

Records of All-Sky Camera Utilization at Syowa Station,  
Antarctica in 1974 - 1975

National Institute of Polar Research

An all-sky camera was used in aurora observations in 1974-1975 at Syowa Station, Antarctica.

This report describes the availability of data to upper atmosphere physicists.

The original records are deposited at National Institute of Polar Research.

Enquiries about the details of the data should be addressed to:

Division of Data Collection and Processing  
National Institute of Polar Research  
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Tokyo 173, Japan.

1. Location

CSAGI No.	Station	Geographic		Geomagnetic		Remarks
		Lat. S	Long. E	Lat.	Long.	
A984	Syowa	69° 00'S	39° 36'E	-69.6°	77.1°	Height about 15 m (above sea level)

2. Observers

(1974) Mr. Hideki KANEKO (Geographical Survey Institute)

(1975) Mr. Kenji CHUJO (Geographical Survey Institute)

3. Instrumentation

A 35 mm Automax cine-pulse camera was used (model G-4SD with f/3.5, 40 mm in the focal length of the main lens, with a fish-eye lens).

The observation was conducted during clear nights between February 28 and October 14, 1974 and between March 2 and October 3, 1975. Two exposures were made every minute, *i.e.*, 0 - 15 s and 30 - 45 s. Sometimes, six or four exposures were made every minute during high auroral

activities. The film used was Kodak 35 mm 4-X, sensitivity ASA 800, which was 400 feet long and rolled in a reel.

#### 4. Obtained Records

Availability of data of the observation is shown in Fig. 1 (days of observation) and in Table 1 (hours of observations), respectively. Marks in Fig. 1 are as follows:

Dark area: All-sky camera was operated.

Cross: Not operated due to instrument malfunction.

Blank: Not operated due to blizzard or overcast.

The second column of Table 1 is the hours of operation (Universal Time) of the camera. The third column shows K-indices at Syowa Station, among which the underlined numerals represent the intensity of geomagnetic activity when the camera was operated.

The "X" marks in the third column denote lack of data due to malfunction of a 3-axis fluxgate magnetometer.

The classification of K-indices at Syowa Station is as follows:

K-Index:	0	(	0 <sup>Y</sup>	-	<	25 <sup>Y</sup>	)
	1	(	25 <sup>Y</sup>	-	<	50 <sup>Y</sup>	)
	2	(	50 <sup>Y</sup>	-	<	100 <sup>Y</sup>	)
	3	(	100 <sup>Y</sup>	-	<	200 <sup>Y</sup>	)
	4	(	200 <sup>Y</sup>	-	<	350 <sup>Y</sup>	)
	5	(	350 <sup>Y</sup>	-	<	600 <sup>Y</sup>	)
	6	(	600 <sup>Y</sup>	-	<	1000 <sup>Y</sup>	)
	7	(	1000 <sup>Y</sup>	-	<	1660 <sup>Y</sup>	)
	8	(	1660 <sup>Y</sup>	-	<	2500 <sup>Y</sup>	)
	9	(	more than 2500 <sup>Y</sup>			)	



Table 1. Hours of operation of the 35 mm all-sky camera at Syowa Station in 1974 and 1975.

1974

Day	Hours(Universal Time)	K-Index	Remarks
Feb. 28	22 <sup>h</sup> 28 <sup>m</sup> 00 <sup>s</sup>	5 4 4 3 3 3 4 <u>5</u>	
Mar. 1	-02 39 35	<u>6</u> 3 2 2 2 2 4 6	
3	22 29 00	5 2 3 1 3 2 2 <u>5</u>	Cloud
4	-02 59 38	<u>4</u> 5 1 2 2 0 0 <u>0</u>	
5	-03 01 45	<u>5</u> <u>5</u> 2 1 2 3 5 <u>5</u>	Cloud
6	-03 44 45	<u>5</u> <u>5</u> 2 2 3 3 3 <u>5</u>	Poor
7	-03 40 45	<u>4</u> <u>4</u> 1 1 1 3 2 <u>6</u>	
8	-03 39 45	<u>3</u> <u>3</u> 4 2 2 2 3 <u>6</u>	
9	-03 39 45	<u>4</u> <u>5</u> 5 2 3 4 4 <u>5</u>	Cloud
10	-03 44 45	<u>4</u> <u>3</u> 4 4 3 3 5 <u>5</u>	Snow - Cloud
11	-03 44 45	<u>4</u> <u>5</u> 4 4 2 4 4 <u>6</u>	
12	-03 44 45	<u>4</u> <u>3</u> 4 2 2 2 3 <u>4</u>	
13	-03 50 45	<u>4</u> <u>5</u> 2 2 1 1 0 <u>1</u>	
14	-04 14 45	<u>3</u> <u>3</u> 3 2 1 3 3 <u>2</u>	Cloud
15	-04 00 45	<u>0</u> <u>1</u> 0 0 0 1 0 0	
16	21 36 00	3 3 2 2 3 4 6 <u>2</u>	Snow
17	-04 04 45	<u>2</u> <u>3</u> 3 1 0 1 1 <u>0</u>	Cloud -Snow
18	-02 14 45	<u>2</u> <u>0</u> 0 1 0 0 0 <u>0</u>	Cloud
19	-03 47 45	<u>0</u> <u>1</u> 0 1 0 0 0 <u>0</u>	Cloud
20	-04 29 45	<u>3</u> <u>0</u> 1 1 1 3 6 <u>6</u>	
21	-04 27 45	<u>5</u> <u>6</u> 4 4 3 5 6 <u>6</u>	
22	-04 29 45	<u>6</u> <u>5</u> 4 4 3 2 3 6	

Day	Hours(Universal Time)	K-Index	Remarks
Mar. 23	20 <sup>h</sup> 16 <sup>m</sup> 00 <sup>s</sup>	7 6 3 3 4 3 2 <u>7</u>	Cloud
24	-04 44 45	<u>5</u> <u>6</u> 4 3 3 4 4 6	
26	20 09 00	4 5 4 2 3 2 3 <u>5</u>	Cloud-Fine -Fog.Cloud
27	-04 34 45	<u>5</u> <u>5</u> 4 3 2 2 2 <u>1</u>	Fog.Cloud
28	-04 00 45	<u>4</u> <u>3</u> 4 2 3 2 3 <u>6</u>	
29	-05 00 45	<u>5</u> <u>4</u> 4 3 4 4 6 <u>5</u>	Fine-Cloud -Snow
30	-05 29 45	<u>6</u> <u>5</u> 3 2 2 3 4 5	
Apr. 4	19 13 00	6 5 4 3 4 3 2 <u>2</u>	Cloud
5	-05 52 45	<u>1</u> <u>1</u> 2 3 2 2 3 <u>4</u>	Cloud
6	-06 12 45	<u>4</u> <u>6</u> 3 3 2 2 4 5	
7	19 35 00	6 4 3 2 2 2 3 <u>2</u>	Cloud
8	-05 59 45	<u>2</u> <u>3</u> 1 1 2 2 3 <u>3</u>	Cloud -Fine
9	-06 04 45	<u>2</u> <u>3</u> 2 2 2 3 4 <u>5</u>	Cloud
10	-06 21 45	<u>5</u> <u>6</u> 4 3 3 3 3 <u>5</u>	Poor
11	-03 06 45	<u>6</u> <u>6</u> 2 2 3 2 0 0	
13	19 19 00	1 2 2 2 1 0 2 <u>1</u>	Cloud -Fine
14	-03 46 45	<u>3</u> <u>3</u> 1 0 0 0 1 <u>2</u>	
15	-06 59 45	<u>2</u> <u>0</u> 0 0 0 0 0 <u>2</u>	Cloud Fine
16	-06 42 45	<u>1</u> <u>0</u> 0 0 0 0 3 <u>3</u>	Cloud
17	-06 44 45	<u>3</u> <u>0</u> 0 0 0 2 2 <u>5</u>	Cloud
18	-06 45 45	<u>3</u> <u>6</u> 6 4 2 3 5 <u>4</u>	Cloud
19	-06 44 45	<u>5</u> <u>6</u> 5 3 2 4 5 <u>4</u>	Cloud

Day	Hours(Universal Time)		K-Index				Remarks
Apr. 20	-06 <sup>h</sup> 49 <sup>m</sup> 45 <sup>s</sup>	17 <sup>h</sup> 51 <sup>m</sup> 00 <sup>s</sup>	<u>5</u> <u>6</u> <u>3</u> <u>4</u>	<u>4</u> <u>4</u> <u>6</u> <u>6</u>			Cloud
21	-06 00 45	17 54 00	<u>4</u> <u>5</u> <u>4</u> <u>3</u>	<u>3</u> <u>3</u> <u>4</u> <u>6</u>			Cloud
22	-06 30 45	18 07 00	<u>4</u> <u>5</u> <u>5</u> <u>4</u>	<u>4</u> <u>3</u> <u>5</u> <u>6</u>			Poor
23	-06 54 45	17 32 00	<u>6</u> <u>4</u> <u>4</u> <u>3</u>	<u>3</u> <u>3</u> <u>5</u> <u>5</u>			
24	-06 39 45	17 37 00	<u>6</u> <u>4</u> <u>2</u> <u>2</u>	<u>1</u> <u>1</u> <u>6</u> <u>4</u>			Poor
25	-06 59 45	17 51 00	<u>7</u> <u>5</u> <u>4</u> <u>3</u>	<u>2</u> <u>2</u> <u>4</u> <u>5</u>			Cloud
26	-06 20 45	17 57 00	<u>5</u> <u>4</u> <u>1</u> <u>2</u>	<u>3</u> <u>1</u> <u>3</u> <u>6</u>			Cloud -Snow
27	-00 49 45		<u>5</u> <u>5</u> <u>3</u> <u>3</u>	<u>2</u> <u>2</u> <u>1</u> <u>4</u>			
29		17 30 00	<u>4</u> <u>4</u> <u>2</u> <u>2</u>	<u>2</u> <u>2</u> <u>4</u> <u>5</u>			Poor
30	-07 20 45	19 24 00	<u>3</u> <u>4</u> <u>4</u> <u>1</u>	<u>2</u> <u>2</u> <u>1</u> <u>6</u>			Snow-Cloud -Fine
May 1	-07 26 45	17 08 00	<u>4</u> <u>2</u> <u>0</u> <u>0</u>	<u>0</u> <u>0</u> <u>2</u> <u>3</u>			
2	-00 19 45		<u>3</u> <u>3</u> <u>2</u> <u>2</u>	<u>1</u> <u>3</u> <u>3</u> <u>5</u>			
June 6		15 48 00	<u>2</u> <u>3</u> <u>2</u> <u>1</u>	<u>1</u> <u>0</u> <u>0</u> <u>0</u>			Cloud -Fine
7	-09 00 45	15 30 00	<u>0</u> <u>0</u> <u>1</u> <u>0</u>	<u>0</u> <u>0</u> <u>0</u> <u>2</u>			
8	-08 55 45	15 40 00	<u>0</u> <u>1</u> <u>1</u> <u>0</u>	<u>1</u> <u>0</u> <u>1</u> <u>0</u>			
9	-09 23 45	15 24 00	<u>0</u> <u>0</u> <u>0</u> <u>0</u>	<u>0</u> <u>1</u> <u>4</u> <u>4</u>			Poor
10	-04 53 45	15 46 00	<u>5</u> <u>4</u> <u>4</u> <u>1</u>	<u>2</u> <u>1</u> <u>2</u> <u>4</u>			Poor
11	-09 00 45	15 40 00	<u>1</u> <u>3</u> <u>3</u> <u>3</u>	<u>4</u> <u>3</u> <u>3</u> <u>6</u>			
12	-09 17 45	15 16 00	<u>6</u> <u>5</u> <u>5</u> <u>4</u>	<u>2</u> <u>2</u> <u>2</u> <u>5</u>			
13	-09 49 45	15 23 00	<u>5</u> <u>6</u> <u>4</u> <u>2</u>	<u>2</u> <u>3</u> <u>3</u> <u>5</u>			
14	-07 37 45	16 50 00	<u>5</u> <u>5</u> <u>4</u> <u>1</u>	<u>2</u> <u>4</u> <u>4</u> <u>3</u>			
15	-09 00 45	15 28 00	<u>5</u> <u>5</u> <u>5</u> <u>4</u>	<u>3</u> <u>3</u> <u>4</u> <u>7</u>			

Day	Hours(Universal Time)		K-Index				Remarks
June 16	-09 <sup>h</sup> 14 <sup>m</sup> 45 <sup>s</sup>	15 <sup>h</sup> 45 <sup>m</sup> 00 <sup>s</sup>	<u>4</u> <u>5</u> <u>3</u> <u>3</u>	<u>3</u> <u>3</u> <u>5</u> <u>6</u>			
17	-09 19 45	15 46 00	<u>5</u> <u>4</u> <u>4</u> <u>3</u>	<u>3</u> <u>2</u> <u>2</u> <u>4</u>			
18	-09 33 45	15 25 00	<u>4</u> <u>3</u> <u>3</u> <u>1</u>	<u>2</u> <u>2</u> <u>2</u> <u>6</u>			
19	-09 16 45	15 08 00	<u>5</u> <u>1</u> <u>2</u> <u>1</u>	<u>2</u> <u>2</u> <u>3</u> <u>2</u>			
20	-09 24 45	15 22 00	<u>4</u> <u>3</u> <u>3</u> <u>4</u>	<u>2</u> <u>3</u> <u>3</u> <u>5</u>			
21	-09 53 45	16 00 00	<u>4</u> <u>2</u> <u>1</u> <u>0</u>	<u>1</u> <u>1</u> <u>1</u> <u>4</u>			
22	-08 30 45	17 23 00	<u>4</u> <u>4</u> <u>1</u> <u>1</u>	<u>1</u> <u>1</u> <u>2</u> <u>3</u>			
23	-08 10 45	16 49 00	<u>2</u> <u>2</u> <u>0</u> <u>2</u>	<u>1</u> <u>1</u> <u>0</u> <u>3</u>			
24	-04 16 45	15 11 00	<u>3</u> <u>3</u> <u>2</u> <u>1</u>	<u>2</u> <u>0</u> <u>4</u> <u>4</u>			
25	-03 17 45	17 18 00	<u>3</u> <u>2</u> <u>2</u> <u>0</u>	<u>0</u> <u>0</u> <u>1</u> <u>7</u>			
26	-08 30 45	16 02 00	<u>6</u> <u>5</u> <u>5</u> <u>3</u>	<u>4</u> <u>4</u> <u>3</u> <u>5</u>			
27	-01 19 45		<u>5</u> <u>6</u> <u>6</u> <u>5</u>	<u>3</u> <u>4</u> <u>5</u> <u>5</u>			
July 1		18 <sup>h</sup> 24 <sup>m</sup> 00 <sup>s</sup> -23 34 45	<u>5</u> <u>2</u> <u>3</u> <u>2</u>	<u>1</u> <u>1</u> <u>3</u> <u>3</u>			
2		15 59 00	<u>3</u> <u>2</u> <u>3</u> <u>3</u>	<u>2</u> <u>3</u> <u>1</u> <u>4</u>			
3	-09 32 45	17 35 00	<u>2</u> <u>1</u> <u>1</u> <u>2</u>	<u>2</u> <u>1</u> <u>1</u> <u>5</u>			
4	-08 30 45		<u>6</u> <u>6</u> <u>5</u> <u>2</u>	<u>2</u> <u>4</u> <u>3</u> <u>6</u>			
6		17 42 00	<u>5</u> <u>6</u> <u>7</u> <u>6</u>	<u>4</u> <u>4</u> <u>5</u> <u>3</u>			
7	-08 00 45		<u>5</u> <u>5</u> <u>3</u> <u>2</u>	<u>2</u> <u>2</u> <u>2</u> <u>3</u>			
8		21 40 00	<u>4</u> <u>4</u> <u>5</u> <u>4</u>	<u>3</u> <u>3</u> <u>5</u> <u>5</u>			
9	-01 19 45	16 00 00	<u>6</u> <u>6</u> <u>4</u> <u>2</u>	<u>3</u> <u>2</u> <u>2</u> <u>5</u>			
10	-08 30 45	15 46 00	<u>5</u> <u>4</u> <u>3</u> <u>3</u>	<u>3</u> <u>2</u> <u>4</u> <u>6</u>			
11	-08 00 45	17 00 00	<u>4</u> <u>3</u> <u>3</u> <u>2</u>	<u>3</u> <u>1</u> <u>4</u> <u>5</u>			

Day	Hours(Universal Time)			K-Index	Remarks
July 12	-08 <sup>h</sup> 30 <sup>m</sup> 45 <sup>s</sup>	18 <sup>h</sup> 05 <sup>m</sup> 00 <sup>s</sup>	-23 <sup>h</sup> 30 <sup>m</sup> 45 <sup>s</sup>	<u>4</u> <u>5</u> <u>2</u> <u>2</u> 3 2 <u>3</u> <u>5</u>	
14			17 31 00	6 5 3 2 2 2 <u>2</u> <u>5</u>	
15	-08 00 45		15 45 00	<u>4</u> <u>4</u> <u>3</u> <u>1</u> 0 <u>1</u> <u>1</u> <u>4</u>	
16	-08 42 45		18 15 00	<u>4</u> <u>5</u> <u>4</u> <u>2</u> 1 0 <u>0</u> <u>3</u>	
17	-08 44 45			<u>5</u> <u>2</u> <u>2</u> <u>1</u> 2 1 0 0	
19			17 00 00	1 1 0 0 0 <u>2</u> <u>2</u> <u>2</u>	
20	-08 30 45		17 00 00	<u>3</u> <u>2</u> <u>2</u> <u>0</u> 0 <u>0</u> <u>3</u> <u>3</u>	
21	-08 00 45		18 13 00	<u>5</u> <u>2</u> <u>1</u> <u>0</u> 0 0 <u>2</u> <u>4</u>	
22	-07 30 45		16 00 00	<u>0</u> <u>1</u> <u>2</u> <u>2</u> 0 <u>0</u> <u>0</u> <u>4</u>	
23	-08 00 45		16 20 00	<u>5</u> <u>6</u> <u>5</u> <u>4</u> 4 <u>4</u> <u>7</u> <u>6</u>	
24	-08 00 45	17 00 00	-21 22 45	<u>7</u> <u>5</u> <u>6</u> <u>5</u> 3 <u>3</u> <u>4</u> <u>5</u>	
26			16 30 00	4 6 4 3 2 <u>2</u> <u>4</u> <u>6</u>	
27	-05 15 45			<u>5</u> <u>4</u> <u>5</u> 3 4 2 3 4	
28			17 11 00	6 6 3 3 2 <u>2</u> <u>3</u> <u>1</u>	
29	-08 32 45		16 03 00	<u>3</u> <u>5</u> <u>3</u> <u>4</u> 2 <u>3</u> <u>2</u> <u>4</u>	
30	-08 14 45		16 27 00	<u>3</u> <u>3</u> <u>2</u> <u>3</u> 2 <u>1</u> <u>2</u> <u>3</u>	
31	-08 10 45		16 28 00	<u>3</u> <u>4</u> <u>0</u> <u>1</u> 1 <u>1</u> <u>1</u> <u>1</u>	
Aug. 1	-08 00 45		16 28 00	<u>3</u> <u>2</u> <u>1</u> <u>1</u> 1 <u>0</u> <u>1</u> <u>2</u>	
2	-00 00 45			<u>4</u> 1 1 0 1 3 5 5	
3			16 33 00	5 4 4 3 4 <u>5</u> <u>7</u> <u>6</u>	
4	-08 15 45		17 05 00	<u>7</u> <u>4</u> <u>4</u> <u>3</u> 1 <u>2</u> <u>5</u> <u>4</u>	
5	-06 32 45		16 56 00	<u>5</u> <u>5</u> <u>3</u> <u>3</u> 4 <u>3</u> <u>3</u> <u>4</u>	

Day	Hours(Universal Time)			K-Index	Remarks
Aug. 6	-08 <sup>h</sup> 00 <sup>m</sup> 45 <sup>s</sup>		17 <sup>h</sup> 05 <sup>m</sup> 00 <sup>s</sup>	<u>5</u> <u>5</u> <u>x</u> <u>x</u> 3 <u>3</u> <u>4</u> <u>4</u>	
7	-06 51 45		17 23 00	<u>5</u> <u>4</u> <u>3</u> <u>2</u> 2 <u>2</u> <u>5</u> <u>5</u>	
8	-04 11 45		18 02 00	<u>6</u> <u>7</u> <u>5</u> <u>3</u> 1 <u>1</u> <u>1</u> <u>3</u>	
9	-07 00 45		22 51 00	<u>3</u> <u>5</u> <u>5</u> <u>2</u> 1 <u>3</u> <u>3</u> <u>5</u>	
10	-07 28 45		17 08 00	<u>4</u> <u>5</u> <u>4</u> <u>3</u> 2 <u>1</u> <u>3</u> <u>4</u>	
11	-04 27 57		17 38 00	<u>5</u> <u>3</u> <u>2</u> <u>2</u> 2 <u>1</u> <u>3</u> <u>2</u>	
12	-01 38 45		17 13 00	<u>2</u> <u>1</u> <u>1</u> <u>0</u> 0 <u>1</u> <u>0</u> <u>2</u>	
13	-07 00 45	18 <sup>h</sup> 24 <sup>m</sup> 00 <sup>s</sup>	-20 17 45	<u>0</u> <u>1</u> <u>1</u> <u>1</u> 0 <u>0</u> <u>0</u> <u>2</u>	
14			17 26 00	2 3 1 0 0 <u>0</u> <u>0</u> <u>2</u>	
15	-07 00 45		18 48 00	<u>3</u> <u>1</u> <u>1</u> <u>1</u> 0 <u>0</u> <u>0</u> <u>0</u>	
16	-06 00 45			<u>0</u> <u>3</u> <u>2</u> <u>1</u> 0 <u>0</u> <u>0</u> <u>3</u>	
18			17 32 00	3 2 1 1 1 <u>0</u> <u>0</u> <u>5</u>	
19	-07 27 45		17 27 00	<u>4</u> <u>5</u> <u>3</u> <u>4</u> 4 <u>3</u> <u>4</u> <u>5</u>	
20	-06 44 57		21 08 00	<u>5</u> <u>6</u> <u>6</u> <u>5</u> 4 4 6 6	
21	-06 46 45			<u>6</u> <u>5</u> <u>4</u> <u>5</u> 3 3 5 5	
22	01 36 00	-06 21 45	18 04 00	<u>5</u> <u>5</u> <u>5</u> <u>3</u> 4 <u>3</u> <u>5</u> <u>6</u>	
23	-06 44 45		17 45 00	<u>7</u> <u>6</u> <u>5</u> <u>4</u> 3 <u>2</u> <u>4</u> <u>6</u>	
24	-06 41 57		18 15 00	<u>5</u> <u>4</u> <u>2</u> <u>4</u> 4 <u>3</u> <u>4</u> <u>4</u>	
25	-06 30 57		17 55 00	<u>5</u> <u>4</u> <u>2</u> <u>2</u> 1 <u>2</u> <u>1</u> <u>3</u>	
26	-06 31 57		18 50 00	<u>3</u> <u>1</u> <u>1</u> <u>1</u> 1 0 <u>3</u> <u>3</u>	
27	-06 27 45		17 56 00	<u>4</u> <u>4</u> <u>3</u> <u>3</u> 3 <u>3</u> <u>3</u> <u>4</u>	
28	-06 22 45		18 31 00	<u>5</u> <u>3</u> <u>2</u> <u>2</u> 2 <u>3</u> <u>3</u> <u>6</u>	

Day	Hours(Universal Time)		K-Index	Remarks
Aug. 29	<sup>h</sup> <sup>m</sup> <sup>s</sup> -06 24 45	<sup>h</sup> <sup>m</sup> <sup>s</sup> 18 40 00	<u>5</u> <u>4</u> <u>3</u> <u>5</u> 3 3 <u>3</u> <u>4</u>	
30	-06 26 45	18 16 00	<u>6</u> <u>4</u> <u>1</u> <u>1</u> 1 2 <u>5</u> <u>5</u>	
31	-06 21 45	17 54 00	<u>4</u> <u>4</u> <u>3</u> <u>2</u> 2 <u>3</u> <u>4</u> <u>6</u>	
Sep. 1	-06 49 45	18 20 00	<u>4</u> <u>6</u> <u>3</u> <u>3</u> 3 2 <u>2</u> <u>6</u>	
2	-06 17 45	18 32 00	<u>5</u> <u>4</u> <u>6</u> <u>3</u> 3 2 <u>5</u> <u>7</u>	
3	-06 28 45	21 04 00	<u>5</u> <u>4</u> <u>3</u> <u>3</u> 2 2 <u>3</u> <u>3</u>	
4	-06 01 45	18 39 00	<u>5</u> <u>4</u> <u>3</u> <u>2</u> 3 1 <u>5</u> <u>6</u>	
5	-06 24 45	18 25 00	<u>5</u> <u>6</u> <u>3</u> <u>3</u> 2 1 <u>2</u> <u>4</u>	
6	-04 42 45	<sup>h</sup> <sup>m</sup> <sup>s</sup> 18 32 00 -21 24 45	<u>6</u> <u>4</u> <u>2</u> <u>2</u> 1 1 <u>4</u> <u>4</u>	
8		20 49 00	5 1 1 1 1 2 <u>2</u> <u>4</u>	
9	-05 59 45	19 59 00	<u>4</u> <u>2</u> <u>0</u> <u>0</u> 1 0 <u>1</u> <u>2</u>	
10	-04 43 45		<u>4</u> <u>2</u> <u>0</u> <u>1</u> 0 0 2 4	
11	00 45 00	-05 00 45 18 45 00	<u>4</u> <u>1</u> <u>1</u> <u>0</u> 0 0 <u>0</u> <u>1</u>	
12	-05 00 45	19 15 00	<u>0</u> <u>1</u> <u>1</u> <u>0</u> 0 1 <u>3</u> <u>3</u>	
13	-05 29 45	18 48 00	<u>3</u> <u>2</u> <u>2</u> <u>3</u> 2 2 <u>3</u> <u>4</u>	
14	-05 14 45	19 09 00	<u>2</u> <u>1</u> <u>0</u> <u>2</u> 0 0 <u>4</u> <u>5</u>	
15	-05 00 45	19 03 00	<u>2</u> <u>2</u> <u>1</u> <u>0</u> 5 3 <u>5</u> <u>5</u>	
16	-05 19 57	19 15 00	<u>7</u> <u>6</u> <u>5</u> <u>4</u> 4 2 <u>2</u> <u>2</u>	
17	-05 00 45		<u>3</u> <u>1</u> <u>0</u> <u>0</u> 0 1 0 0	
19		19 17 00	6 3 4 4 2 2 <u>4</u> <u>6</u>	
20	-04 59 45	23 25 00	<u>6</u> <u>4</u> <u>3</u> <u>3</u> 3 5 4 <u>5</u>	
21	-04 45 57	19 30 00	<u>5</u> <u>2</u> <u>3</u> <u>3</u> 5 5 <u>5</u> <u>5</u>	

Day	Hours(Universal Time)		K-Index	Remarks
Sep. 22	<sup>h</sup> <sup>m</sup> <sup>s</sup> -05 16 45	<sup>h</sup> <sup>m</sup> <sup>s</sup> 21 07 00	<u>4</u> <u>4</u> <u>2</u> <u>2</u> 3 3 2 <u>5</u>	
23	-04 05 57	19 41 00	<u>4</u> <u>3</u> <u>1</u> <u>2</u> 2 1 <u>4</u> <u>5</u>	
24	-04 33 45	19 40 00	<u>3</u> <u>5</u> <u>5</u> <u>3</u> 2 2 <u>4</u> <u>3</u>	
25	-04 32 45	19 45 00	<u>6</u> <u>2</u> <u>2</u> <u>3</u> 2 4 <u>7</u> <u>5</u>	
26	-04 23 57		<u>5</u> <u>7</u> <u>6</u> <u>4</u> 3 3 4 5	
27		20 39 00	4 4 3 4 4 3 <u>5</u> <u>4</u>	
28	-04 30 45	20 16 00	<u>4</u> <u>4</u> <u>2</u> <u>2</u> 2 2 <u>5</u> <u>4</u>	
29	-04 17 45	21 17 00	<u>3</u> <u>4</u> <u>3</u> <u>2</u> 2 3 2 <u>3</u>	
30	-03 54 45		<u>4</u> <u>5</u> <u>2</u> <u>2</u> 2 3 3 6	
Oct. 1		20 42 00	6 5 3 3 3 3 <u>5</u> <u>5</u>	
2	-04 01 45		<u>4</u> <u>2</u> <u>3</u> <u>2</u> 4 2 6 6	
4		21 48 00	3 2 1 0 1 1 2 <u>6</u>	
5	-03 26 45	23 12 00	<u>3</u> <u>3</u> <u>1</u> <u>1</u> 1 0 2 <u>4</u>	
6	-02 15 45	22 05 00	<u>6</u> <u>2</u> <u>2</u> <u>1</u> 1 0 1 <u>3</u>	
7	-02 44 45	23 51 00	<u>0</u> <u>1</u> <u>1</u> <u>0</u> 0 1 2 <u>4</u>	
8	-02 38 45		<u>4</u> <u>1</u> <u>1</u> <u>1</u> 1 2 3 5	
9	00 34 00	<sup>h</sup> <sup>m</sup> <sup>s</sup> -02 04 45 21 56 00	<u>4</u> <u>7</u> <u>6</u> <u>3</u> 3 3 5 <u>4</u>	
10	-03 14 45	22 16 00	<u>5</u> <u>3</u> <u>3</u> <u>1</u> 1 1 2 <u>4</u>	
11	-02 59 45		<u>4</u> <u>3</u> <u>1</u> <u>1</u> 0 0 2 2	
12		21 45 00	1 2 2 0 3 1 3 <u>5</u>	
13	-03 12 45	23 00 00	<u>6</u> <u>7</u> <u>6</u> <u>4</u> 3 3 5 <u>6</u>	
14	-02 31 45		<u>3</u> <u>3</u> <u>1</u> <u>1</u> 1 3 5 6	

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Day	Hours(Universal Time)			K-Index	Remarks
Mar. 2	00 <sup>h</sup> 09 <sup>m</sup> 00 <sup>s</sup>	-01 <sup>h</sup> 40 <sup>m</sup> 45 <sup>s</sup>	23 <sup>h</sup> 09 <sup>m</sup> 00 <sup>s</sup>	<u>6</u> 3 2 1 2 2 2 <u>5</u>	
3	-03 41 00			<u>4</u> <u>2</u> 1 1 0 0 2 3	
16			22 32 00	3 3 3 3 3 3 3 <u>4</u>	
17	-04 30 45		22 46 00	<u>5</u> <u>5</u> 2 2 2 2 1 <u>5</u>	
18	-04 30 45			<u>5</u> <u>2</u> 1 2 3 4 4 6	
24			23 30 00	2 1 1 3 4 4 3 <u>4</u>	
25	-04 48 45			<u>2</u> <u>3</u> 1 1 2 1 1 2	
27	00 35 00	-03 45 45		<u>4</u> <u>4</u> 2 2 4 6 6 5	
28	00 16 00	-05 02 45	21 56 00	<u>4</u> <u>4</u> 5 3 3 3 4 <u>5</u>	
29	-04 49 45			<u>4</u> <u>5</u> 5 3 3 3 3 4	
Apr. 6			23 39 00	3 2 1 1 2 1 2 <u>5</u>	
7	-03 31 45		22 11 00	<u>3</u> 2 0 1 2 2 4 <u>6</u>	
8	-05 37 45			<u>5</u> <u>4</u> 3 3 4 4 5 4	
22			23 13 00	4 4 4 2 1 2 2 <u>5</u>	
23	-06 30 45			<u>6</u> <u>4</u> <u>4</u> 4 3 4 4 4	
May 3			23 52 00	5 6 3 2 3 1 2 <u>6</u>	
4	-06 25 45			<u>5</u> <u>3</u> <u>2</u> 2 2 1 2 5	
5			22 11 00	4 6 5 3 3 4 6 <u>6</u>	
6	-06 29 45		20 20 00	<u>6</u> <u>6</u> <u>4</u> 3 3 3 <u>5</u> <u>5</u>	
7	-02 00 57	19 12 00	-23 33 45	<u>4</u> 3 3 3 4 3 <u>3</u> <u>4</u>	
8	01 11 00	-07 09 57	21 46 00	<u>4</u> <u>3</u> <u>2</u> 2 2 2 6 <u>5</u>	
9	-03 07 57			<u>4</u> <u>5</u> 3 2 3 3 3 6	

Day	Hours(Universal Time)			K-Index	Remarks
May 10			22 <sup>h</sup> 59 <sup>m</sup> 00 <sup>s</sup>	5 6 3 3 2 1 3 <u>5</u>	
11	-03 <sup>h</sup> 37 <sup>m</sup> 57 <sup>s</sup>			<u>1</u> <u>1</u> 1 1 0 0 0 1	
14			22 27 00	5 5 3 2 2 1 4 <u>4</u>	
15	-03 59 57			<u>1</u> <u>1</u> 2 1 0 0 0 1	
17	01 08 00	21 58 00		<u>5</u> <u>5</u> <u>3</u> 3 2 2 1 <u>2</u>	
	-07 39 57	-22 38 57			
18	01 59 00	-08 <sup>h</sup> 00 <sup>m</sup> 57 <sup>s</sup>		<u>3</u> <u>3</u> <u>2</u> 2 1 2 3 4	
28		22 03 00	-23 42 57	3 2 0 0 1 1 0 <u>0</u>	
29			23 54 00	4 3 3 2 1 3 3 <u>4</u>	
30	-06 13 57			<u>3</u> <u>2</u> <u>2</u> 2 1 1 0 3	
June 5			21 00 00	5 3 2 2 2 1 4 <u>5</u>	
6	-06 45 57			<u>4</u> <u>4</u> <u>3</u> 2 2 2 3 4	
7	00 41 00	-08 23 57		<u>3</u> <u>2</u> <u>2</u> 2 1 1 1 4	
8	01 04 00	-02 03 57		<u>1</u> 0 1 1 0 1 0 2	
30			22 11 00	5 5 4 3 4 2 3 <u>6</u>	
July 1	-04 38 57		22 50 00	<u>3</u> <u>4</u> 2 3 2 1 0 <u>5</u>	
2	-06 29 57			<u>4</u> <u>3</u> <u>1</u> 0 0 1 1 3	
4	01 50 00	-03 06 57	23 19 00	<u>3</u> <u>0</u> 0 0 1 0 4 <u>5</u>	
5	-06 59 57			<u>3</u> <u>0</u> <u>2</u> 1 0 0 0 2	
8	00 54 00	-08 13 57	17 45 00	<u>6</u> <u>6</u> <u>5</u> 4 4 2 3 <u>1</u>	
9	-03 38 57		17 46 00	<u>3</u> <u>4</u> 4 4 3 3 <u>3</u> <u>2</u>	
10	-03 09 57		17 18 00	<u>2</u> <u>4</u> 3 3 3 3 <u>3</u> <u>5</u>	
11	-03 27 57			<u>4</u> <u>4</u> 5 3 3 2 1 1	

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Day	Hours(Universal Time)	K-Index	Remarks
July 12	01 <sup>h</sup> 20 <sup>m</sup> 00 <sup>s</sup> -01 <sup>h</sup> 57 <sup>m</sup> 57 <sup>s</sup>	<u>2</u> 1 1 1 1 1 3 1	
13	23 <sup>h</sup> 46 <sup>m</sup> 00 <sup>s</sup>	1 2 1 0 2 2 3 <u>4</u>	
14	-00 48 57	<u>4</u> 3 3 3 2 1 3 4	
22	02 37 00 -04 15 57	<u>2</u> <u>1</u> 3 1 1 1 1 1	
24	02 03 00 -05 15 57 22 33 00 -23 14 8	<u>5</u> <u>0</u> 1 1 1 0 0 0	
28	22 53 00	5 4 2 1 2 1 4 <u>3</u>	
29	-01 37 57 22 51 00	<u>3</u> 3 1 1 0 0 0 <u>4</u>	
30	-04 11 57	<u>4</u> <u>3</u> 1 1 0 0 0 3	
Aug. 3	00 39 00 -03 54 57	<u>2</u> <u>1</u> 1 1 1 1 2 2	
4	22 52 00	4 2 0 1 0 1 2 <u>2</u>	
5	-05 37 57	<u>5</u> <u>5</u> 4 4 3 3 4 4	
8	01 57 00 -03 18 57	<u>4</u> <u>6</u> 5 2 1 0 1 3	
9	22 13 00	4 2 2 3 1 3 4 <u>5</u>	
10	-05 05 57	<u>4</u> <u>4</u> 4 3 2 1 1 0	
23	23 35 00	4 4 1 2 1 1 1 <u>3</u>	
24	-05 22 57 22 00 00	<u>2</u> <u>2</u> 0 0 1 0 2 <u>4</u>	
25	-03 36 57	<u>3</u> <u>4</u> 2 1 1 1 2 3	
26	00 04 00 -04 42 57 22 05 00	<u>4</u> <u>1</u> 1 1 1 0 1 <u>4</u>	
27	-05 42 57	<u>5</u> <u>5</u> 1 1 0 0 0 2	
28	01 39 00 -05 51 57 23 48 00	<u>2</u> <u>2</u> 1 1 0 0 2 <u>5</u>	
29	-06 22 57	<u>5</u> <u>5</u> <u>4</u> 2 2 3 3 4	
31	23 54 00	2 2 2 2 1 1 3 <u>3</u>	

Day	Hours(Universal Time)	K-Index	Remarks
Sep. 1	-05 <sup>h</sup> 44 <sup>m</sup> 57 <sup>s</sup>	<u>0</u> <u>2</u> 2 0 0 3 2 4	
2	23 <sup>h</sup> 48 <sup>m</sup> 00 <sup>s</sup>	3 2 0 0 0 0 3 <u>3</u>	
3	-01 23 57	<u>3</u> 0 0 0 0 0 0 0	
5	22 30 00	0 0 0 0 0 0 0 <u>4</u>	
6	-04 34 57	<u>4</u> <u>3</u> 1 1 3 3 2 4	
7	00 43 00 -04 <sup>h</sup> 48 <sup>m</sup> 57 <sup>s</sup> 22 09 00	<u>2</u> <u>2</u> 1 2 0 0 0 <u>4</u>	
8	-03 25 57	<u>4</u> <u>2</u> 0 0 1 1 2 4	
11	21 07 00	5 5 2 3 2 3 5 <u>5</u>	
12	-05 13 57	<u>5</u> <u>5</u> 4 2 2 1 2 3	
18	00 13 00 -02 46 57 23 40 00	<u>4</u> 3 0 0 1 3 4 <u>4</u>	
19	-00 15 57	<u>3</u> 2 1 2 1 1 0 1	
26	23 40 00	3 3 1 0 3 3 2 <u>5</u>	
27	-04 55 57 23 41 00	<u>5</u> <u>3</u> 2 1 2 3 3 <u>3</u>	
28	-04 14 57 22 37 00	<u>3</u> <u>3</u> 1 2 0 1 0 <u>2</u>	
29	-03 19 57 22 23 00	<u>3</u> <u>0</u> 1 1 0 0 1 <u>2</u>	
30	-03 05 57	<u>1</u> <u>0</u> 0 0 0 0 0 4	
Oct. 1	00 02 00 -01 54 57 23 18 00	<u>5</u> 4 0 0 0 0 0 <u>2</u>	
2	-02 37 57 23 00 00	<u>3</u> 1 0 0 0 0 0 <u>2</u>	
3	-03 29 57	<u>2</u> <u>0</u> 0 1 2 1 4 5	