

Overview of solar-terrestrial environment between March and September, 2015

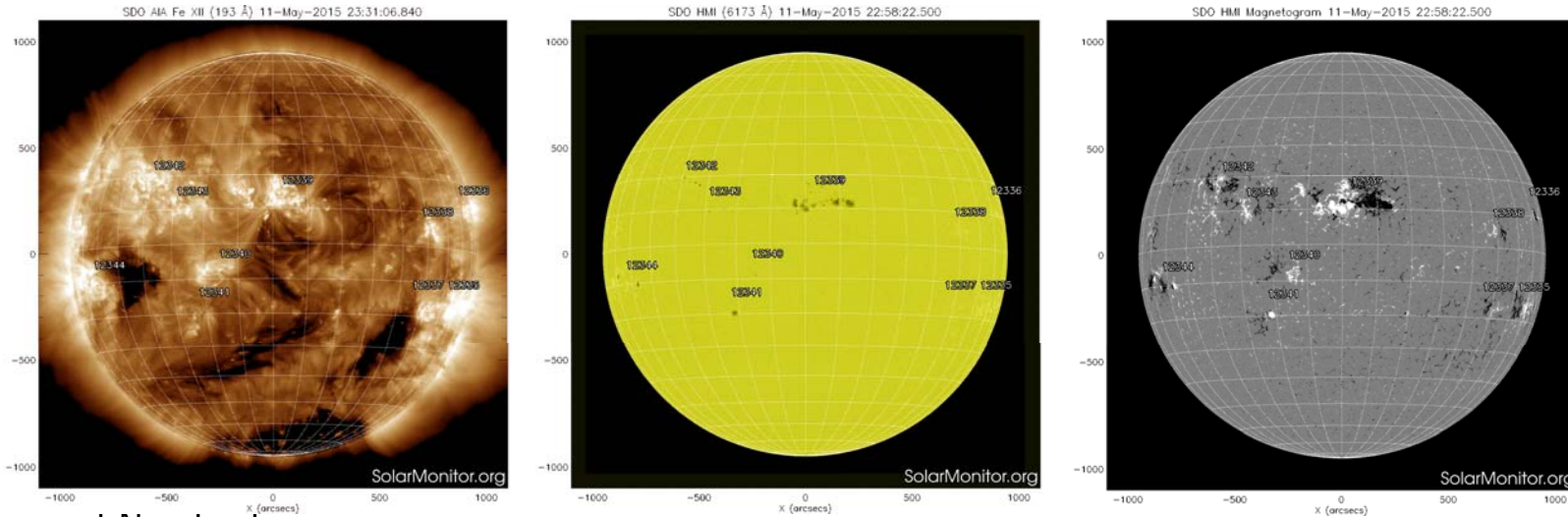
Shuji Abe[1]

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KYUSHU UNIVERSITY

Sun (2015Mar.-2015 Sep.)



[Noaa Sunspot Number]

White:0, Skyblue: less than 40, Green: 40-80, Yellow: 80-120, Red: greater than 120

2015/02/20	53	54	49	44	63	64	39	58	70	66	65	38	43	31	37	20	23	29	42	42	56	87	56	54	57	60	44
2015/03/19	71	27	40	88	119	127	115	103	109	82	73	56	53	69	31	29	68	66	78	39	40	37	34	74	64	68	97
2015/04/15	85	85	93	114	142	125	153	134	110	79	77	55	42	36	26	27	13	25	67	85	99	110	131	134	136	134	188
2015/05/12	170	135	126	113	103	75	83	84	61	36	81	69	74	66	48	24	11	23	27	47	38	39	55	80	105	129	136
2015/06/08	122	110	105	101	96	97	117	107	87	94	82	74	89	79	77	61	39	33	28	25	39	36	41	49	73	91	111
2015/07/05	131	109	118	131	120	124	91	59	44	39	39	55	40	52	46	39	37	35	27	54	41	38	53	56	66	83	71
2015/08/01	70	51	62	68	87	80	95	92	87	67	87	68	51	46	33	32	20	44	36	68	78	72	93	71	61	45	46
2015/08/28	52	50	50	50	49	41	27	36	24	38	47	40	49	42	79	87	75	52	66	67	72	62	61	74	68	79	

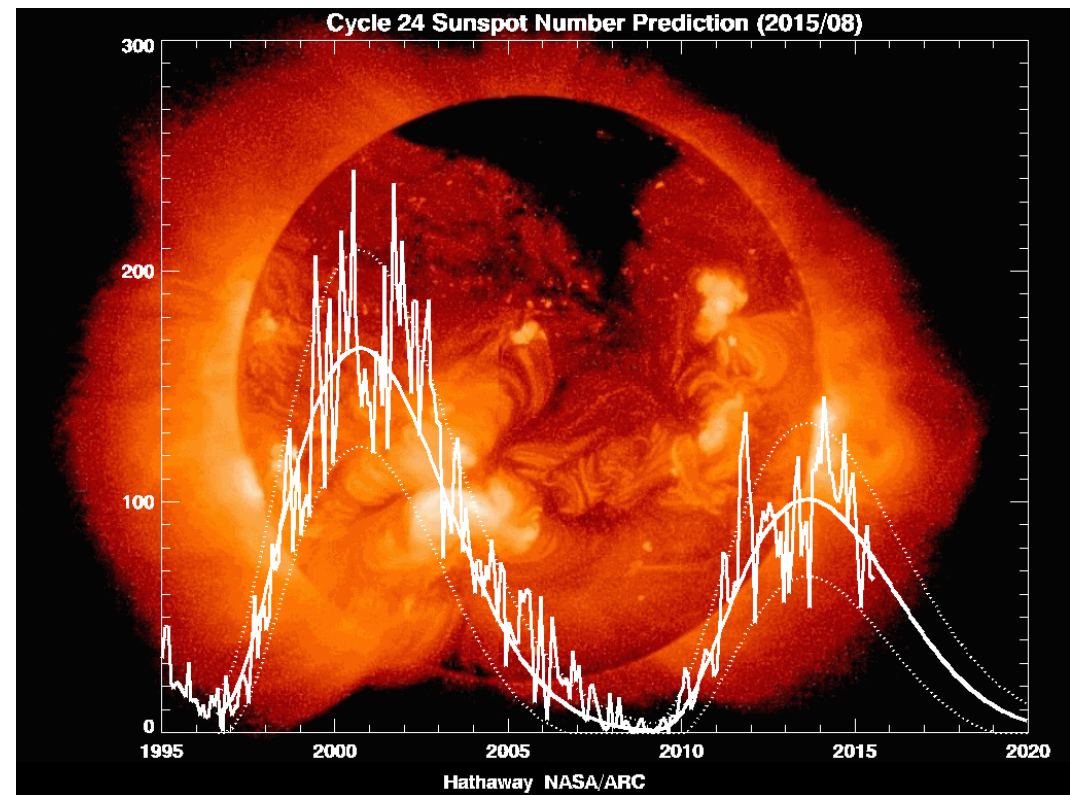
<http://www2.nict.go.jp/aeri/swe/swx/swcenter/sunspot.html>

Solar Cycle Prediction

YYYYMM MSS 13MAve.

201407	100.2	112.6
201408	106.9	108.3
201409	130.0	101.9
201410	90.0	97.4*
201411	103.6	95.0*
201412	112.9	92.6*
201501	93.0	89.8*
201502	66.7	86.6*
201503	54.5	-1.0*
201504	78.0*	-1.0*
201505	90.0*	-1.0*
201506	68.3*	-1.0*
201507	66.4*	-1.0*
201508	64.6*	-1.0*

Note: Since July 1st 2015, the original Sunspot number data are replaced by a new entirely revised data series(ver. 2.0).



<http://solarscience.msfc.nasa.gov/predict.shtml>



X-ray Flare (2015Mar.-2015 Sep.)

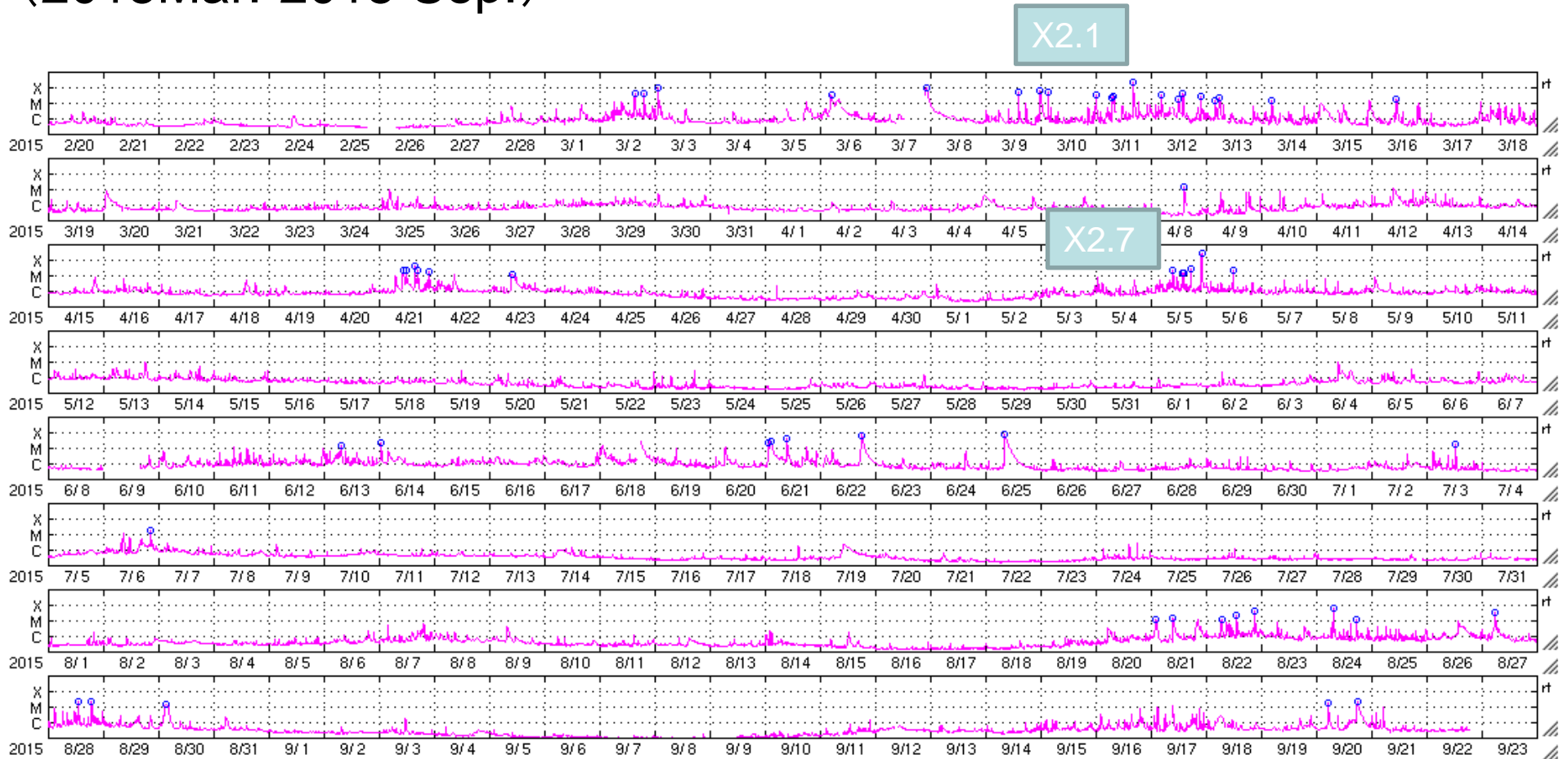
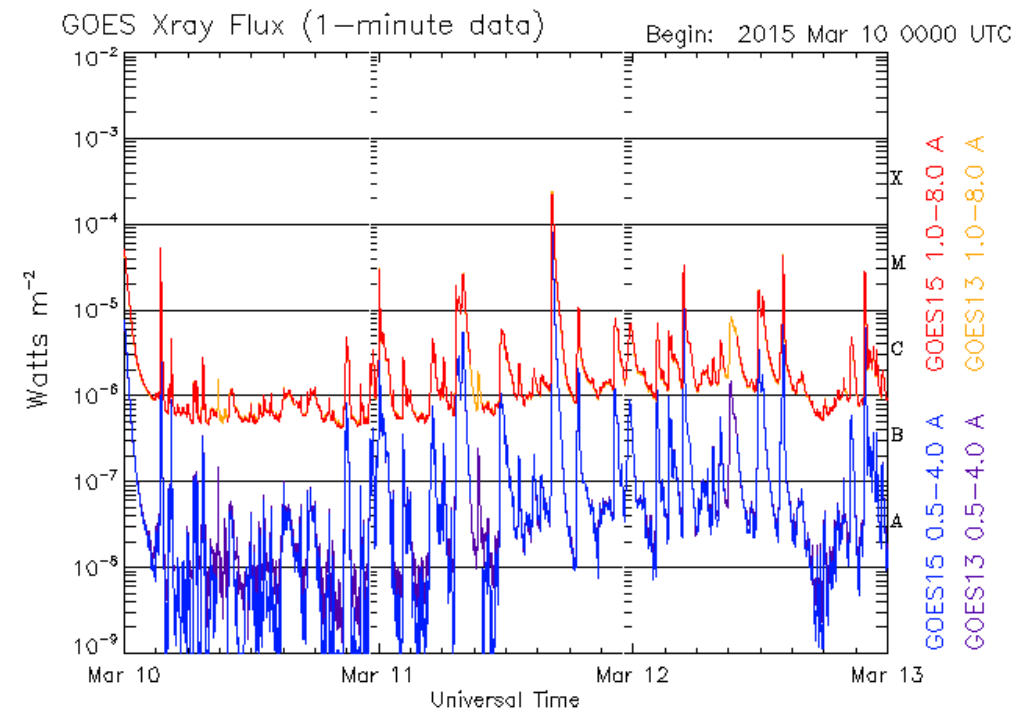
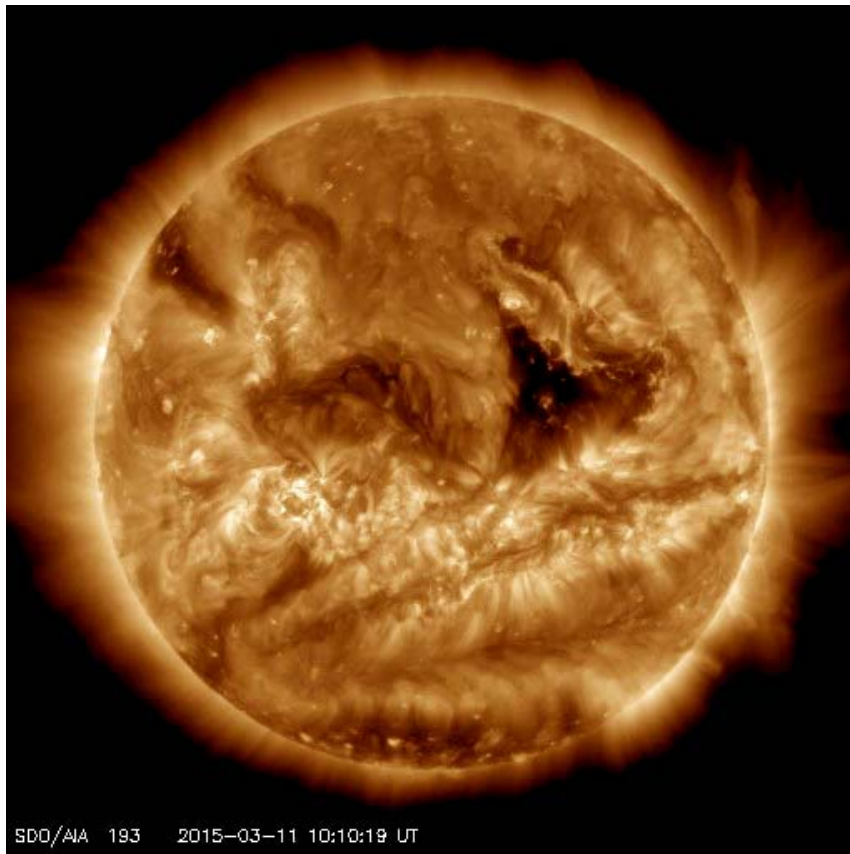


Figure from [簡単データ表示 \(swnews.jp\)](http://www.swnews.jp)

(Viewer by M. Shino)

X-ray Flare (2015Mar.-2015 Sep.)

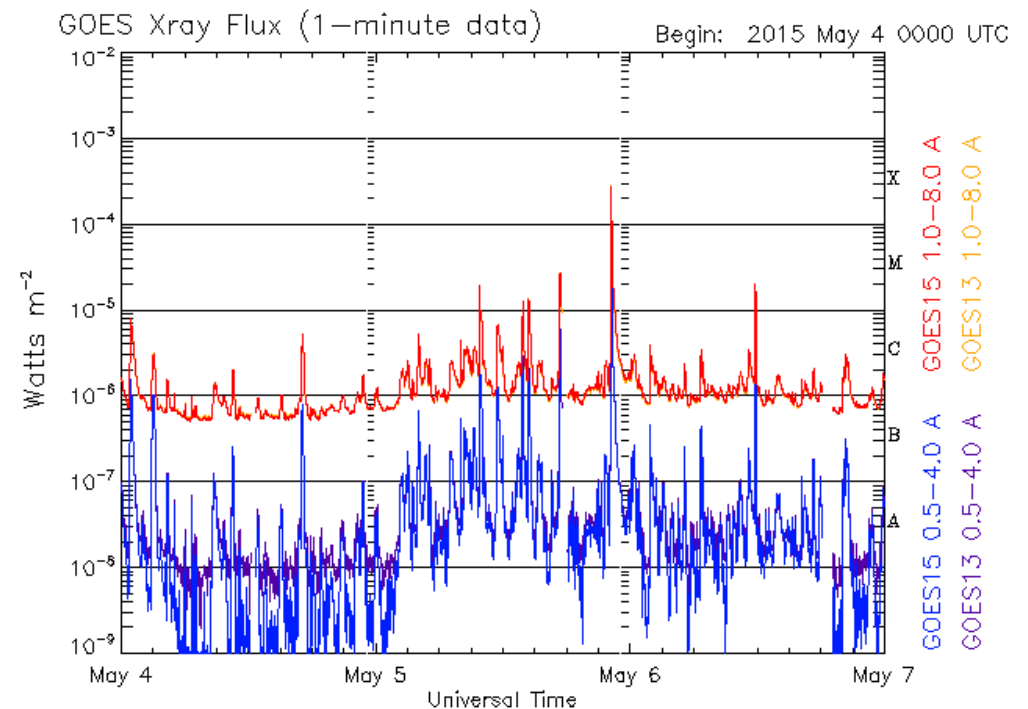
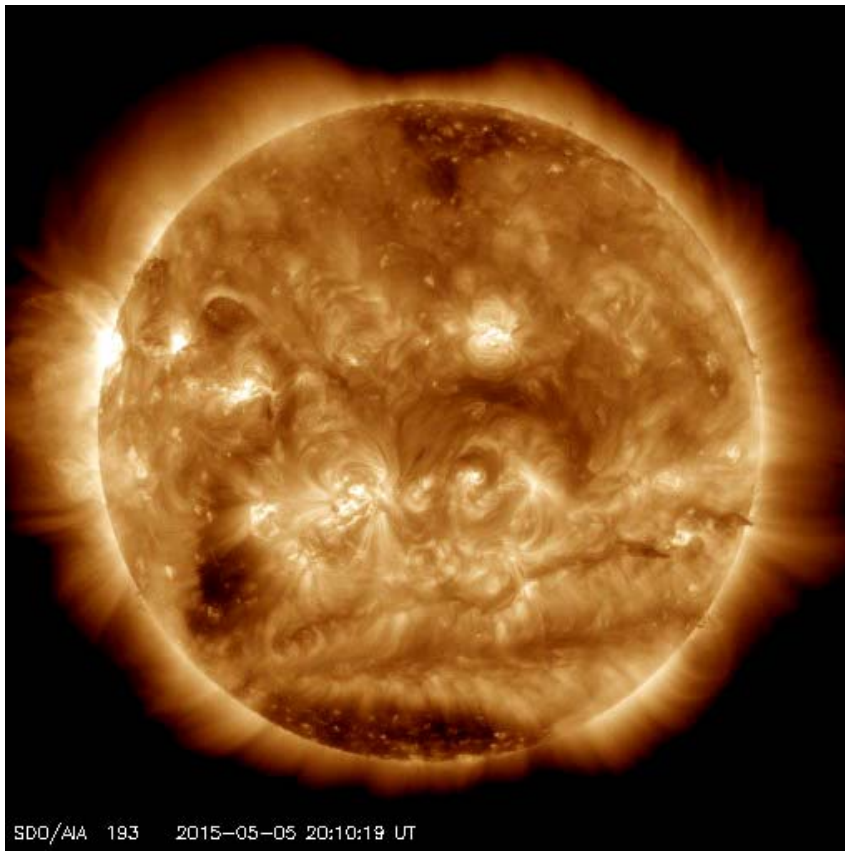
Region 2297
2015/March/11 15:15UT
X2.1



X-ray Flare

(2015Mar.-2015 Sep.)

Region 2339
2015/May/05 22:05UT
X2.7





High energy particle (Proton) (2015Mar.-2015 Sep.)

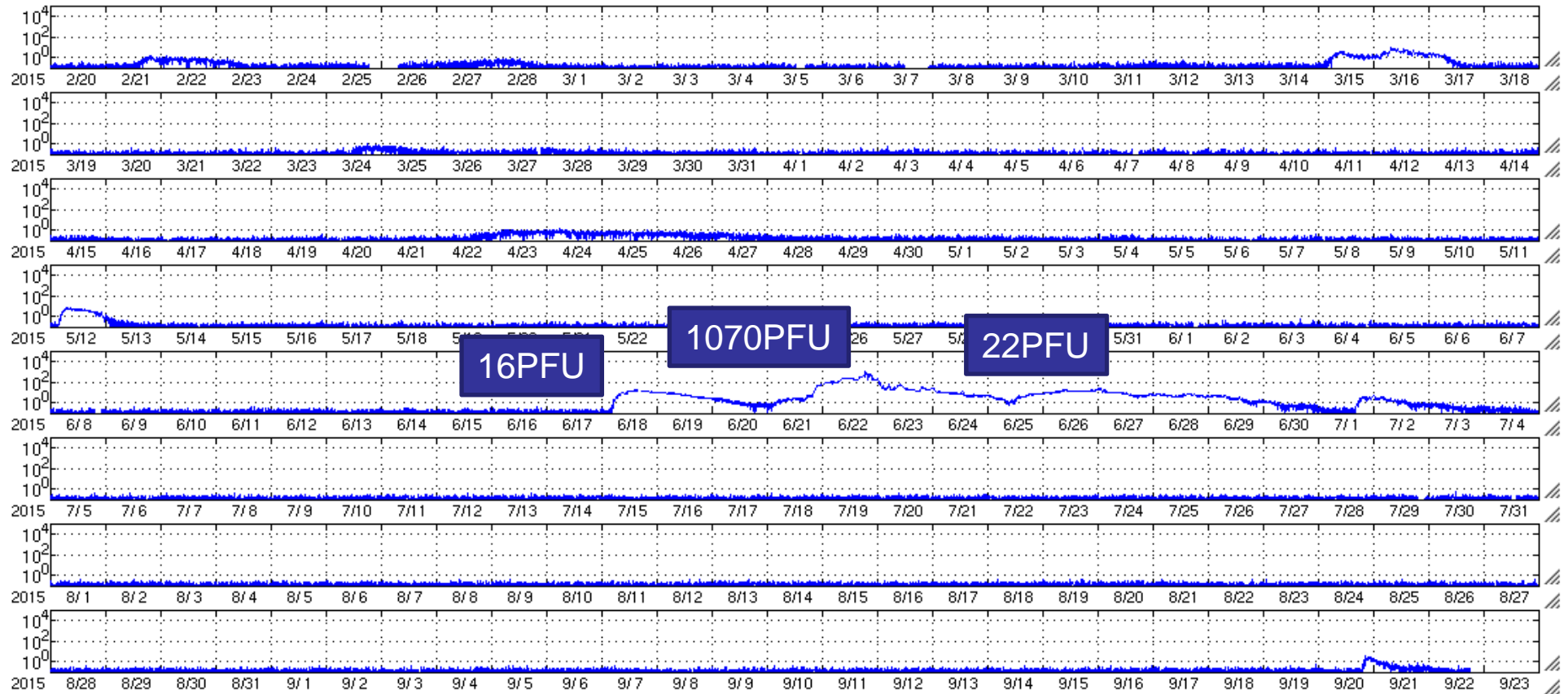


Figure from [簡単データ表示 \(swnews.jp\)](http://swnews.jp)

(Viewer by M. Shino)

Start	Max	PFU	Associated CME	Xflare	Location
Jun 18/1135	Jun 18/1445	16	Narrow SW limb event	M1	SW limb
Jun 21/2135	Jun 22/1900	1070	Full halo/21	M2	N13W00
Jun 26/0350	Jun 27/0030	22	Asymmetric full halo	M7	N12W40

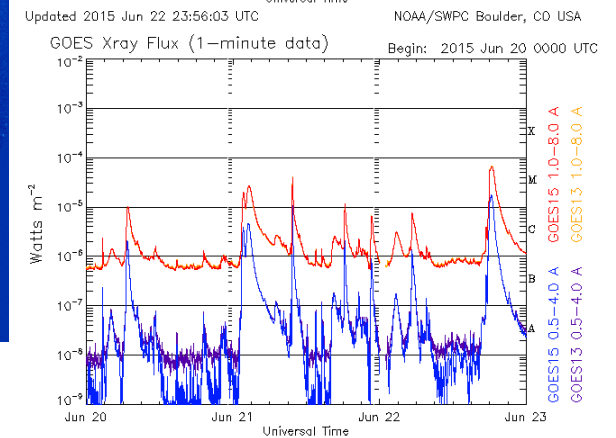
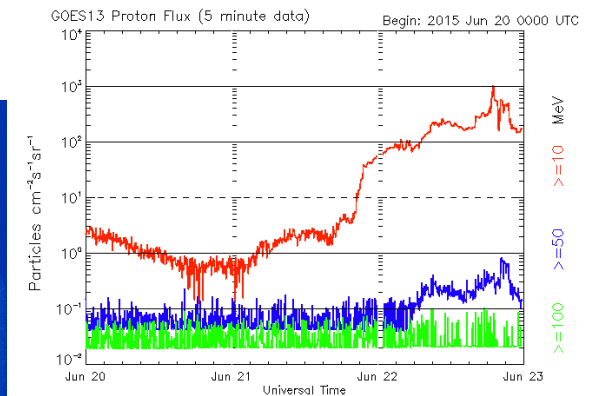
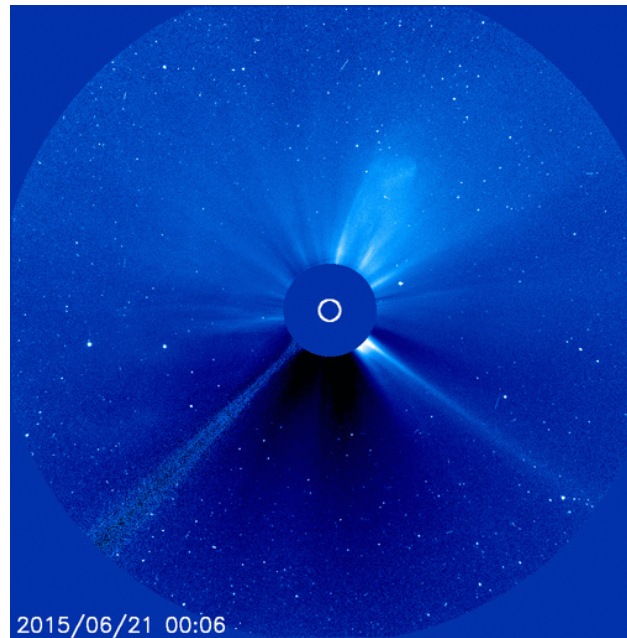
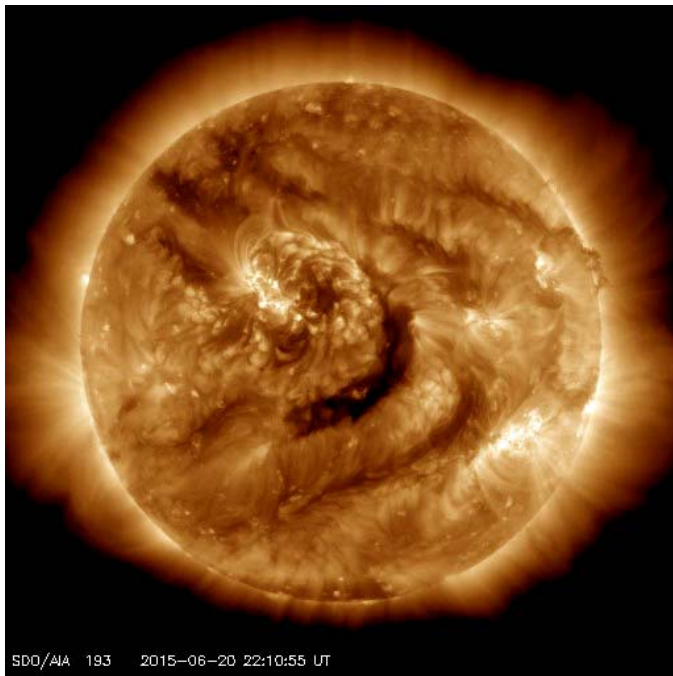
High energy particle (Proton)

(2015Mar.-2015 Sep.)

Start time: 2015/Jun/21 21:35UT

Maximum time: 2015/Jun/22 19:00UT

Proton flux: 1070PFU



Updated 2015 Jun 22 23:59:12 UTC NOAA/SWPC Boulder, CO USA

M2 flare and Full halo CME(region 2371)



Solar Wind velocity (2015Mar.-2015 Sep.)

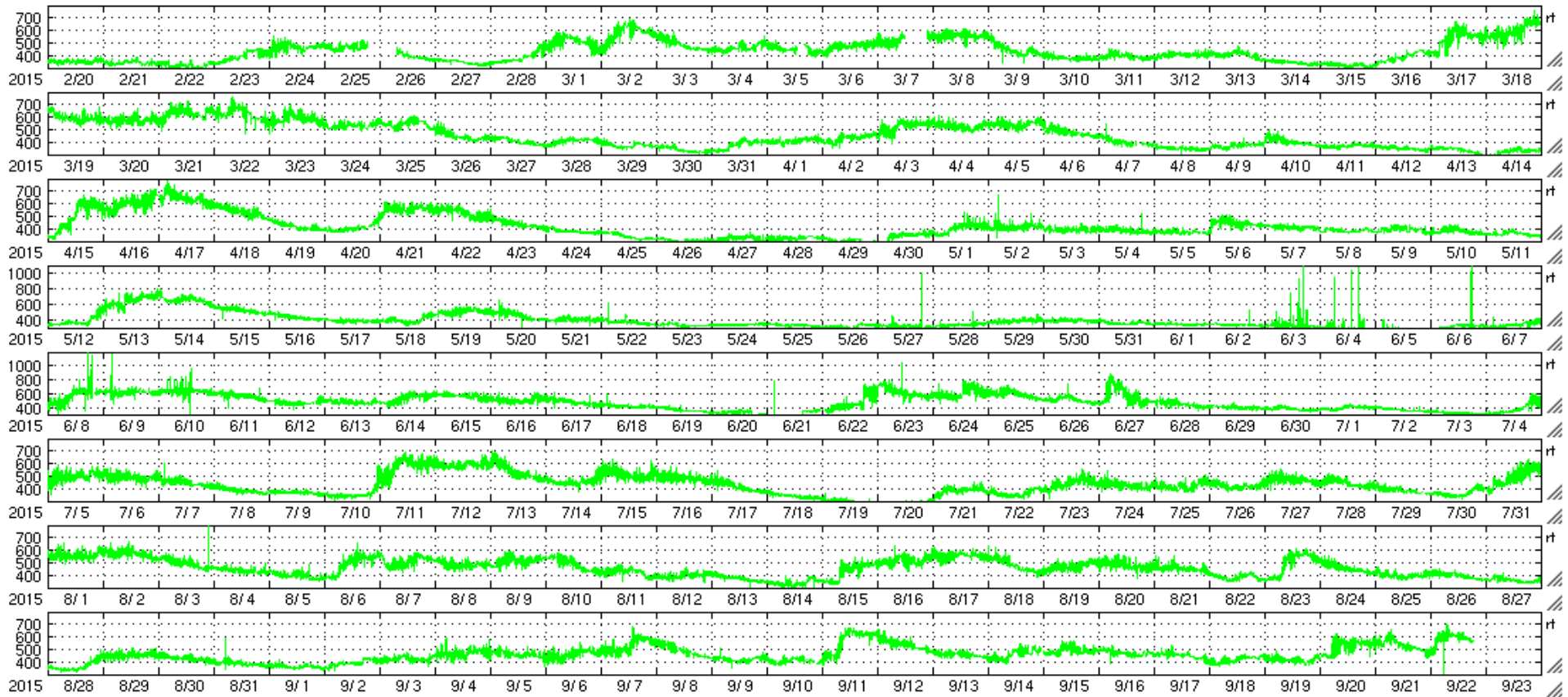


Figure from [簡単データ表示 \(swnews.jp\)](#)

(Viewer by M. Shino)



Solar Wind mag (2015Mar.-2015 Sep.)

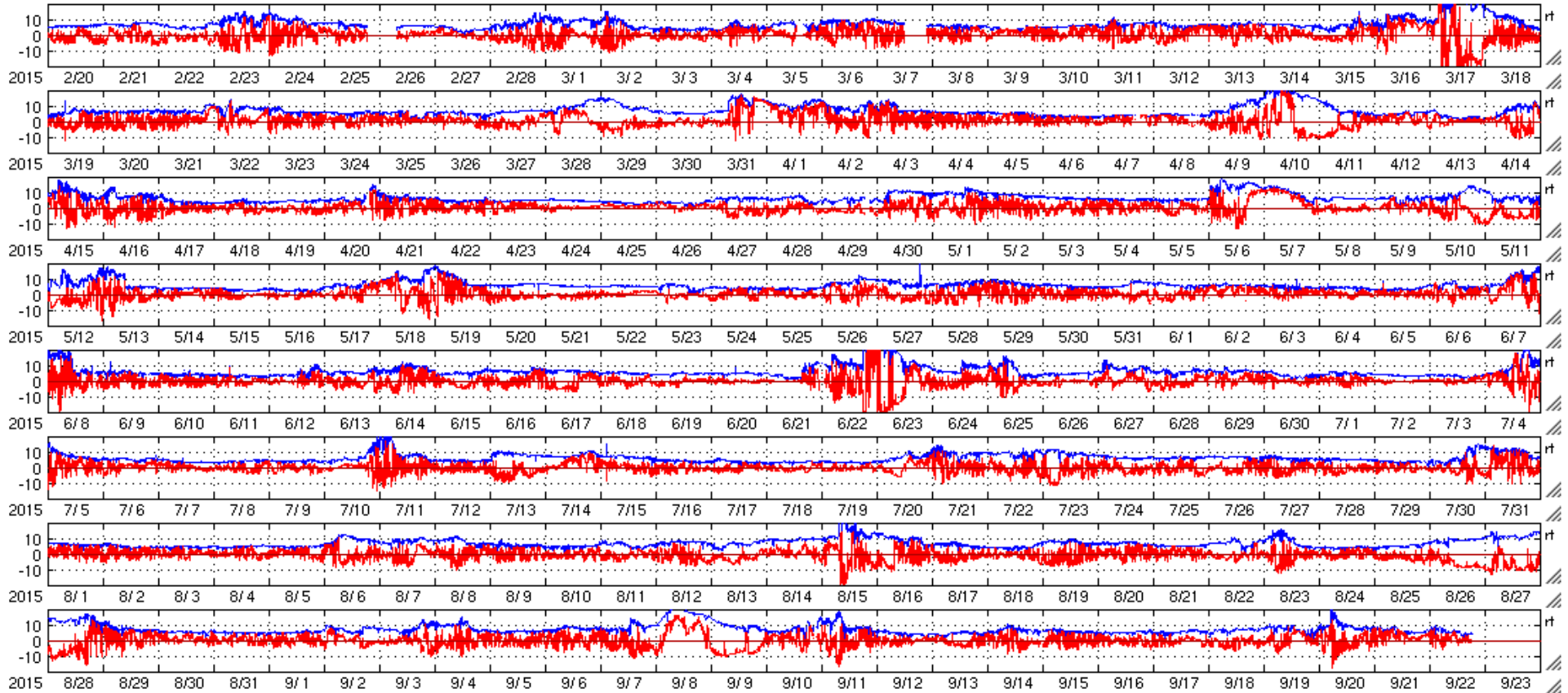


Figure from [簡単データ表示 \(swnews.jp\)](http://swnews.jp)

(Viewer by M. Shino)



Sector structure (2015Mar.-2015 Sep.)

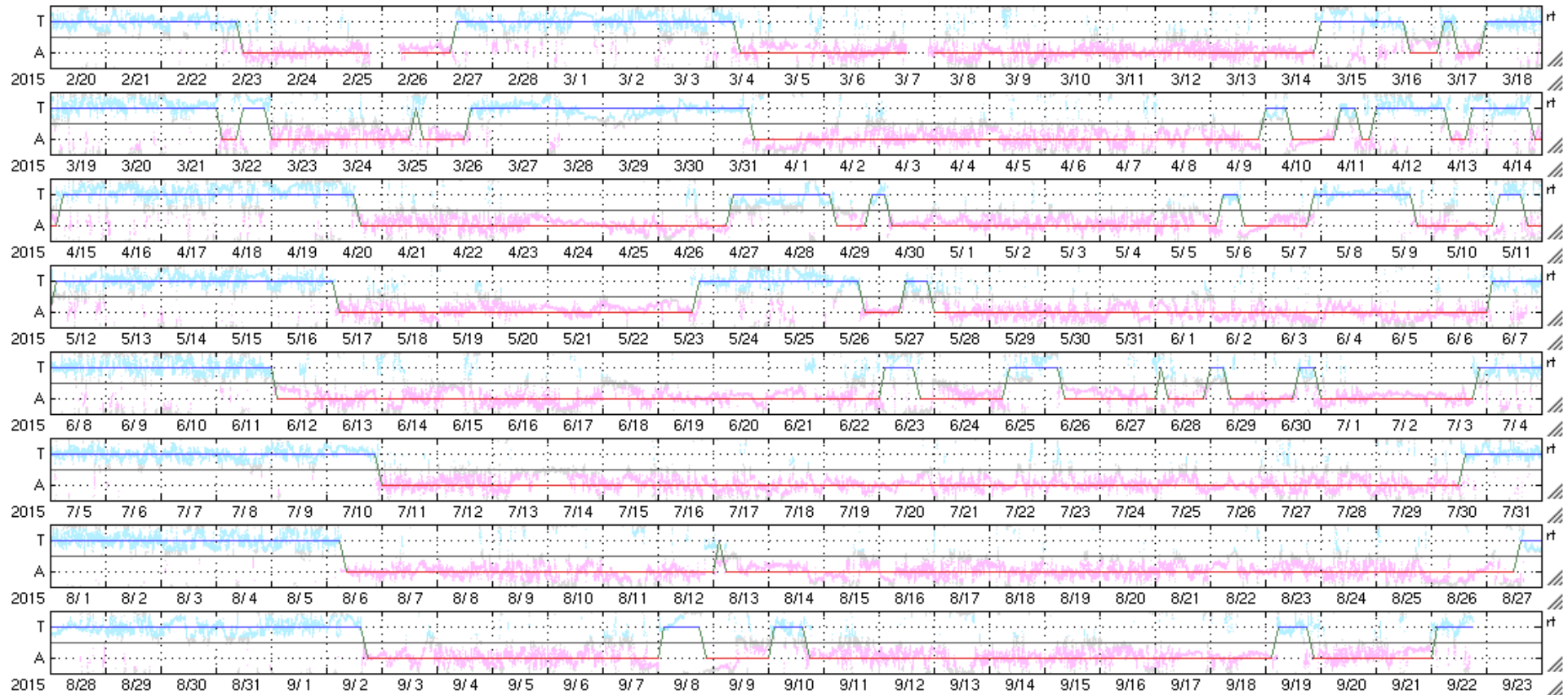
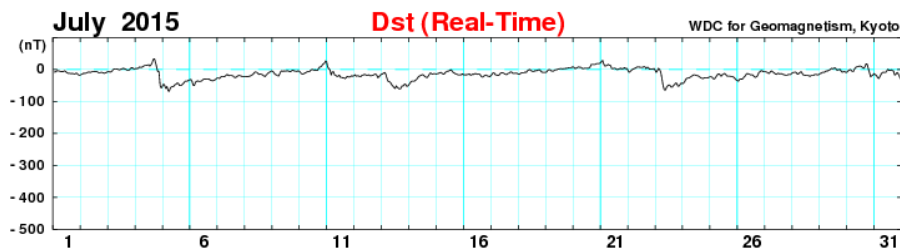
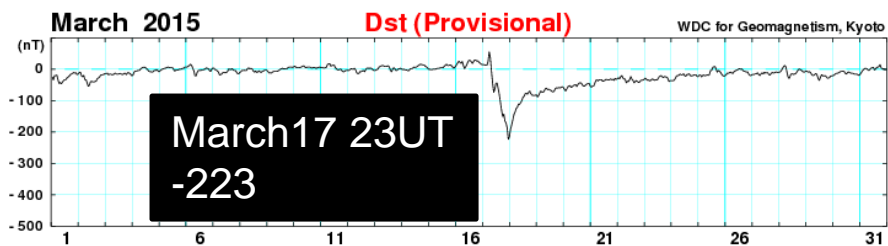


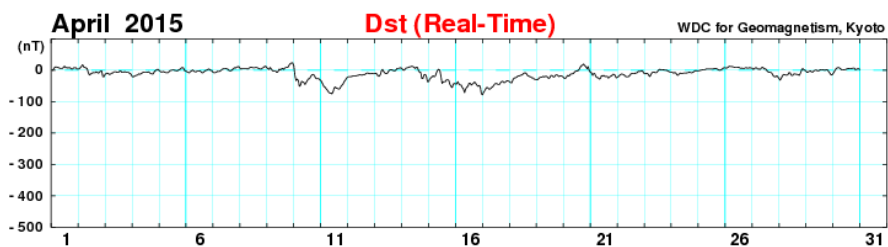
Figure from [簡単データ表示 \(swnews.jp\)](http://swnews.jp)

(Viewer by M. Shino)

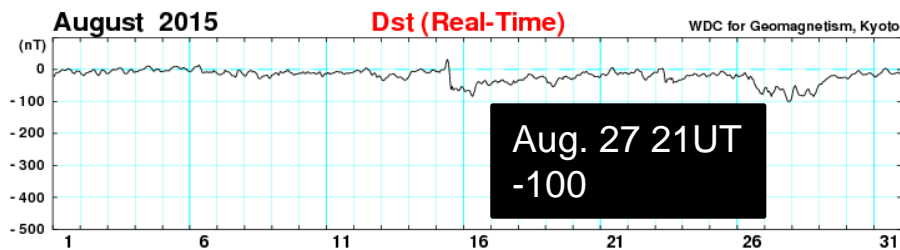
Dst Index (2015Mar.-2015 Sep.)



[Created at 2015-09-11 15:05UT]



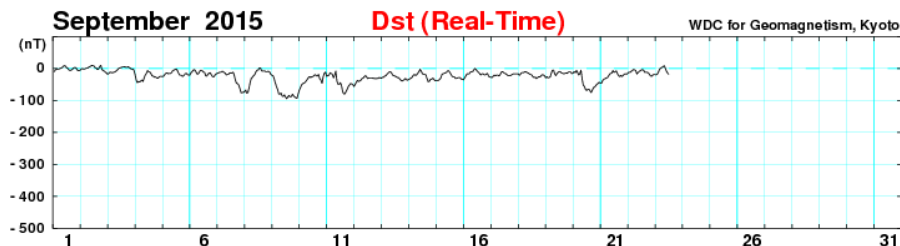
[Created at 2015-07-30 15:05UT]



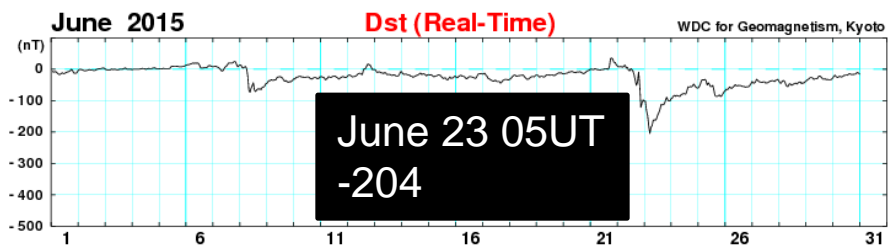
[Created at 2015-09-11 15:05UT]



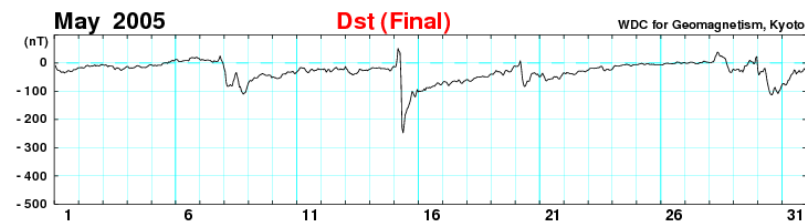
[Created at 2015-08-31 15:05UT]



[Created at 2015-09-23 11:30UT]

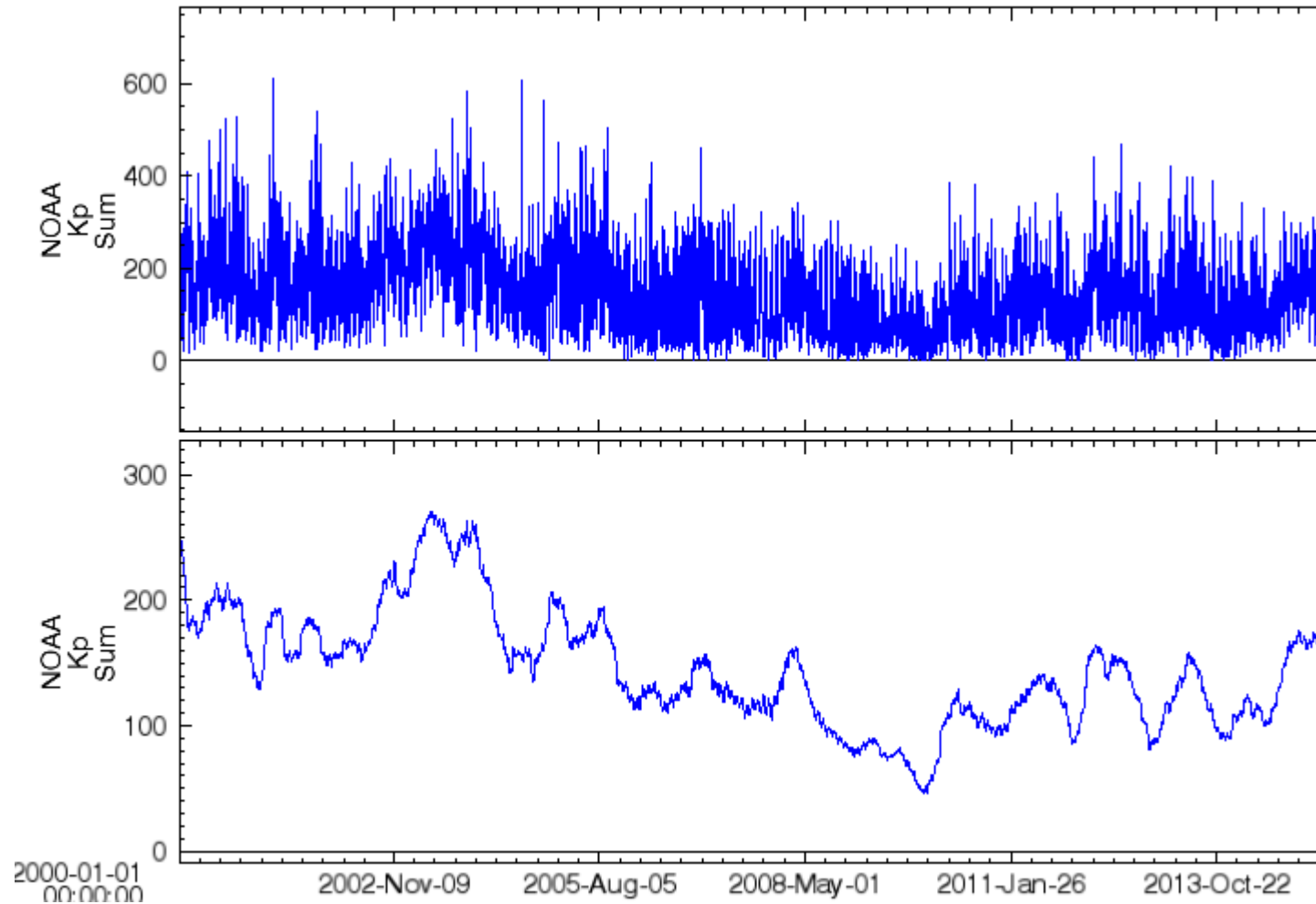


[Created at 2015-09-11 15:05UT]



Kp Index

(2015Mar.-2015 Sep.)





Space Weather Events Examples during this period (2015Mar.-2015 Sep.)

1. St. Patrick's Day 2015 Event

Date and Time: 2015/March/15-18

C9.1 Flare from AR2297 (2015/03/15 01:15UT, S22W25)

Full Halo CME(2015/03/15 02:00UT)

SC Storm(2015/03/17 23UT, -223nT)

2. Summer Solstice 2015 Event

Date and Time:2015/June/21-24

M2.0 Flare from AR2371 (2015/06/21 01:02UT, N12E13)

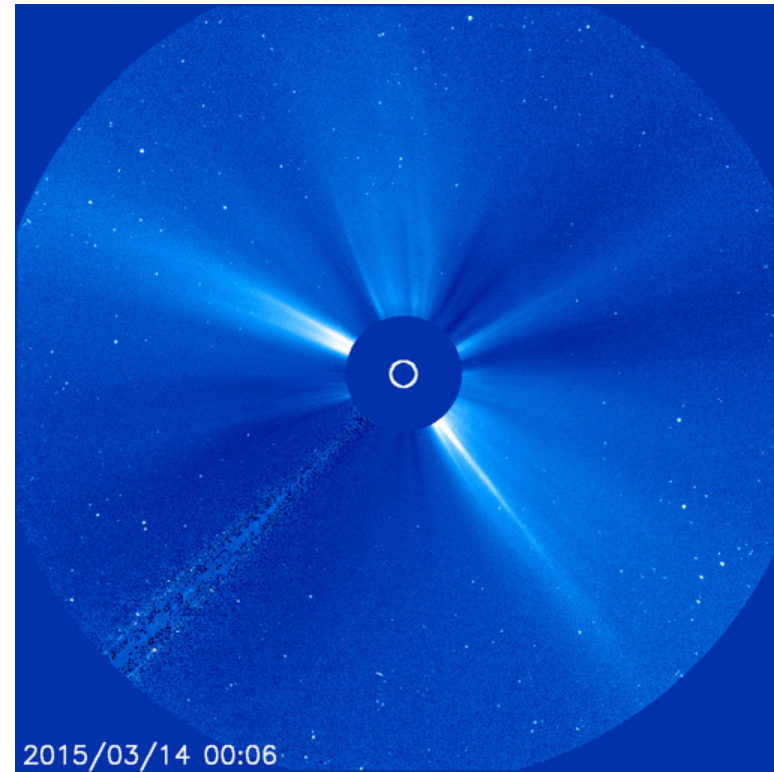
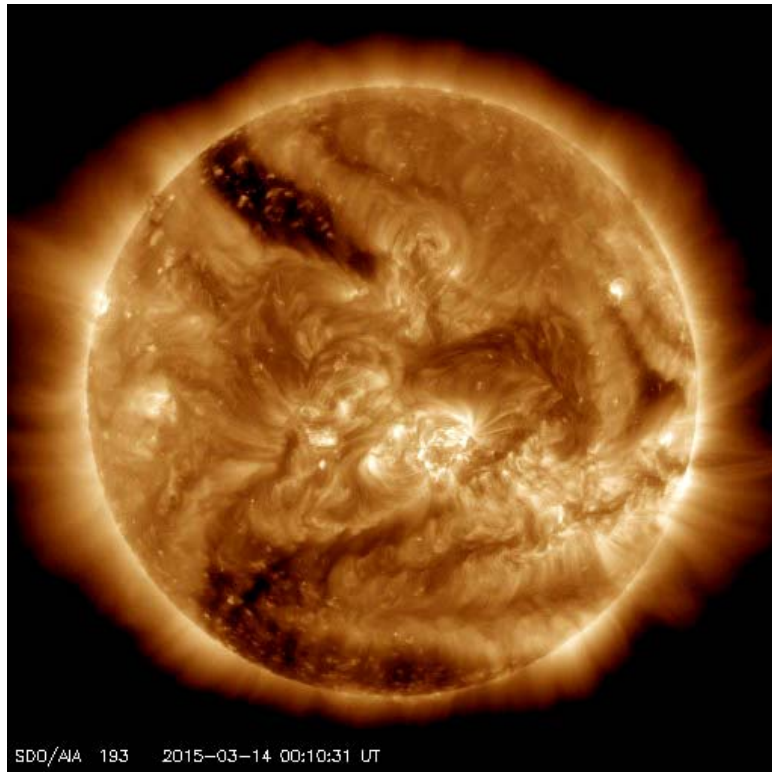
Full Halo CME(2015/06/21 02:36UT)

Proton event(2015/06/22 19:00UT, 1070PFU)

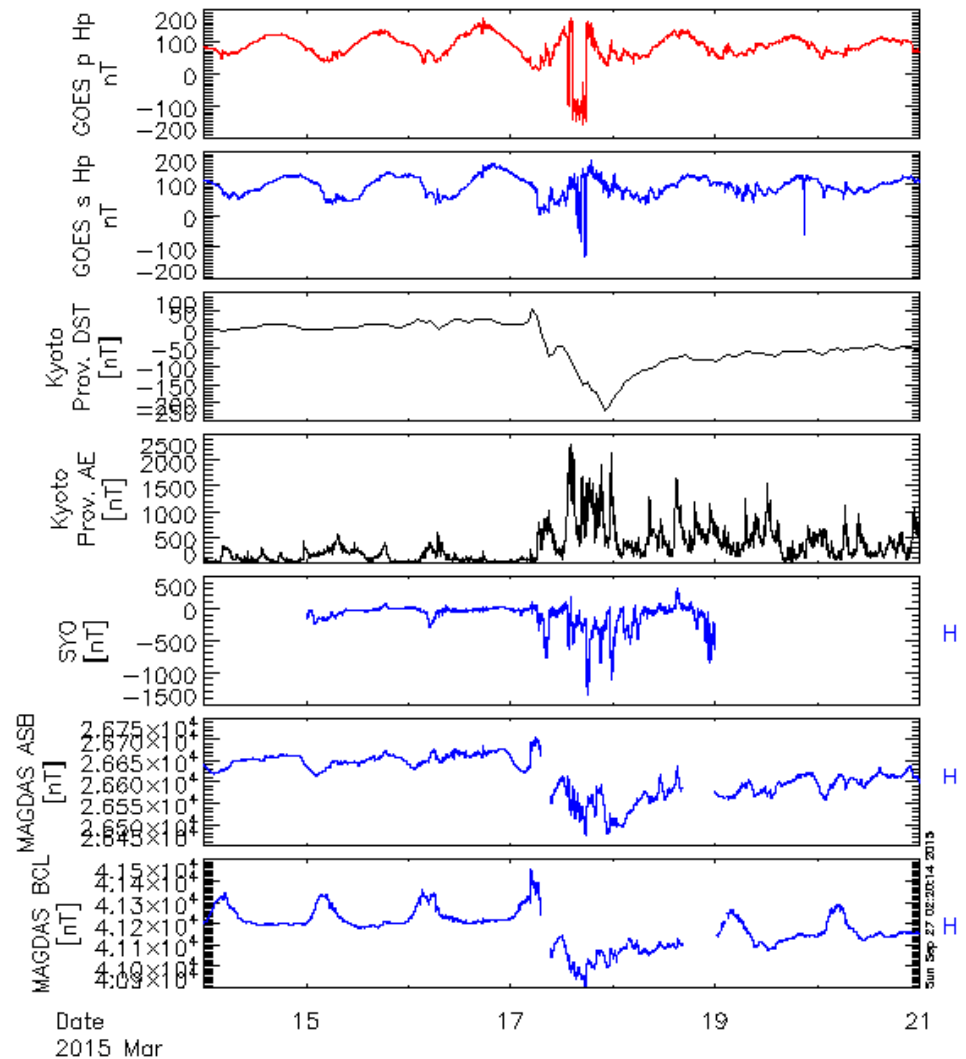
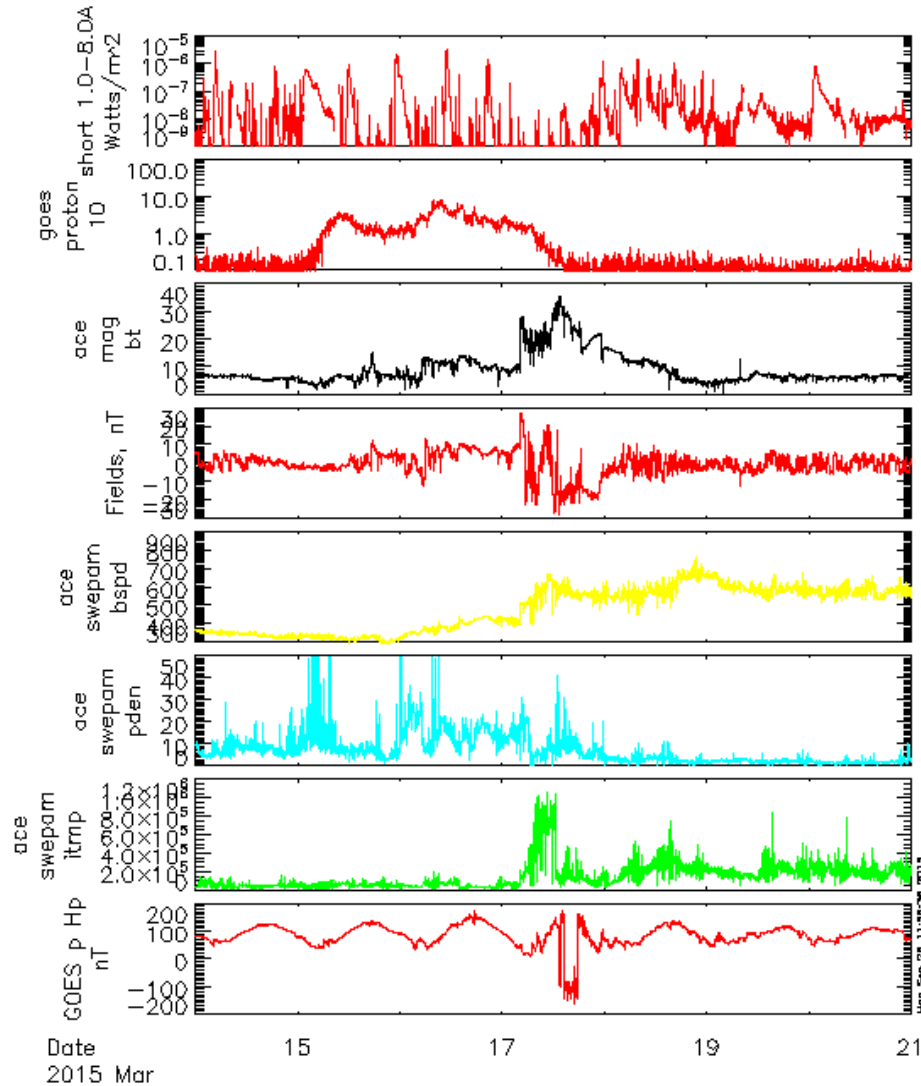
SC Storm(2015/06/23 05UT, -204nT)



Brief report of St. Patrick's Day 2015 Event

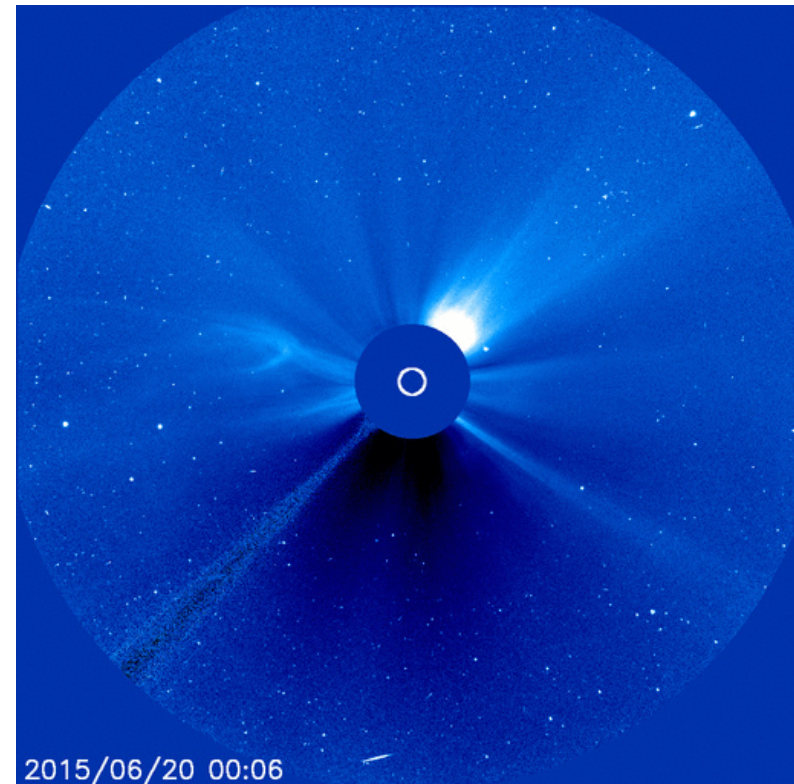
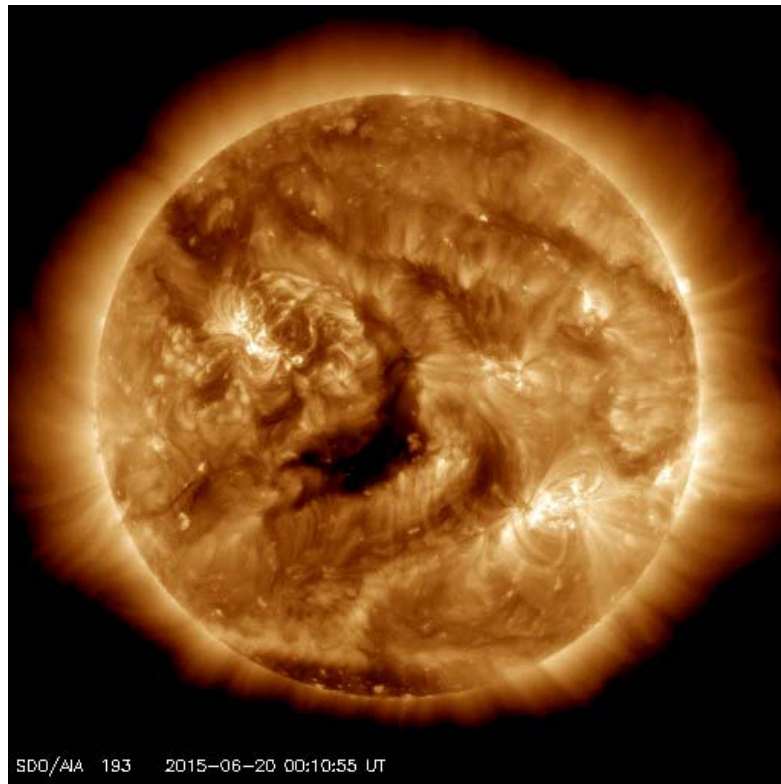


Brief report of St. Patrick's Day 2015 Event

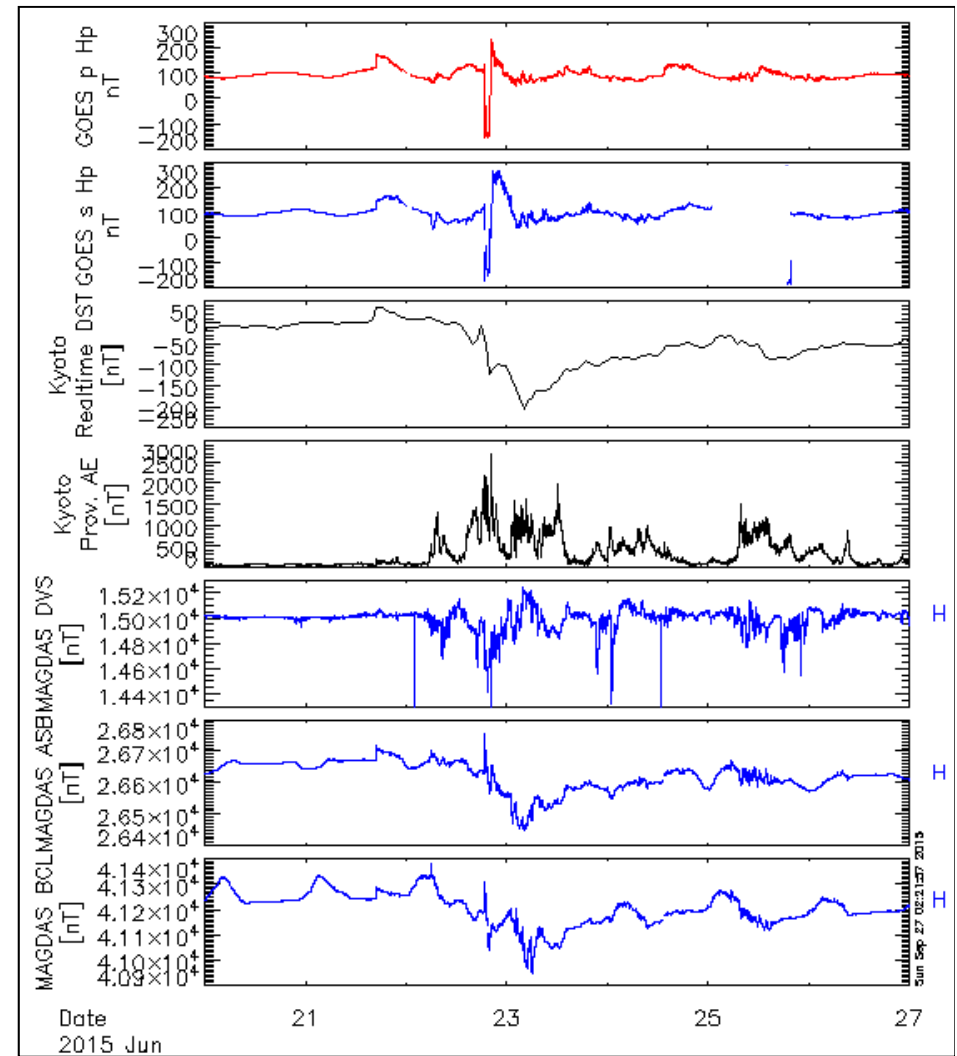
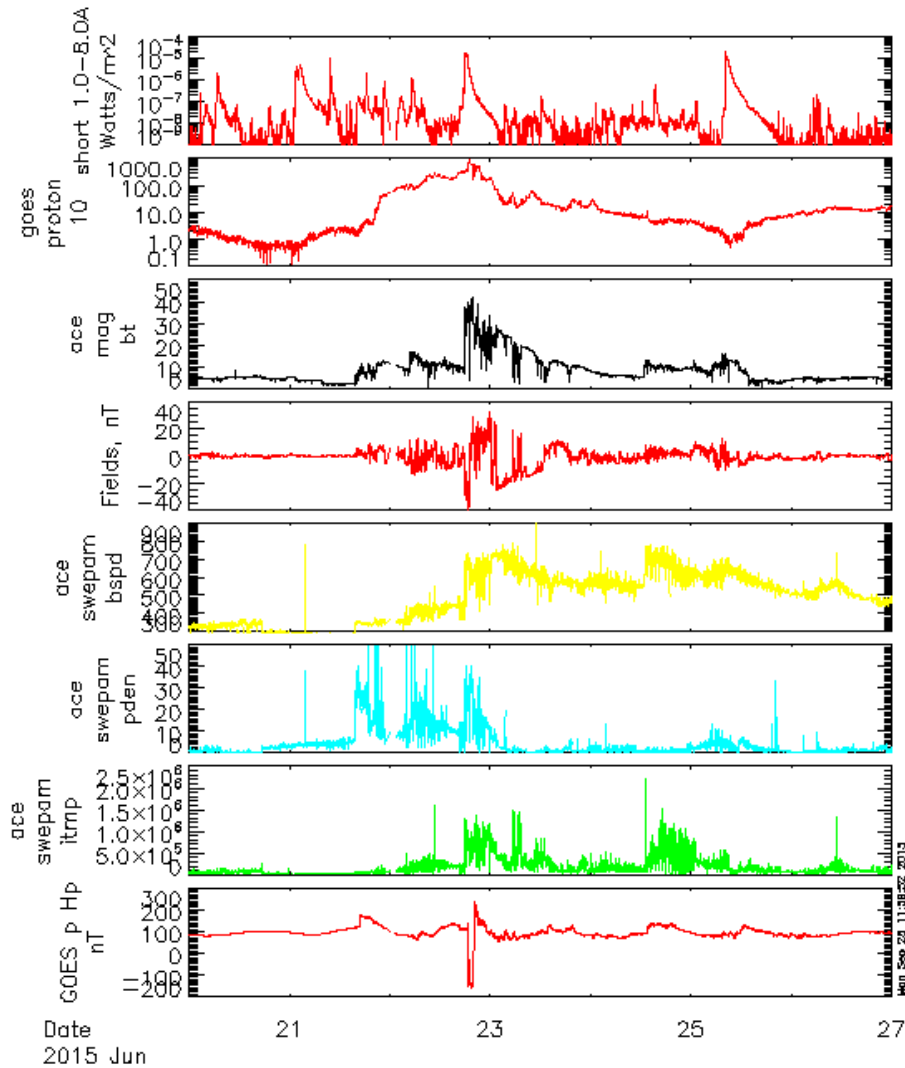




Brief report of Summer Solstice 2015 Event



Brief report of Summer Solstice 2015 Event





Summary

Recent a half year,

Sun:

Decreasing sunspot number

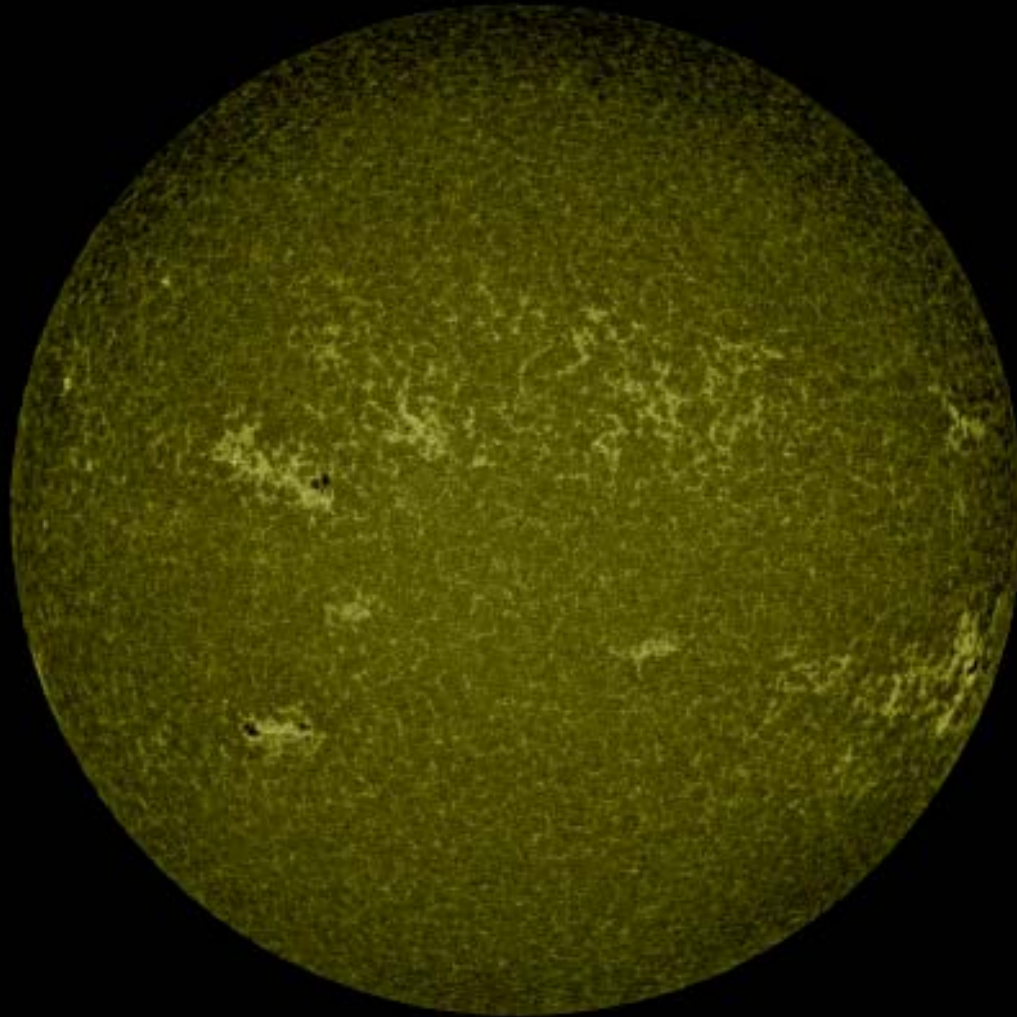
Two X class and three solar energetic particle events

Interplanetary field:

Complexed CIR and CME related field

Geospace:

First experience of over -200nT geomagnetic storm in solar cycle 24



*Thank you
for your attention*