E ₁₅ S ₁₅	E ₁₄ B ₁₄	E	G	G	G	G	G	G	G	G	G	G	30	G	E	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆	
8	E	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₅ S ₁₅	E ₁₆ S ₁₆	E ₁₆ S ₁₆	G	G	E ₃₁ R ₃₁	36	38	G	G	39	G	34	30	G	E ₁₈ S ₁₈	E ₁₆ S ₁₆	C	C	C	C	
9	C	C	C	C	C	C	C	G	C	35	G	G	G	G	E ₂₁ R ₂₁	G	G	29	25	E	E ₁₆ S ₁₆	E	E ₁₆ S ₁₆	E ₁₆ S ₁₆	
10	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₁ B ₁₁	C	C	C	C	C	C	C	G	G	G	G	G	G	18	19	E ₁₆ S ₁₆	E	E ₁₆ S ₁₆	E	E	
11	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₅ S ₁₅	E ₁₆ S ₁₆	E ₁₆ S ₁₆	19	G	25	G	G	G	G	G	G	G	29	25	E	23	E	E	E	E ₁₅ S ₁₅	
12	E ₁₅ S ₁₅	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₅ S ₁₅	E ₁₆ S ₁₆	E ₁₆ S ₁₆	G	G	E ₃₆ R ₃₆	G	E ₃₅ R ₃₅	E ₃₆ R ₃₆	40	G	40	40	40	E ₂₁ R ₂₁	E ₁₆ S ₁₆	20	40	32	E	E ₁₆ S ₁₆	
13	E	E ₁₆ S ₁₆	E ₁₂ B ₁₂	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆	G	32	E ₃₆ R ₃₆	G	40	E ₄₇ R ₄₇	35	E ₃₅ R ₃₅	30	31	G	E	26	22	20	E	E ₁₆ S ₁₆		
14	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E	E	G	E ₃₁ R ₃₁	E ₃₃ R ₃₃	E ₃₆ R ₃₆	40	E ₃₅ R ₃₅	C	E ₃₅ R ₃₅	E ₃₅ R ₃₅	32	25	E ₁₆ S ₁₆	22	E ₁₆ S ₁₆	E	E ₁₆ S ₁₆	E		
15	E	E ₁₆ S ₁₆	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	E ₁₆ S ₁₆	19	29	35	37	G	G	G	33	E ₃₂ R ₃₂	40	38	27	24	25	E	E	E ₁₅ S ₁₅	E ₁₅ S ₁₅	
16	E	E ₁₅ S ₁₅	E ₁₅ S ₁₅	14	14	E	E ₁₆ S ₁₆	29	34	38	38	G	G	G	43	45	39	G	19	17	17	E ₁₅ S ₁₅	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	39	E ₃₁ R ₃₁	E ₃₄ R ₃₄	43	34	38	20	G	20	22	20	16	E ₁₅ S ₁₅	E ₁₅ S ₁₅
18	E ₁₆ S ₁₆	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E	E ₁₅ S ₁₅	E ₁₃ B ₁₃	E ₁₆ S ₁₆	G	33	G	40	E ₃₇ R ₃₇	G	G	G	G	G	G	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E	E	E ₁₆ S ₁₆	E ₁₆ S ₁₆	
19	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₅ S ₁₅	E ₁₂ B ₁₂	E ₁₁ B ₁₁	E ₁₅ S ₁₅	G	34	36	40	43	E ₃₄ R ₃₄	G	G	G	33	40	25	E	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E	E ₁₆ S ₁₆	E ₁₆ S ₁₆	
20	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E	E ₁₆ S ₁₆	E ₁₅ S ₁₅	G	E ₂₉ R ₂₉	38	G	G	G	G	33	G	G	G	G	19	30	32	21	E ₁₅ S ₁₅	E	
21	E	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₃ B ₁₃	E	G	34	40	E ₄₂ R ₄₂	E ₁₀₆ B ₁₀₆	E ₇₅ R ₇₅	E ₇₄ B ₇₄	G	E ₃₉ R ₃₉	G	G	G	29	E ₁₆ S ₁₆	E	E	E	E	
22	E	E	E	E	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆	G	G	E ₃₆ R ₃₆	40	G	G	G	G	28	G	G	G	16	E	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E	E
23	E ₁₆ S ₁₆	E ₁₂ B ₁₂	E ₁₅ S ₁₅	E ₁₁ B ₁₁	E	E ₁₅ S ₁₅	G	G	G	G	G	G	E ₅₉ B ₅₉	G	G	38	E ₂₉ B ₂₉	26	17	19	19	E	E	E	
24	E ₁₅ S ₁₅	E	E ₁₃ B ₁₃	13	14	E	E ₁₅ S ₁₅	G	G	G	39	G	G	G	34	27	G	27	27	26	25	22	38	E ₁₅ S ₁₅	E ₁₅ S ₁₅
25	16	E	19	19	E	E	E ₁₆ S ₁₆	G	32	E ₃₅ R ₃₅	E ₃₁ R ₃₁	E ₃₄ R ₃₄	E ₃₄ R ₃₄	E ₃₂ R ₃₂	E ₃₁ R ₃₁	E ₅₂ B ₅₂	G	17	G	E	E	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆	
26	E ₁₇ S ₁₇	20	E	20	40	E	25	30	34	G	40	G	E ₃₅ R ₃₅	E ₂₉ R ₂₉	G	E ₃₂ R ₃₂	G	18	17	E	E	E ₁₆ S ₁₆	19	E	
27	E	E ₁₅ S ₁₅	E ₁₂ B ₁₂	E ₁₅ S ₁₅	E ₁₂ B ₁₂	E ₁₅ S ₁₅	E ₁₆ S ₁₆	G	G	G	G	E ₇₅ B ₇₅	E ₆₅ R ₆₅	G	G	40	G	28	27	21	25	E ₁₆ S ₁₆	20	E ₁₆ S ₁₆	E
28	17	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₄ B ₁₄	E ₁₅ S ₁₅	G	G	G	E ₇₅ B ₇₅	G	G	G	G	G	G	G	26	G	E	19	E	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆
29	E ₁₅ S ₁₅	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₃ B ₁₃	E ₁₆ S ₁₆	E ₁₅ S ₁₅	19	25	G	G	46	41	C	C	C	C	36	17	E ₁₇ B ₁₇	22	32	17	22	E ₁₅ S ₁₅	
30	E	E	E ₁₅ S ₁₅	E	E	E	16	G	26	29	34	E ₃₅ R ₃₅	E ₃₀ R ₃₀	E ₈₉ B ₈₉	E ₅₀ B ₅₀	E ₄₀ B ₄₀	E ₂₄ R ₂₄	G	27	19	21	E ₁₃ B ₁₃	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅
31	E ₁₆ S ₁₆	E ₁₂ B ₁₂	E ₁₅ S ₁₅	E	E	E ₁₅ S ₁₅	G	G	G	39	40	47	42	40	40	39	32	26	18	17	E ₁₆ S ₁₆	E	E	E	E
CNT	29	29	29	29	28	28	28	29	28	29	30	31	30	29	30	30	30	30	30	31	30	29	29	29	29
MED	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₃ B ₁₃	E ₁₄ B ₁₄	E ₁₅ S ₁₅	E ₁₅ S ₁₅	G	E ₂₄ R ₂₄	E ₃₃ R ₃₃	E ₃₅ R ₃₅	G	E ₂₂ R ₂₂	E ₂₇ R ₂₇	E ₂₁ R ₂₁	E ₃₀ R ₃₀	G	19	E ₁₆ S ₁₆	16	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E ₁₅ S ₁₅	
UQ	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₅ S ₁₅	E ₁₆ S ₁₆	E ₁₅ S ₁₅	E ₁₆ S ₁₆	G	32	36	40	E ₃₆ B ₃₆	E ₃₉ R ₃₉	34	E ₃₄ B ₃₄	U	36	31	26	19	22	19	E ₁₆ S ₁₆	E ₁₆ S ₁₆	E ₁₆ S ₁₆
LQ	E	E	E ₁₃ B ₁₃	E	E	E	G	G	G	G	G	G	G	G	G	G	G	G	G	E ₁₅ S ₁₅	E ₁₅ S ₁₅	E	E	E	E

IONOSPHERIC DATA

MAR. 1969

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

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 ₁₅	12	13	10	10	E ₁₅	14	16	16	15	17	26	28	29	20	26	16	16	11	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
2	E ₁₅	E ₁₅	13	11	10	E ₁₅	16	19	17	19	16	19	26	18	16	25	17	16	E ₁₆	E ₁₆	E ₁₅	E ₁₅	E ₁₅	E ₁₅
3	E ₁₅	12	14	11	10	14	E ₁₅	15	16	17	26	26	25	26	25	17	20	15	E ₁₅	14	E ₁₅	E ₁₅	E ₁₅	E ₁₅
4	E ₁₆	E ₁₅	E ₁₅	13	E ₁₅	E ₁₅	15	15	16	25	18	19	40	26	17	14	C	C	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
5	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	14	15	16	16	17	17	23	17	16	19	25	16	16	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
6	E ₁₅	E ₁₅	E ₁₅	11	12	E ₁₅	15	15	15	16	16	16	25	19	26	18	16	16	E ₁₅	E ₁₆	13	E ₁₅	E ₁₆	E ₁₅
7	E ₁₅	E ₁₅	13	E ₁₅	14	E ₁₅	16	16	18	20	26	25	26	25	26	19	16	16	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆
8	E ₁₆	E ₁₆	E ₁₆	E ₁₅	E ₁₆	E ₁₆	16	16	15	16	16	16	26	26	19	15	15	16	E ₁₆	C	C	C	C	C
9	C	C	C	C	C	C	C	16	C	18	28	26	20	27	16	16	16	16	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆
10	E ₁₆	E ₁₆	E ₁₆	11	C	C	C	C	C	C	C	26	26	19	18	26	17	16	E ₁₆	E ₁₆	E ₁₅	E ₁₆	E ₁₆	E ₁₆
11	E ₁₆	E ₁₆	E ₁₆	E ₁₅	10	E ₁₆	16	16	16	16	26	26	26	26	15	16	16	16	E ₁₆	E ₁₅	E ₁₆	E ₁₆	E ₁₆	E ₁₅
12	E ₁₅	E ₁₆	E ₁₆	E ₁₅	E ₁₆	E ₁₆	16	16	15	16	27	26	19	27	25	26	16	15	E ₁₆	E ₁₆	E ₁₅	E ₁₆	E ₁₆	E ₁₆
13	E ₁₆	E ₁₆	12	E ₁₆	E ₁₆	E ₁₆	16	16	16	18	27	27	25	26	26	20	16	16	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆
14	E ₁₆	E ₁₆	E ₁₅	E ₁₅	E ₁₆	E ₁₆	15	16	27	16	19	26	25	C	17	17	16	16	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆
15	E ₁₆	E ₁₆	E ₁₅	E ₁₆	E ₁₅	E ₁₆	16	16	17	24	26	22	26	27	17	17	16	12	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
16	E ₁₅	E ₁₅	E ₁₅	10	10	E ₁₅	16	16	16	16	25	25	26	26	27	22	18	12	10	E ₁₅	E ₁₅	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	26	25	25	25	28	17	14	10	16	E ₁₆	E ₁₅	E ₁₅	E ₁₅
18	E ₁₆	E ₁₆	E ₁₆	10	E ₁₅	13	16	16	16	17	25	25	33	26	16	15	18	15	16	E ₁₆	E ₁₅	E ₁₆	E ₁₆	E ₁₆
19	E ₁₆	E ₁₆	E ₁₅	12	11	E ₁₅	16	15	16	18	26	26	27	28	26	26	16	16	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆
20	E ₁₆	E ₁₆	E ₁₆	10	E ₁₆	E ₁₅	16	16	16	16	26	28	26	26	25	18	17	16	16	E ₁₆	E ₁₆	E ₁₅	E ₁₅	13
21	14	E ₁₅	E ₁₅	E ₁₅	13	E ₁₅	16	16	17	26	26	106	75	74	32	27	19	17	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆
22	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆	16	16	17	18	25	26	26	26	19	18	18	16	14	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
23	E ₁₆	12	E ₁₅	11	10	E ₁₅	16	16	16	26	19	28	59	27	26	19	29	15	14	E ₁₆	E ₁₅	E ₁₅	14	E ₁₅
24	E ₁₅	E ₁₅	13	11	10	E ₁₅	15	16	16	26	18	25	25	25	25	16	15	15	16	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
25	12	E ₁₅	E ₁₅	12	E ₁₅	E ₁₅	16	16	17	25	25	26	27	26	26	52	16	11	16	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆
26	E ₁₇	E ₁₆	E ₁₆	10	E ₁₆	E ₁₆	16	16	16	26	20	22	33	25	28	18	16	12	16	E ₁₅	E ₁₅	E ₁₆	E ₁₆	E ₁₅
27	E ₁₅	E ₁₅	12	E ₁₅	12	E ₁₅	16	16	16	25	26	75	65	28	26	19	19	15	13	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆
28	E ₁₆	E ₁₆	E ₁₆	E ₁₆	14	E ₁₅	16	16	15	19	75	26	26	26	28	26	16	16	15	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆
29	E ₁₅	E ₁₆	E ₁₆	13	E ₁₆	E ₁₅	16	15	25	24	25	27	C	C	C	C	14	12	17	E ₁₅	E ₁₅	12	14	E ₁₅
30	E ₁₅	E ₁₅	E ₁₅	10	10	E ₁₅	15	16	16	16	25	26	89	50	40	16	19	12	12	E ₁₆	13	E ₁₅	E ₁₅	E ₁₅
31	E ₁₆	12	E ₁₅	10	10	E ₁₅	15	15	16	25	25	25	26	28	28	25	25	16	16	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆
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	29	29	29	28	28	28	29	28	29	30	31	30	29	30	30	30	30	30	31	30	29	29	29
MED	E ₁₆	E ₁₅	E ₁₅	11	U	E ₁₅	16	16	16	18	25	26	26	26	25	18	16	16	E ₁₆	E ₁₆	E ₁₅	E ₁₆	E ₁₆	E ₁₅
UQ	E ₁₆	E ₁₆	E ₁₆	E ₁₅	E ₁₆	E ₁₆	16	16	17	25	26	26	28	27	26	25	18	16	16	E ₁₆	E ₁₆	E ₁₆	E ₁₆	E ₁₆
LQ	E ₁₅	E ₁₅	E ₁₅	11	10	E ₁₅	15	16	16	16	19	25	25	25	18	17	16	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅

IONOSPHERIC DATA

MAR. 1969

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	280	285	305	295	275	290	300	330	315	305	290	300	300	295	295	285	295	305	305	300	U ₂₉₅	295	295	S ₂₈₅
2	295 ^S	290	305	305	285	280	J ₂₉₀	330	J ₃₁₅	295	320	295	305	285	290	290	300	300	300	295	305	285	290	280
3	275	290	310	330	280	270	305	J ₃₄₅	J ₃₁₅	320	300	300	295	295	295	310	310	305	300	305	300	275	285	295
4	295	300	295	290	285	285	310	330	330	315	295	300	290	290	300	305	C	C	310	290	290	285	305	300
5	280	280	300	305	285	300	310	330	325	305	300	300	300	290	290	300	310	300	305	300	J ₃₀₅	295	285	270
6	280	295	J ₂₉₅	295	290	275	290	325	320	305	310	310	300	305	295	295	300	315	315	310	290	285	285	270
7	290	295	290	275	265	260	310	330	330	305	310	305	295	300	290	310	305	310	310	290	J ₂₉₅	305	290	295
8	295	275	J ₂₈₀	290	265	270	285	325	315	315	310	295	295	295	295	300	295	315	310	C	C	C	C	C
9	C	C	C	C	C	C	C	U ₃₅₀	C	305	300	290	290	295	290	295	305	310	300	290	285	280	290	295
10	280	295	295	315	C	C	C	C	C	C	C	310	305	290	305	310	300	310	305	300	280	285	285	280
11	290	J ₃₀₅	315	295	265	270	295	J ₃₄₀	320	295	305	290	300	295	295	300	315	310	300	315	295	300	280	275
12	255	290	315	300	285	270	290	315	300	310	300	275	285	295	300	290	290	300	315	305	R	275	265	280
13	305	300	310	305	265	270	300	335	315	300	305	290	295	290	300	295	325	315	320	300	290	285	285	295
14	295	295	295	310	255	290	315	R	320	J ₃₀₅	305	295	300	I ₃₀₀	300	305	325	315	J ₃₀₀	295	310	285	I ₂₈₀	R ₂₈₅
15	280	285	285	290	305	280	310	330	325	295	300	305	285	285	290	295	295	305	305	285	285	290	270	265
16	U ₂₈₀	285	270	290	275	J ₂₇₀	305	J ₃₁₅	305	305	305	295	295	295	300	290	300	290	300	305	290	C	C	C
17	C	C	C	C	C	C	C	C	C	C	300	285	275	270	280	285	290	295	290	300	290	R	300	285
18	J ₂₆₅	J ₂₉₀	J ₃₁₀	315	245	255	315	325	305	310	310	295	285	280	275	275	290	295	300	285	J ₂₉₅	290	U ₂₉₀	S ₂₉₀
19	J ₂₈₅	I ₃₀₀	310	300	255	260	305	J ₃₁₅	310	300	295	300	290	285	285	275	285	290	300	300	300	I ₃₀₅	290	270
20	285	275	285	315	300	290	320	320	305	290	280	280	270	275	270	275	275	285	280	290	275	290	290	S
21	285	255	265	265	260	J ₂₇₅	I ₃₃₀	320	305	275	290	J ₂₈₀	280	270	275	280	280	285	295	J ₂₈₅	280	285	305	280
22	295	290	280	285	275	295	315	315	300	285	300	285	280	295	U ₂₉₀	290	295	295	295	290	290	280	J ₂₇₅	285
23	U ₂₉₀	275	280	280	275	280	300	295	305	295	285	285	285	280	280	275	285	285	295	J ₂₈₀	285	280	S ₂₈₀	285
24	I ₂₉₀	J ₂₉₀	J ₂₇₅	280	275	260	310	325	295	320	230	270	255	270	265	260	260	250	280	255	260	260	265	U ₂₉₀
25	J ₂₆₅	U ₂₇₅	260	255	275	290	305	J ₃₀₅	310	290	305	295	300	285	275	275	285	295	305	300	R	295	280	255
26	245	260	305	325	A	265	I ₃₀₀	315	310	300	285	285	285	285	280	280	280	290	295	300	280	290	280	J ₂₆₅
27	J ₂₇₅	275	270	260	270	280	315	305	295	280	300	285	285	280	285	275	280	290	290	305	290	285	285	280
28	310	R	295	280	270	275	310	315	310	310	285	275	280	275	285	280	280	290	300	J ₃₀₀	I ₂₇₅	J ₂₇₀	I ₂₇₀	270
29	R	U ₂₈₀	265	285	265	R	R	310	305	300	285	285	C	C	C	C	285	295	295	300	290	S ₂₈₅	U ₂₉₀	J ₂₈₅
30	J ₂₆₀	270	255	280	255	265	S ₂₈₀	310	305	290	290	270	290	285	280	275	285	300	305	J ₃₁₀	300	280	285	285
31	280	275	290	305	265	255	J ₃₂₅	325	330	280	280	285	280	285	285	285	290	290	300	I ₂₉₀	R	290	295	290
	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	28	29	29	27	27	27	28	28	29	30	31	30	30	30	30	30	30	31	30	27	28	29	28
MED	282	288	295	295	275	275	305	325	310	300	300	290	290	288	290	290	292	298	300	300	290	285	285	285
UQ	292	295	305	305	282	282	312	330	320	305	305	300	300	295	295	300	300	310	305	300	295	290	290	290
LQ	278	275	280	280	265	268	300	315	305	295	290	285	285	280	280	275	285	290	295	290	285	280	280	272

IONOSPHERIC DATA

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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	L	L	L	L	L									
2										L	L	L	L	L	L	L								
3										L	L	L	L	L	L	L								
4										L	L	L	L	L	L	L								
5									L	L	L	L	L	L	L	L								
6									L	L	L	L	L	L	L	L								
7										L	L	L	L	L	L	L								
8									L	L	L	L	L	L	L	L								
9									C	L	L	L	400	L	L	L	L							
10									C	C	C	L	L	L	L	L								
11										L	L	L	L	L	L	L								
12									L	L	L	L	L	L	L	L								
13										L	L	L	R	L	L	L	L							
14									L	L	L	L	L	C	L	L	L							
15									L	L	L	L	L	L	R	L								
16										L	L	L	L	L	L	L								
17							C	C	C	C	L	L	L	L	L	L								
18									L	L	L	L	L	L	L	L								
19									L	L	L	L	L	L	L	L	L	L						
20										L	L	L	L	L	L	L								
21										L	R	B	B	B	L	L	L							
22										L	L	L	L	L	L	L								
23									L	L	L	L	L	L	L	L								
24									L	L	U L 325	L	L	L	L	L								
25									L	L	L	L	L	L	L	B	L							
26										L	L	L	L	L	L	L								
27										L	L	B	B	L	L	L	L							
28									L	L	B	L	L	L	L	L	L							
29									L	L	L	L	C	C	C	C								
30									L	L	L	L	B	B		L								
31									L	L	L	L	L	L	L	L	L							
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		1												
MED										U L 325		400												
UQ																								
LQ																								

IONOSPHERIC DATA

MAR. 1969

h'F2 (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										260	260	260	255	270	260										
2										245	250	290	270	265	270	280									
3										250	250	270	250	260	275	260									
4										245	250	260	255	295	270	250									
5									240	255	260	255	260	270	270	260									
6									250	250	260	260	260	270	250	245									
7										275	255	250	260	260	285	260									
8									250	240	250	255	305	260	255	260									
9									C	250	285	285	265	275	260	260	250								
10									C	C	C	265	290	265	280	265									
11										275	265	265	290	265	265	255									
12									250	250	265	310	290	290	260	270									
13										255	265	265	285	285	280	250	250								
14									240	255	260	250	275		C	265	255	250							
15									250	270	275	290	255	280	E ₃₀₀ R	255									
16										250	260	260	275	260	255	265									
17								C	C	C	C	255	260	300	300	260	275								
18									250	245	255	255	255	275	290	L	300								
19									250	250	250	270	260	295	250	250	250	260							
20									260	255	275	280	255	270	280										
21									250	260		B	E ₃₀₀ R	E ₃₄₀ R	290	275	265								
22									245	255	290	L	300	310	310	300									
23									250	250	240	300	305	305	260	280									
24									245	240	410	310	325	270	330	310									
25									250	250	250	250	255	300	250	250	285								
26									250	250	250	260	260	260	280	275									
27									255	265		B	E ₃₀₀ B	260	265	260	260								
28									245	255	I ₂₅₅ B	295	280	280	265	255	255								
29									250	250	250	270	C	C	C	C									
30									250	250	260	260	B	270		285									
31									240	250	255	260	260	270	265	270	250								
	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	29	30	29	29	29	29	29	9	1							
MED									250	250	255	265	270	270	265	260	250	260							
UQ									250	255	260	285	290	288	280	275	260								
LQ									245	250	250	260	260	265	260	255	250								

IONOSPHERIC DATA

MAR. 1969

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	295	270	250	220	300	270	250	230	235	230	240	235	230	22 ^H	22 ^B	245	240	240	225	210	245	255	265	260	
2	270	270	250	250	290	315	260	230	240	230	230	210	245	240	230	240	245	240	230	225	230	250	255	275	
3	295	270	250	225	205	295	250	230	240	235	245	235	215	220	240	220	245	245	240	240	250	255	295	280	
4	270	260	250	265	250	275	250	220	240	220	205	20 ^B	240	240	220	240		C	C	215	220	245	255	260	270
5	295	300	255	245	220	250	250	225	225	225	225	225	21 ^H	20 ^H	210	240	240	225	220	225	240	255	255	315	
6	300	250	250	245	210	290	275	220	235	225	210	225	210	210	220	210	245	240	210	215	250	260	270	290	
7	255	250	245	260	345	310	255	225	230	240	250	240	220	230	230	225	240	245	210	245	250	245	265	275	
8	265	300	315	260	290	315	280	240	240	225	230	205	210	245	230	230	240	245	205		C	C	C	C	
9	C	C	C	C	C	C	C		C		245	220	205 ^H	220	240	230	195 ^H	240	235	200	230	285	290	295	265
10	295	260	265	240	C	C	C	C	C	C	C	C	240	230	215	240	245	245	240	245	215	265	265	290	290
11	260	260	240	235	240	310	260	245	245	235	240	230	220	215	240	240	245	240	220	250	250	250	300	325	
12	300	285	250	245	260	290	260	250	240	245	225	250	225	245	230	245	250	250	235	245	260 ^A	290	275	295	
13	265	250	240	220	300	310	270	245	245	240	235	230	R	205	250	245	240	240	240	230	275	275	285	265	
14	260	265	285	255	295	300	260	240	235	240	235	220	235	225 ^C	240	240	240	240	245	250	250	250	270	290	
15	300	295	275	245	210	270	250	240	240	205 ^H	220	225	245	225		R	245 ^A	250	245	245	250	240	255	300	300
16	275	275	280	255	220	290	255	240	235	225	225	240	245	230	245 ^A	250 ^A	250	240	225	250	255	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	205	220	255 ^R	245	220	245	250	250	245	230	245	295	260	255
18	305	260	230	230	390	345	245	220	240	230	230	225	230	225	21 ^B	240	250	245	230	235	240	270	275	295	
19	280	265	250	245	310	345	250	220	230	225	230	250	225	220 ^R	240	240	240	250	250	240	250	245	235	290	
20	300	300	270	250	245	250	245	240	240	230	200 ^H	205 ^H	240	225	220	240	245	250	255	255 ^A	260 ^A	250 ^A	255	245	
21	245	305	325	330	340	295	225	220	230	245	250 ^R	B	B	B	B	240	245	245	250	245	220	245	250	290	290
22	285	295	300	285	295	270	245	240	240	225	210	200	245	240	240	240	245	250	240	230	245	255	290	290	
23	270	275	280	250	250	270	250	245	230	230	205	205	B	245	210	240	250	250	240	240	245	260	260	275	
24	270	270	300	280	250	275	255	240	230	220 ^H	230	245	245	255	240	230	250	260	270	300	295	290 ^A	220	210	
25	290	280	300	310	275	245	245	245	235	240	215	230	235	230 ^H	245	B	245	250	250	250	250	240	260	300	
26	385	340	250	225	A	340	250	250	250	230	225	220	220	235	220	230	245	250	245	230	240	255	290	310	
27	300	290	290	275	250	280	240	225	240	240	250	B	B	B	245	250	245	245	250	250	245	250	275	295	285
28	285	260	260	245	280	295	250	245	235	240	B	215	220 ^R	250	245	240	225	250	250	245	240	265	280	280	
29	285	290	300	285	310	310	245	245	240	220	240 ^A	210	C	C	C	C	255	255	250	225	250 ^A	270	290	270	
30	305	310	340	275	300	320	240	245	240	220	210	205	B	B	245	240	250	255	240	240	220	250	275	270	
31	290	270	255	220	220	360	245	230	230	230	235	210	220	220	240	245	245	245	245	240	260	275	260	280	
	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	29	29	29	27	28	28	29	28	29	29	29	25	28	29	29	30	30	31	30	30	29	29	29	
MED	285	270	260	250	275	295	250	240	240	230	230	225	228	230	240	240	245	245	240	240	250	255	275	280	
UQ	300	295	290	265	300	312	258	245	240	240	235	235	240	242	240	245	250	250	245	245	255	270	290	290	
LQ	270	260	250	240	242	272	245	225	232	225	215	210	220	220	220	240	240	240	225	225	245	250	260	270	

IONOSPHERIC DATA

MAR. 1969

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

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	B	B	E	E	S	B	G	G	150	140	G	G	G	G	110	110	105	105	S	S	S	S	100	
2	100	S	B	100	100	100	105	G	G	G	G	G	G	G	G	G	G	G	S	S	S	S	S	S	
3	S	B	100	100	E	B	S	G	G	G	G	110	105	105	105	105	G	G	100	100	S	100	S	S	
4	S	S	S	105	100	S	B	G	110	G	110	G	B	105	105	100	C	C	S	S	110	S	105	105	
5	105	105	S	100	S	B	B	G	G	105	105	G	105	105	G	G	G	150	S	S	S	S	S	S	
6	S	100	S	B	B	S	B	125	G	105	G	G	G	115	115	115	G	G	100	S	110	110	S	105	
7	S	S	B	S	B	110	110	G	G	G	G	G	G	G	G	G	110	G	100	S	S	S	S	S	
8	110	S	S	S	S	S	B	G	160	150	145	G	G	145	G	130	125	100	S	C	C	C	C	C	
9	C	C	C	C	C	C	C	G	C	155	G	G	100	G	100	145	100	115	100	S	110	S	S	S	
10	S	S	S	B	C	C	C	C	C	C	C	G	G	G	G	G	G	100	100	S	100	S	100	110	
11	S	S	S	S	E	S	160	G	110	G	G	G	G	G	G	G	110	110	110	105	110	105	110	S	
12	S	S	S	S	S	S	100	G	G	145	G	110	110	105	G	115	110	110	S	120	110	110	125	S	
13	115	S	B	S	100	S	B	G	140	140	G	110	105	105	105	105	100	G	110	105	105	100	100	S	
14	S	S	S	S	105	100	G	G	115	110	110	110	105	C	110	130	140	115	S	115	S	110	S	100	
15	100	S	S	100	S	S	150	150	150	110	G	G	G	110	105	105	100	100	100	100	100	100	115	S	S
16	120	S	S	105	105	105	B	155	155	150	140	G	G	G	140	145	140	100	100	100	S	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	110	110	105	100	110	105	100	100	120	115	110	S	S	S	
18	S	S	S	E	S	B	B	G	105	G	115	110	G	110	G	100	G	G	B	S	115	115	S	S	
19	S	S	S	B	B	S	G	G	150	150	115	110	110	G	G	G	140	115	110	110	S	S	100	S	
20	S	S	S	E	S	S	G	G	110	125	G	G	G	110	G	G	G	G	115	110	110	105	S	110	
21	105	S	S	S	B	105	G	G	115	135	115	B	B	B	G	110	G	G	110	S	110	100	100	100	
22	100	100	100	100	S	S	B	G	G	110	110	G	G	G	105	G	G	G	100	100	S	S	105	105	
23	S	B	S	B	E	S	G	G	G	G	G	G	B	G	G	115	B	115	110	110	105	105	110	105	
24	S	105	B	105	100	105	B	G	G	G	135	G	G	G	105	100	100	120	100	100	100	105	S	S	
25	105	100	100	100	100	100	B	G	110	110	110	110	110	110	105	B	105	100	100	100	100	S	S	S	
26	S	100	105	105	105	110	150	170	110	G	115	G	105	105	G	100	100	100	100	100	115	S	105	105	
27	105	S	B	S	B	S	B	G	G	G	G	B	B	G	105	120	100	100	100	100	S	100	S	105	
28	100	S	S	S	B	S	G	G	G	G	B	G	G	G	G	G	110	125	110	110	100	100	S	S	
29	S	S	S	B	S	S	110	110	G	G	115	115	C	C	C	C	125	100	B	115	105	110	105	S	
30	110	105	S	E	E	105	105	110	105	105	105	105	B	B	B	100	G	155	100	100	B	S	S	S	
31	S	B	S	E	E	S	G	G	G	140	110	110	110	110	110	115	110	110	110	110	S	100	100	100	
	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	7	4	10	8	9	8	6	14	17	17	11	11	14	14	20	19	21	23	20	18	16	12	12	
MED	105	100	100	100	100	105	110	138	112	135	115	110	105	108	105	110	110	110	100	105	110	105	105	105	
UQ	110	105	102	105	105	105	150	155	150	150	115	110	110	110	110	118	118	115	110	110	110	110	108	105	
LQ	100	100	100	100	100	100	105	110	110	110	110	110	105	105	105	102	100	100	100	100	100	100	100	100	

IONOSPHERIC DATA

MAR. 1969

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	F ₄								H ₁	H ₁						C ₁	C ₂	L ₂	F ₁					F ₂	
2	F ₁			F ₃	F ₁	F ₁	L ₁																		
3				F ₁							L ₁	L ₂	L ₁	L ₁	L ₁				F ₁	F ₁		F ₁			
4				F ₁	F ₁				L ₁		C ₁			L ₁	L ₁	L ₁					F ₁		F ₃	F ₃	
5	F ₁	F ₂		F ₁					L ₁	L ₁			L ₁	L ₁				H ₁							
6		F ₁						C ₂		L ₁				L ₁	L ₁	C ₁				F ₁		F ₂	F ₁	F ₁	
7					F ₁	L ₁												L ₁		F ₁					
8	F ₁					L ₁			HL ₁₁	H ₁	H ₁			H ₁			HL ₁₁	HL ₁₁	L ₁						
9										HL ₁₁				L ₁		L ₁	H ₁	LH ₁₁	C ₁	F ₁		F ₁			
10																			L ₁	F ₂		F ₁		F ₁	F ₁
11						H ₁		L ₁									L ₁	L ₁	F ₁	F ₂	F ₁	F ₁	F ₁	F ₁	
12							L ₁			H ₁		L ₁	L ₁	L ₁		L ₁	C ₂	L ₂		F ₅	F ₃	F ₃	F ₁	F ₁	
13	F ₁				F ₁				H ₁	H ₁		L ₁	L ₂	L ₁	L ₁	L ₂	L ₂		F ₁	F ₄	F ₂	F ₂	F ₁	F ₁	
14					F ₁	F ₃			L ₁	L ₁	L ₁	L ₁	L ₁		L ₁	H ₁	H ₁	L ₁		F ₂		F ₁		F ₁	
15	F ₂			F ₁			H ₁	HL ₁₁	HL ₁₁	L ₁				L ₁	L ₁	L ₂	L ₂	L ₂	F ₂	F ₃	F ₁	F ₁			
16	F ₁			F ₁	F ₁		H ₁	H ₁	H ₁	H ₁					H ₁	H ₁	H ₁	L ₁	L ₂	F ₂					
17										C ₁	L ₁	L ₁	L ₁	L ₁	L ₁	L ₂	L ₂	L ₂	CL ₂₁	F ₃	F ₂				
18									L ₁		C ₁	C ₁		L ₁		L ₁					F ₁	F ₁			
19									H ₁	H ₁	C ₁	L ₁	L ₁				H ₁	C ₁	F ₂	F ₁			F ₁		
20									L ₁	H ₁				L ₁					L ₂	F ₃	F ₃	F ₄		F ₁	
21	F ₂					F ₁			L ₁	H ₁	L ₁					L ₁				L ₂		F ₁	F ₁	F ₂	F ₁
22	F ₁	F ₁	F ₁	F ₁						L ₁	L ₁					L ₁				L ₁	F ₁		F ₁	F ₁	F ₁
23																C ₁			C ₁	L ₂	F ₃	F ₂	F ₁	F ₁	F ₁
24		F ₁			F ₂	F ₁					H ₁					L ₁	L ₁	L ₂	CL ₂₂	L ₃	F ₃	F ₂	F ₃		
25	F ₂	F ₂	F ₃	F ₃	F ₁	F ₁			L ₁	L ₁	L ₁	L ₁	L ₁	L ₁	L ₁		L ₁	L ₁	L ₁	F ₁	F ₁				
26		F ₃	F ₁	F ₂	F ₄	F ₁	H ₁	H ₁	L ₁		C ₁			L ₁	L ₁		L ₁	L ₁	L ₂	L ₂	F ₁	F ₁		F ₃	F ₁
27	F ₁															L ₁	CL ₁₁	L ₁	L ₂	L ₂	F ₂		F ₁		F ₁
28	F ₁																		L ₁	C ₁	L ₁	F ₂	F ₂	F ₁	
29							L ₁	L ₁			C ₂	C ₁						HL ₁₁	L ₁	L ₁	F ₃	F ₃	F ₃	F ₄	
30	F ₁	F ₂				F ₁	L ₁	L ₁	L ₂	L ₁	L ₂	L ₁				L ₁		HL ₁₁	L ₂	F ₄					
31										H ₁	L ₁	C ₁	L ₁	L ₁	L ₁	L ₁	L ₂	L ₁	L ₂	F ₂		F ₁	F ₁	F ₁	
	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

MAR. 1969

hpF2 (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	380	365	310	315	400	360	320	265	295	305	320	320	320	345	335	340	320	300	305	305	U15	340	340	S	J340
2	S	345	350	330	315	355	395	J40	265	J300	315	290	340	325	350	340	345	315	305	310	315	305	345	345	365
3	380	350	305	285	345	385	315	J255	J295	300	315	325	340	330	320	300	310	300	310	310	310	310	380	380	350
4	340	340	350	390	380	380	320	260	265	285	310	325	320	340	320	310	C	C	290	315	340	345	325	320	
5	365	370	315	300	345	340	310	270	290	305	310	315	320	335	345	325	300	305	300	305	J320	325	355	400	
6	375	315	J340	345	325	375	350	290	300	305	305	310	315	315	330	320	310	300	300	305	345	340	370	370	
7	330	320	325	360	410	405	310	265	290	310	300	300	320	320	340	330	300	300	300	350	J310	340	350	350	
8	340	400	J400	360	400	400	370	270	300	295	300	320	345	330	325	320	320	295	300	C	C	C	C	C	
9	C	C	C	C	C	C	C	U255	C	300	320	340	340	320	330	325	300	290	300	350	380	370	350	330	
10	360	330	340	300	C	C	C	C	C	C	C	300	330	340	335	310	320	300	300	310	360	360	360	360	
11	340	J300	290	310	390	400	320	J250	300	330	300	340	340	340	340	310	290	300	300	310	330	330	390	400	
12	390	350	300	340	370	390	360	300	310	300	310	370	350	340	330	340	340	315	300	310	R	360	390	370	
13	330	315	300	315	390	390	320	270	300	315	315	315	340	345	320	340	290	300	280	300	350	350	360	350	
14	350	340	340	310	400	360	300	R	295	J300	310	340	315	I320	320	315	290	300	J315	320	310	340	I355	R350	
15	380	350	350	320	320	390	300	290	290	330	325	335	345	340	350	330	320	305	U310	340	340	340	R385	390	
16	U355	355	390	350	370	J390	310	J290	305	305	315	330	340	330	320	330	320	320	310	310	335	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	C	320	345	365	380	360	350	340	310	340	310	340	R	335	350
18	J400	J350	J300	290	490	440	295	290	300	305	305	320	345	360	355	355	345	315	310	350	J330	320	U350	S360	
19	J345	I320	J310	320	435	420	305	J290	300	340	340	300	350	350	360	370	350	340	315	340	345	I315	330	390	
20	380	360	360	300	330	350	300	300	300	335	350	365	370	370	375	365	355	350	350	340	360	345	335	S	
21	345	410	410	425	430	J380	J275	280	300	360	340	J360	365	390	390	360	350	350	330	J360	360	350	340	375	
22	360	360	R390	360	370	365	290	300	310	345	340	355	380	355	U365	360	350	345	R320	330	340	350	J380	365	
23	U350	350	355	355	380	375	330	320	305	330	345	355	365	360	360	365	350	345	R320	J345	350	R360	R355	S355	
24	J390	J350	J385	365	370	410	315	R260	320	270	460	365	410	380	395	390	390	405	350	405	400	400	380	U330	
25	J380	J355	405	405	370	310	295	J300	305	340	310	330	340	350	360	365	355	325	320	320	R	R330	R370	400	
26	480	420	R300	290	A	R390	I330	300	300	305	330	350	355	355	350	360	350	330	300	310	340	350	360	J395	
27	J370	375	390	385	385	380	295	305	320	350	340	360	365	365	355	355	355	345	335	335	R350	350	350	370	360
28	330	R	340	380	390	390	310	300	300	315	350	365	375	370	365	365	350	350	310	J335	I370	J400	I375	370	
29	R	U390	400	385	400	R	R	300	300	310	340	350	C	C	C	C	350	330	310	310	340	S350	U350	J350	
30	J395	390	440	390	420	405	330	300	300	335	320	365	355	350	355	350	350	315	305	J300	305	350	355	360	
31	370	370	340	305	390	440	J290	280	280	350	355	350	360	370	350	360	335	340	330	I350	R	R350	R340	R360	
	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	28	29	29	27	27	27	28	28	29	30	31	30	30	30	30	30	30	31	30	27	28	29	28	
MED	362	350	340	340	385	390	310	290	300	310	320	340	345	348	348	342	338	315	310	318	340	350	355	360	
UQ	380	370	390	360	400	400	325	300	302	335	340	355	365	360	360	360	350	340	320	340	350	355	370	372	
LQ	345	340	310	310	370	375	300	265	295	305	310	320	330	335	330	325	310	300	300	310	325	340	345	350	

IONOSPHERIC DATA

MAR. 1969

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	90	80	75	95	90	90	80	85	75	80	125	80	90	85	85	105	95	85	85	95	U ₈₀ S	60	75	J ₇₅ S	
2	S ₆₀	60	70	80	70	75	J ₈₀ R	65	J ₆₅ R	90	100	60	75	95	105	105	85	95	95	85	80	100	60	90	
3	75	95	60	65	120	85	85	J ₅₅ R	J ₆₀ R	90	125	75	100	100	100	110	110	110	120	100	110	100	110	70	
4	100	100	80	90	120	100	90	100	95	70	95	80	95	80	75	90	C	C	75	80	65	70	65	75	
5	80	75	85	75	110	75	S ₆₅	75	55	90	85	70	80	90	80	75	90	90	65	85	J ₆₅ R	70	75	95	
6	70	80	J ₇₅ R	80	80	80	55	70	65	90	90	80	80	80	105	95	90	75	65	90	70	80	75	80	
7	75	80	120	95	95	90	75	80	60	90	80	90	90	110	100	110	110	100	90	90	J ₁₀₅ R	60	80	65	
8	100	90	J ₉₀ R	90	100	100	120	90	90	90	95	105	65	80	100	85	90	80	95	C	C	C	C	C	
9	C	C	C	C	C	C	C	U ₄₅ S	C	110	90	75	100	100	100	105	100	90	90	110	100	90	80	80	
10	100	90	70	100	C	C	C	C	C	C	C	100	70	80	75	90	90	70	100	100	80	80	90	90	
11	90	J ₁₀₀ R	70	100	110	80	90	J ₆₀ R	90	100	100	90	60	100	90	90	100	110	110	100	70	80	90	90	
12	100	65	100	70	90	110	80	90	100	100	100	90	90	80	85	90	90	95	100	90	R	100	100	70	
13	80	100	100	105	100	100	80	90	100	85	95	95	70	95	90	100	100	100	90	100	60	90	90	100	
14	100	70	90	80	100	90	90	R	65	J ₁₀₀ R	100	70	95	I ₉₀ C	80	85	100	100	J ₁₀₅ R	90	80	R ₉₀	I ₉₅ R	R ₁₀₀	
15	80	80	70	100	90	100	100	70	90	90	75	75	70	85	95	75	120	95	U ₉₀ S	105	90	100	70	105	
16	U ₉₀ R	90	105	75	100	J ₁₀₅ R	85	J ₆₀ R	90	100	85	85	65	75	90	115	95	120	95	85	85	C	C	C	
17	C	C	C	C	C	C	C	C	C	C	100	95	105	105	85	90	105	105	75	85	65	R	60	65	
18	J ₉₅ R	J ₆₅ R	J ₅₅ R	75	105	85	S ₆₀	60	100	95	75	95	100	120	110	105	105	90	90	95	J ₇₀ R	80	U ₆₀ S	S ₄₅	
19	J ₆₀ R	I ₈₀ R	S ₅₅	75	80	80	75	J ₇₅ R	85	100	70	100	90	100	100	110	110	100	95	100	95	I ₁₀₀ R	70	90	
20	70	120	80	100	100	90	90	80	110	105	105	100	105	80	100	85	105	90	100	105	105	70	70	S	
21	75	80	85	70	65	J ₇₀ R	I ₆₀ S	75	95	120	70	J ₈₀ R	95	100	70	100	100	100	100	J ₁₀₀ R	100	100	90	65	
22	100	J ₉₅ R	90	80	80	75	100	100	90	90	85	90	90	70	U ₈₅ R	85	80	60	80	95	85	70	J ₇₀ R	R ₈₀	
23	U ₆₀ S	95	90	90	85	70	70	95	95	80	100	90	85	105	95	95	95	100	95	J ₁₀₀ R	75	R ₈₅	S ₉₀	90	
24	I ₇₀ R	J ₇₅ R	J ₇₀ R	80	85	90	S ₅₅ R	85	100	80	190	115	105	110	115	120	110	140	95	95	115	100	95	U ₁₁₅ R	
25	J ₉₀ R	U ₉₅ R	90	95	95	135	70	J ₇₀ R	75	100	90	110	90	95	120	95	105	85	120	R ₉₀	R	R ₁₀₀	110	100	
26	100	90	R ₁₀₀	100	A	R ₁₀₀	I ₁₀₀ R	100	100	95	100	95	95	90	95	90	100	95	120	85	105	70	85	J ₈₅ R	
27	J ₈₅ R	70	95	90	115	65	70	80	90	110	90	80	115	95	85	105	95	95	125	115	110	100	110	100	
28	70	R	100	80	90	100	80	60	90	100	100	85	80	90	95	95	110	90	120	J ₁₀₅ R	I ₁₁₀ R	J ₁₀₀ R	I ₁₀₀ R	120	
29	R	U ₉₀ R	100	75	100	R	R	100	100	110	110	95	C	C	C	C	95	100	100	100	S ₇₅	S ₉₅	U ₆₀ S	J ₉₅ S	
30	J ₇₅ R	70	60	65	80	S ₉₀	115	95	100	110	100	105	90	95	90	110	90	85	90	J ₉₅ R	90	95	90	85	
31	75	100	60	90	105	65	J ₅₅ R	65	65	100	105	100	100	110	110	90	95	110	110	I ₁₀₀ R	R	R ₉₀	R ₉₀	R ₉₀	
	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	28	29	29	27	27	27	28	28	29	30	31	30	30	30	30	30	30	31	30	27	28	29	28	
MED	80	85	85	80	95	90	80	78	90	95	98	90	90	95	95	95	100	95	95	95	85	90	85	90	
UQ	98	95	95	95	102	100	90	90	100	100	100	98	100	100	100	105	105	100	102	100	102	100	90	98	
LQ	72	75	70	75	85	78	70	65	70	90	85	80	80	80	85	90	90	90	90	90	90	72	75	70	75

IONOSPHERIC DATA

MAR. 1969

foF2 (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	72 ^S	67	64	57	48	49	46	64	91 ^S	116	124	136	138	134	131	130	132	129	119	100	96 ^S	89 ^S	79	78 ^S	
2	66	61	62	60	48	47 ^S	49	72 ^S	92	114	130	142	147	153	146	143	140	136	125 ^R	114 ^S	106 ^S	99 ^S	91 ^S	91 ^S	
3	86 ^J	70	70	64	39	33 ^S	34	64 ^J	94 ^S	105	122	132	144	143	141	135	130	120	114 ^R	107 ^R	107 ^S	108 ^S	102 ^S	95 ^S	
4	91 ^J	76	66	63	55	43	40	63	84	93	104	112	127	136	144	135	120 ^S	112	105	93 ^S	81	87	80 ^S	69	
5	62	56	56	54	50	41	36 ^S	64	89 ^S	95	119	134	137	136	149 ^S	160	149	138	128 ^J	113 ^S	100 ^S	89 ^S	76 ^S	70	
6	73	80	72 ^S	70	54	45 ^S	46	76 ^S	98 ^U	112 ^S	127 ^S	135	139	147	137	135	132	132 ^S	123 ^S	100 ^S	82 ^S	73	68	65	
7	66 ^U	61	54	54	49 ^U	51 ^U	50	75 ^S	91 ^S	123 ^S	144	137	136	136	146	147	152 ^S	147	140 ^J	S	S	113 ^S	75 ^S	68	
8	67	65 ^J	59	58	52	49	50 ^U	78 ^S	87	107	122 ^S	115	127	140	140	132	124	121	111 ^R	101 ^S	82	70	68	65	
9	64 ^S	63	59	60	48	34	37	70 ^S	81	101	108	119	135	134	131	130	133	120 ^U	109 ^R	86 ^S	64 ^S	65 ^S	68	66 ^S	
10	55	55	55	55	45	37 ^V	40 ^S	69	91 ^S	99 ^S	118	141	139	142	141	140	133 ^S	131	120 ^S	103 ^S	89 ^S	82 ^S	71 ^U	67 ^S	
11	68	69 ^S	69	55	33	33	34	66 ^S	92 ^S	103	114	121	127	134	134	134	127	114 ^S	114 ^S	104 ^R	79 ^S	77 ^S	66	61	
12	63	64	67	58	44	39	39	71 ^S	112 ^S	110	103 ^S	105	127	142	134	133	127	121 ^S	122 ^J	117 ^S	100 ^R	78	76	74 ^S	
13	80 ^S	79 ^S	73 ^S	54	40	37	41	75 ^S	98 ^S	115	132	135	138	140	153	151	141	128 ^J	116 ^R	106 ^R	91 ^R	82 ^R	77	72	
14	67	61	57	54	46	46	46	70	91	105	113 ^I	124 ^I	128	128	127	119 ^I	111	100 ^S	96	95 ^S	90 ^S	83 ^U	80	77 ^S	
15	76	76 ^S	69	69	60	47	50 ^S	76 ^S	97 ^U	112 ^S	132	150	152 ^S	152	149	152	147	144	143 ^S	R	R	R	S	85 ^U	
16	86 ^U	78 ^S	73 ^S	69	64 ^J	48	50 ^S	83 ^S	100 ^S	114 ^J	129 ^J	135	137	143	135	127	117	117 ^S	116 ^R	114 ^S	102 ^S	92 ^S	81 ^S	85 ^S	
17	82	65	66	58	54	55	60 ^U	97 ^S	96 ^S	108	125 ^S	140	137	146	149	147	134	131	128 ^R	135 ^S	116 ^S	104 ^S	103 ^J	104 ^S	
18	82	84	85 ^J	59	52	52	64 ^J	86 ^S	103	125	131	125	126	135	135	132	125	127	119 ^U	112 ^U	107 ^U	92 ^U	86 ^U	84 ^S	
19	82 ^S	87 ^S	95 ^U	70	53	54	58	88	112 ^S	122 ^S	134	137	140	140	135	131	130	130 ^S	125 ^S	118 ^S	102 ^S	90 ^U	87 ^S	76	
20	77	79	78	76 ^J	55	43	42 ^J	79	105	120 ^S	125	131	137	143	139	137	130	127	121 ^S	116 ^S	104 ^S	98 ^J	84 ^J	85 ^J	
21	80	72 ^S	72	68	70	68	67	89	106 ^S	120 ^S	135	153 ^R	148	153	161	162	161 ^S	148 ^S	141	129 ^R	105 ^S	102 ^S	91 ^J	87 ^J	
22	81	80	72	73 ^S	68	65	65 ^J	92 ^S	120 ^S	122 ^S	134	139	148	160 ^J	169 ^J	172 ^S	166 ^S	152 ^S	142 ^S	122 ^S	108 ^S	101 ^S	96 ^S	96 ^S	
23	94 ^I	87 ^S	81 ^S	82 ^S	70	66	69	95 ^S	127	134	132	137	146	152 ^S	152	149	148	146	140	135	133 ^S	S	S	S	S
24	S	96 ^S	82 ^S	78 ^S	73	60	60 ^S	85 ^S	110	110	87 ^S	134	132	135	122	127	130	122 ^S	142	132 ^S	126 ^S	114 ^S	102 ^S	88 ^S	
25	73 ^U	74 ^S	69	72 ^S	71	63	62 ^S	86 ^S	117 ^U	136	137	138	134	138	135	131	140	142	136	115	102 ^S	96 ^S	87 ^S	74	
26	72 ^S	70	79	60	43	42	46 ^U	93 ^S	119	118	125	137	144	145	143	146	142	140 ^S	134 ^R	122 ^S	105 ^S	99 ^S	93 ^S	89 ^S	
27	90 ^U	88 ^I	78	70	64	59	62 ^J	90 ^S	112	122 ^U	131	138	151	157	148 ^S	142	138	140	142	135 ^J	130 ^S	133 ^S	137	131 ^S	
28	S	S	S	82	74	69	73 ^S	105 ^S	107	103	111	119	132	145	140	134	131	128	127	126 ^V	115 ^S	105 ^S	106 ^S	108 ^S	
29	102 ^I	94 ^S	84 ^S	81 ^S	75	72 ^S	81	102 ^J	108 ^J	120 ^S	121	131	142	150	149	147	144	140	140	136	110 ^S	102 ^S	101 ^S	100 ^S	
30	89 ^I	90 ^U	82 ^S	78	73	69	80 ^J	101 ^S	116 ^S	125	129	133	150 ^R	152	151 ^V	142	149	153 ^S	150 ^J	131 ^S	111 ^S	96 ^I	95 ^S	S	
31	S	85 ^S	85	65	47	48	47	98 ^J	101 ^S	97	117 ^S	129	135	137	138	138	135	128	125 ^R	114 ^S	103 ^S	95 ^J	88 ^J	87 ^S	
	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	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	29	29	29	29	29
MED	76	75 ^S	72	64	53	48	50 ^S	79 ^S	100 ^S	114	125	135	137	142	141	137	133	130	125	114 ^S	103 ^S	93 ^S	86 ^S	83 ^S	
UQ	84 ^S	84 ^S	80 ^S	71	66	60	62 ^S	91 ^S	111 ^S	121	132	138	144	148	149	147	143	140	140	129 ^U	110 ^S	102 ^S	95 ^S	89 ^S	
LQ	67	65	65	58	48	42	42	70 ^S	92 ^S	105	118	127	133	136	135	132	130	122	118	104 ^S	91 ^S	83 ^S	76	70	

IONOSPHERIC DATA

MAR. 1969

foF1 (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	L	U L 530	L	L	L	L							
2										L	L	L	L	L	L	L	L							
3										L	L	L	L	L	L	L	L							
4									310	L	L	L	L	L	L	L	L							
5										L	L	L	L	L	L	L	L							
6										L	L	L	L	L	L	L	L	L						
7									300	L	L	L	L	L	L	L	L							
8										L	L	L	L	L	L	550 450	L							
9										L	L	L	L	L	L	L	L	L						
10										L	L	L	L	L	L	L	L	L						
11										L	L	L	L	L	L	L	A	A						
12										L	L	L	L	L	L	L	L	L						
13										L	L	L	L	L	L	L	L	L						
14										L	L	C	L	L	L	L	L							
15										L	L	L	L	L	L	L	L							
16										L	L	L	L	L	L	L	L	L						
17										L	L	L	L	L	L	L	L							
18										L	L	L	L	L	L	L	L							
19										L	L	L	L	L	L	L	L	L						
20										L	L	L	L	L	L	L	L	L						
21											L	B	L	L	L	L	L	L						
22										L	L	L	L	L	L	L	L							
23										L	L	L	L	L	L	L	L							
24										L	L	L	L	L	L	L	L	L						
25										L	L	L	L	L	L	L	L							
26										L	L	L	L	L	L	L	L	L						
27										L	L	L	L	L	L	L	L	L						
28										L	L	L	L	L	L	L	L	L						
29										L	L	L	L	L	L	L	L	L						
30										L	L	L	L	B	L	L	L	L						
31										L	L	L	L	L	L	L	L	A						
CNT										2	1			1		1	1		1					
MED										305	450			U L 530		550	450		320					
UQ																								
LQ																								

IONOSPHERIC DATA

MAR. 1969

foE (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	260	320	350	380	390	390	380	A	A	I ^H 270	180					
2								190	270	310	350	360	370 ^R	370	370	345	320	260	A					
3								S	260	310 ^H	340	360	365	370 ^H	360	350	320	255	A					
4								S	250	310 ^H	310	340	360 ^H	370 ^H	I ^A 355	330	A	A	A					
5								160	260 ^H	310 ^H	330	355	360	370	365	350 ^H	310 ^H	260 ^H	165					
6								S	260	300	330	R	R	R	355	I ^A 335	310	I ^H 260	S					
7								S	250	320 ^H	330	350 ^H	360 ^H	350 ^H	I ^A 350	340	310	250	B					
8								150	260 ^H	310 ^H	335	350	365	365	360	330	I ^A 295	260	160					
9								150	260	310	335	355	I ^A 360	360	360	340 ^H	305	250	A					
10								160	270	310	330	R	360	370	360	340	I ^A 310	260	S					
11								170	270	310 ^H	340	360	I ^A 370	370	370	350 ^R	320	265	170					
12								190	270	A	A	A	A	A	355	345	320	270	S					
13								200 ^H	280	320	350	350	350	350	350	350 ^R	320	260	180					
14								200 ^H	280 ^H	320	335	I ^C 345	370	370	380	355	320	270	A					
15								200	A	A	A	I ^A 370	370	370 ^R	360	345	320	270	170					
16								200	290 ^H	325	350	370 ^B	370	370	370 ^H	370	340 ^H	280	190					
17								180	280	330	355	360	380 ^R	I ^R 380	380	360	330	280	170					
18								200 ^H	280	330	365	365	I ^R 370	I ^R 380	I ^A 380	370	340	280	195					
19								220 ^H	290 ^H	325	360	370	380	390 ^H	385	370	340	300	A					
20								225 ^H	290	330	A	A	A	R	375	355 ^H	330	290	210					
21								220	280	330	360	B	B	A	A	360	340	290	185					
22								200	290	I ^A 335	360	A	R	400	380 ^R	360	330	290	210 ^H					
23								220 ^H	300	340	350	380	390	390	380	350	I ^B 345	I ^A 290	220					
24								220 ^H	280	330	370 ^H	370	I ^A 375	I ^A 380	380	375	340	I ^A 285	210					
25								220 ^H	280	330	340	365	370	380	365 ^H	I ^B 370	340	300	210					
26								210	290 ^H	335 ^H	355 ^H	360 ^R	350 ^H	I ^R 370	380 ^H	370	340	300	A					
27								230 ^H	290	330	350	B	B	I ^R 385	390 ^R	370	340	280	A					
28								230	290	340	I ^B 365	370	370	380	I ^R 390	370 ^H	340	300	A					
29								220 ^H	290	340	370	390	380	390 ^R	380	365 ^H	345	300	A					
30								230 ^H	290	325	I ^A 350	360	B	B	380 ^R	365	340	290	210 ^H					
31								230 ^H	300 ^H	330	350	365	375 ^H	380	370	350 ^H	A	A	A					
	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	30	29	28	24	24	26	30	30	28	29	16					
MED								200	280	325	350	360	370	370	370	352	330	280	188					
UQ								220 ^H	290	330	358	370	375	380	380	370	340	290	210					
LQ								190	260	310	335	355	360	370	360	345	320	260	170					

IONOSPHERIC DATA

MAR. 1969

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	18	22	23	E 11	J X 20	J X 21	E S 15	E S 15	G	34	38	G	G	G	G	37	33	G 25	G 18	E S 15	22	19	E S 15	E S 15		
2	22	E S 15	E B 11	E B 12	E B 12	E B 13	E S 15	23	G	33	34	36	G	G	G 29	G	J X 34	30	J X 28	J X 24	J X 18	J X 16	E S 15	E S 15		
3	E S 14	E S 14	E B 12	E B 11	E B 12	E S 14	E S 15	G	G	28	37	39	J G 34	G	G 28	G 25	34	J X 52	J X 37	J X 33	24	22	20	E S 15		
4	M 23	J X 25	E B 11	E	E B 13	E B 13	E S 15	E S 14	G	29	35	37	G	G	24	36	35	38	J X 40	30	J 25	J X 22	19	J X 20	E S 15	
5	E S 15	E S 14	E S 13	J X 26	E B 13	E B 15	J X 20	J X 21	G	22	30	35	G	G	37	20	G	G	G	E S 15	E S 14	E S 14	E S 13	20		
6	J X 18	E B 13	J X 16	18	E B 12	E B 15	E S 15	E S 14	G	31	G	G 35	G 36	G 36	G 35	37	33	29	E S 15	E S 15	E S 15	E S 15	E S 13	E S 15		
7	E S 13	E B 13	E B 15	E	E B 14	E B 15	J X 20	G	G	21	37	37	40	37	37	34	30	G 22	E B 15	18	E S 15	E S 13	E S 15	E B 16		
8	E S 15	E B 13	E B 12	E	E B 14	E B 13	20	G	G	29	33	37	40	38	38	37	35	28	G E S 14	20	18	E S 15	E S 14			
9	J X 29	E S 15	E B 14	23	E B 11	E S 15	G	G	G	30	J G 33	J X 36	J X 49	38	39	36	32	27	18	E S 15	E S 15	E S 15	E S 14	E S 15		
10	E B 15	17	E B 12	E	E B 13	E S 15	G	G	G	G	G	38	28	26	35	35	33	26	22	24	E S 15	E B 12	E S 15	E S 15		
11	E S 15	E S 15	E B 12	E B 14	E B 13	E S 15	G	G	G	G	G	G	39	G	39	40	46	36	G	20	E S 15	J X 21	J X 37	J X 27		
12	22	E B 15	E B 14	E	E B 14	E S 15	24	G	G	36	40	J X 61	41	42	38	36	G	G	E S 15	E S 15	J X 32	24	J X 26	22		
13	21	J X 20	21	E	E B 12	E B 15	22	22	30	36	42	41	46	42	41	38	G	G	G	E S 15	E B 15	21	J X 25	23		
14	J X 18	J X 21	E B 13	E B 13	E B 12	E B 12	J X 18	G	G	G	35	C	G	G	G	G	35	37	22	J X 33	J X 27	E S 15	E S 14	22		
15	E S 14	E S 13	E B 13	E B 11	E B 11	E S 15	G	J X 31	34	J X 38	J X 39	35	35	35	30	G	G	22	G	13	23	19	E S 15	22	19	E S 15
16	E S 15	E S 11	E B 13	E B 12	E B 15	21	23	G	35	40	40	41	41	54	45	G	G	G	E S 14	E S 15	21	E S 15	E S 14			
17	24	E B 12	E B 14	E	E B 11	E S 15	23	G	22	35	30	G 34	52	45	41	G	G	G	G	E S 15	J X 18	20	E S 13	E S 15		
18	E B 13	E S 15	E B 14	E	E B 15	E S 15	G	G	36	38	40	35	G 37	40	G	G	G	25	J X 29	J X 30	J X 20	J X 22	E S 15			
19	E S 14	E B 14	E B 15	E	E B 15	E B 13	E S 15	G	31	35	42	42	44	41	42	40	G	31	27	J X 17	19	J X 39	24	22		
20	E S 15	18	E B 13	E B 15	E B 12	E B 13	E S 15	G	G	35	36	39	41	37	G	G	G	G	J X 24	E S 15	E S 14	34	J X 29			
21	J X 30	23	22	22	18	18	E S 15	G	G	35	41	E 100	E B 62	44	48	G 29	G 25	30	22	E S 15	E S 14	E S 15	E S 15	E S 14		
22	E S 14	E S 13	E S 14	E	E B 13	23	G	G	35	34	G 53	45	43	42	39	34	28	J X 21	J X 24	E S 13	E S 13	E S 15	E S 15			
23	E S 14	E S 12	E B 14	E	E	E S 15	G	G	G	G	G	G	42	44	42	40	35	J X 33	J X 22	J X 21	24	E S 15	E S 15			
24	E S 15	E S 13	E B 12	E	E B 11	E S 15	G	29	36	41	41	41	44	47	42	43	35	G 20	E S 14	E S 14	E S 15	E S 14	E S 15			
25	J X 20	23	16	E B 11	E B 12	E B 12	E S 15	G	G	28	G	G	G	39	44	39	E B 44	G 26	G 21	J X 24	J X 26	22	21	E S 14	E S 15	
26	E S 14	J X 23	17	25	E	19	22	22	32	36	38	38	G	G 36	G	39	20	G 21	26	J X 25	19	E S 15	E S 15	E S 15		
27	E S 15	E S 14	E B 12	E	E B 14	21	G	G	G	G	E B 53	E B 47	G 35	G	G	28	G 23	30	24	E S 13	23	E S 15	20	E S 15		
28	E S 14	E S 14	E B 12	E B 15	E B 11	E S 15	E S 15	G	G	36	E B 50	39	39	32	G 31	G 25	G 27	G	27	J X 21	J X 18	E S 15	E S 15	E S 15		
29	E S 15	E B 12	E B 13	E	E B 11	E S 15	G	G	G	39	G	G	35	48	43	43	20	32	23	J X 22	E S 15	E S 15	E S 15	E S 15		
30	19	E S 12	E B 14	E	E B 13	E S 15	G	32	G 30	36	42	E 100	E B 47	46	42	38	31	29	J X 37	J X 26	J X 21	E S 15	E S 15			
31	E S 15	E S 15	E B 11	E	E B 14	E S 15	G	G	35	39	41	39	42	44	44	45	37	26	E S 15	E S 15	E S 14	E S 15	E S 15	E S 15		
	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	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31	
MED	E S 15	E S 14	E B 13	E	E B 13	E S 15	G	G	33	36	38	38	37	38	36	30	28	22	19	18	16	E S 15	E S 15	E S 15		
UQ	20	18	E B 14	E B 14	E B 12	E B 15	16	18	G 26	35	38	40	42	42	42	40	34	32	26	J X 24	J X 22	21	20	E 16		
LQ	E S 14	E S 13	E B 12	E	E B 12	E S 15	G	G	G 24	G 34	G 35	G 31	G 34	G 30	G 26	G 20	E G 13	G 15	E S 15	E S 15	E S 15	E S 15	E S 15	E S 15		

IONOSPHERIC DATA

MAR. 1969

fbEs (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	E	E	E	E	E	E	E	G	G	G	G	G	G	G	35	32	G	G	E	E	E	E	E	
2	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	29	G	27	23	19	22	E	E	E	E
3	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	24	G	24	33	48	35	31	16	E	E
4	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	22	36	37	28	23	20	E	17
5	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	G	G	G	E	E	E	E	E
6	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	29	26	E	E	E	E	E	E
7	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	29	21	E	E	E	E	E	E
8	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	29	32	G	E	E	E	E	E
9	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	G	G	G	E	E	E	E	E
10	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
11	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
12	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
13	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
14	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
15	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
16	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
17	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
18	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
19	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
20	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
21	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
22	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
23	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
24	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
25	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
26	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
27	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
28	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
29	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
30	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
31	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	20	G	25	16	E	E	E	E	E	E
	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	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31	31
MED	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	15	15	E	E	E	E
UQ	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	19	16	E	E	E	E
LQ	E	E	E	E	E	E	E	E	G	G	G	G	G	G	G	G	G	G	G	E	E	E	E	E	E

IONOSPHERIC DATA

MAR. 1969

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	E ₁₅	12	13	11	14	15	E ₁₅	E ₁₅	14	14	14	16	16	16	16	15	14	14	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
2	E ₁₅	E ₁₅	11	12	12	13	E ₁₅	E ₁₄	15	15	15	15	24	16	16	15	14	E ₁₅	E ₁₅	11	E ₁₅	E ₁₅	E ₁₅	E ₁₅
3	E ₁₄	E ₁₄	12	11	E	12	E ₁₄	E ₁₅	14	14	14	15	17	16	16	15	14	14	E ₁₃	E ₁₄	E ₁₃	E ₁₄	E ₁₅	E ₁₅
4	E ₁₅	15	11	E	13	13	E ₁₅	E ₁₄	14	15	15	16	15	14	15	15	11	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅
5	E ₁₅	E ₁₄	13	15	13	15	E ₁₄	E ₁₄	14	15	16	15	13	15	14	18	18	15	15	E ₁₅	E ₁₄	E ₁₄	E ₁₃	E ₁₄
6	E ₁₅	13	13	15	12	15	E ₁₅	E ₁₄	14	14	15	15	15	18	16	16	16	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
7	E ₁₃	13	15	E	E	14	E ₁₅	E ₁₅	15	15	17	16	18	15	15	16	15	15	15	E ₁₅	E ₁₅	E ₁₃	E ₁₅	16
8	E ₁₅	13	12	E	14	13	E ₁₅	E ₁₃	13	15	15	16	19	16	16	16	15	15	E ₁₄	E ₁₄	E ₁₄	E ₁₅	E ₁₅	E ₁₄
9	E ₁₅	E ₁₅	14	E	E	11	E ₁₅	E ₁₄	E ₁₅	15	16	16	16	17	16	16	15	11	14	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅
10	15	E ₁₄	12	E	E	13	E ₁₅	E ₁₃	14	15	15	16	16	17	15	16	15	12	12	E ₁₅	E ₁₅	12	E ₁₅	E ₁₅
11	E ₁₅	E ₁₅	12	14	E	13	E ₁₅	E ₁₅	15	12	16	18	16	18	16	15	15	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₄
12	E ₁₅	15	14	E	E	14	E ₁₅	E ₁₅	14	15	16	16	17	16	18	18	15	15	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₅
13	E ₁₅	E ₁₄	13	E	12	15	E ₁₅	E ₁₅	15	15	17	20	20	19	27	15	16	15	15	E ₁₅	15	E ₁₅	E ₁₅	14
14	15	15	13	13	12	12	E ₁₅	E ₁₅	16	15	14	C	18	18	18	16	14	11	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅
15	E ₁₄	E ₁₃	13	11	E	11	E ₁₅	E ₁₄	14	16	17	17	19	17	19	17	15	12	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
16	E ₁₅	E ₁₁	13	12	E	E ₁₅	15	E ₁₄	14	14	20	22	19	19	18	20	15	15	14	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₄
17	E ₁₅	12	14	E	E	11	E ₁₅	E ₁₅	15	15	16	16	26	20	18	16	15	14	14	E ₁₅	E ₁₅	E ₁₄	E ₁₃	E ₁₅
18	13	15	14	E	E	15	E ₁₅	E ₁₄	15	16	18	18	20	20	18	16	19	15	15	E ₁₅	16	E ₁₅	E ₁₅	E ₁₅
19	E ₁₄	14	15	E	15	13	E ₁₅	E ₁₄	14	15	15	16	16	17	16	15	15	11	13	E ₁₆	E ₁₅	E ₁₄	E ₁₅	E ₁₅
20	E ₁₅	E ₁₄	13	15	12	13	E ₁₅	E ₁₅	15	17	16	19	21	18	19	18	15	15	E ₁₅	E ₁₄	E ₁₅	E ₁₄	E ₁₅	E ₁₄
21	E ₁₄	E ₁₅	13	E	13	E ₁₅	E ₁₅	E ₁₅	15	17	19	100	62	33	26	18	15	15	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₅	E ₁₄
22	E ₁₄	13	E ₁₄	E	E	13	E ₁₅	E ₁₅	16	16	19	19	22	23	21	17	15	E ₁₄	E ₁₃	E ₁₂	E ₁₃	E ₁₃	E ₁₅	E ₁₅
23	E ₁₄	E ₁₂	14	E	E	E	E ₁₅	E ₁₅	15	15	17	18	32	21	20	18	35	18	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
24	E ₁₅	E ₁₃	12	E	E	11	E ₁₅	E ₁₄	15	17	18	18	20	21	20	18	15	15	E ₁₄	E ₁₄	E ₁₄	E ₁₅	E ₁₄	E ₁₅
25	E ₁₄	E ₁₄	14	11	12	12	E ₁₅	E ₁₄	15	16	18	18	19	18	17	44	16	14	E ₁₄	E ₁₅	E ₁₅	E ₁₄	E ₁₄	E ₁₅
26	E ₁₄	13	13	13	E	E ₁₄	E ₁₅	E ₁₄	15	14	17	21	24	23	22	20	15	14	14	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
27	E ₁₅	E ₁₄	12	E	E	14	E ₁₃	14	15	15	19	53	47	26	24	19	19	15	14	E ₁₃	E ₁₅	E ₁₅	E ₁₅	E ₁₅
28	E ₁₄	E ₁₄	12	15	11	E ₁₅	E ₁₅	E ₁₄	15	15	50	17	21	22	21	17	15	15	E ₁₄	E ₁₃	E ₁₃	E ₁₅	E ₁₅	E ₁₅
29	E ₁₅	12	13	E	E	11	E ₁₅	E ₁₅	16	16	22	18	24	24	20	17	15	15	15	E ₁₃	E ₁₅	E ₁₅	E ₁₅	E ₁₅
30	E ₁₄	E ₁₂	14	E	E	13	E ₁₅	E ₁₅	15	15	15	17	100	47	24	17	15	15	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
31	E ₁₅	E ₁₅	11	E	E	E ₁₄	E ₁₅	E ₁₄	15	17	17	18	19	20	17	15	17	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₄	E ₁₅	E ₁₅
	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	31	31	31	31	31	31	31	31	31	31	31	30	31	31	31	31	31	31	31	31	31	31	31	31
MED	E ₁₅	E ₁₄	13	E	E	13	E ₁₅	E ₁₄	15	15	16	17	19	18	18	16	15	15	E ₁₄	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
UQ	E ₁₅	E ₁₅	14	12	12	14	E ₁₅	E ₁₅	15	16	18	18	23	21	20	18	16	15	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅	E ₁₅
LQ	E ₁₄	E ₁₂	12	E	E	12	E ₁₅	E ₁₄	14	15	15	16	16	16	16	16	15	13	E ₁₄	E ₁₄	E ₁₅	E ₁₄	E ₁₄	E ₁₅

IONOSPHERIC DATA

MAR. 1969

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	270 ^S	265	280	290	250	285	280	310	305 ^S	300	300	295	295	285	285	270	280	295	300	280	270 ^S	280 ^S	280	275 ^S	
2	280	280	290	300	270	255 ^S	265	305 ^S	315	295	290	295	290	285	280	280	285	295	290 ^R	280 ^S	280 ^S	260 ^S	265 ^S	280 ^S	
3	265 ^S	270	300	310	320	270 ^S	280	310 ^S	320 ^S	295	305	300	300	285	285	290	290	300	300 ^R	295 ^R	290 ^S	280 ^S	275 ^S	280 ^S	
4	290 ^S	275	275	275	310	280	275	335	335	310	305	290	290	295	305	295	300 ^S	295	305	290 ^R	285	275	285 ^S	290	
5	290	275	285	285	300	280	265	315	330 ^S	310	295 ^S	300	300	280	295 ^S	285	295 ^S	290	295 ^R	290 ^R	280 ^S	280 ^S	280 ^S	255	
6	260	290	285 ^S	285	295	270 ^S	265	310 ^S	325 ^S	305 ^S	300 ^S	295	295	305	290	290	290	295	300 ^S	300 ^S	280 ^S	275	280	270	
7	285 ^S	295	290	275	250 ^S	255 ^S	280	320 ^S	305 ^S	295 ^S	310	315	295	285	285	285	295 ^S	300	280 ^R	S	S	290 ^S	265 ^S	280	
8	270	260 ^S	255	285	270	265	255 ^S	320 ^S	320	300	295 ^S	285	290	285	290	290	290	300	295 ^R	285 ^S	290	265	280	280	
9	280 ^S	285	290	300	310	265	275	330 ^S	320	310	305	285	295	300	295	290	310	300 ^S	310 ^R	290 ^S	250 ^S	260 ^S	285	310	
10	270	275	290	310 ^S	315	255 ^S	250 ^S	320	320 ^S	295 ^S	295 ^S	305	300	300	295	295	285 ^S	300	300 ^S	295 ^S	270 ^S	280 ^S	280 ^S	270 ^S	
11	280	295 ^S	310	330	335	265	265	300 ^S	315 ^S	310	305	290	300	300	290	300	300 ^S	295 ^R	300 ^R	270 ^S	285 ^S	265	260		
12	255	275	300	310	290	280	255	295 ^S	325 ^S	325 ^S	295 ^S	275	285	290	285	285	285	280 ^S	290 ^R	280 ^S	270	275	255 ^S		
13	280 ^S	300 ^S	300 ^S	315	255	260	250	315 ^S	315 ^S	305	310	295	295	285	295	300	300	295	300 ^S	290 ^R	280 ^S	270 ^S	285	295	
14	300	295	290	285	270	280	280	315	330	I C	C	C	290	300	300	I C	295	310	290	295	J S	U S	275	265 ^S	
15	275	290 ^S	280	290	320	270	270 ^S	315 ^S	U S	U S	295	300	290 ^S	290	280	285	280	270	I R	R	R	R	U S	280 ^S	
16	U S	J S	J S	J S	J S	275	260 ^S	320 ^S	J S	J S	300 ^S	295 ^S	295	290	285	290	285	280	280 ^S	I R	285 ^S	280 ^S	265 ^S	270 ^S	
17	295	280	290	285	275	270	295 ^S	335 ^S	335 ^S	295	270 ^S	285	275	270	270	280	275	275	280 ^R	290 ^R	I S	I S	J S	J S	
18	260	275	295 ^S	305	230	240	290 ^S	315 ^S	305	305	305	295	270	275	265	270	270	285	285 ^S	U S	U S	U S	270 ^S	270 ^S	
19	270 ^S	280 ^S	U S	300	285	260	270	305	300 ^S	295 ^S	295	290	280	280	280	270	270	285 ^S	295 ^S	I S	295 ^S	290	U S	275	
20	260	280 ^S	295	300 ^S	295	285	285 ^S	315	300	J S	290	275	275	275	270	270	270	275	J S	I S	J S	J S	J S	275 ^S	
21	280	260 ^S	250	250	255 ^S	270	275	320 ^S	305 ^S	J S	280	280 ^R	270	265	265	270	275 ^S	J S	290	285 ^R	I S	J S	I S	J S	
22	275	285	270	275 ^S	280	275	290 ^S	315 ^S	310 ^S	J S	285	275	270	265 ^S	260 ^S	260 ^S	265 ^S	J S	295 ^S	280 ^S	I S	270 ^S	275 ^S	275 ^S	
23	275 ^S	265 ^S	265 ^S	270 ^S	260	260	255 ^S	290 ^S	305	300	290	275	275	275 ^S	270	270	270	280	285	275	J S	S	S	S	
24	S	270 ^S	250 ^S	250 ^S	265 ^S	255	250 ^S	310 ^S	300	295	240 ^S	270	255	265	250	250	260	J S	260	J S	255 ^S	265 ^S	265 ^S	270 ^S	
25	U S	265 ^S	250	255 ^S	275	305	275 ^S	305 ^S	U S	300	300	290	275	275	280	270	280	290	295	280	280 ^S	270 ^S	275 ^S	255	
26	240 ^S	245	290	330	255	250	260 ^S	U S	320 ^S	305	290	290	285	275	270	275	275	J S	290 ^R	295 ^S	I S	I S	260 ^S	255 ^S	
27	U S	I S	270	270	265	270	265 ^S	300 ^S	295	U S	280	280	285	280	270 ^S	270	270	275	290	J S	I S	I S	I S	285 ^S	
28	S	S	280 ^S	280	270	280 ^S	285 ^S	315 ^S	325	300	280	275	270	275	280	275	275	280	300	J S	285 ^S	I S	I S	I S	
29	I S	275 ^S	255	260 ^S	255	265 ^S	275	315 ^S	305 ^S	J S	290	275	275	275	270	270	280	280	280	295	I S	I S	I S	J S	
30	I S	U S	245 ^S	270	250	245	260 ^S	295 ^S	300 ^S	290	285	280	275 ^R	280	270 ^S	275	275	285 ^S	300	305 ^S	I S	I S	I S	S	
31	S	295 ^S	295	305	270	240 ^S	255	335 ^S	330 ^S	290	285 ^S	285	280	285	275	275	280	290	290 ^R	295 ^S	I S	I S	I S	275 ^S	
	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	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	29	29	29	29	29	
MED	275	278 ^S	285	285	270	270	270 ^S	315 ^S	315 ^S	300	295	290	285	285	280	280	280	285	290	290 ^S	280 ^S	275 ^S	275 ^S	275 ^S	
UQ	280	285 ^S	290	302	295	278	280	320 ^S	322 ^S	305	300	295	295	288	290	290	290	295	300	295 ^S	285 ^S	280 ^S	280 ^S	280 ^S	
LQ	262 ^S	270 ^S	270	275	258	258	260 ^S	305 ^S	305 ^S	295	285	280	275	275	270	270	270	275	280	288	280 ^S	270 ^S	270 ^S	265 ^S	270 ^S

IONOSPHERIC DATA

MAR. 1969

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

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	L	U L 375	L	L	L	L							
2									L	L	L	L	L	L	L	L							
3									L	L	L	L	L	L	L	L							
4								410	L	L	L	L	L	L	L	L							
5									L	L	L	L	L	L	L	L	400						
6									L	L	L	L	L	L	L	L	L						
7								385	L	L	L	L	L	L	L	L	L						
8									L	L	L	L	L	345	375	L							
9									L	L	L	L	L	L	L	L	L						
10									L	L	L	L	L	L	L	L	L						
11									L	L	L	L	L	L	L	A	A						
12									L	L	L	L	L	L	L	L	L						
13									L	L	L	L	L	L	L	L	L						
14									L	L	C	L	L	L	L	L	L						
15									L	L	L	L	L	L	L	L	L						
16									L	L	L	L	L	L	L	L	L	L					
17									L	L	L	L	L	L	L	L	L						
18									L	L	L	L	L	L	L	L	L						
19									L	L	L	L	L	L	L	L	L	L					
20									L	L	L	L	L	L	L	L	L	L					
21									L	B	L	L	L	L	L	L	L						
22									L	L	L	L	L	L	L	L	L						
23									L	L	L	L	L	L	L	L	L						
24								400	L	L	L	L	L	L	L	L	L	L					
25									L	L	L	L	L	L	L	L	L						
26									L	L	L	L	L	L	L	L	L	L					
27								L	L	L	L	L	L	L	L	L	L	L					
28									L	L	L	L	L	L	L	L	L	L					
29									L	L	L	L	L	L	L	L	L	L					
30								L	L	L	L	B	L	L	L	L	L	L					
31									L	L	L	L	L	L	L	L	L	A					
CNT								2	1			1		1	1		1						
MED								398	400			375		345	375		400						
UQ																							
LQ																							

IONOSPHERIC DATA

MAR. 1969

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

Year 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	265	295	285	300	250							
2										250	250	280	295	280	290	290	255							
3										250	250	255	275	280	275	275	255							
4									230	245	260	280	275	300	280	250	245							
5										255	275	270	270	310	300	280	255	245						
6										250	265	260	275	275	275	255	275	250						
7									235	275	255	255	270	260	265	275	250							
8										250	255	250	300	275	280	255	250							
9										250	255	280	310	275	280	275	260	235						
10										300	300	285	270	290	285	280	250	250						
11										250	265	275	275	285	295	260	255	240						
12										230	300	335	300	270	300	270	255	250						
13										275	275	275	275	290	300	270	250	250						
14										250	250	280	280	280	275	250	250							
15										250	285	280	275	290	305	280	260							
16										250	265	290	290	295	280	300	300	300						
17										250	300	280	300	325	300	290	290							
18										250	250	280	310	300	320	310	300							
19										250	300	255	300	255	300	300	300	275						
20										245	250	300	300	325	300	325	300	275						
21											300	^{E B} ₃₃₀	300	335	335	310	300	250						
22										250	300	300	300	320	330	310	300							
23										250	250	300	315	325	325	310	300							
24										250	^L ₄₂₀	325	280	280	350	350	340	330						
25										250	245	255	300	300	255	325	295							
26										245	250	265	300	300	300	310	300	275						
27									250	255	280	300	300	290	300	300	300	295						
28										245	300	300	300	300	295	305	300	280						
29										245	250	300	300	300	315	305	300	275						
30									250	250	280	300	^{E B} ₃₃₀	300	300	300	310	280						
31										250	255	255	300	300	300	300	260	245						
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								4	30	31	31	31	31	31	31	31	18							
MED								242	250	265	280	300	295	300	300	275	262							
UQ								250	250	292	300	300	300	300	308	300	280							
LQ								232	250	250	268	275	280	280	275	255	250							

IONOSPHERIC DATA

MAR. 1969

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

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	275	265	245	225	290	260	250	240	230	240	230	230	215	200 ^H	205 ^H	230 ^H	240	245	235	220	245	245	255	270
2	265	255	265	250	255	320	300	245	230	225 ^H	235	220 ^H	225 ^H	215 ^H	225	230 ^H	235	240	230	230	230	225	250	250
3	250	255	245	225	200	E ₇₀ ^B	E ₇₅ ^S	240	230	230 ^H	230	230	200 ^H	225	220	230	225	245	245	245	245	220	250	255
4	245	255	250	250	225	250	250	230	215	220 ^H	220	205	210	205	230	225	230	245	230	230	250	245	250	250
5	260	290	275	255	230	235	250	245	245	230	225	215 ^H	220	205 ^H	215	215 ^H	240	225	230	220	225	235	255	305
6	300	255	250	250	200	260	295	250	230	225	220 ^H	210	220 ^H	200 ^H	215	225	220 ^H	240	230	215	240	250	265	290
7	260	255	250	275	300	300	250	230	230	240	235	235	225	210	210	210 ^H	240	240	230	230	250	230	230	270
8	290	280	305	245	255	275	315	230	220	230	230	230	225	215 ^H	225	215	220	240	230	230	235	250	270	265
9	275	250	250	250	210	250 ^H	280	230	225	230	220 ^H	225	200 ^H	220 ^H	230	230 ^H	220 ^H	230	230	205	250	295	250	240
10	295	275	250	240	205	300	330	245	235	235	225 ^H	230	225	210	210	230	225 ^H	240	240	210	240 ^H	255	245 ^H	275
11	270	255	230	220	200	300	315	250	240	230 ^H	235	225	225 ^H	225	240 ^H	225	I ₄₅ ^A	I ₄₀ ^A	240	225	220	255	300	300
12	300	275	250	225	220	280	350	255	240	230	205 ^H	225 ^H	200 ^H	250	220	215	240	230	250	235	245	250	275	280
13	270	240	240	205	250	310	345	255	240	235	250	225	225	225 ^H	220 ^H	240	230	230 ^H	225	225	225	260	275	255
14	250	255	255	250	245	270	250	240	240	230	230	I ₂₀ ^C	220 ^H	205 ^H	230 ^H	230	235	245	240	260	250	245	255	280
15	285	250	260	250	215	225	280	240	240	230	220 ^H	210 ^H	210 ^H	225	225 ^H	230	240 ^H	240	240	230	235	230	275	270
16	265	260	265	250	215	245	310	230	230	225 ^H	240	E ₄₀ ^A	240 ^H	230	260	255	240 ^H	225 ^H	250	250	240	240	255	275
17	245	250	260	225	250	270	255	235	225	220 ^H	205 ^H	205 ^H	250	240 ^H	225 ^H	225 ^H	240	245	255	250	230	275	270	250
18	275	270	230	200	350	375	260	225 ^C	240	230	230	210 ^H	230 ^H	220 ^H	230 ^H	220 ^H	240 ^H	245	235	250	255	230	270	290
19	295	275	245	225	250	305	290	235	240	240	225 ^H	230	230 ^H	225	220 ^H	225 ^H	225 ^H	245	250	240	235	240	245	250
20	300	280	260	245 ^H	200	230	260	245	240	240	230	210 ^H	220	205 ^H	230 ^H	245 ^H	225 ^H	240	255	250	235	255	250	260
21	260	295	320	325	300	260	230	225	230	240	225 ^H	I ₂₀ ^B	I ₂₀ ^B	250	250	240	240	230	250	225	225	240	265	275
22	275	270	290	275 ^H	250 ^H	255 ^H	250	235	225	205 ^H	205 ^H	250	230	250	240	240	240	250	245	245	240	260	265	280
23	270	275	290	250	220	245	290	245	240	235 ^H	230	220 ^H	205 ^H	245 ^H	240 ^H	225 ^H	255	255	255	245	255	260	270 ^F	250
24	255	260	285	300	230	225	310	230	230	215	230	250	235 ^H	230 ^H	235 ^H	240 ^H	250	250	290	260	280	240	245	245
25	260 ^B	290	300	300	250	235	245	245	240	230	225	215 ^H	205 ^H	210 ^H	210 ^H	245	240	255	245	250	235	230	250	290
26	320	325	250	205 ^H	300	320	245	240	230	225	220	215 ^H	205 ^H	225 ^H	225 ^H	240	240	245	250	240	240	235	280	300
27	290	275	265	250	230	250	275	240	230	225 ^H	225	B	E ₅₀ ^B	250	230 ^H	225 ^H	235 ^H	240 ^H	255	235	230	250	275	255
28	250	245	250	240	210	250	265	245	240	225	250	205 ^H	195	225 ^H	245	240 ^H	245	240	260	250	240	230	270	260
29	250	265	285	275	270	260	260	230	230	225	220	205 ^H	200 ^H	250	230 ^H	230 ^H	235 ^H	250	255	240	215	255	255	250
30	280	295	305	275	245	295	290	230	230	230	220 ^H	210 ^H	B	E ₅₀ ^B	255	250	230 ^H	250	255	240	235	210	270	265
31	265	250	245	210	175 ^H	350	300	230	230	225	215 ^H	205	200	220 ^H	E ₄₅ ^A	240 ^H	255	I ₂₀ ^A	245	240	240	240	270	270
	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	31	31	31	31	31	31	31	31	31	31	31	30	30	31	31	31	31	31	31	31	31	31	31	31
MED	270	265	255	250	230	260	280	240	230	230	225	220	220 ^H	222 ^H	228	230	240	240	245	240	240	245	265	270
UQ	288	275	280	252	250	300	305	245	240	232	230	230	228	232	235	240	240	245	252	248	245	255	270	280
LQ	260	255	250	225	210	250	251	230	230	225	220 ^H	210 ^H	205 ^H	210 ^H	220	225	230	240	232	228	232	232	250	252

IONOSPHERIC DATA

MAR. 1969

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	105	100	100	B	100	100	S	S	G	150	135	G	G	G	G	115	110	110	105	S	105	100	S	S
2	100	S	B	B	B	B	S	100	G	140	115	100	G	G	100	G	100	105	100	100	100	95	S	S
3	S	S	B	B	E	B	S	S	G	105	175	155	105	G	100	100	140	115	105	105	105	110	100	S
4	100	100	B	E	B	B	S	S	110	105	130	120	G	100	120	120	110	110	110	110	105	95	100	S
5	S	S	B	100	B	B	100	100	105	100	150	130	G	115	100	G	G	G	G	S	S	S	S	100
6	100	B	100	100	B	B	S	S	G	130	G	120	125	125	120	115	110	110	S	S	S	S	S	S
7	S	B	B	E	E	B	S	100	G	100	125	125	125	125	120	120	105	105	B	100	S	S	S	B
8	S	B	B	E	B	B	100	G	E G 175	155	135	130	135	130	130	115	110	140	G	S	110	110	S	S
9	105	S	B	100	E	B	S	G	G	105	105	100	100	145	130	130	130	130	115	S	S	S	S	S
10	B	100	B	E	E	B	S	G	G	G	G	140	100	100	100	105	105	105	100	95	S	B	S	S
11	S	S	B	B	E	B	S	G	G	G	G	G	105	G	130	140	125	125	G	100	S	105	100	100
12	100	B	B	E	E	B	S	150	G	115	110	100	100	105	120	120	G	G	S	S	110	105	105	100
13	100	105	100	E	B	B	105	145	145	125	115	115	110	110	115	130	G	G	G	S	B	110	100	100
14	100	100	B	B	B	B	100	G	G	G	135	C	G	G	G	G	155	130	120	115	110	S	S	100
15	S	S	B	B	E	B	S	G	105	105	105	105	105	105	105	100	100	100	100	100	S	105	105	S
16	S	S	B	B	E	S	100	100	G	125	125	120	115	115	130	145	G	G	G	S	S	105	S	S
17	100	B	B	E	E	B	S	100	100	130	105	105	130	135	145	G	G	G	G	S	105	100	S	S
18	B	B	B	E	E	B	S	G	G	150	145	125	105	105	105	G	G	G	125	110	105	105	105	S
19	S	B	B	E	B	B	S	G	E G 165	175	130	125	125	145	145	130	G	130	105	105	105	100	100	100
20	S	100	B	B	B	B	S	G	G	140	100	100	100	100	G	G	G	G	G	105	S	S	100	100
21	100	100	100	100	100	100	S	G	G	155	125	B	B	100	120	100	100	100	120	S	S	S	S	S
22	S	B	S	E	E	B	105	G	G	105	100	100	160	135	125	125	120	120	95	95	S	S	S	S
23	S	S	B	E	E	E	S	G	G	G	G	105	G	125	125	115	120	110	110	105	100	100	S	S
24	S	S	B	E	E	B	S	G	140	145	130	125	120	120	115	125	115	115	110	S	S	S	S	S
25	100	100	100	B	B	B	S	G	105	G	G	G	135	120	130	B	100	100	100	100	95	105	S	S
26	S	105	105	110	E	105	105	100	155	150	140	140	G	105	G	135	100	100	140	95	95	S	S	S
27	S	S	B	E	E	B	100	G	G	G	G	B	B	110	G	105	105	125	110	S	105	S	100	S
28	S	S	B	B	B	S	S	G	G	150	B	125	130	105	105	100	100	G	110	105	105	S	S	S
29	S	B	B	E	E	B	S	G	G	G	150	G	105	125	130	125	100	125	120	110	S	S	S	S
30	100	S	B	E	E	B	S	G	145	105	105	120	B	B	125	125	125	150	125	110	105	100	S	S
31	S	S	B	E	E	S	S	G	G	145	125	120	125	115	115	110	110	110	105	S	S	S	S	S
	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	9	6	5	2	3	8	8	11	24	24	24	21	25	26	24	23	23	21	18	16	16	10	7
MED	100	100	100	100	100	100	100	100	U 122	130	125	120	115	115	120	120	110	110	110	105	105	105	100	100
UQ	100	100	100	100		102	105	122	146	150	135	125	125	125	130	128	120	125	120	110	105	105	105	100
LQ	100	100	100	100		100	100	100	105	105	108	105	105	105	105	108	100	105	105	100	102	100	100	100

IONOSPHERIC DATA

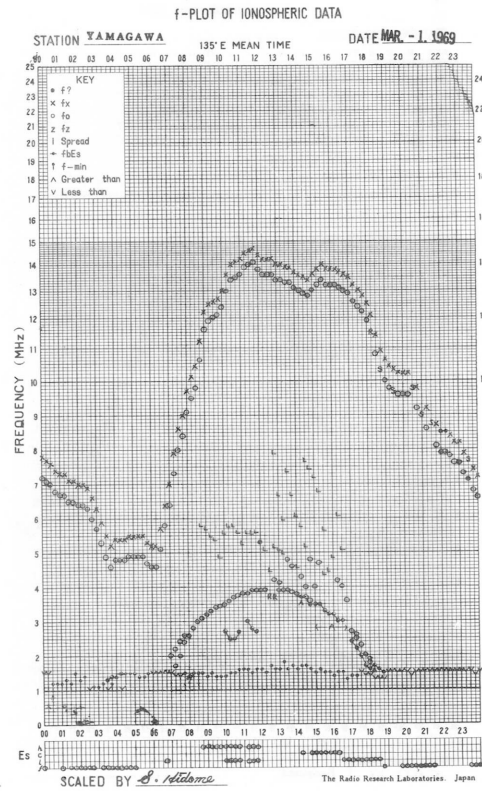
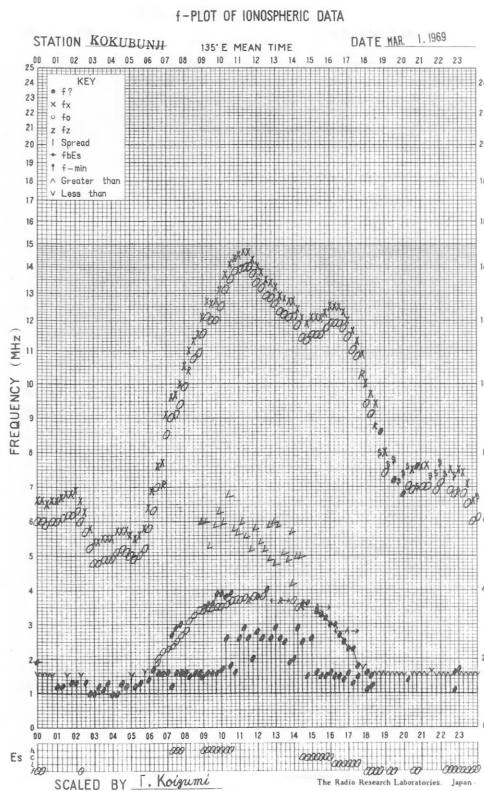
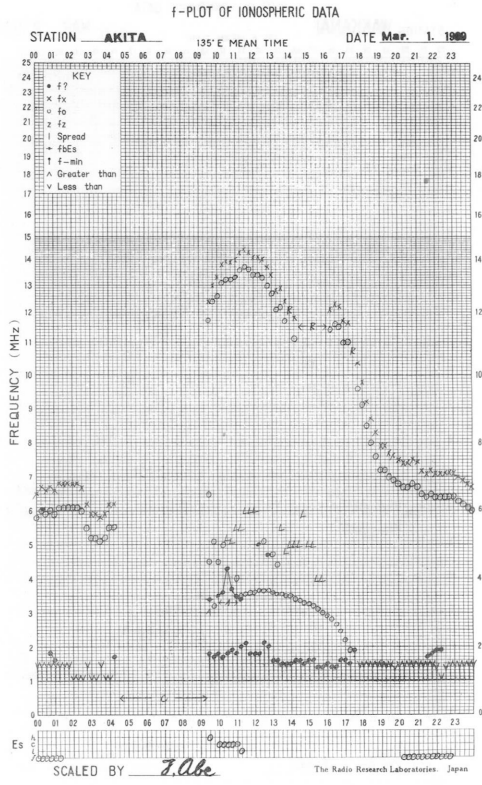
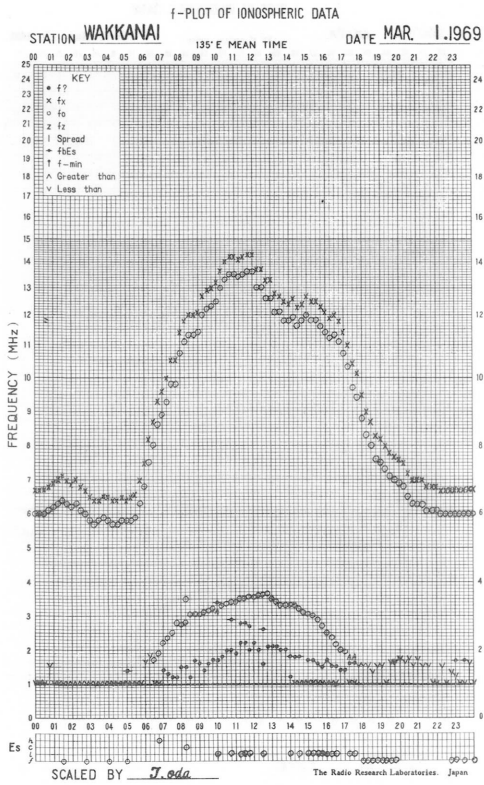
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Types of Es

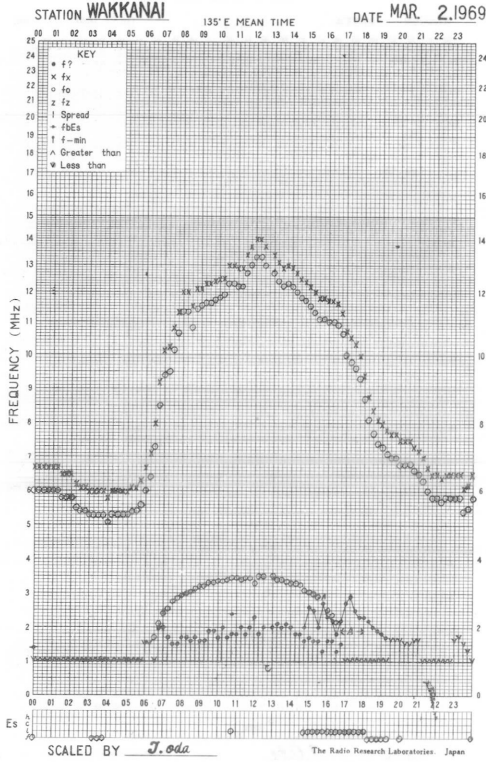
135° E Mean Time (G. M. T. + 9^h)

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

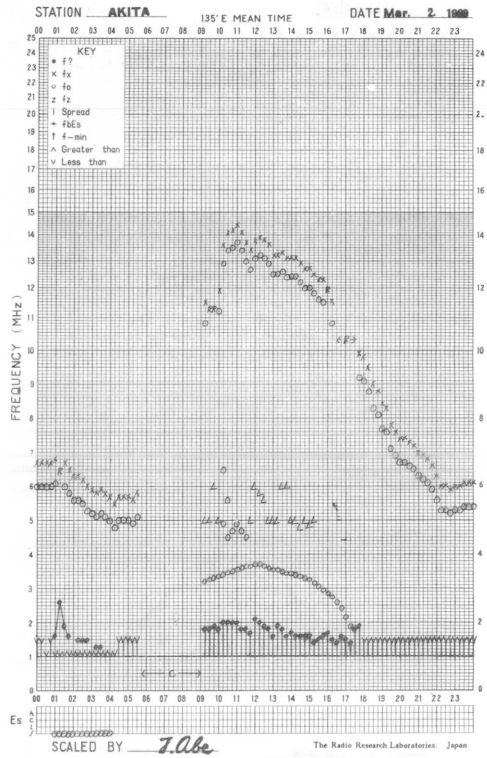
Hour Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	F ₁	F ₁	F ₁		F ₁	F ₁				H ₁	HL ₁₁					C ₁	C ₁	L ₂	L ₁		F ₁	F ₁			
2	F ₁							L ₁		H ₁	C ₁	L ₁			L ₁		L ₁	L ₂	F ₃	F ₁	F ₁				
3										L ₁	HL ₁₁	HL ₁₁	L ₁		L ₁	L ₁	HL ₂₂	CL ₄₁	L ₃	F ₅	F ₂	F ₁	F ₁		
4	F ₁	F ₁						L ₁	L ₁	HL ₁₁	C ₁			L ₁	CL ₁₁	CL ₁₁	CL ₂₁	CL ₅₂	CL ₃₁	FF ₃₁	FF ₂₁	F ₁	F ₂		
5				F ₁		F ₁	L ₁	L ₂	L ₂	HL ₁₁	CL ₁₁			C ₁	L ₁									F ₁	
6	F ₁		F ₁	F ₁						H ₁		C ₁	C ₁	C ₁	C ₁	L ₁	L ₂								
7							L ₁		L ₁	H ₁	HL ₁₁	HL ₁₁	H ₁	C ₁	C ₁	L ₁	L ₂		F ₁						
8					F ₁			H ₁	HL ₁₂	HL ₁₁	HL ₁₁	HL ₁₁	HL ₁₁	H ₁	CL ₁₁	C ₂	HL ₁₂				F ₁	F ₁			
9	F ₄			F ₁					L ₁	L ₁	L ₁	L ₂	HL ₁₂	HL ₁₁	H ₁	H ₁	HL ₂₁	L ₁							
10		F ₁									H ₁	L ₁	L ₁	L ₁	L ₁	L ₂	L ₂	L ₁	F ₂						
11												L ₁		H ₁	HL ₁₁	HL ₁₁	H ₄			F ₁		F ₅	F ₄	F ₂	
12	F ₁						H ₃		C ₂	C ₁	L ₂	L ₁	L ₁	C ₁	C ₁						F ₄	F ₂	F ₁	F ₁	
13	F ₁	F ₁	F ₁			F ₁	H ₂	H ₁	H ₁	C ₁	C ₁	C ₁	C ₁	C ₁	C ₁	HL ₁₁						F ₁	F ₄	F ₁	
14	F ₁	F ₁				F ₁				H ₁							H ₁	HL ₂₁	C ₁	FF ₃₁	F ₄			F ₁	
15								L ₂	L ₂	L ₁	L ₁	L ₁	L ₁	L ₁	L ₁	L ₂	L ₁	L ₁	F ₁		F ₁	F ₁			
16						F ₂	L ₁		HL ₁₁	H ₁	H ₁	C ₁	CL ₁₁	HC ₁₁	H ₁							F ₁			
17	F ₁						L ₁	L ₂	HL ₁₁	L ₁	L ₁	HL ₂₁	H ₁	H ₁							F ₁	F ₁			
18									H ₁	H ₁	H ₁	L ₁	L ₁	L ₁				C ₄	F ₆	F ₄	F ₅	F ₂			
19								HL ₁₁	H ₁	H ₁	H ₁	HL ₁₁	H ₁	H ₁			H ₂	L ₃	F ₁	F ₁	F ₅	F ₃	F ₂		
20		F ₁							H ₁	L ₁	L ₁	L ₁	L ₁							F ₃		F ₄	F ₃		
21	F ₃	F ₁	F ₁	F ₁	F ₁	F ₁				H ₁	H ₁		L ₁	CL ₁₁	L ₁	L ₁	L ₁	C ₂							
22						F ₁				L ₁	L ₁	L ₁	HL ₁₁	HL ₁₁	HL ₁₁	HL ₁₁	HL ₁₃	L ₂	F ₂						
23											L ₁		H ₁	HL ₁₁	C ₁	C ₁	L ₂	L ₂	F ₄	F ₃	F ₁				
24								H ₁	H ₁	H ₁	HL ₁₁	CL ₁₁	C ₁	C ₁	C ₁	C ₂	C ₃	L ₁							
25	F ₂	F ₂	F ₁					L ₂					H ₁	C ₁	HL ₁₁		L ₁	L ₂	LH ₂₂	F ₅	FF ₁₁	F ₁			
26		F ₁	F ₁	F ₁		F ₁	F ₂	L ₁	HL ₁₂	HL ₁₁	HL ₁₁	HL ₁₁		L ₁		HL ₁₁	L ₁	L ₁	HL ₁₁	F ₂	F ₁				
27							F ₁							L ₁		L ₁	L ₁	H ₁	L ₂		F ₁		F ₁		
28									HL ₁₁		H ₁	HL ₁₁	L ₁	L ₁	L ₁	L ₁		C ₃	F ₂	F ₂					
29										H ₁		HL ₁₁	L ₁	H ₁	HL ₁₁	HL ₁₁	L ₁	HL ₁₁	C ₂	F ₇					
30	F ₁							HL ₂₂	L ₁	L ₁	C ₁			H ₁	H ₁	HL ₁₁	H ₁	H ₂	F ₆	F ₅	F ₂				
31									HL ₁₁	HL ₁₁	CL ₁₁	H ₁	C ₁	C ₁	C ₁	C ₁	C ₃	C ₃	L ₂						
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																									



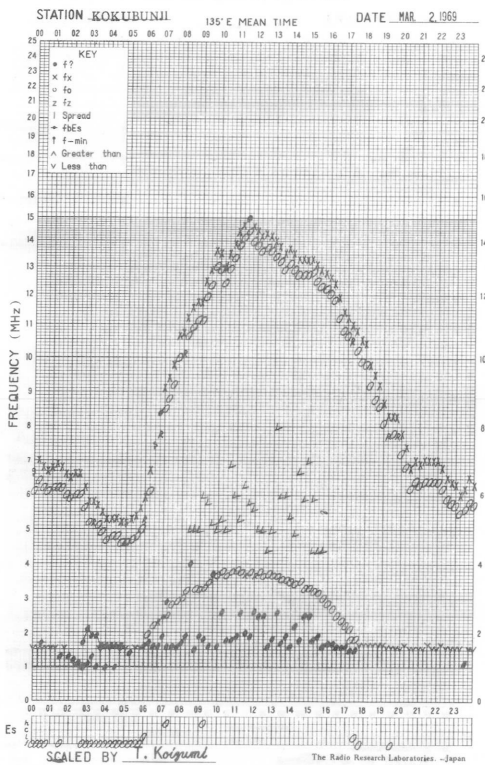
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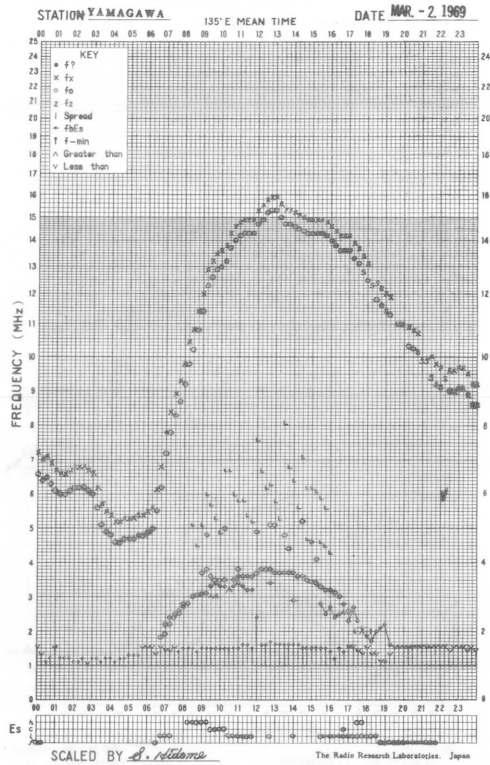
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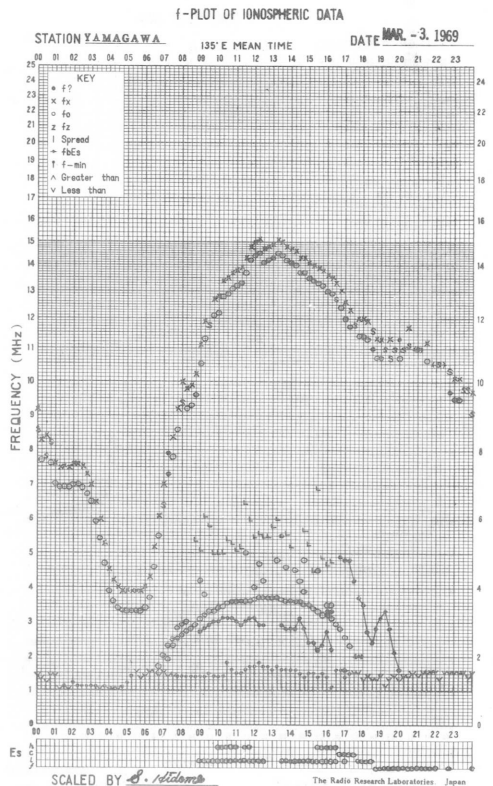
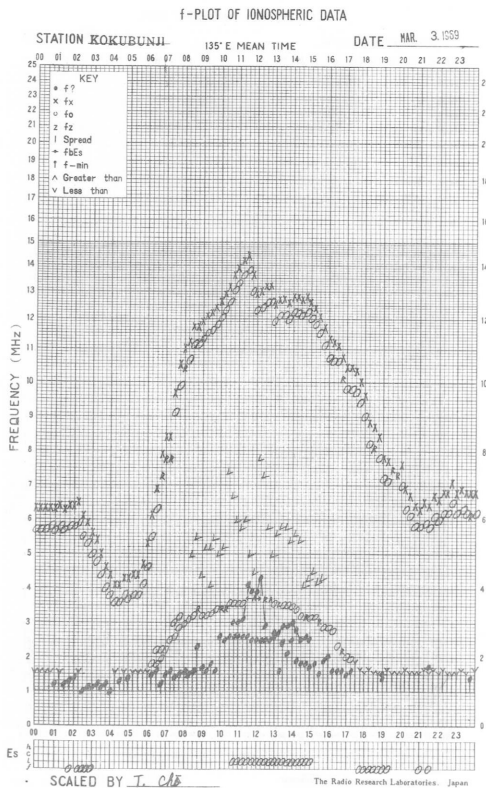
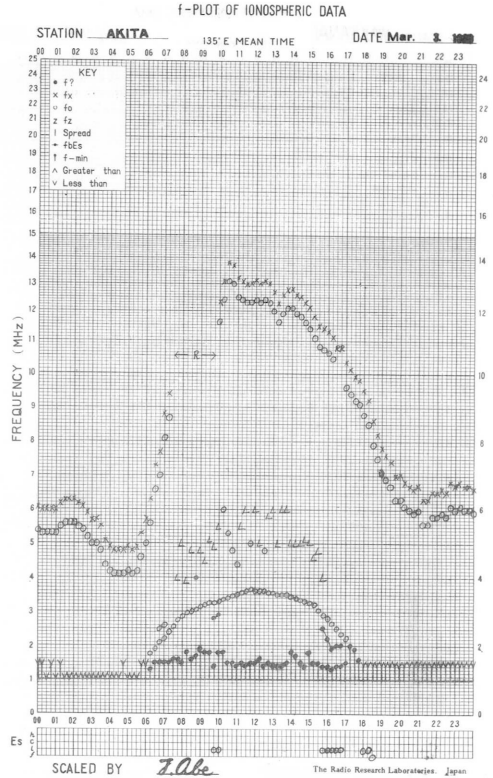
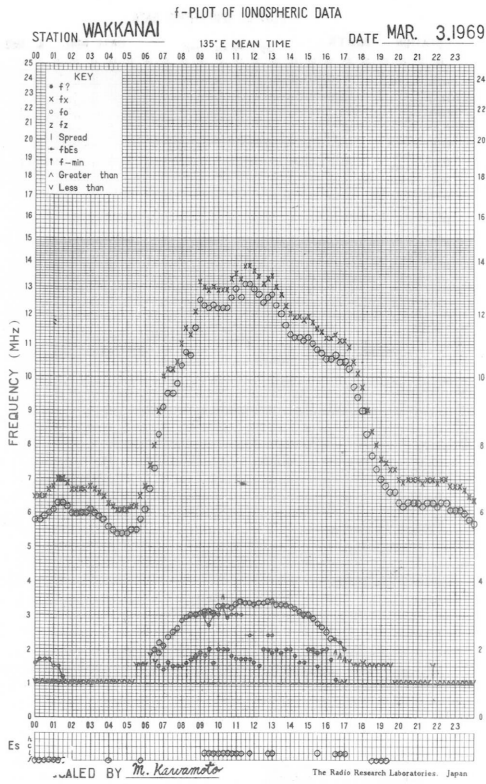


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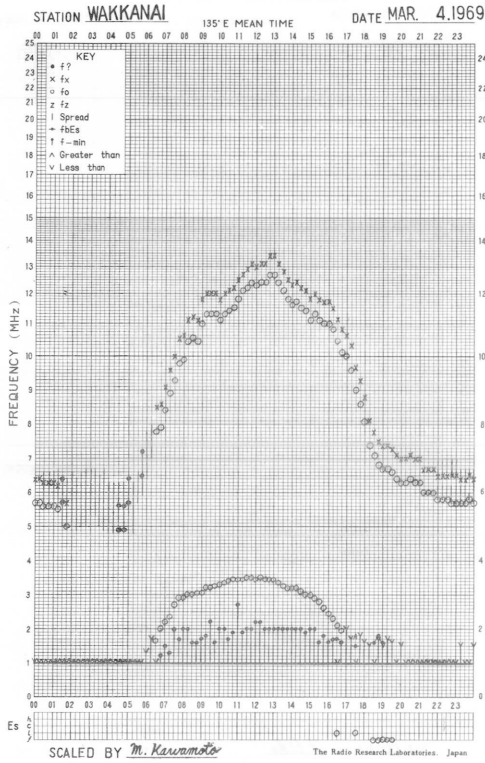


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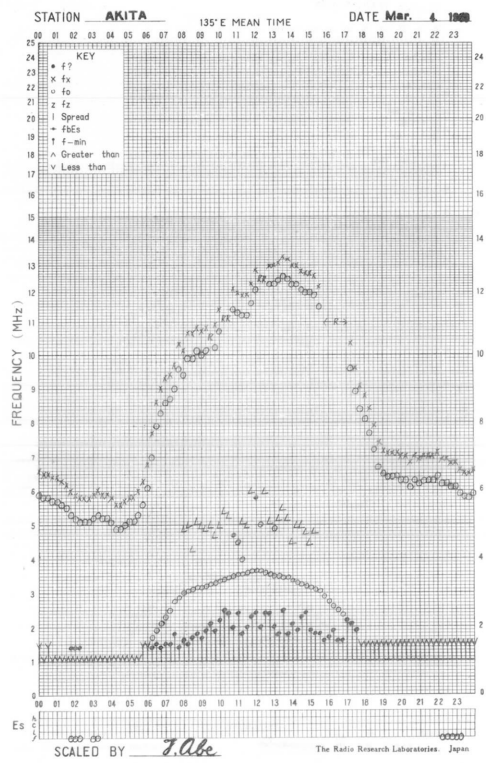




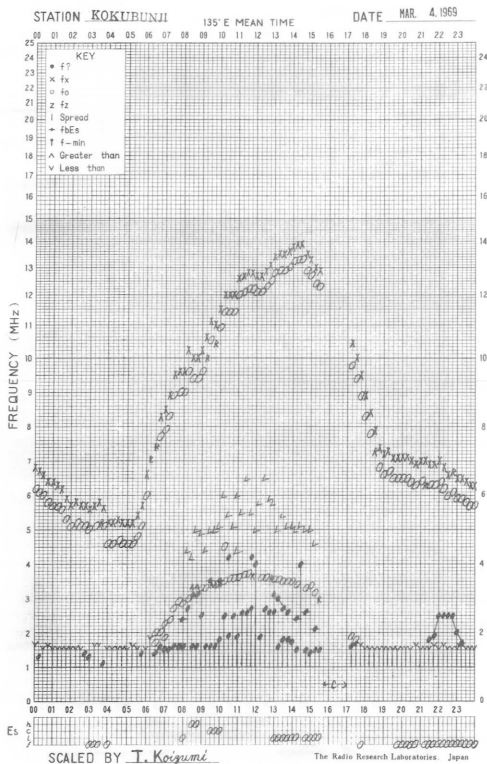
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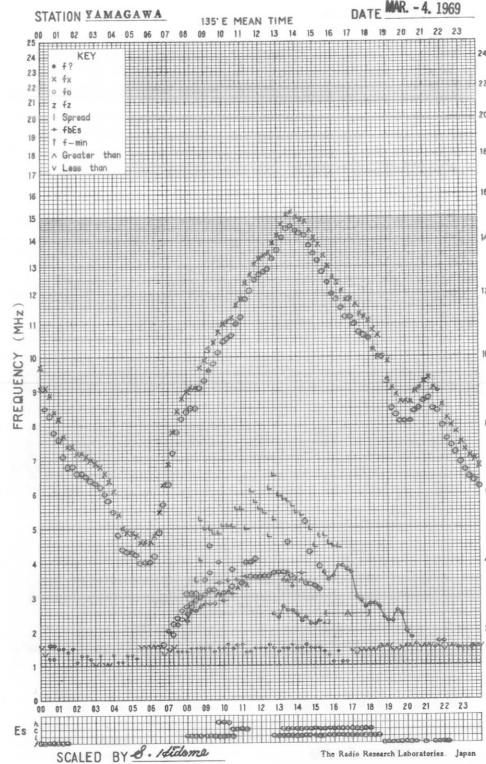
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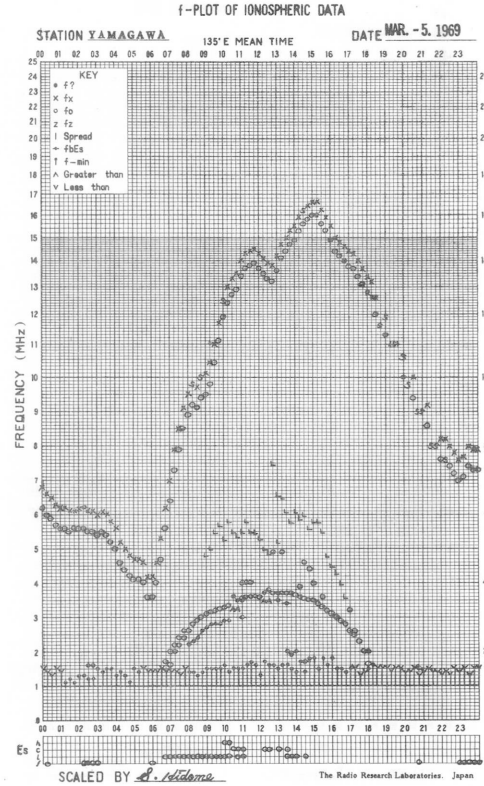
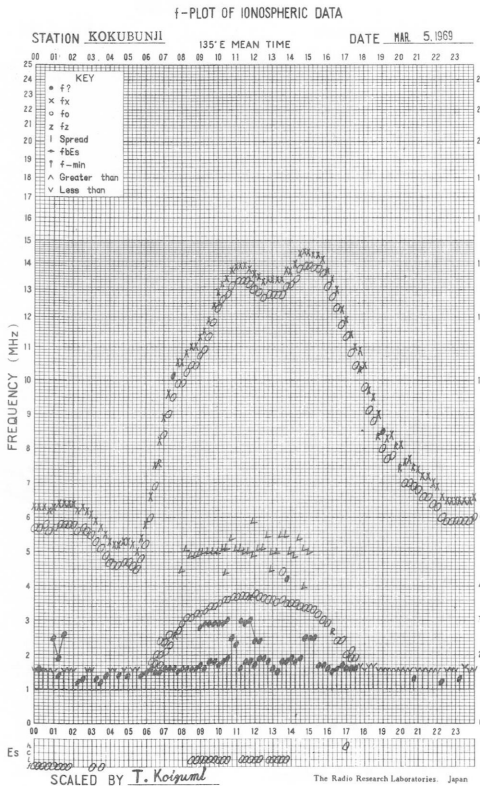
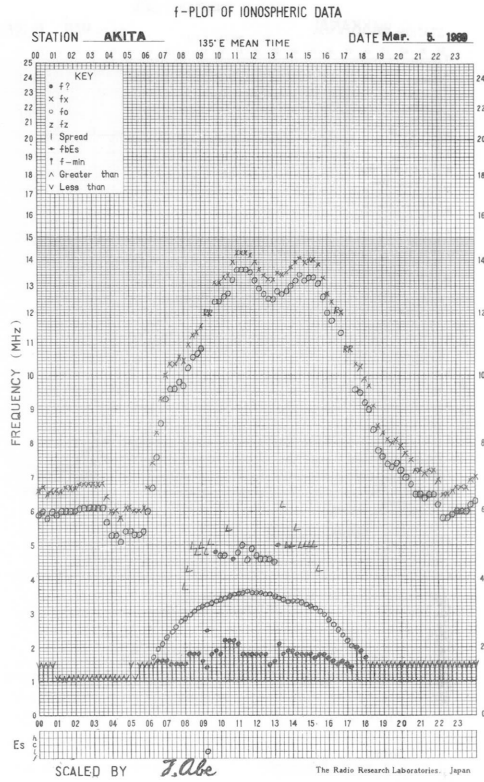
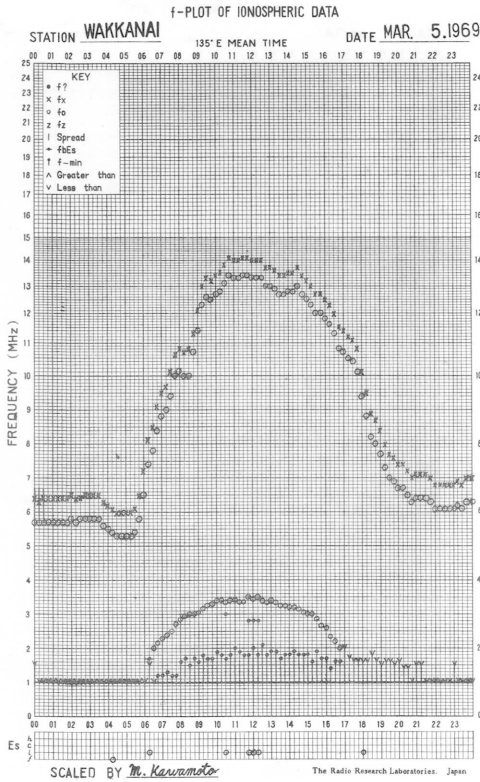


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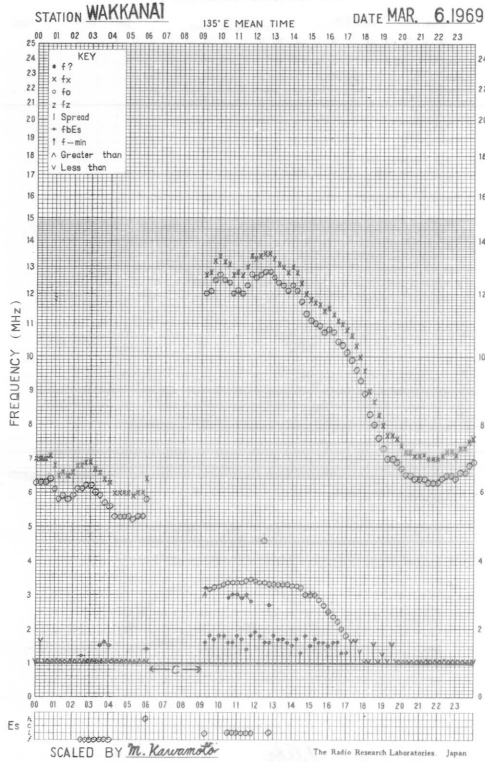


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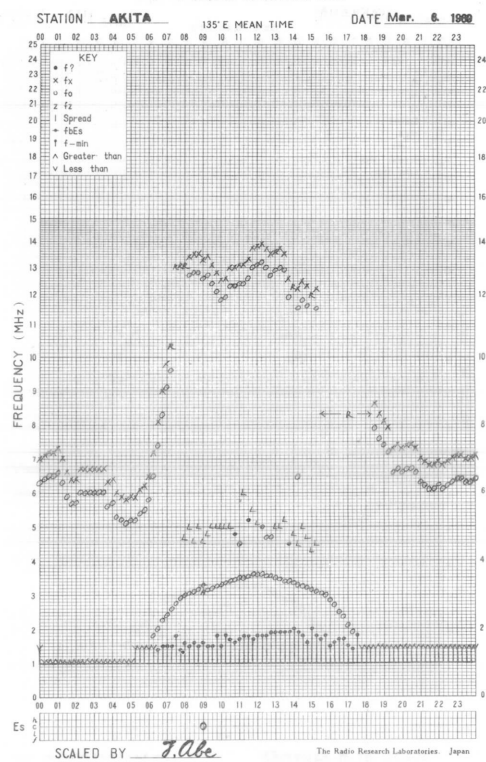




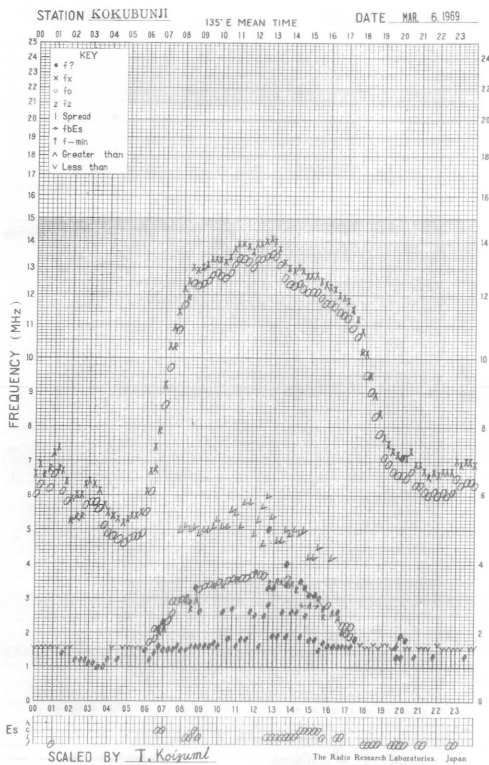
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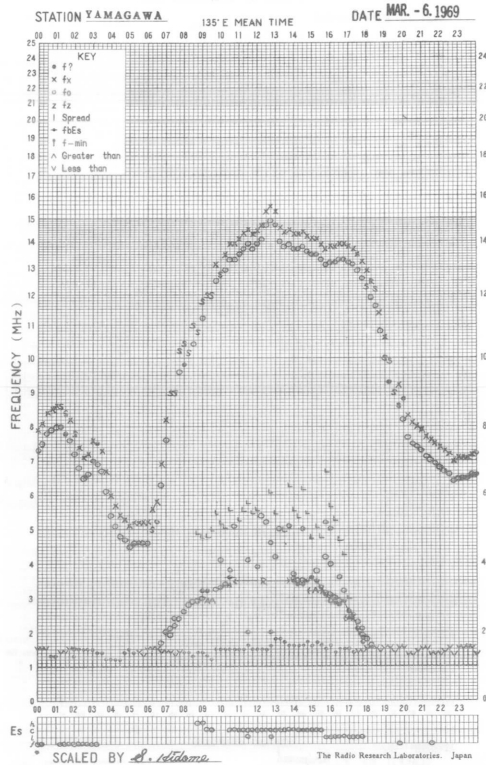
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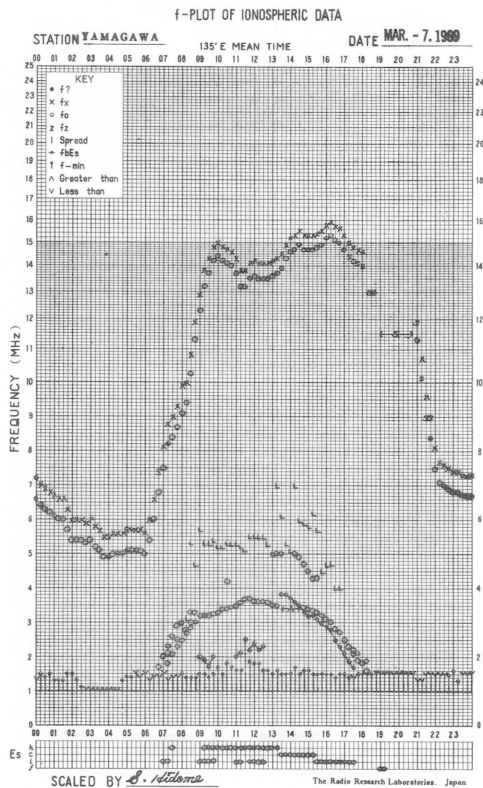
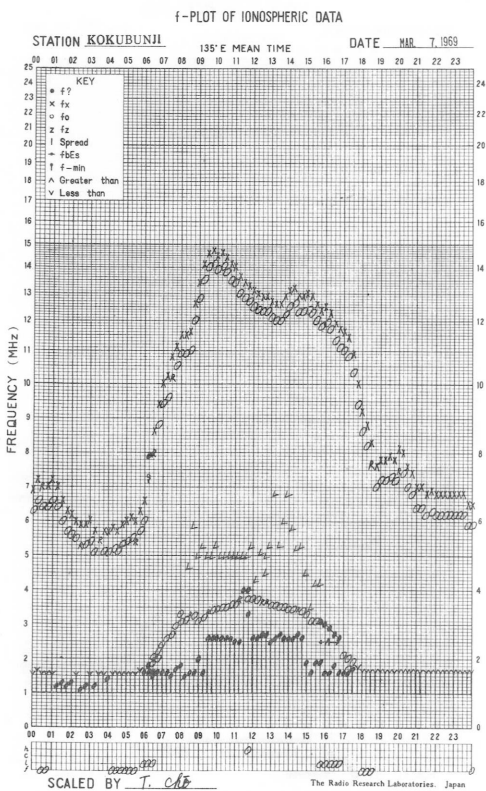
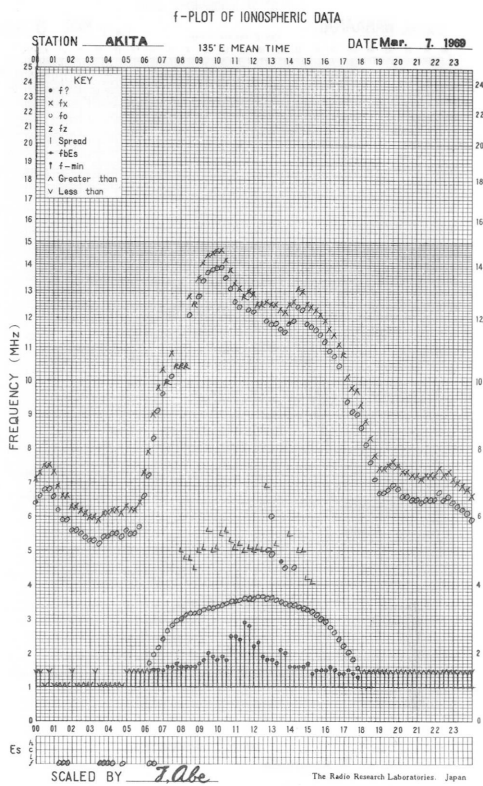
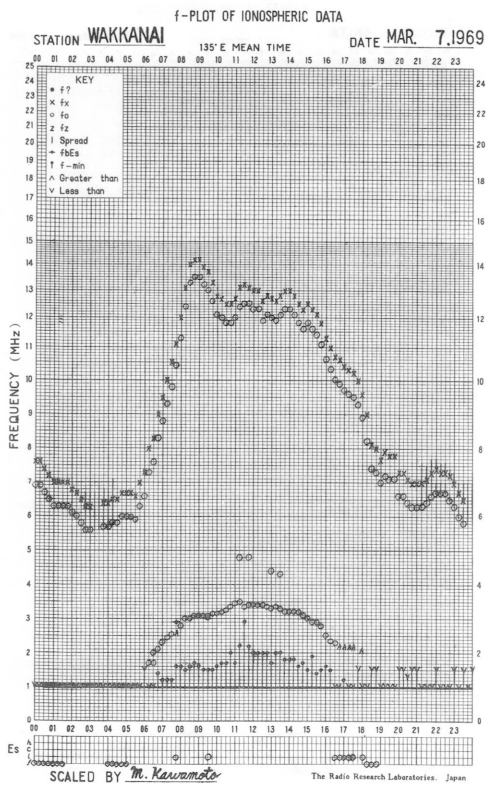


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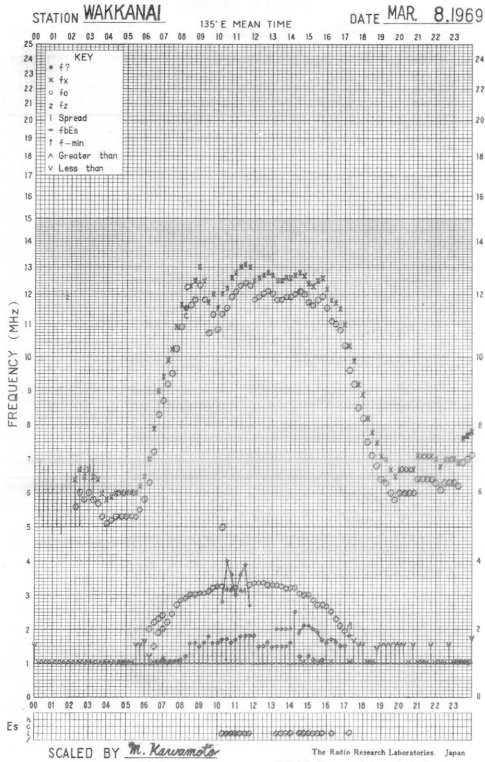


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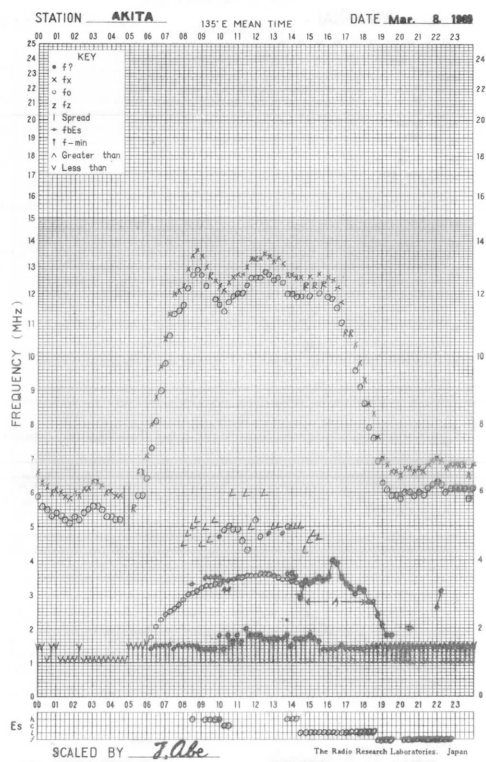




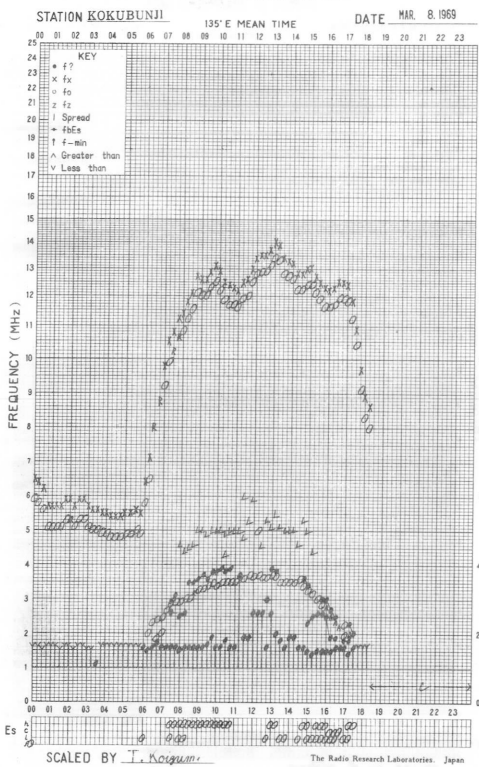
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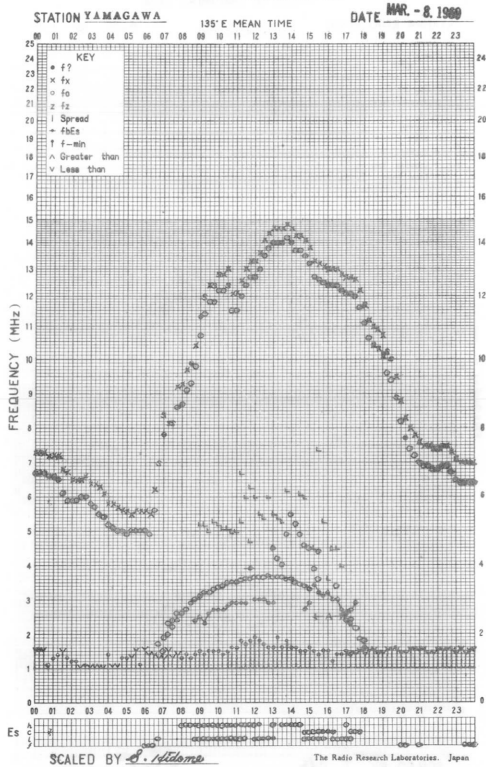
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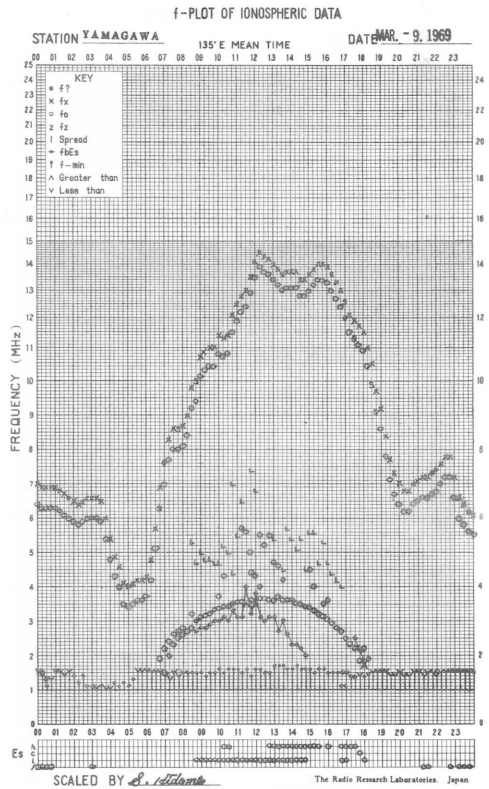
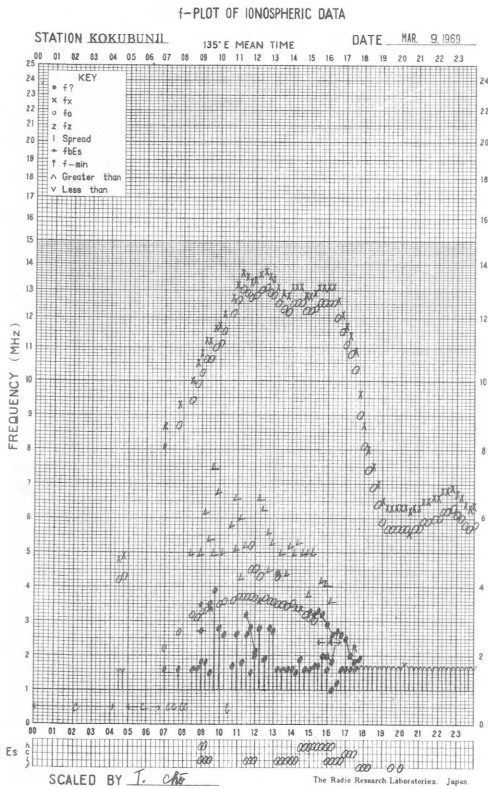
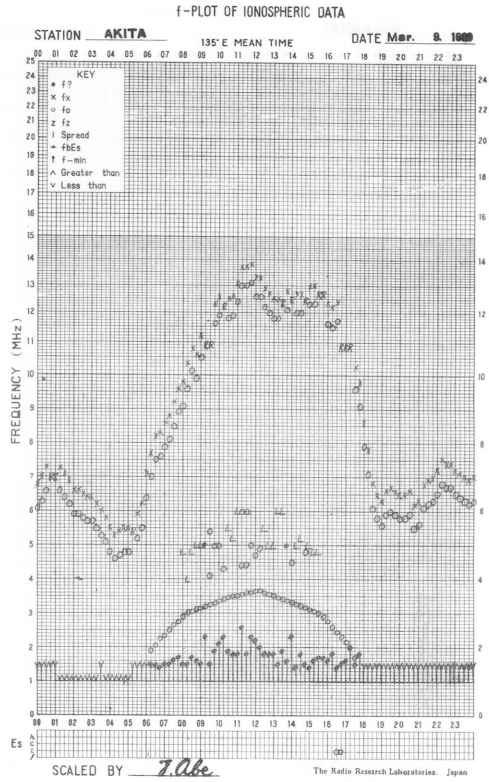
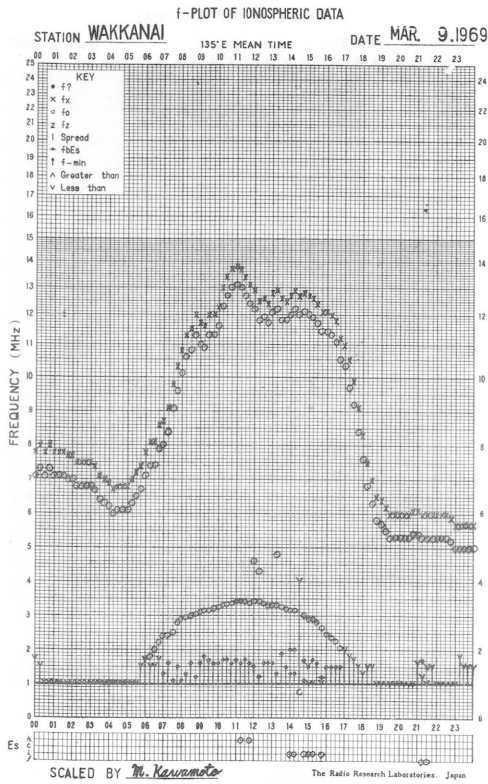


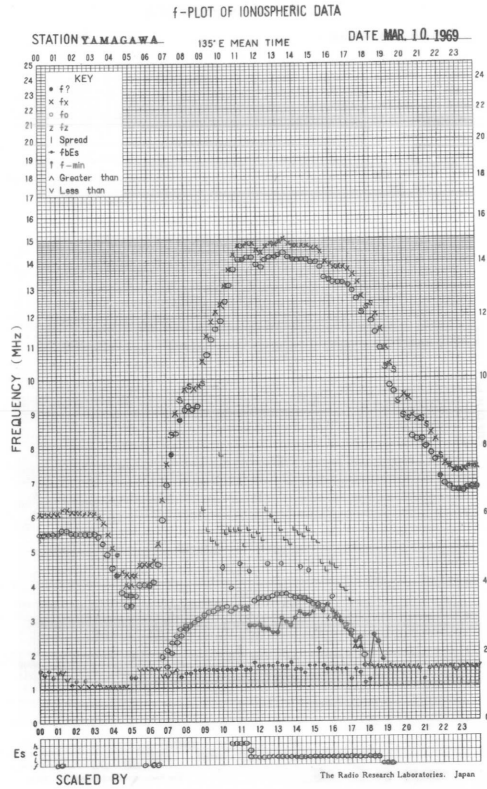
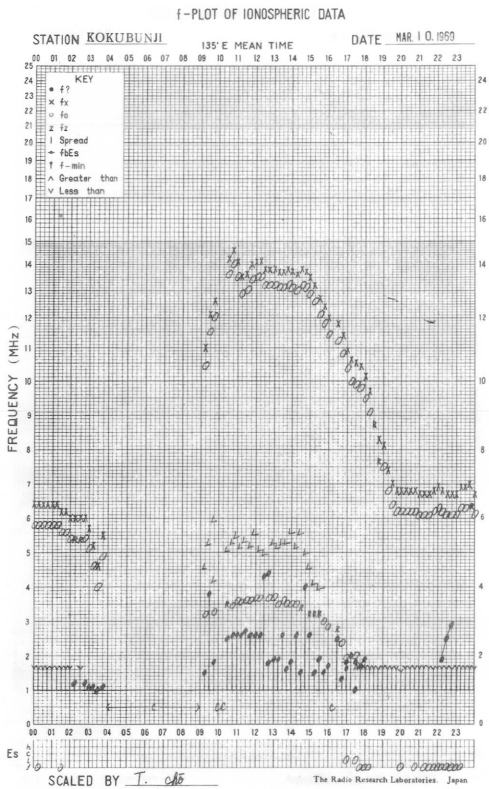
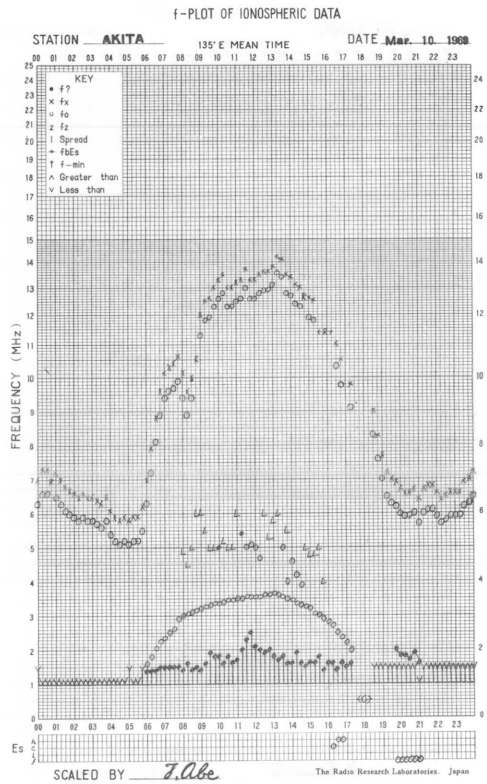
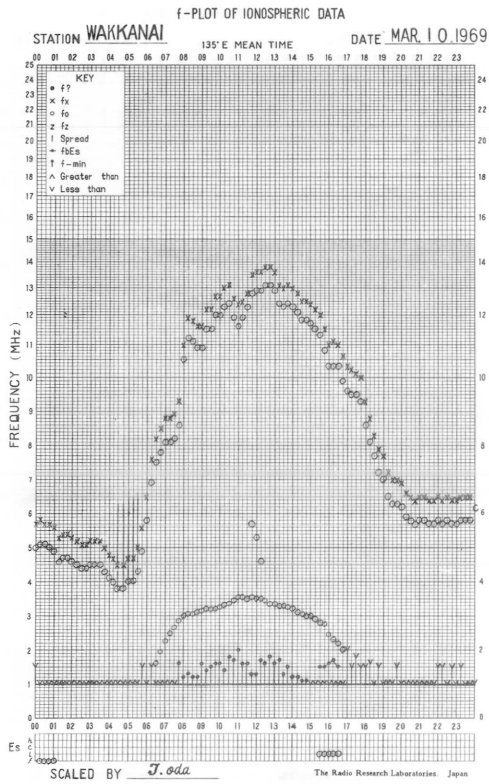
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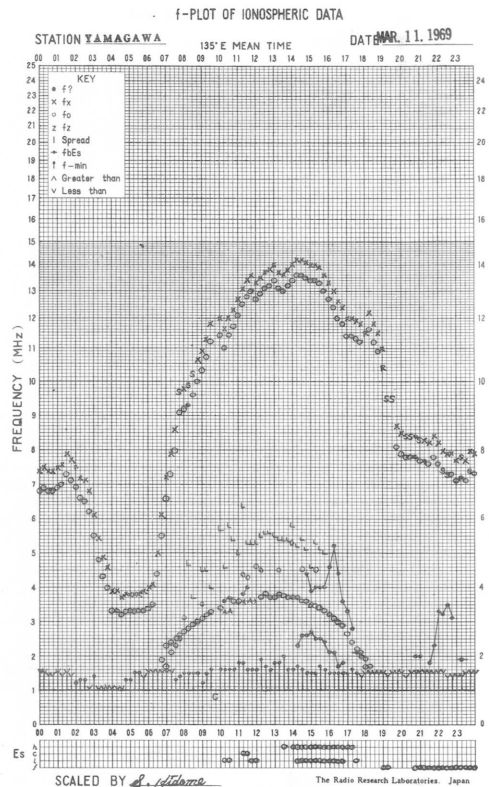
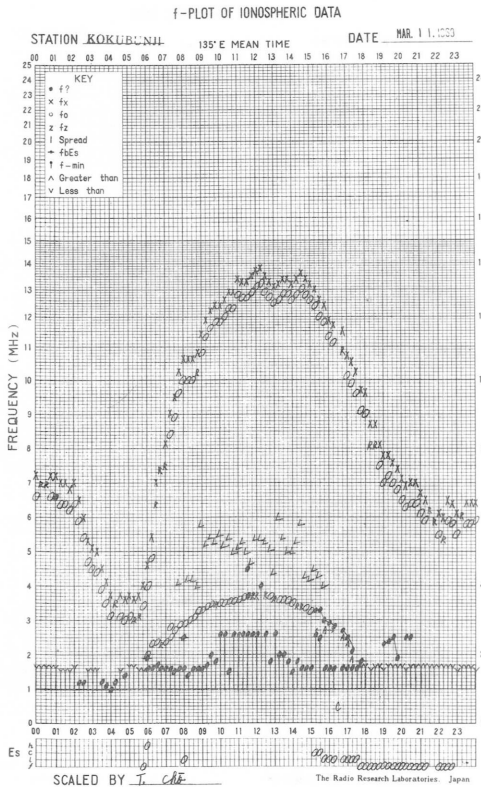
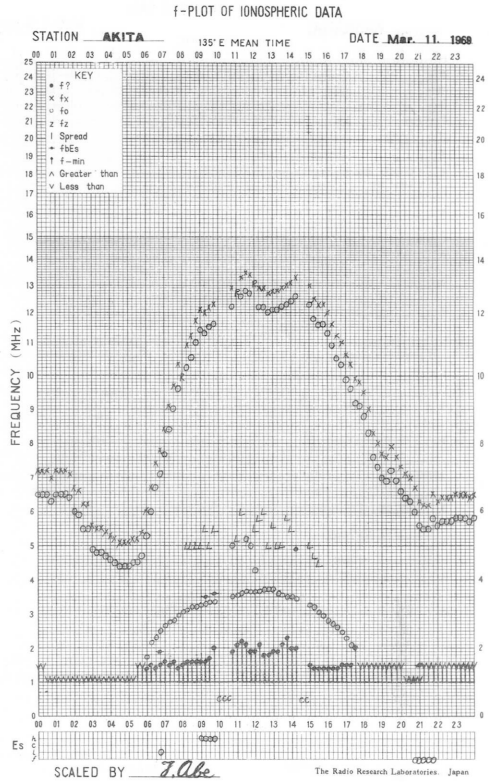
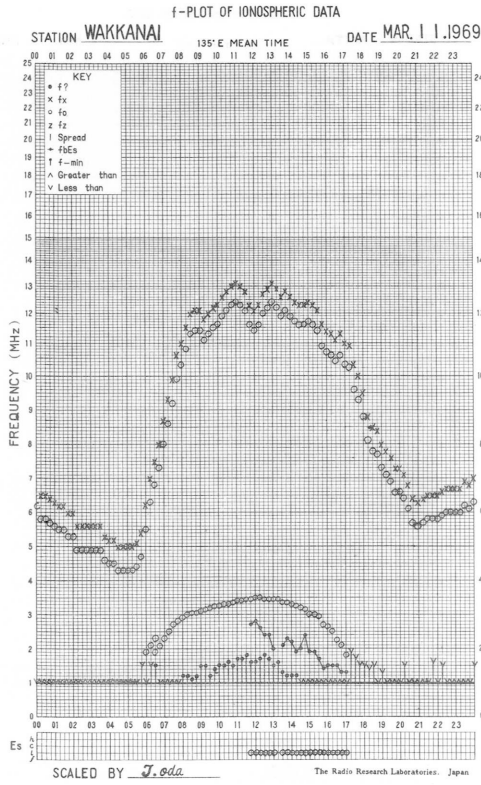


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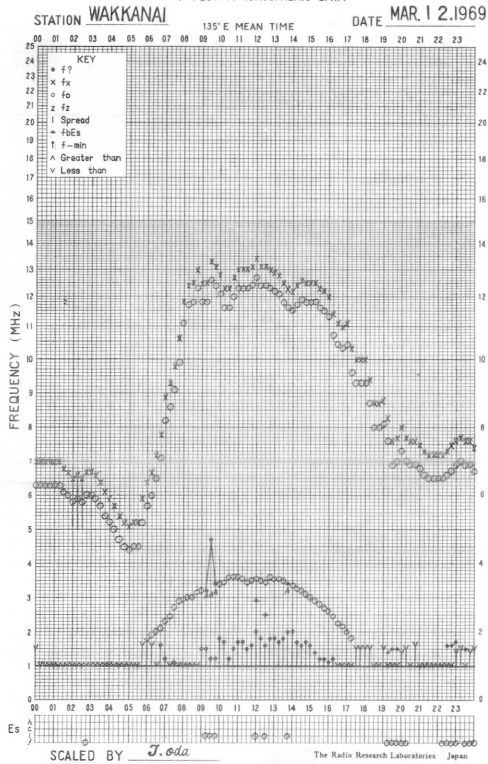




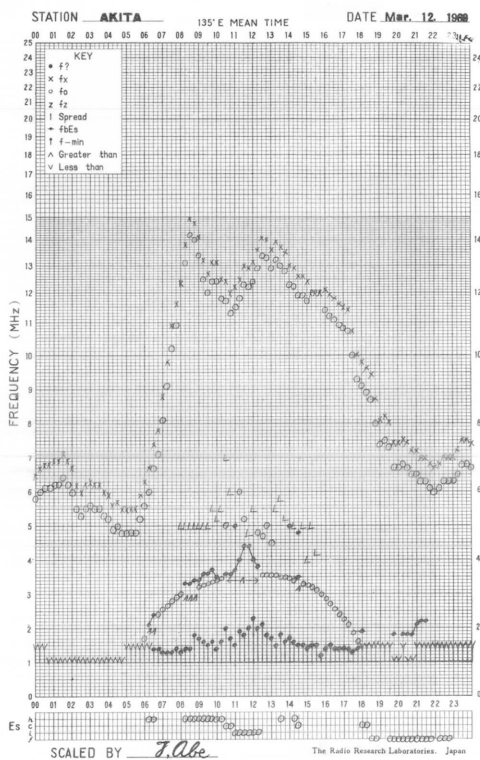




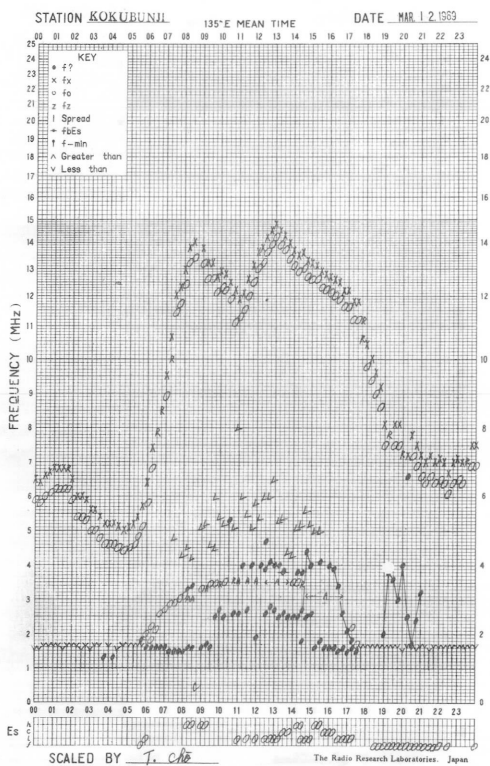
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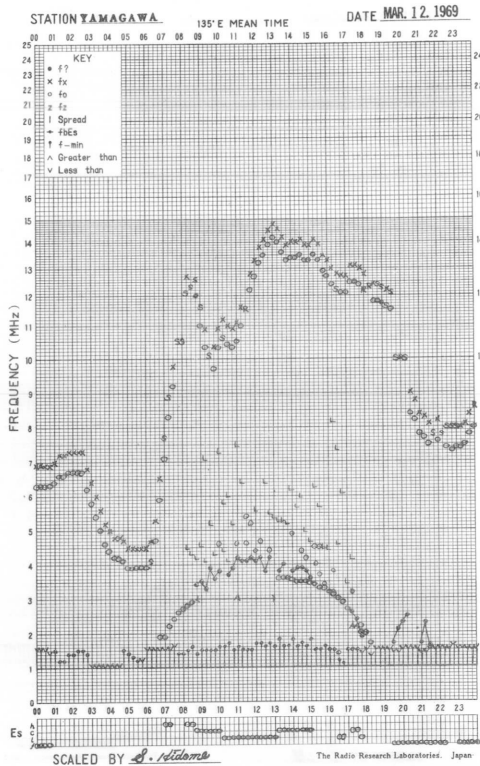
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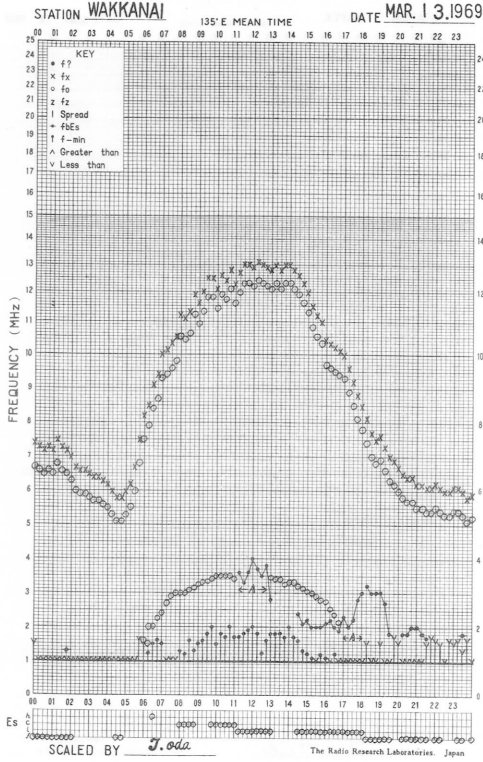
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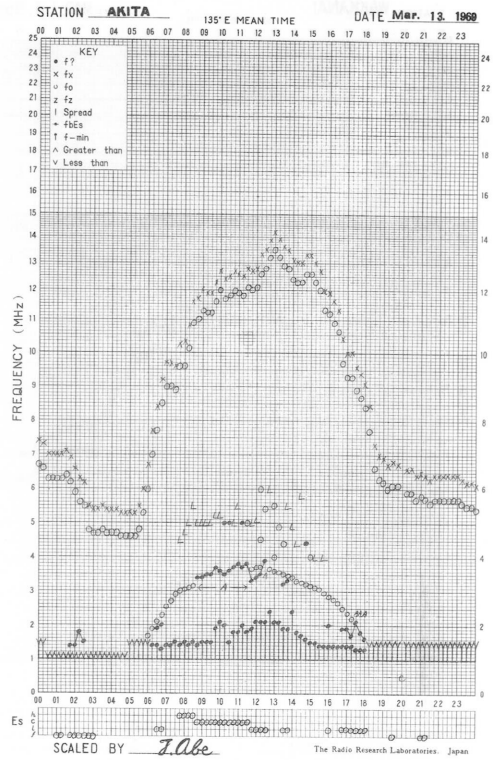
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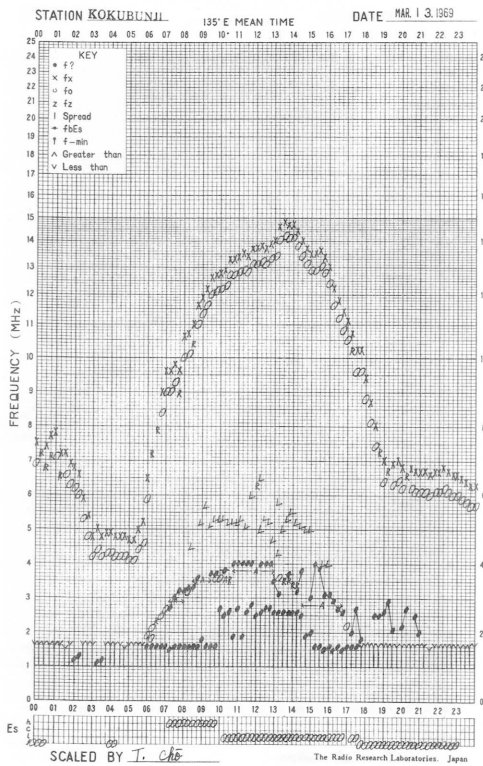
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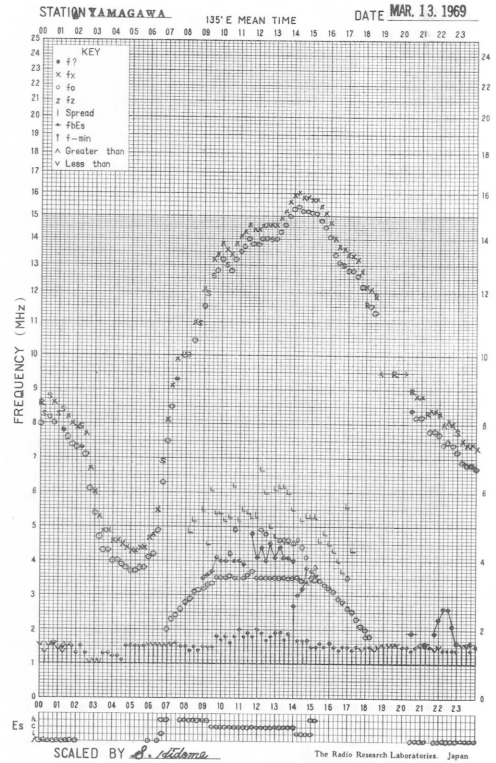
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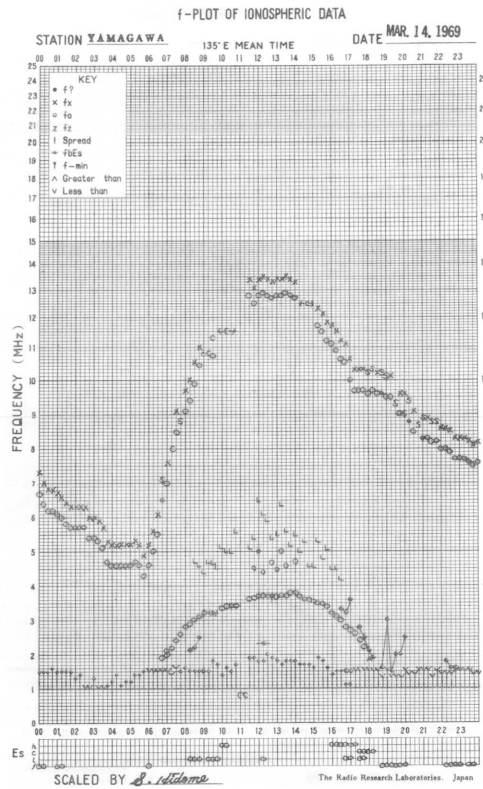
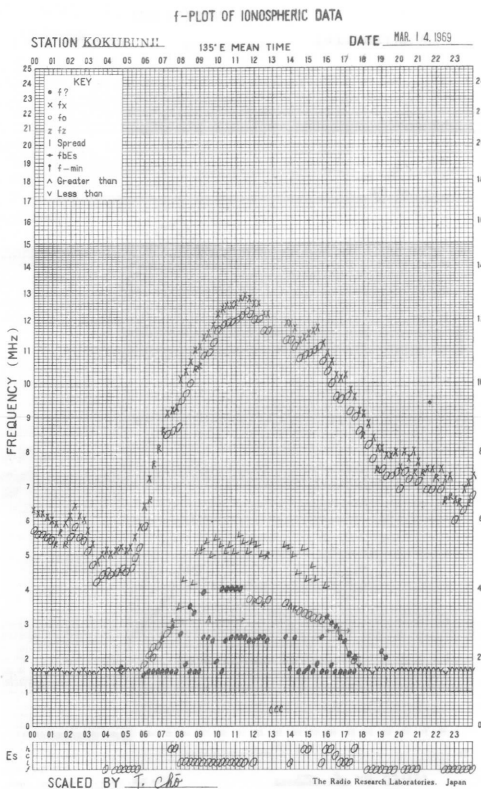
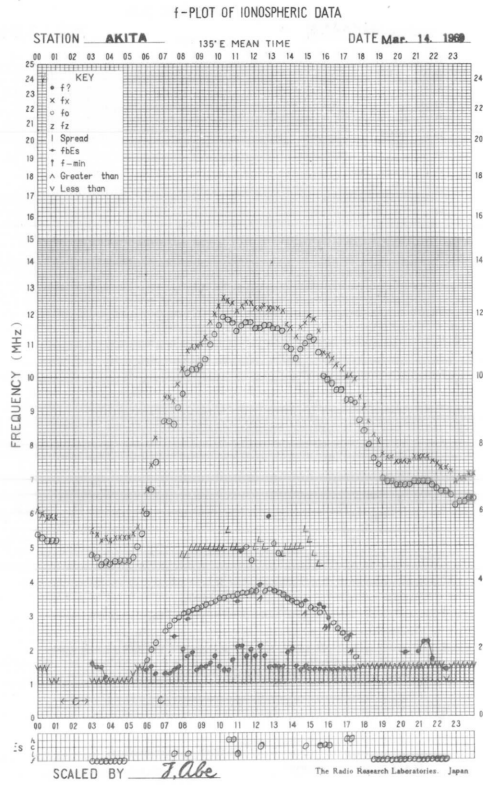
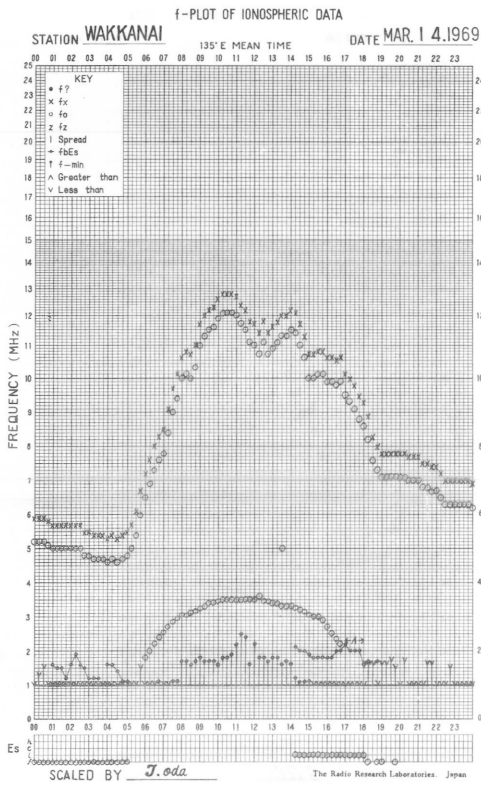


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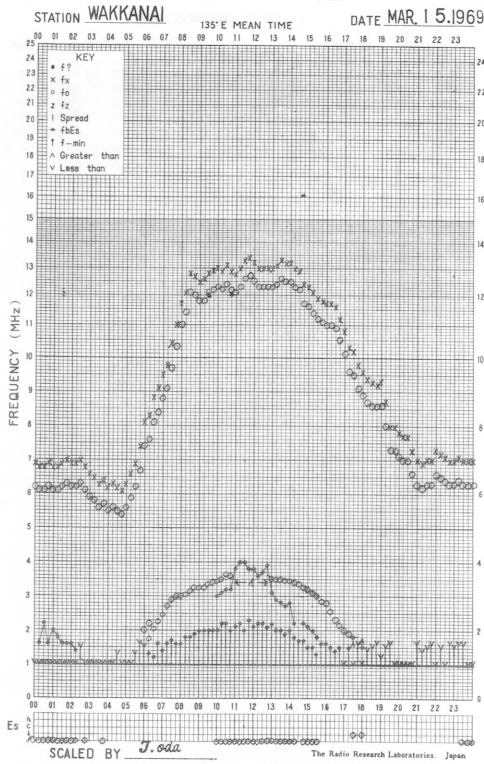


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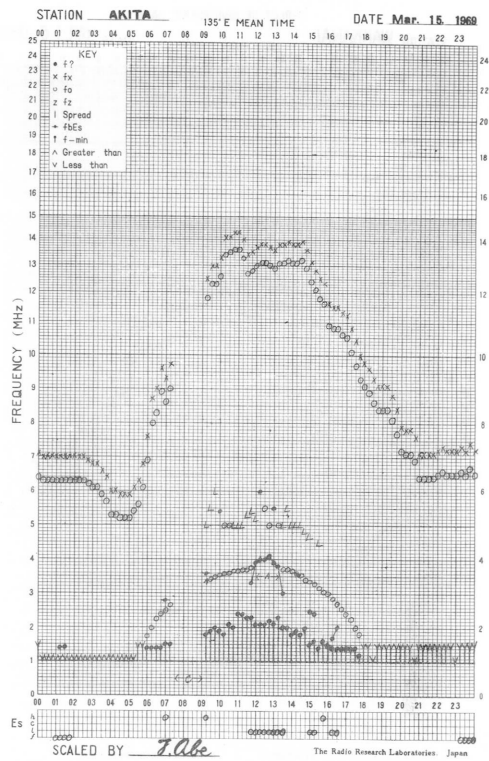




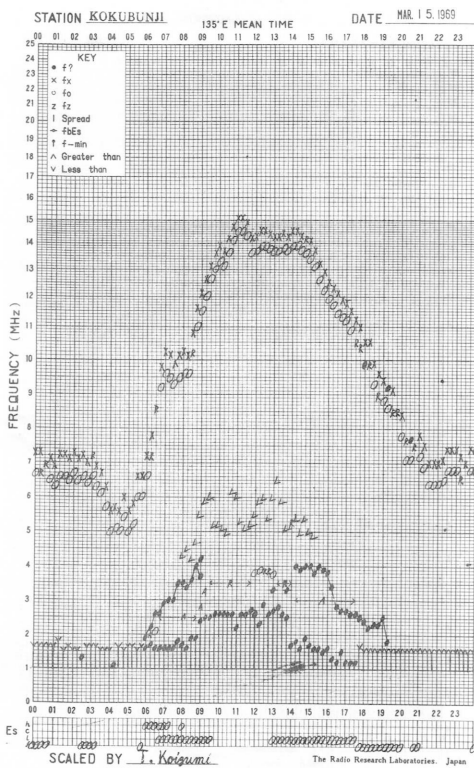
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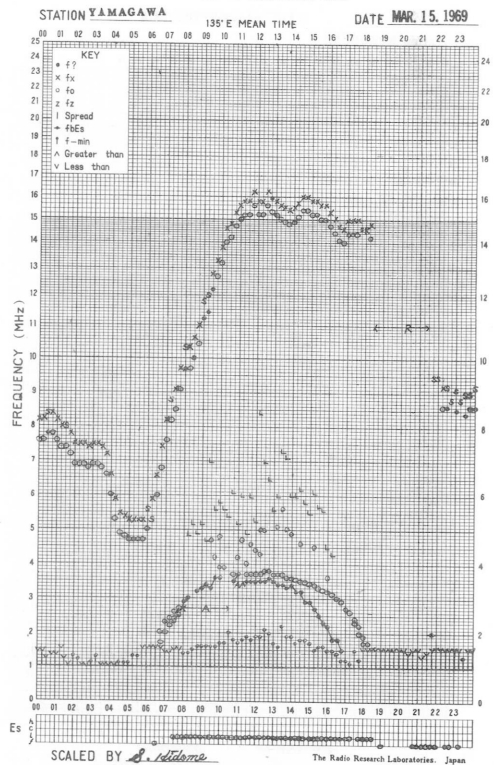
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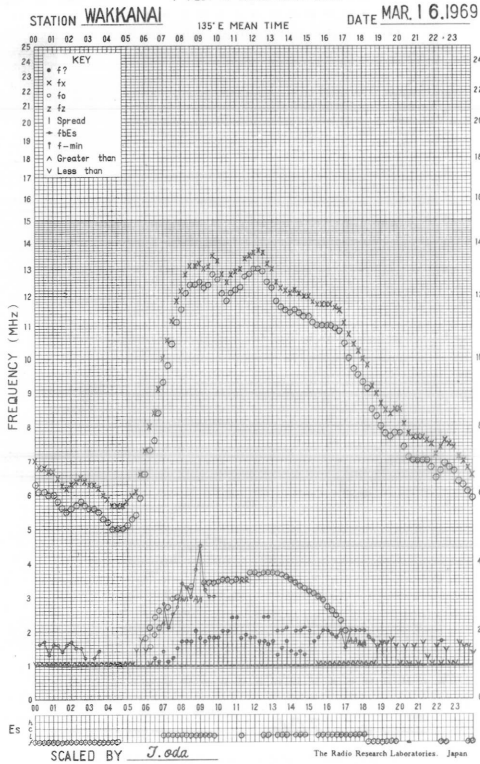
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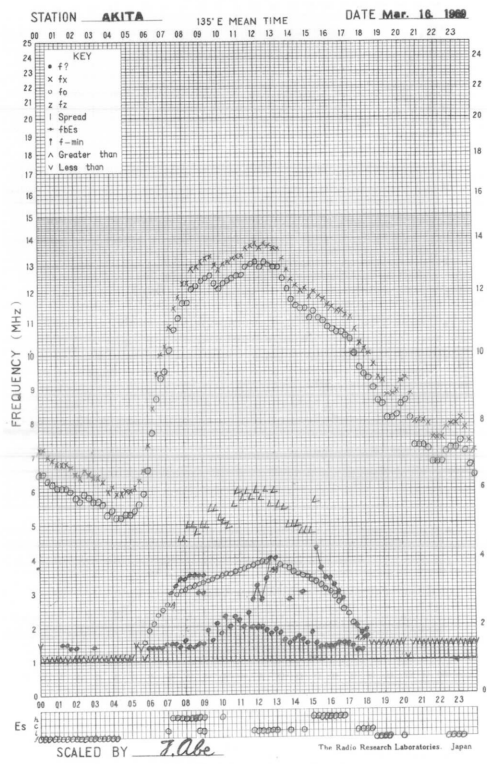
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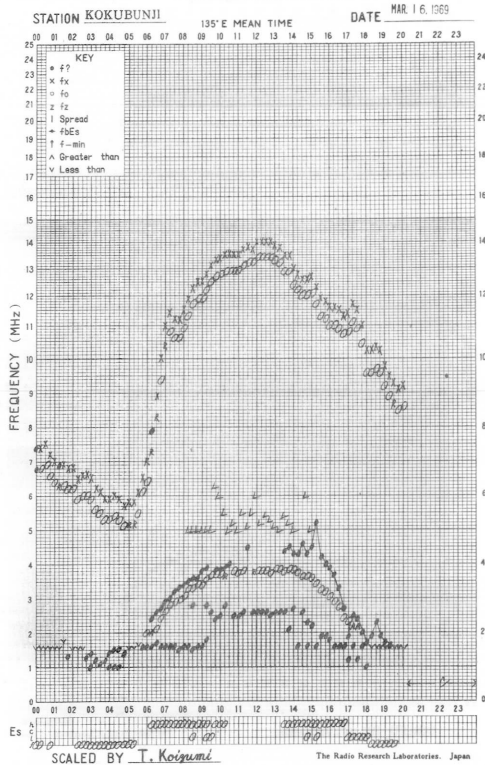
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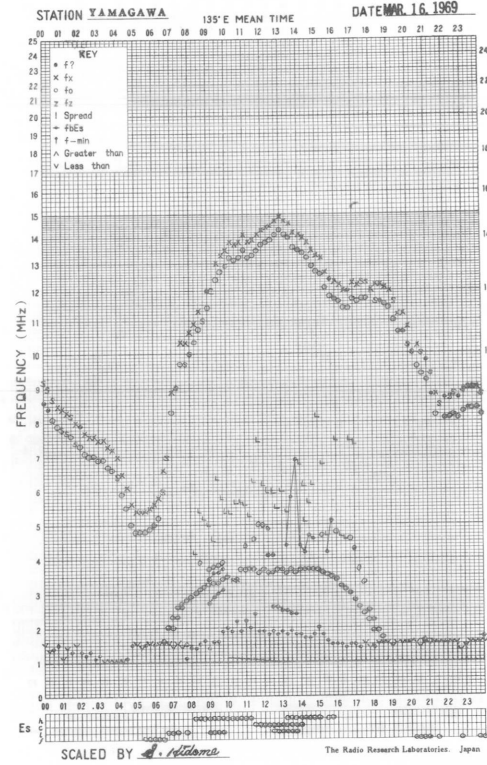
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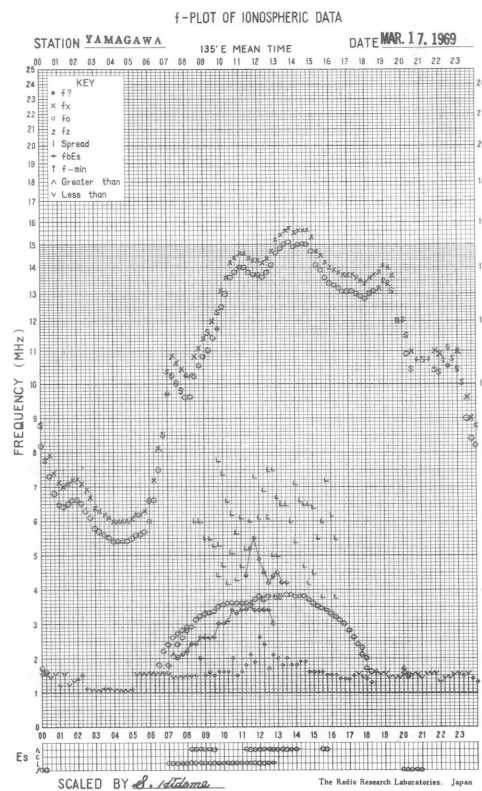
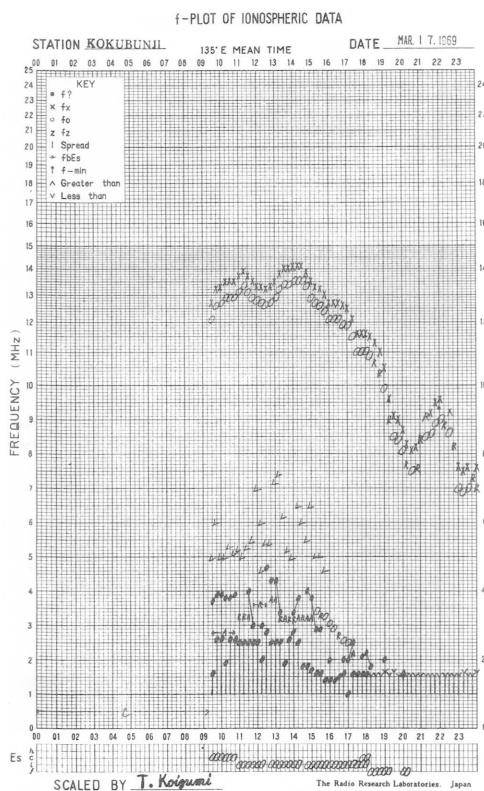
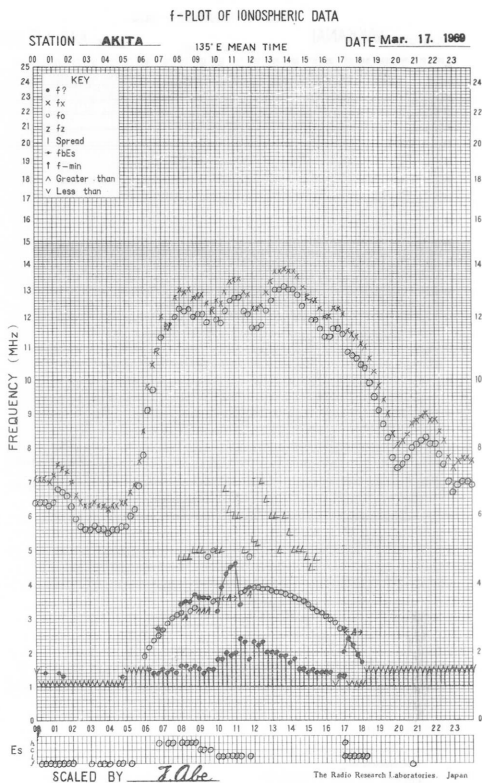
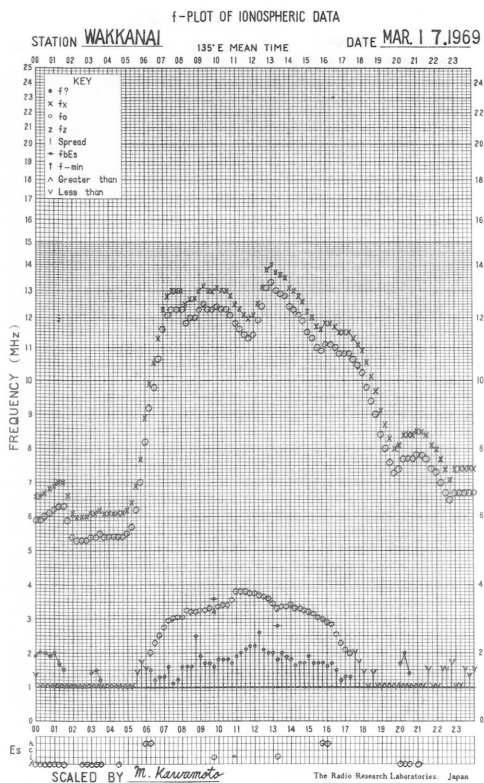


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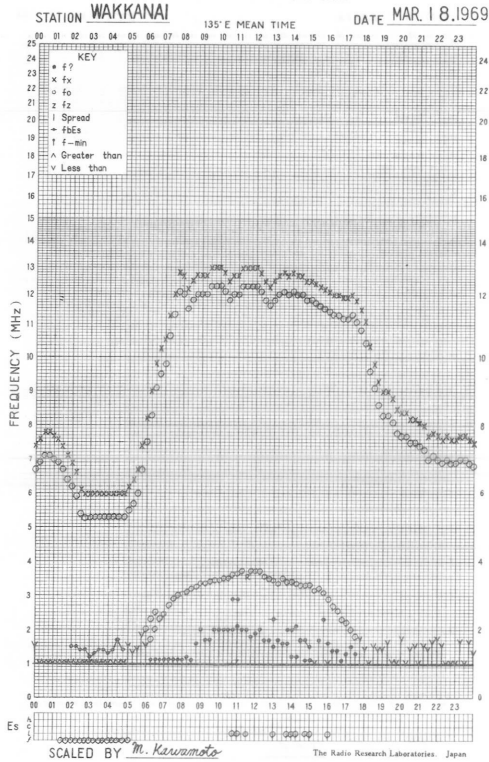


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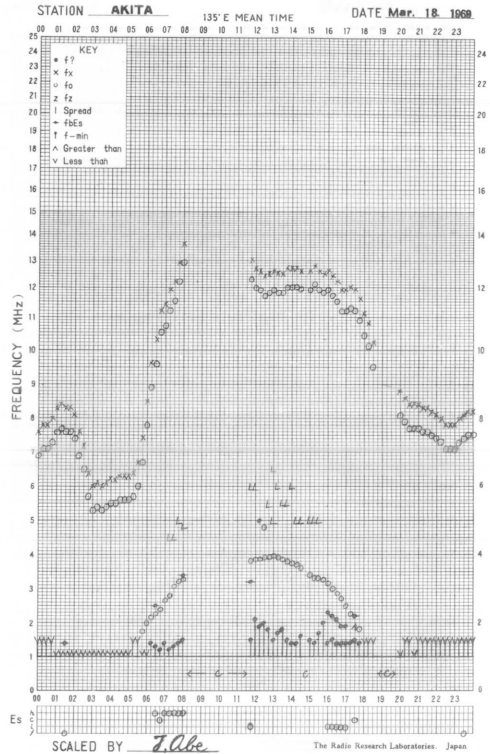




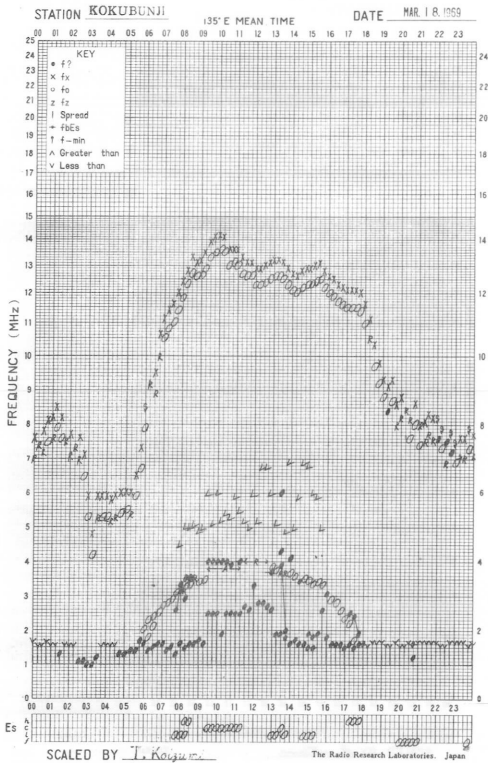
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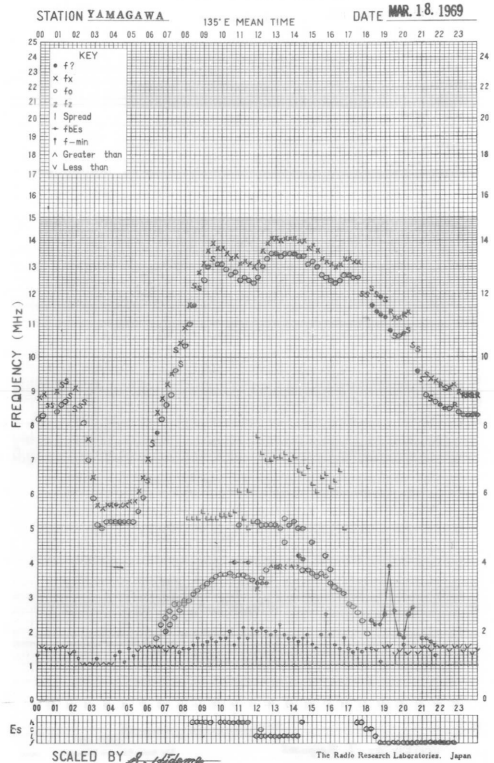
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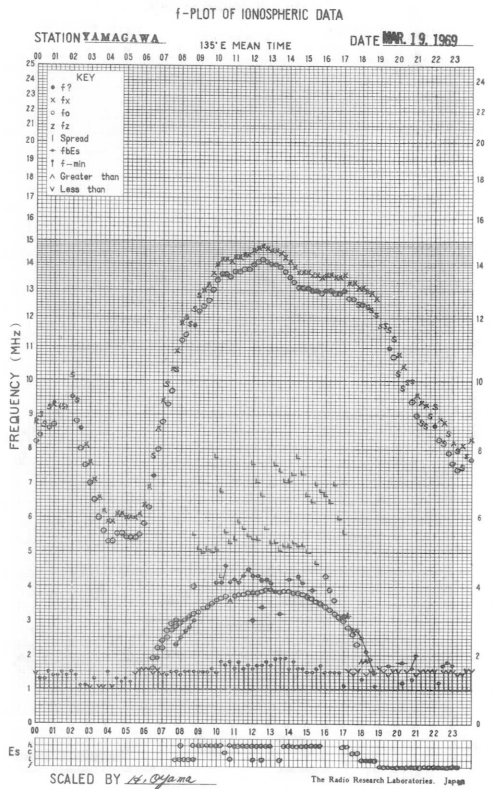
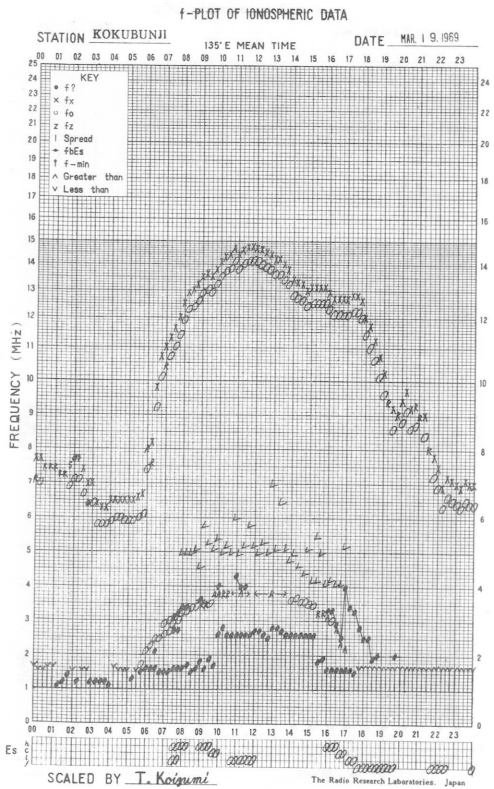
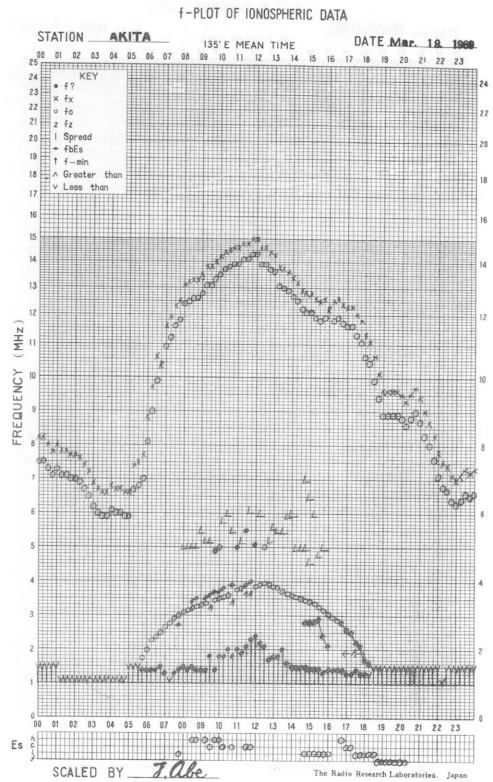
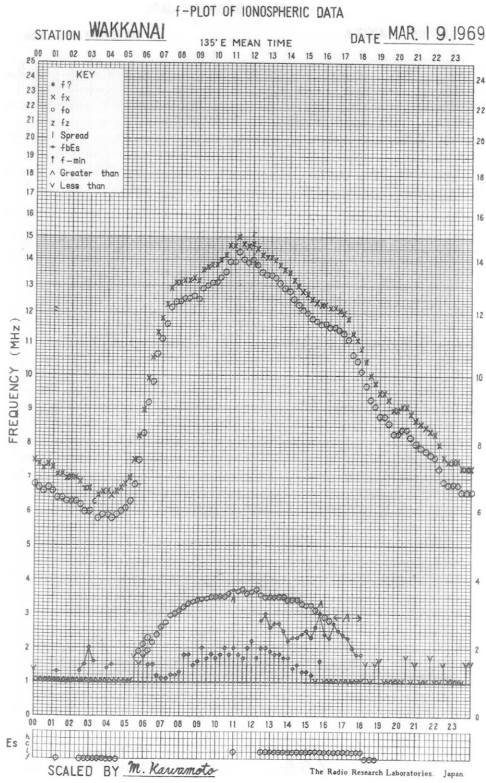


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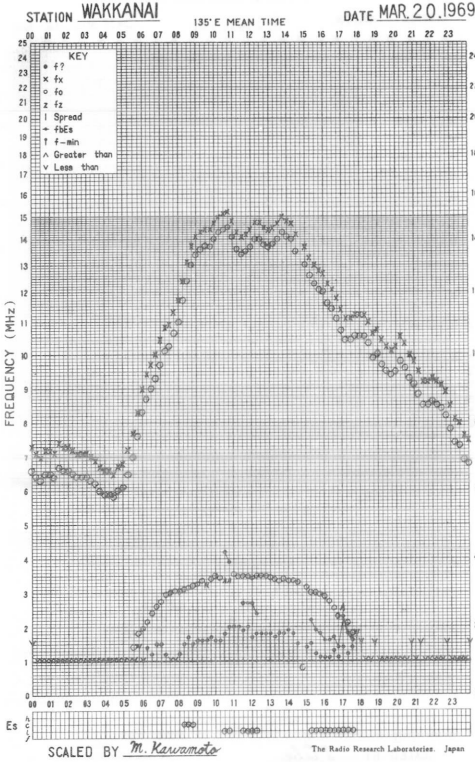


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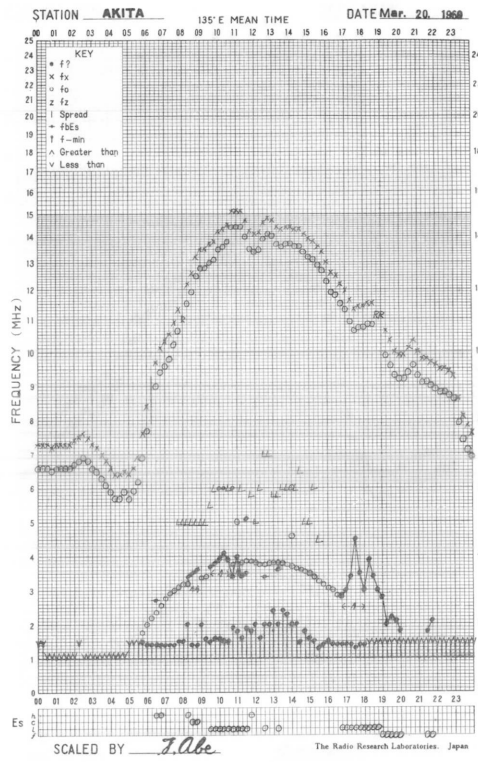




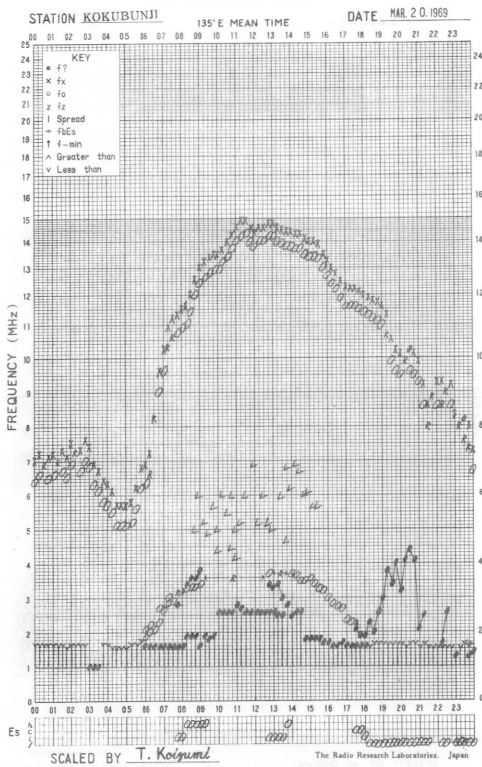
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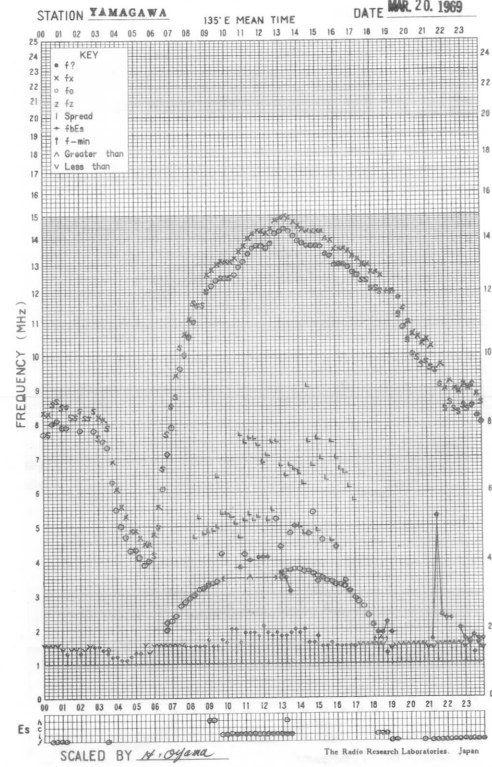
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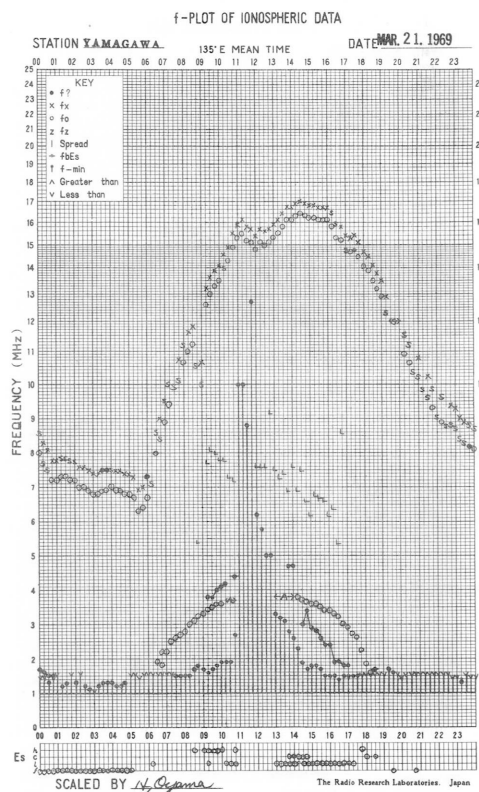
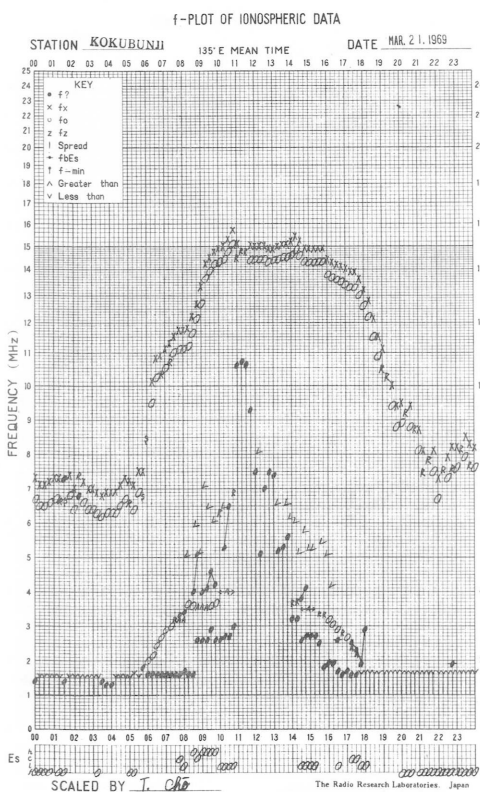
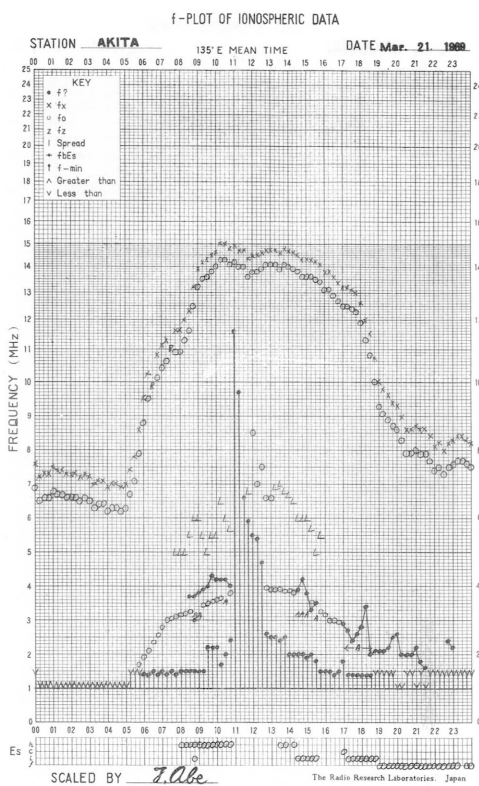
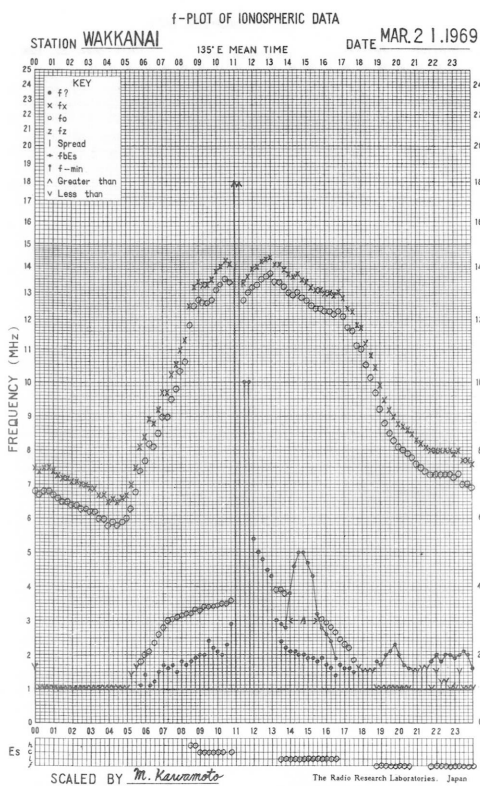


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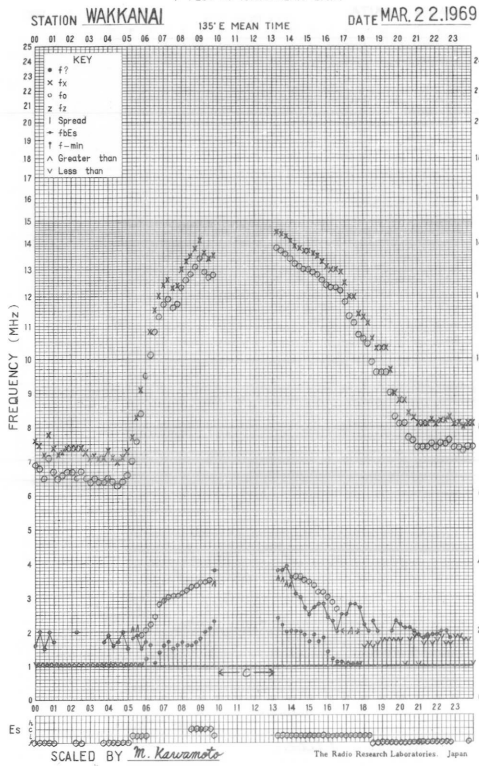


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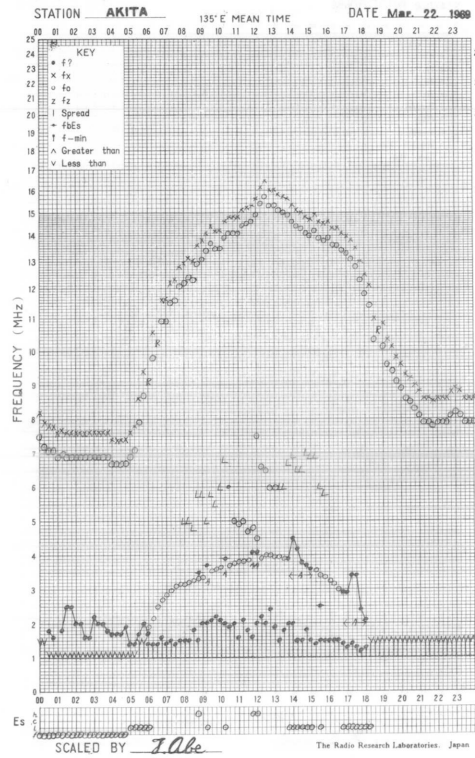




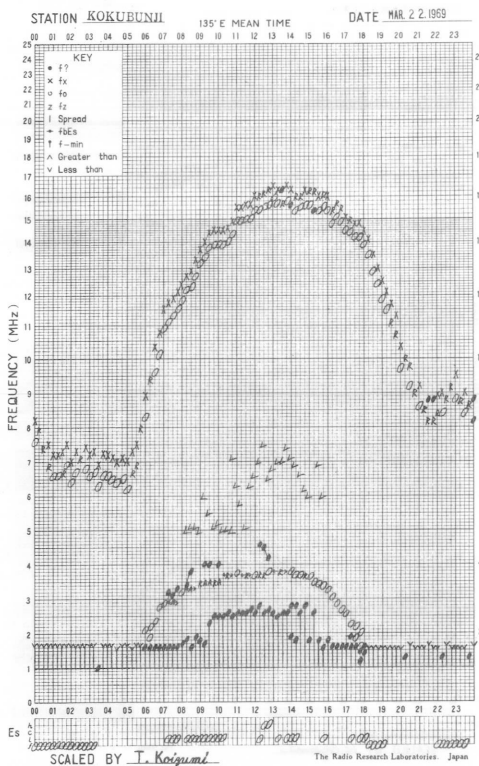
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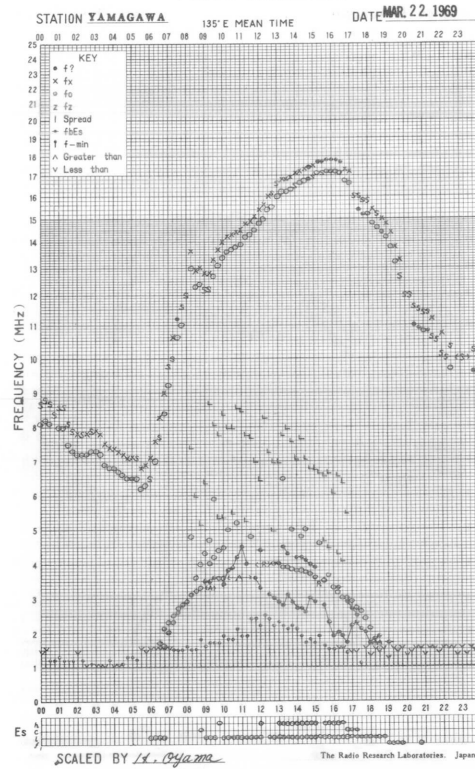
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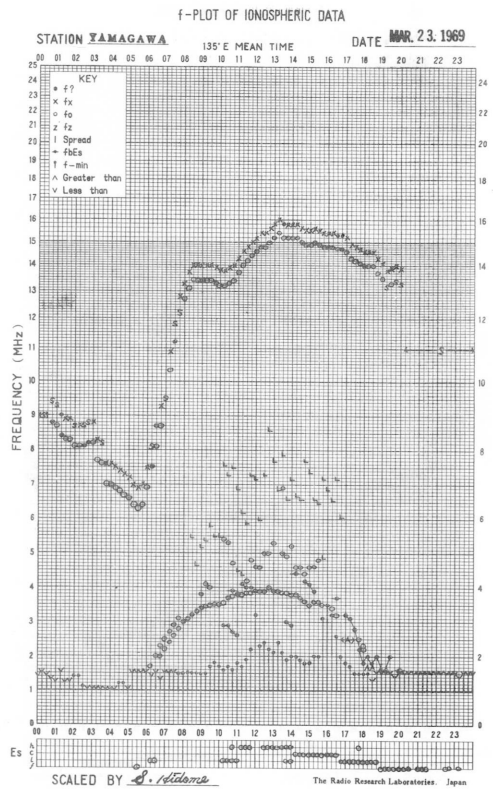
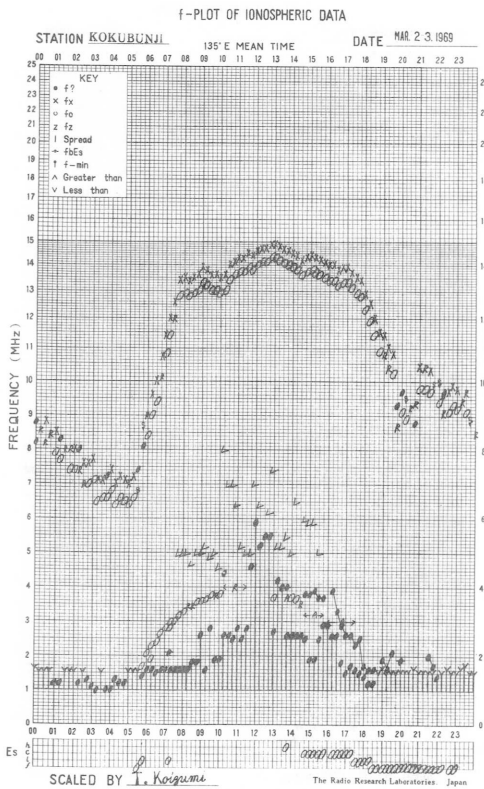
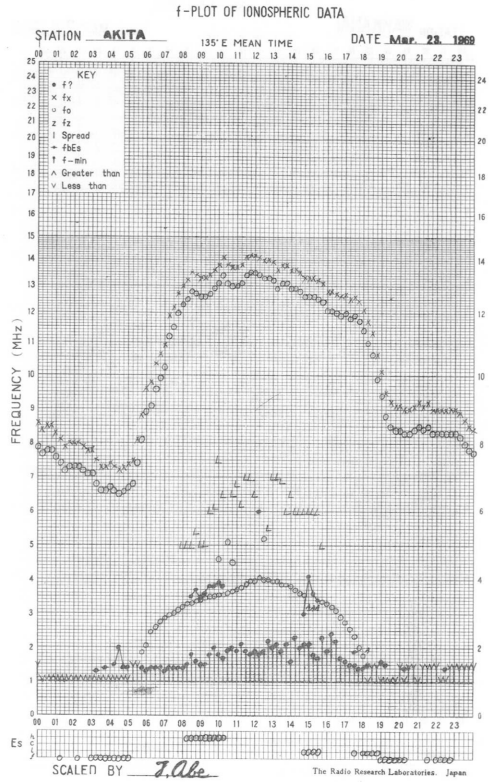
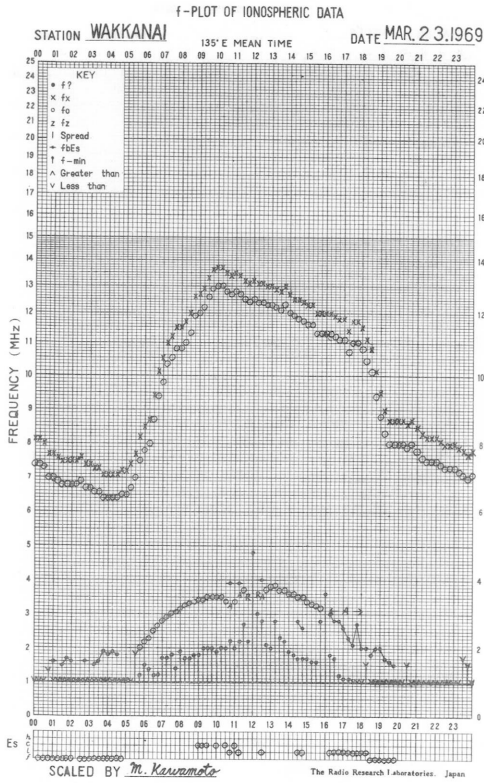


f-PLOT OF IONOSPHERIC DATA

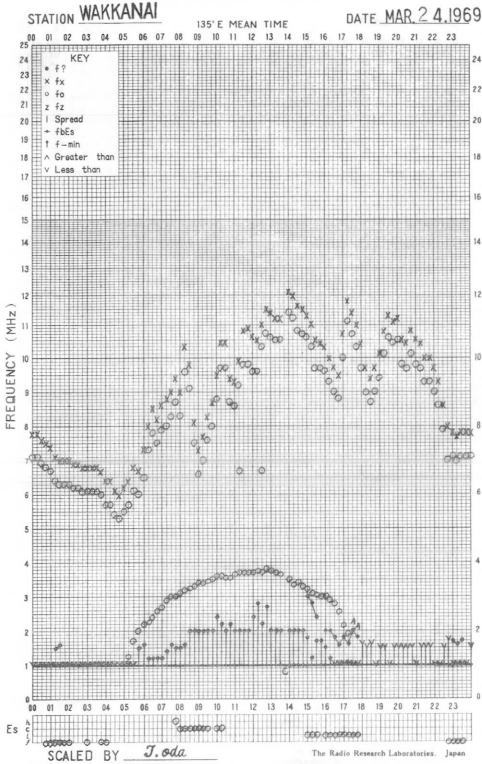


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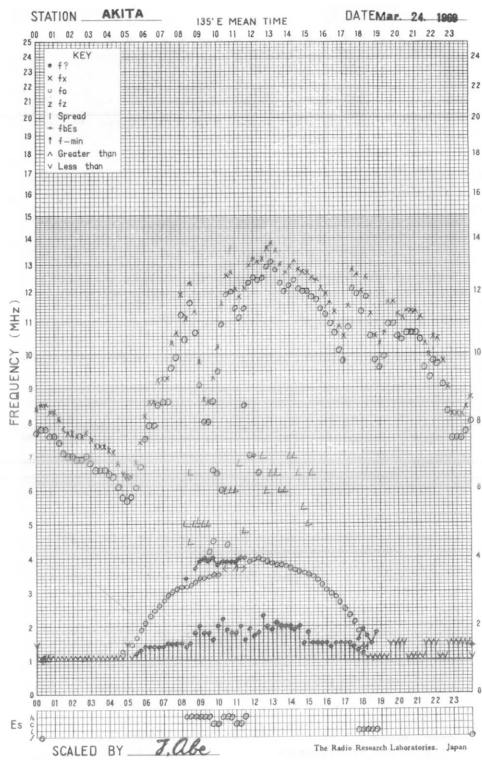




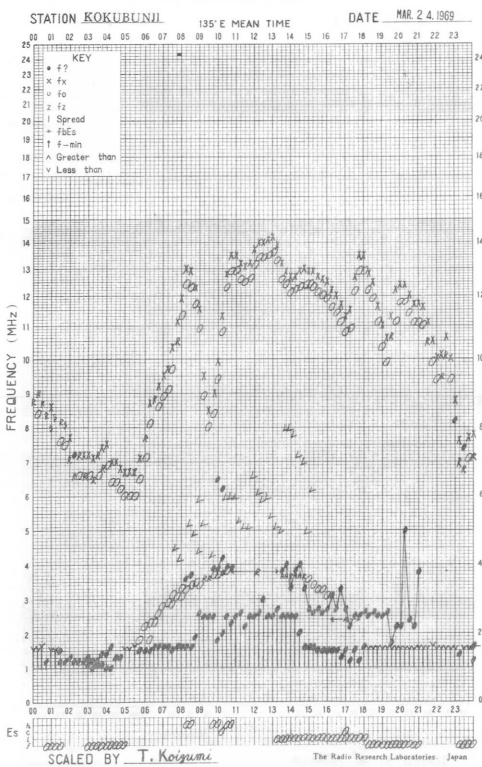
f-PLOT OF IONOSPHERIC DATA



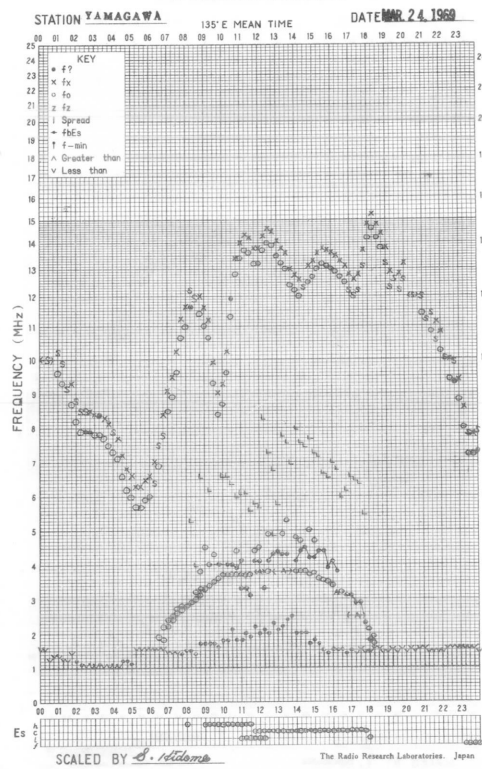
f-PLOT OF IONOSPHERIC DATA

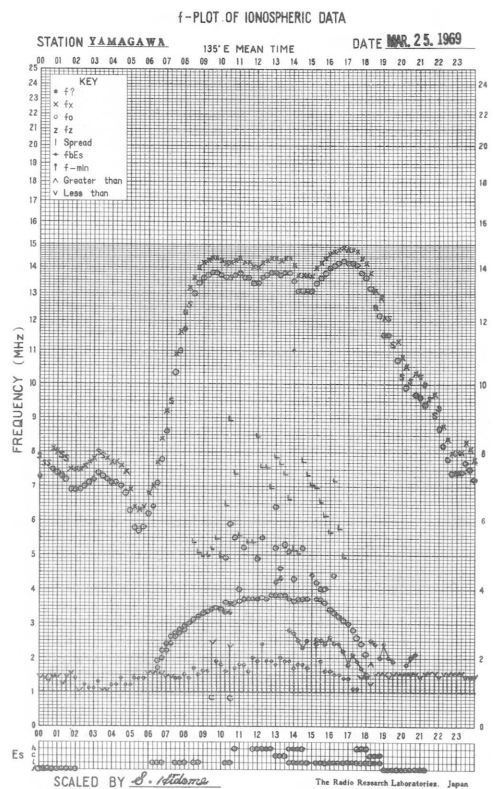
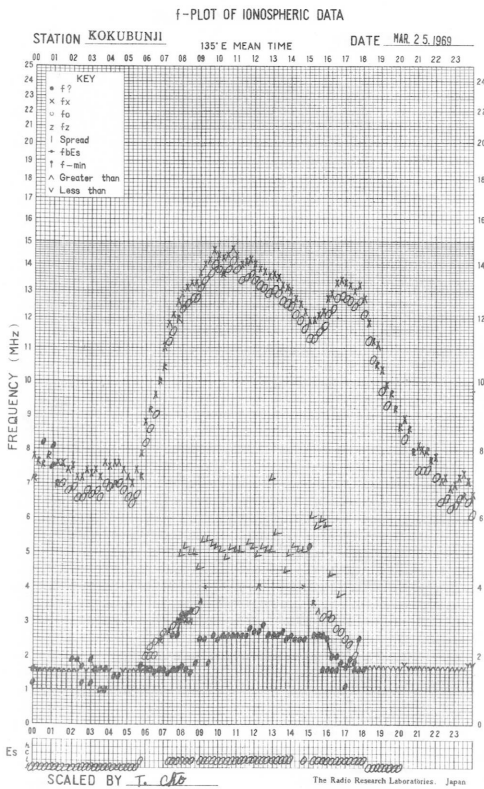
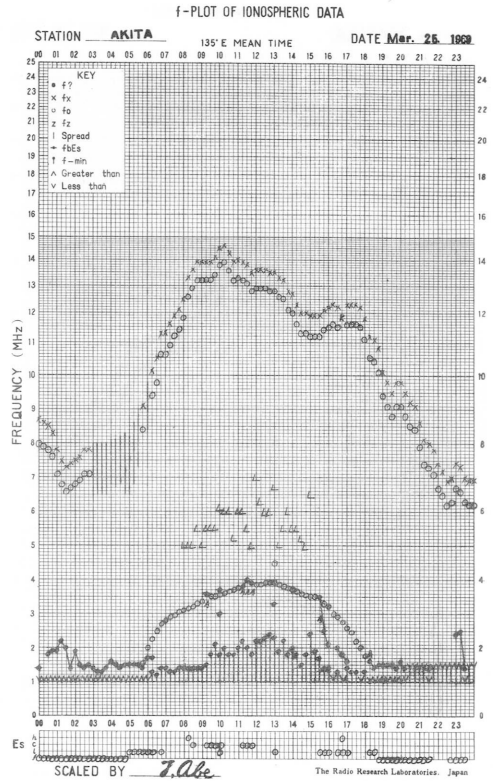
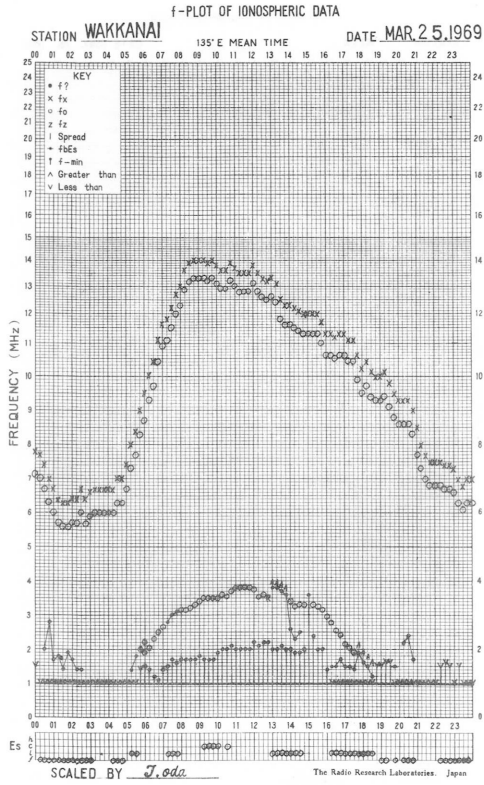


f-PLOT OF IONOSPHERIC DATA

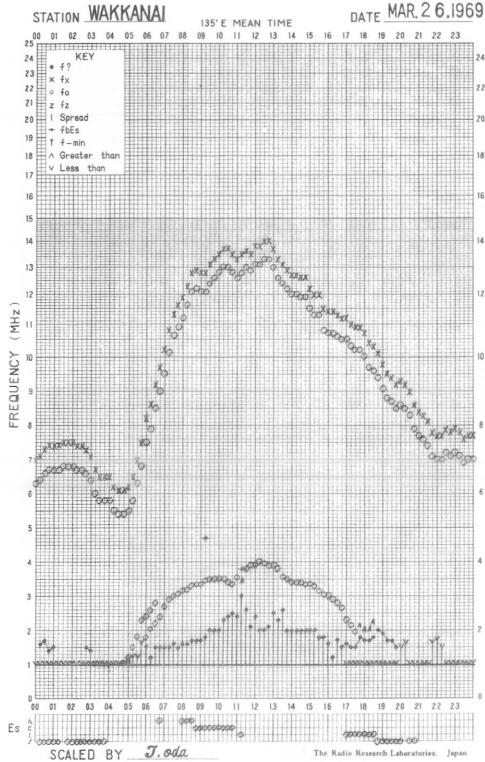


f-PLOT OF IONOSPHERIC DATA

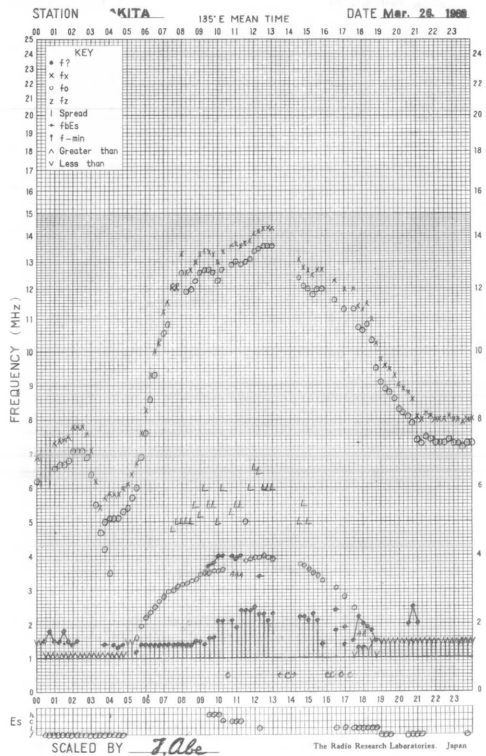




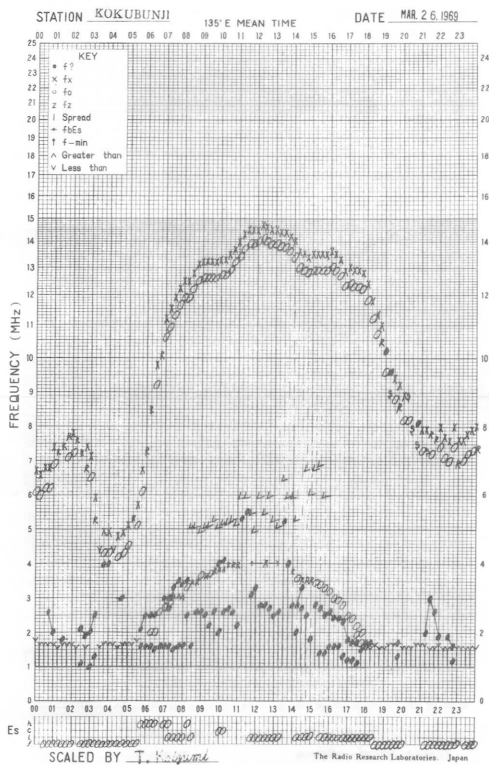
f-PLOT OF IONOSPHERIC DATA



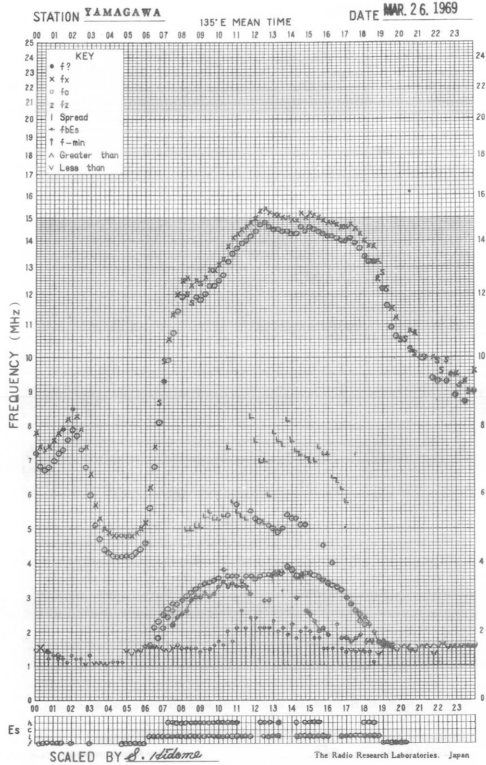
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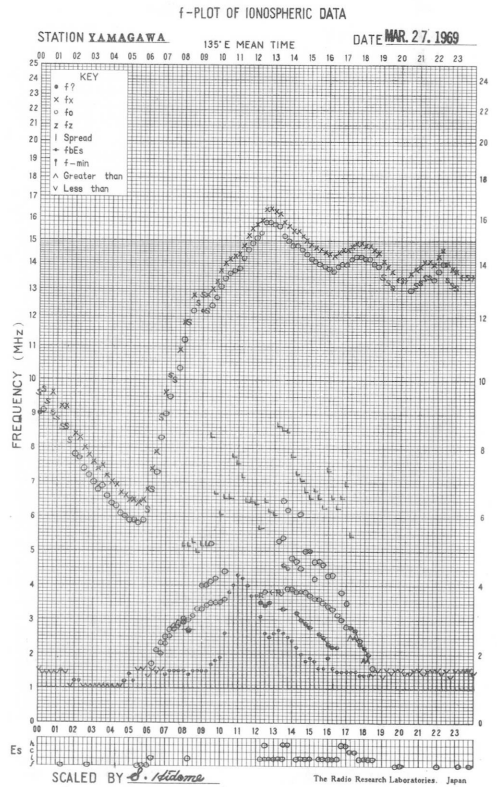
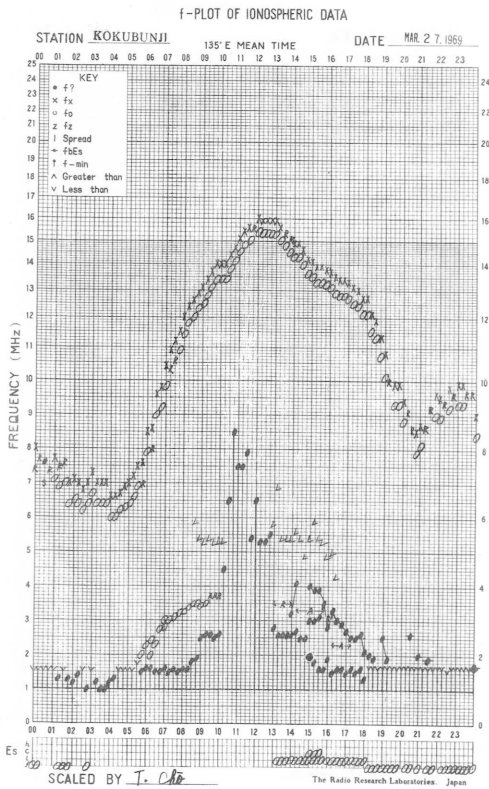
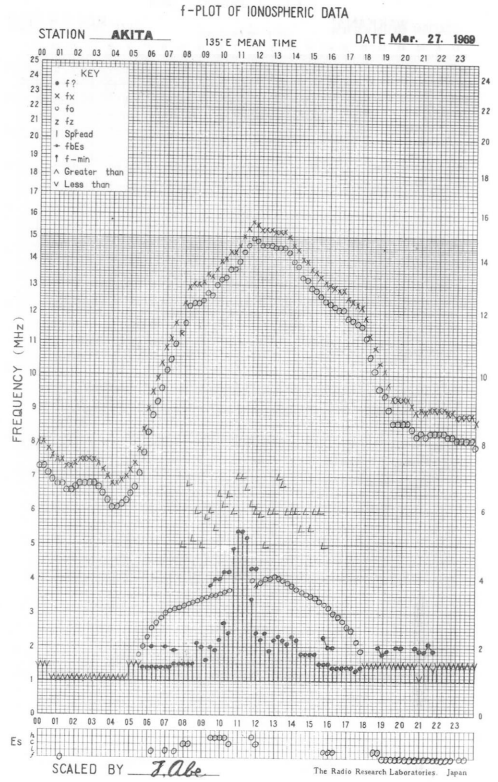
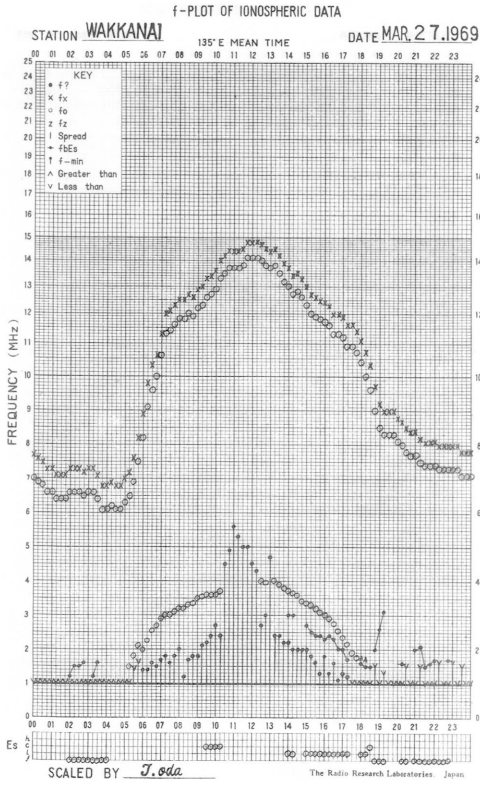


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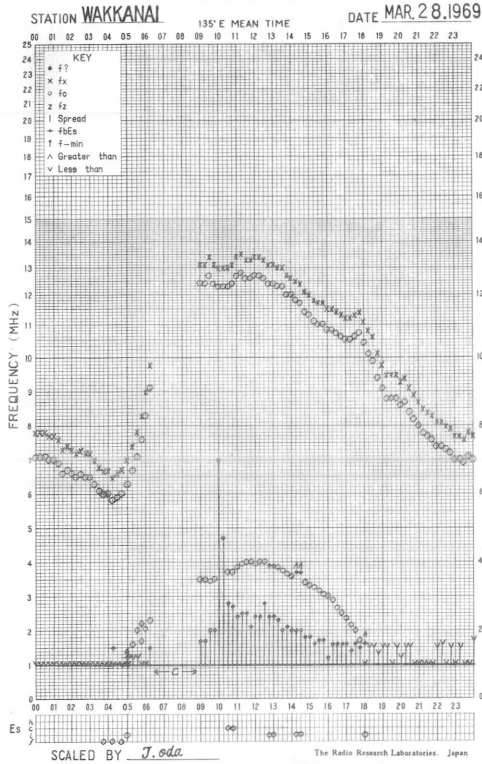


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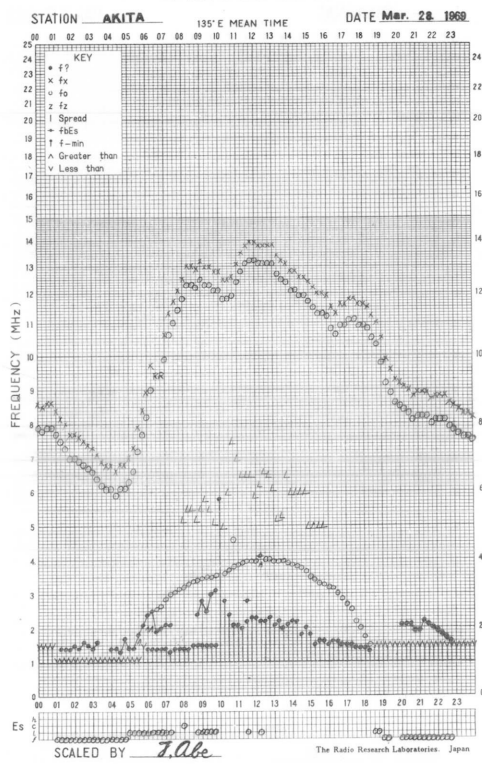




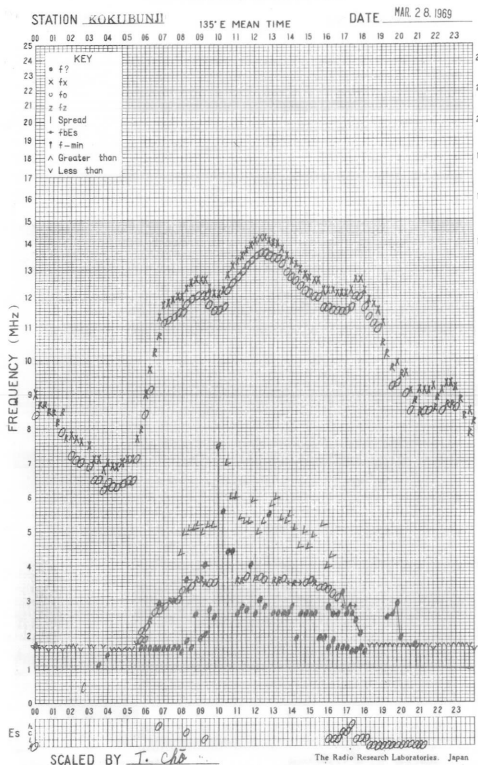
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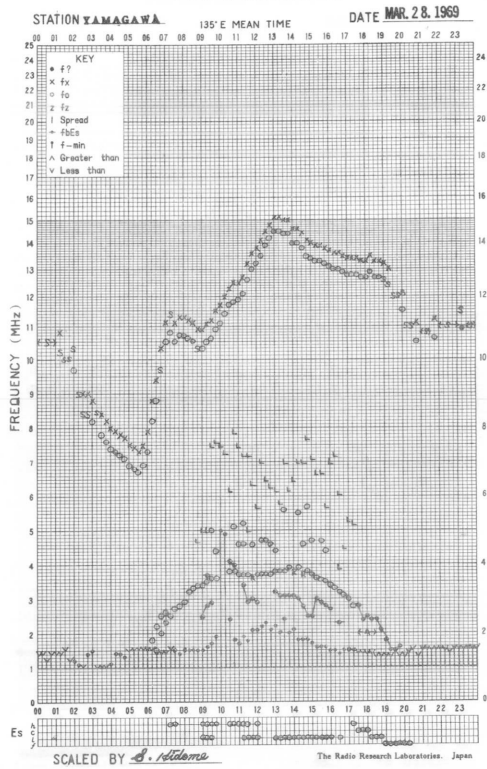
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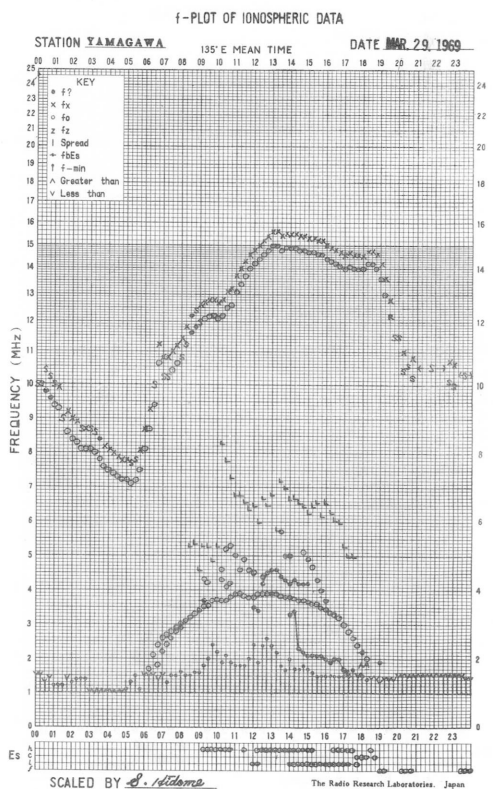
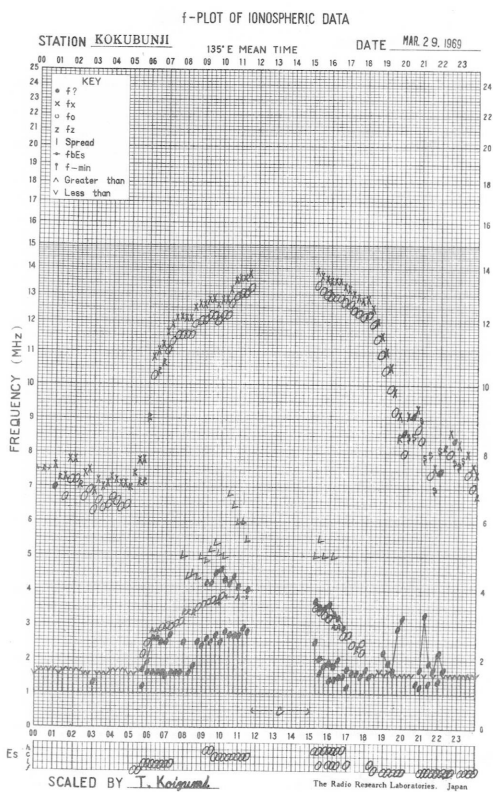
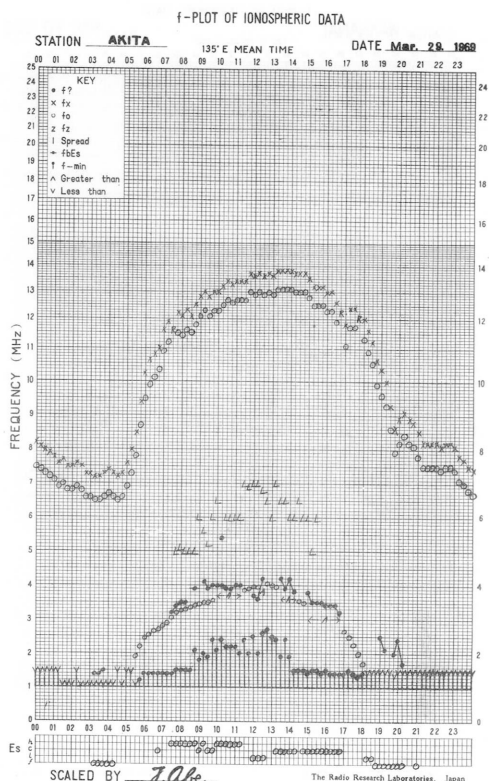
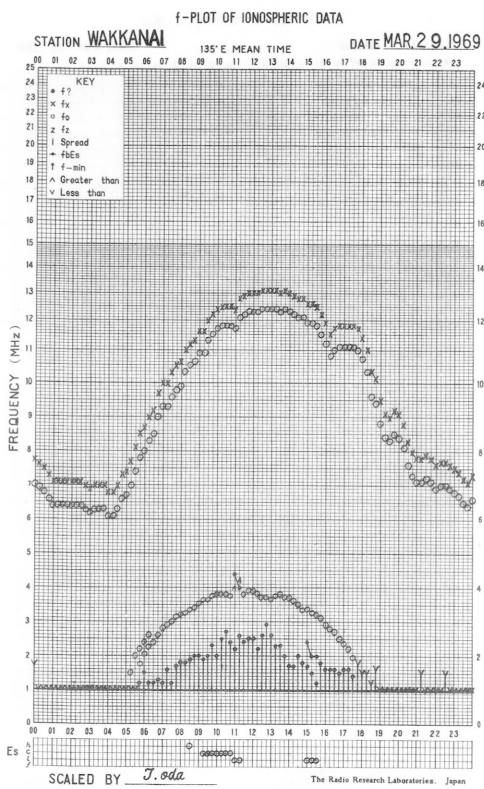


f-PLOT OF IONOSPHERIC DATA

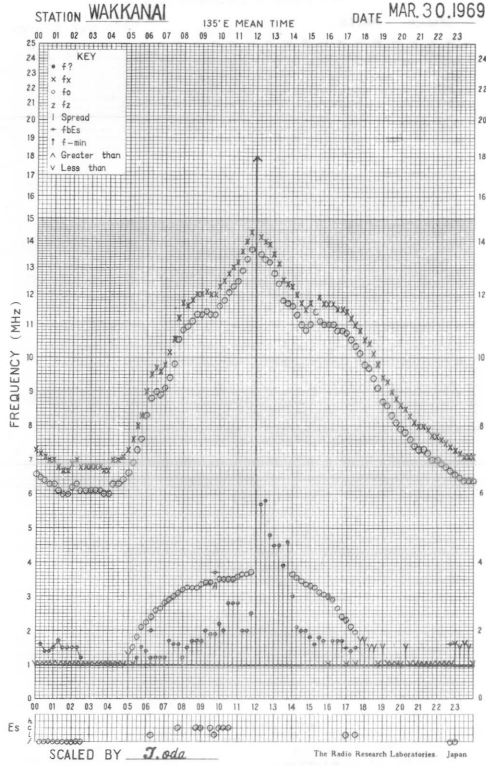


f-PLOT OF IONOSPHERIC DATA

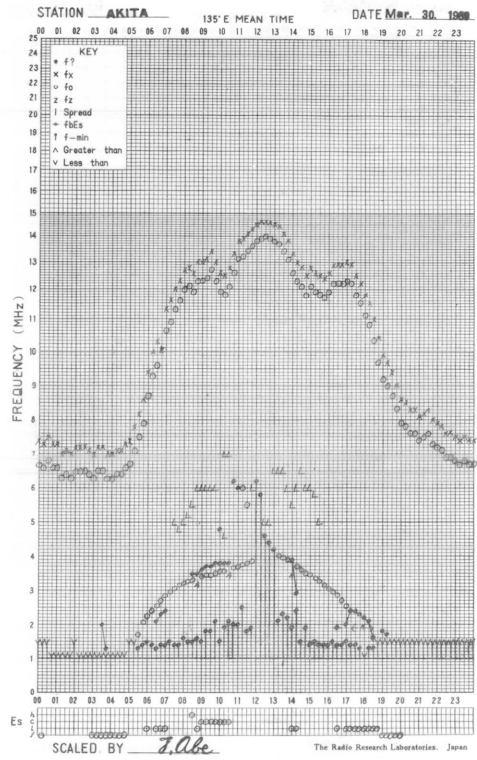




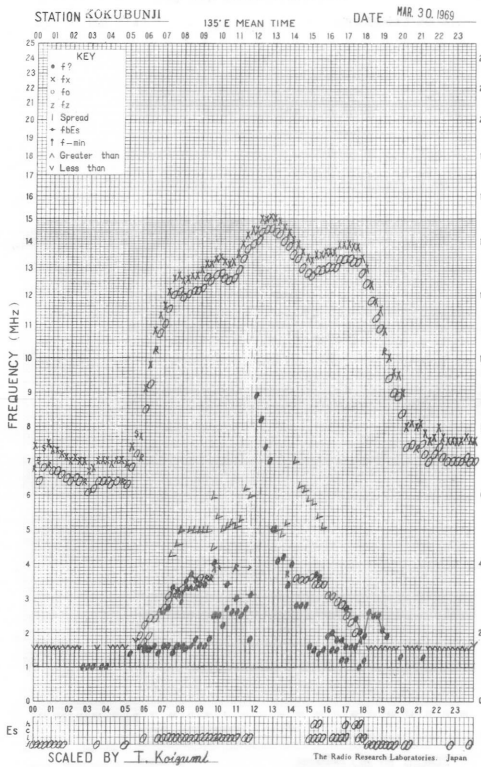
f-PLOT OF IONOSPHERIC DATA



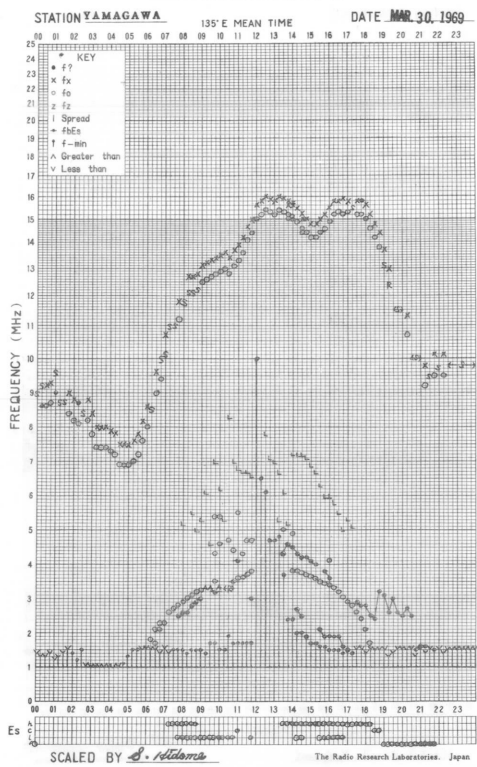
f-PLOT OF IONOSPHERIC DATA

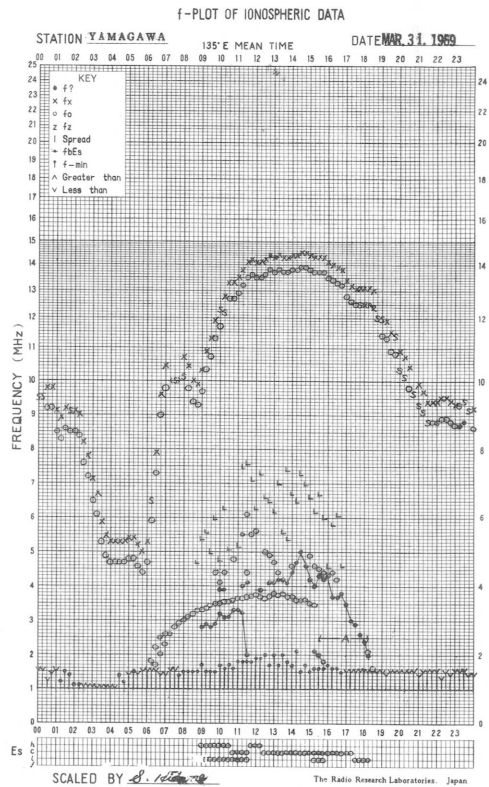
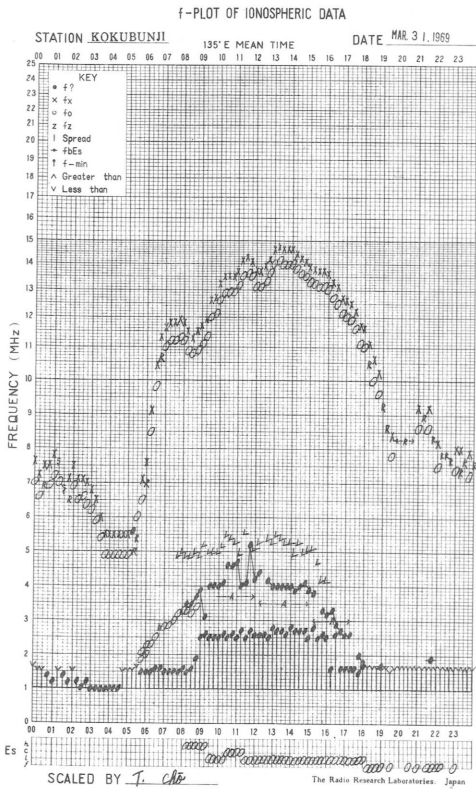
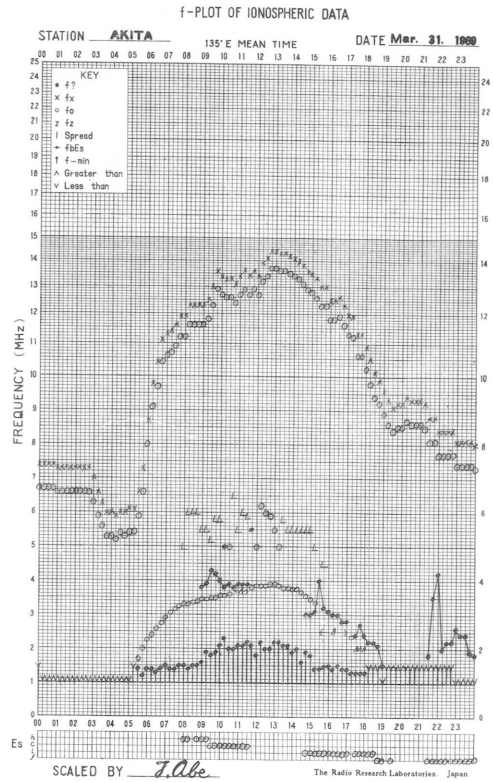
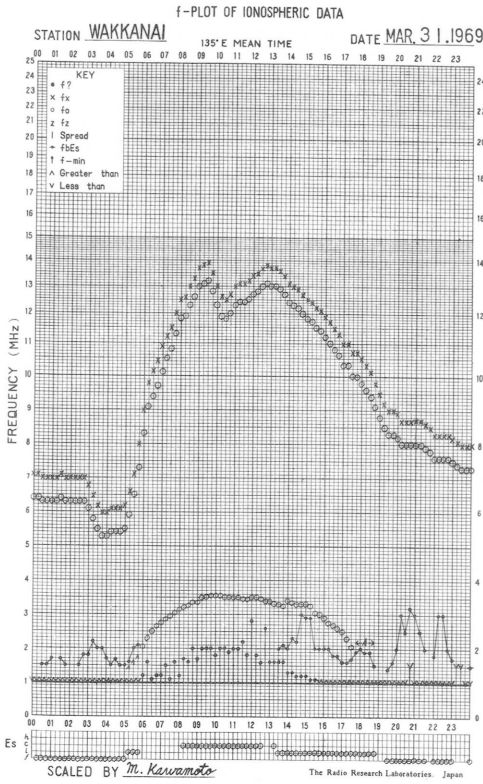


f-PLOT OF IONOSPHERIC DATA



f-PLOT OF IONOSPHERIC DATA





SOLAR RADIO EMISSION

<u>Flux Density and Variability</u>										
Month: March 1969						Frequency: 200 MHz				
Flux density $10^{-22} W_m^{-2} (Hz)^{-1}$						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	6	6	8	6	7	1	1	1	1	1
2	5	5	5	5	5	0	0	1	1	0
3	5	5	6	6	5	0	0	0	0	0
4	7	8	7	6	7	0	0	0	0	0
5	7	7	(7)	6	6	0	0	(1)	1	0
6	5	6	6	(6)	6	0	0	0	(0)	0
7	6	6	6	6	6	0	0	1	1	0
8	7	6	6	7	6	1	0	0	1	1
9	6	6	6	8	6	1	1	1	1	1
10	8	8	8	7	8	1	1	1	1	1
11	8	8	7	(7)	7	1	1	1	(1)	1
12	-	-	-	-	(7)	-	-	-	-	(1)
13	(8)	7	7	6	7	(0)	0	0	1	0
14	7	7	6	6	7	0	0	0	0	0
15	6	6	7	6	6	0	0	0	0	0
16	6	7	6	6	6	0	1	1	1	1
17	7	7	7	6	7	0	1	*	1	1
18	7	7	7	9	7	1	1	1	1	1
19	7	6	6	15	7	1	0	1	1	1
20	13	17	(15)	18	15	1	2	(1)	2	1
21	22	23	26	11	22	2	2	2	1	2
22	14	11	10	10	12	2	1	1	1	1
23	9	12	10	9	10	1	1	2	1	1
24	8	9	9	11	8	1	1	1	1	1
25	9	8	8	10	9	1	0	1	1	1
26	9	9	9	7	9	1	0	1	1	1
27	12	6	8	7	9	2	1	1	1	1
28	6	7	6	6	7	1	1	1	0	1
29	6	7	8	13	6	1	1	1	2	1
30	13	10	8	7	11	2	2	1	0	2
31	7	7	7	7	7	0	1	1	0	1

Note No observations during the following periods:

5th	0700-	0840	20th	0700-	0800
6th	2300-	2400	27th	0700-	0730
12th	0000-	13th 0125	31st	0140-	0300

* : interference by atmospheric.

SOLAR RADIO EMISSION

<u>Flux Density</u>					
Month: March 1969					
Observing station: Hiraiso			Frequency: 500 MHz		
Flux density $10^{-22} \text{ Wm}^{-2} (\text{Hz})^{-1}$					
UT	00-03	03-06	06-09	21-24	Day
Date					
1	35	33	31	30	33
2	34	35	31	-	33
3	q	q	q	-	q
4	38	34	(34)	-	35
5	(36)	(33)	33	34	(34)
6	34	34	33	-	34
7	(36)	39	38	31	38
8	38	37	-	36	36
9	35	37	37	33	36
10	34	35	35	32	34
11	37	38	39	32	36
12	-	-	-	-	(32)
13	41	37	40	34	39
14	39	38	(36)	34	37
15	36	35	36	-	36
16	38	37	36	33	37
17	34	37	(33)	37	35
18	39	39	37	36	38
19	38	39	38	36	37
20	38	44	41	40	40
21	42	46	44	36	43
22	41	42	42	35	40
23	42	43	42	36	40
24	39	37	36	36	37
25	36	36	36	33	36
26	34	34	35	35	34
27	35	35	36	34	35
28	37	38	38	34	37
29	36	36	37	32	35
30	33	36	34	31	34
31	33	32	33	31	32

Note No observations during the following periods:

2nd 2050-	3rd 0100	8th 0500-	0840
3rd 2050-	4th 0130	11th 2359-	13th 0100
4th 0700-	5th 0200	14th 0700-	0800
5th 0400-	0600	15th 2050-	16th 0025
6th 2050-	7th 0200	17th 0715-	0800
7th 2245-	2345	31st 0500-	0600

"q" means quiet level, when radiometer is unstable.

<u>Distinctive Events</u>								
(single-frequency observations)								
Month: March 1969								
Observing station: Hiraiso								
Normal observing period: 2050 - 0840 (sunrise to sunset)								
Date	Frequency MHz	Starting time	Time of maximum	Duration	Type	Flux density $10^{-22} \text{ Wm}^{-2} (\text{Hz})^{-1}$		Remarks
		UT	UT	minutes		peak	mean	
1	500	2141.8	2143.2	> 1.5	C	2240	1200	*
	200	2142.0	2145.5	8.0	C	390	50	
2	500	0253.0	0254.4	3.0	C	150	30	
	200	0256.0	0257.0	3.5	C	50	15	
3	200	2221.0	2223.0	6.5	C	1110	40	
8	200	2206.0	2207.0	1.5	C	580	200	
9	200	0451.5	0454.0	3.0	C	180	10	
	500	0454.0	0454.3	1.0	C	145	45	
16	500	2337.0	2337.5	10.0	C	60	7	**
	200	2337.8	2338.6	1.5	C	> 1240	> 200	
17	200	2340.0	2340.6	3.0	C	190	45	
18	200	0626.0	0630.5	6.0	C	1200	50	
	500	0628.5	0634.5	11.0	C	185	20	
19	200	2227.5	2227.7	1.0	C	490	100	
21	200	0100.0	0149.0	155.0	C	380	35	
	500	0115.0	0224.5	138.0	C	1380	145	
	500	0821.0	0821.9	3.5	C	1180	500	
	500	2334.3	2335.3	3.5	C	225	30	
22	500	0310.0	0312.0	4.5	C	275	17	
	500	0643.0	0645.6	15.0	C	395	13	
	200	0643.0	0648 ?	10.0	C	1460	440	
23	500	0508.0	0521.8	123.0	C	160	20	
	200	0630.0	0655.5	88.0	C	260	80	
27	500	0030	-	170	RF	-	15	
		0400	-	145	RF	-	5	
29	200	0227.0	0231.8	6.0	C	440	10	
	500	0231.0	0231.1	2.0	C	165	15	
30	500	0248.0	0248.5	67.0	C	1920	180	
	200	0248.0	0253.5	30.0	C	740	150	

*: last part missing

**: 2339.0 to 2340.0 missing.

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

MAR 1969		FREQUENCY 15 MHz															BANDWIDTH 80 HZ			RECEIVING ANTENNA ROD 4.5 M										MEASURED AT HIRAISSO			
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	9	5	8	10	12	16	4	ES -7	ES -4	ES -1	ES -5	ES -22	ES -14	ES -7	ES -3	-5	-3	7	4	-20	-11	4	-3	4									
2	7	6	7	8	18	18	24	20	3	2	ES -5	ES -2	-8	-8	9	10	ES -17	10	10	-16	4	4	6	6									
3	6	6	8	13	13	20	12	-4	-5	-9	ES -5	ES 9	C	C	C	C	C	C	C	C	C	C	C	C									
4	9	9	12	11	19	3	ES -10	ES -9	ES -13	ES -2	ES -9	ES -25	ES -11	ES -8	-3	-3	-6	15	11	3	9	8	8	8									
5	6	7	9	14	14	24	25	21	8	2	-3	ES 1	ES -15	ES -10	5	1	6	-6	10	-5	2	6	7	8									
6	8	9	12	14	17	21	21	0	ES 3	ES -3	ES -3	ES 14	-10	-11	-2	19	6	.13	-8	-10	3	7	4	7									
7	8	8	11	11	17	20	10	-4	-2	-3	ES -8	ES -5	-10	-11	-2	-2	S	12	11	ES -32	2	13	12	9									
8	8	8	12	10	19	19	-6	S	-3	-10	ES -6	ES -27	ES -15	ES -13	9	3	8	14	10	0	4	7	9	6									
9	6	8	10	15	19	20	-2	-5	ES 4	ES -6	ES -7	ES -17	ES -17	ES -16	9	-1	9	19	-8	ES -32	-1	9	10	10									
10	9	9	13	12	23	27	18	-3	-5	ES 1	ES -14	ES -30	ES -21	ES -6	0	-3	-1	19	1	-22	4	7	9	9									
11	9	9	11	14	19	17	-2	ES -7	ES -10	ES -6	ES -5	11	10	13	10	13	5	11	9	ES -33	5	8	11	8									
12	C	C	C	C	C	C	C	16	0	C	3	9	4	C	0	9	-2	15	ES -32	ES -32	-8	7	7	9									
13	10	13	12	14	14	25	ES -3	ES 0	ES -1	ES 1	ES 3	ES -13	ES -6	ES -13	14	3	-3	7	-3	ES -31	-3	5	3	-2									
14	3	11	6	10	13	18	ES -13	ES -9	ES -8	ES 3	ES -7	ES -10	ES -7	ES -2	7	5	3	9	8	1	-2	6	4	-4									
15	2	6	9	12	15	24	-1	-4	ES 4	ES -1	4	-1	7	C	C	C	C	C	C	-1	1	6	4	6									
16	3	2	2	14	-2	ES -7	ES -11	ES -7	ES -7	-2	3	13	7	ES -7	6	8	-5	14	3	ES -12	3	-5	-2	2									
17	0	6	3	2	13	7	-7	-2	ES 18	ES 3	ES -8	ES -8	ES -5	ES -3	7	-2	-1	7	ES -30	ES -30	6	8	0	5									
18	0	1	6	16	0	-5	-9	-9	-15	ES -1	1	13	5	ES 9	4	8	4	16	9	ES -33	-3	0	-3	3									
19	-5	-1	7	4	13	15	4	-5	ES -6	ES -2	-6	ES 14	-5	-5	5	6	4	9	8	4	-4	-4	-3	-6									
20	-1	3	3	-2	7	23	1	-1	-5	-4	-1	18	8	10	17	-2	15	11	ES -23	ES -23	ES 3	-1	-7	ES 7									
21	-7	-3	ES -23	ES -23	2	9	-8	ES -5	-2	3	3	11	ES 3	13	7	2	8	10	11	5	ES -2	-8	-7	ES 4									
22	-5	-1	4	6	10	11	14	16	S	ES 0	0	ES 6	-3	ES 9	10	4	4	17	ES 8	2	ES 0	-6	-5	ES -1									
23	-3	-1	2	1	12	22	14	-8	-7	ES -2	ES -8	ES 8	ES -1	5	5	3	14	11	4	-7	-3	-2	-3	-1									
24	-3	3	-3	-10	-1	0	2	6	3	4	1	ES 14	-1	5	1	-2	0	0	15	4	6	-2	-5	ES -4									
25	-5	0	-3	14	S	9	-13	-16	ES -15	ES 0	ES -6	C	ES -5	ES -10	0	12	15	15	C	-10	-4	1	1	ES 2									
26	-9	ES -12	ES -23	ES -17	ES -8	-8	ES -18	ES -11	ES -5	ES -3	ES -10	ES 2	ES 2	-9	5	3	10	6	-3	ES -8	ES -4	-3	S	ES -3									
27	-9	ES -23	ES -33	-7	8	16	19	-7	ES 1	ES 1	-5	ES 8	-6	ES 11	-1	2	5	7	7	ES -10	0	-1	-1	3									
28	-3	ES -20	4	8	11	18	17	-5	-6	3	-2	ES 10	C	C	C	C	C	C	C	C	C	C	C	C									
29	C	C	C	C	C	C	C	-4	1	11	11	7	18	22	9	0	20	11	C	C	C	C	3	-2									
30	ES -22	ES -28	ES -28	ES -34	4	10	-7	-3	-6	4	3	ES 7	ES 3	4	9	9	4	3	-1	C	C	-7	-11	ES 0									
31	ES -9	-2	4	-3	-4	9	16	16	0	1	-1	ES 2	-3	8	12	3	8	9	7	-14	ES -9	-4	-8	ES -4									
CNT	29	29	29	29	28	29	29	30	30	30	31	30	29	27	28	28	27	28	26	27	27	28	28	29									
MED	2	5	6	10	13	17	1	US -4	ES -4	ES 0	US -5	ES 6	ES -5	ES -5	6	3	4	11	US 7	US -10	US 0	4	2	US 4									
UD	9	9	12	14	19	24	21	16	ES 4	4	3	ES 14	8	13	12	12	15	17	11	4	6	8	10	9									
LD	-9	ES -20	ES -23	ES -17	-2	-5	ES -13	ES -9	ES -13	ES -6	ES -9	ES -25	ES -15	ES -13	-2	-3	-5	3	ES -23	ES -32	ES -8	-6	-7	ES -4									

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

MAR 1969	FREQUENCY 15 MHZ BANDWIDTH 80 HZ RECEIVING ANTENNA ROD 4.5 M																							MEASURED AT HIRAISSO				
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	ES -4	-1	2	2	14	19	24	19	18	26	23	9	3	ES -3	ES -4	ES -9	ES -9	-1	ES -32	-14	4	ES -32	-4	ES 4				
2	-2	2	7	9	16	20	27	22	24	24	15	9	2	ES -5	ES -9	-3	10	ES -9	ES -12	-16	8	2	1	1				
3	ES -5	-3	5	3	15	16	24	28	22	15	5	12	C	C	C	C	C	C	C	C	C	C	C	C				
4	1	-2	2	11	12	18	20	27	14	13	ES 2	0	-3	ES -5	ES -8	ES -8	ES -8	.1	-9	8	4	6	2	-2				
5	1	1	1	7	17	18	21	22	27	21	8	20	-1	ES -7	ES -12	ES -8	ES -7	-14	ES -7	-1	7	7	0	-3				
6	0	1	3	9	12	16	23	23	29	13	13	22	-9	ES -9	ES -7	ES -14	ES -10	ES -22	ES -33	-8	8	5	-6	-2				
7	-2	-3	-2	8	13	19	15	18	12	11	19	30	2	ES -11	ES -14	ES -3	ES -14	13	14	-1	8	9	3	-3				
8	-7	-6	0	8	10	13	11	23	4	-2	-3	-3	8	5	ES -7	ES -11	-9	-15	-15	4	6	7	3	-1				
9	-5	-1	3	8	14	17	19	23	25	19	10	-5	-2	ES -16	ES -4	ES -7	ES -14	ES -14	-22	-1	8	4	-5	3				
10	-1	-3	5	3	9	19	20	16	23	18	S	-4	14	ES -4	ES -7	ES -8	ES -22	ES -14	ES -32	1	0	2	-3	-1				
11	-3	-2	3	7	13	16	18	18	16	24	1	13	-6	-4	ES -8	ES -7	ES 1	24	ES -33	-12	-11	-10	ES -16	ES -9				
12	C	C	C	C	C	C	C	20	C	C	15	29	16	C	ES -4	ES -6	ES -9	ES -15	ES -32	-6	-1	3	-8	-7				
13	ES -6	-1	-2	4	11	15	22	18	27	23	8	9	0	ES -10	ES -13	ES -10	ES -6	0	ES -31	-6	-6	-5	-6	ES -3				
14	ES -10	ES -8	ES -5	-2	6	18	25	14	14	14	17	ES -7	ES -9	ES -19	ES -12	ES -17	ES -19	6	11	0	1	0	ES -9	ES -10				
15	-7	-11	-2	6	9	14	18	19	24	23	-1	11	9	C	C	C	C	C	C	-3	-3	-8	-1	ES -8				
16	ES -6	-7	-7	-2	7	8	13	17	15	18	18	23	-3	3	ES -7	ES -6	ES -12	17	1	-5	-1	-6	-9	-15				
17	ES -14	-10	-9	-2	6	17	23	24	27	22	7	ES -2	ES -1	ES 3	ES -7	ES -10	ES 0	2	ES -30	-4	3	-4	-6	-2				
18	ES -13	-11	-5	ES 9	8	18	16	20	18	18	20	18	14	10	ES 5	ES -3	ES -1	7	ES -33	-6	2	-7	-10	-2				
19	ES -13	-13	-7	0	5	9	17	16	23	20	15	23	19	-8	ES -7	ES -5	ES -5	9	8	7	-3	-7	-6	ES -3				
20	ES -7	-11	-7	-3	4	16	20	18	19	15	23	22	25	11	ES -2	ES -6	ES -11	11	ES -23	-12	ES 8	-7	ES -7	ES -2				
21	ES -8	ES -8	ES -23	ES -23	3	10	14	24	19	19	16	18	19	8	3	4	3	10	11	5	ES 8	-11	ES 15	ES -1				
22	-11	-9	-11	-2	6	10	12	20	20	23	17	16	22	20	9	ES -8	-1	24	ES 11	1	ES 6	-12	ES 7	ES -3				
23	ES -7	ES -9	5	-2	6	12	12	17	22	18	16	12	14	8	ES -3	ES -8	-5	18	12	-2	4	5	-17	ES -4				
24	ES -6	-7	-7	-4	4	10	16	16	11	16	16	16	20	18	8	14	9	14	6	4	1	-10	-10	-5				
25	ES -10	-11	-10	-5	S	11	12	15	24	22	C	C	15	0	-7	ES -8	6	19	C	-6	4	-1	ES 7	ES 1				
26	ES -12	ES -15	ES -23	-9	1	8	15	15	10	19	22	14	-2	12	8	6	ES -3	9	0	-4	ES 7	S	-10	ES -7				
27	ES -12	ES -33	ES -33	-2	7	14	20	18	18	26	24	11	2	ES 2	ES -5	ES 4	12	23	7	6	ES 7	1	ES -8	-2				
28	ES -11	ES -16	-11	4	3	15	13	25	22	25	27	15	C	C	C	C	C	C	C	C	C	C	C	C				
29	C	C	C	C	C	C	C	5	4	6	12	12	25	27	28	-10	-5	23	C	C	C	C	2	-8				
30	ES -13	ES -28	-12	ES -34	-2	8	13	18	10	23	23	16	13	-2	-9	-11	11	9	5	C	C	-9	ES -3	ES -5				
31	ES -9	-14	-8	-2	9	7	10	14	16	24	20	19	16	8	ES -11	ES -14	8	12	3	-8	ES -8	-9	ES -20	ES -9				
CNT	29	29	29	29	28	29	29	31	30	30	29	30	29	27	28	28	28	28	26	27	27	27	29	29				
MFD	ES -7	US -8	-5	US 2	8	15	18	18	19	19	16	14	8	US 0	ES -7	ES -8	ES -5	9	US -8	-3	ES 4	-4	ES -6	ES -3				
UD	0	1	5	9	15	19	24	25	27	25	23	23	22	18	8	4	10	23	11	6	8	7	ES 7	ES 1				
LD	ES -13	ES -16	ES -23	ES -9	3	8	12	14	10	11	ES 1	ES -4	ES -6	ES -11	ES -12	ES -14	ES -14	ES -15	ES -33	-12	ES -6	-11	ES -16	ES -9				

RADIO PROPAGATION QUALITY FIGURES

HIRAISO		Time in U.T.																					
Mar. 1969	Whole Day Index	H B			W W V				L M				W W V H				Warning				Principal magnetic storms		
		06 12 18 24	00 06 12 18 24	00 06 12 18 24	00 06 12 18 24	00 06 12 18 24	00 06 12 18 24	00 06 12 18 24	00 06 12 18 24	00 06 12 18 24	00 06 12 18 24	00 06 12 18 24	00 06 12 18 24	00 06 12 18 24	00 06 12 18 24	Start	End	ΔH					
1	4o	C	C	4	4	4	4	4	4	4	-	-	4	5	-	4	N	N	N	N			
2	4o	C	C	(4)	4	4	(4)	4	(4)	-	-	-	5	4	C	(4)	N	N	N	N			
3	4o	4	4	(4)	4	4	4	5	4	4	-	4	4	4	-	4	N	N	N	N			
4	4+	4	4	(4)	4	4	4	5	5	(4)	-	4	4	4	-	5	N	N	N	N			
5	5-	4	5	5	5	5	4	5	(5)	3	-	4	5	5	-	4	N	N	N	N			
6	4o	4	4	(4)	4	4	4	4	4	4	-	5	5	4	-	4	N	N	N	N			
7	4o	5	4	(4)	4	4	4	4	4	4	-	4	4	4	-	5	N	N	N	N			
8	4o	5	4	4	4	4	4	4	4	4	-	-	4	4	-	4	N	N	N	N			
9	4o	4	4	4	4	4	4	4	(4)	-	-	-	4	4	-	4	N	N	N	N			
10	4+	4	4	4	5	4	4	4	5	4	-	4	4	4	-	4	N	N	N	N			
11	4+	4	4	4	4	5	5	(4)	4	4	-	4	4	4	(4)(3)	N	N	N	N	00.4	---	104 ^Y	
12	4-	(3)	C	C	C	(4)	(4)	4	C	C	-	4	C	(4)	5	4	N	N	N	N	---	21xx	
13	4o	4	4	4	4	3	4	4	4	4	-	4	4	4	4	4	N	N	N	N			
14	4o	5	C	C	4	4	4	4	4	C	-	C	4	4	4	5	N	N	N	N			
15	4+	C	C	C	4	4	5	4	C	C	-	-	4	4	4	4	N	N	N	N			
16	4-	4	4	(4)	3	4	(4)	4	(3)	-	-	-	4	4	(4)	4	N	N	N	N			
17	4o	4	4	(3)	4	4	4	4	4	(4)	-	4	4	4	4	4	N	N	N	N	00.30	---	57 ^Y
(18*)	4o	4	4	5	3	4	4	4	3	(5)	-	4	4	4	4	4	N	N	N	N	---	20xx	
(19)	4o	4	4	4	4	4	4	4	4	4	-	4	4	4	4	4	N	N	N	N	19.58	---	97 ^Y
(20*)	4o	5	4	4	4	4	4	4	4	4	-	4	4	4	(3)	N	N	N	N	---	---		
21*	4o	5	4	3	3	4	4	4	4	5	-	4	3	4	4	4	N	N	N	N	---	13xx	
22*	4o	4	4	4	4	5	4	4	4	4	-	-	4	4	4	(4)	N	N	N	N			
23*	4+	4	4	C	5	4	4	4	C	-	-	-	4	4	4	4	U	U	W	W	10.12	---	303 ^Y
24*	3+	3	3	(3)	3	3	4	4	4	4	-	4	4	4	4	4	U	N	N	N	---	---	
25 ^Δ	4-	4	(4)	4	3	(3)	4	2	4	4	-	4	(4)	C	4	4	N	N	N	N	---	---	
26 ^Δ	4-	4	4	4	2	3	4	3	4	4	-	4	3	4	4	(3)	N	N	N	N	---	24xx	
27 ^Δ	4-	5	4	4	3	4	4	4	3	3	-	4	3	4	4	4	N	N	N	N			
28 ^Δ	4o	4	C	C	4	4	4	4	4	4	-	C	(4)	4	4	4	N	N	N	N			
29	4o	(4)	4	4	4	4	4	4	(4)	4	-	-	3	4	4	3	N	N	N	N			
30	4o	4	4	4	3	4	4	4	(4)	-	-	-	3	4	4	(4)	N	N	N	N	21.18	---	70 ^Y
31*	4o	4	4	4	4	4	4	4	4	(4)	-	4	4	4	4	(4)	N	N	N	N	---	24xx	

IQSY GEOALERT and ADALERT (Western Pacific Region)

- * = MAGSTORM
- o = MAGCALME
- Δ = COSMIC EVENT

- () = Regular World Day
- = impossible to evaluate
- () = inaccurate
- C = artificial accident
- = continuing magnetic storm

IONOSPHERIC DATA IN JAPAN FOR MARCH 1969

第 21 卷 第 3 号

1969年6月20日 印 刷
1969年6月25日 發 行 (不許複製非売品)

編 集 兼
發 行 人

越 智 文 雄

東京都小金井市貫井北町4丁目2-1

發 行 所

郵 政 省 電 波 研 究 所

184 東京都小金井市貫井北町4丁目2-1

電話 国分寺(0423) (21) 1 2 1 1 (代)

印 刷 所

有限会社 研 文 社

160 東京都新宿区四谷3丁目6

電話 (353) 8 3 5 8 ・ (351) 0 0 4 6