Overview of solar-terrestrial environment between June, 2014 and March, 2015

Shuji Abe[1]

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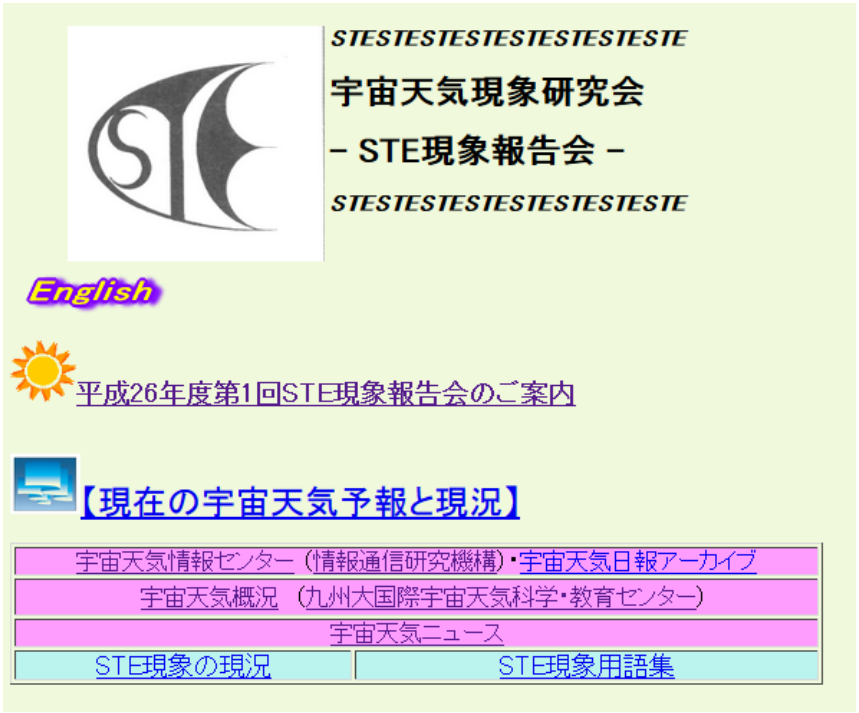
KYUSHU UNIVERSITY

STE Event Report Workshop



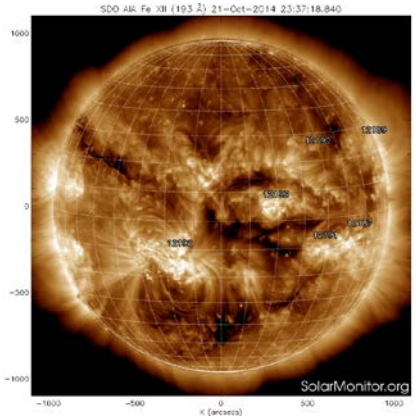
In the event report workshop on Solar-Terrestrial Environments (STE), we analyze observation data in order to understand complex systems in space environment.

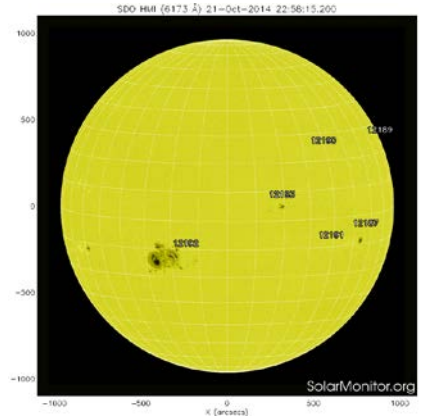
This workshop will take place 2 time each year (September@NICT and March@Kyushu).

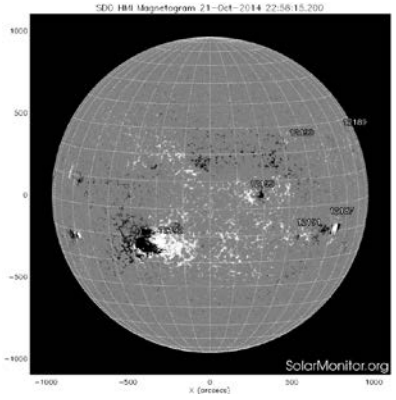
http://www2.nict.go.jp/aeri/swe/swx/ste/ste.html

Sun

2014June.-2015Mar.）







[Noaa Sunspot Number]

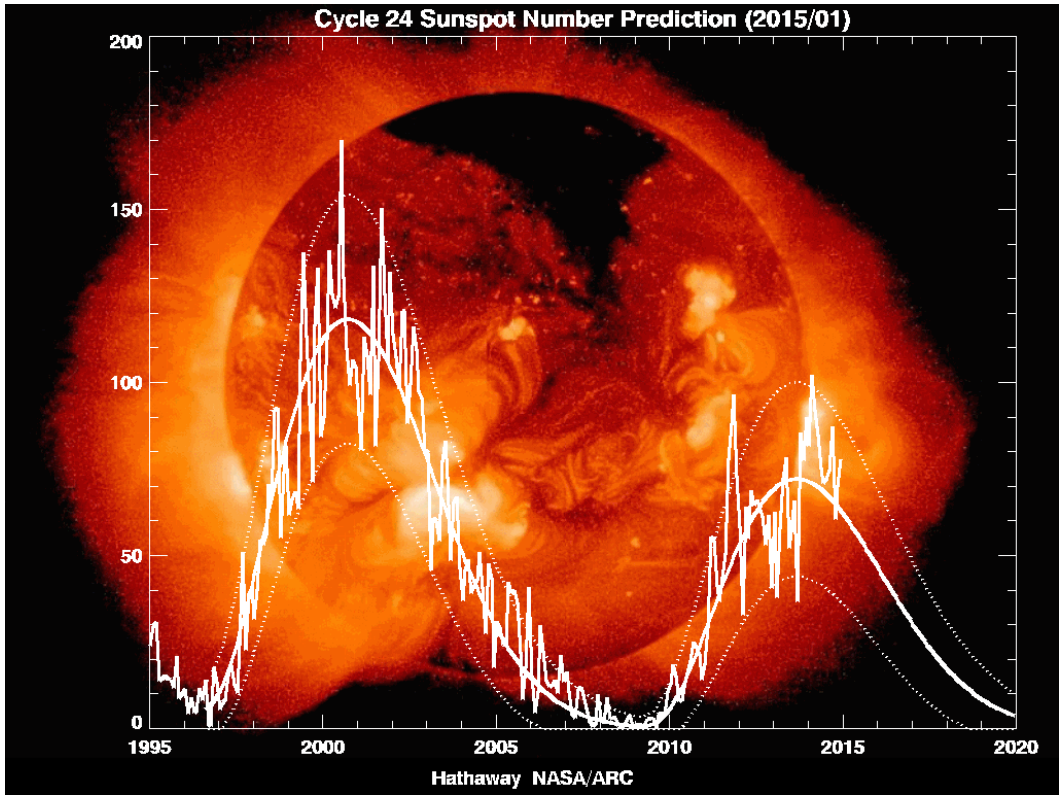
White:0, Skyblue: less than 40, Green: 40-80, Yellow: 80-120, Red: greater than 120

2014/05/26	110	96	72	55	56	55	68	56	61	70	102	132	155	144	152	149	176	196	276	159	80	81	87	108	108	75	75
2014/06/22	95	64	37	52	72	78	89	112	124	154	180	179	199	213	256	197	209	183	159	166	145	102	70	25	11	0	26
2014/07/19	27	41	16	40	55	55	65	76	110	143	160	145	139	165	178	152	111	93	119	158	101	111	64	82	80	68	108
2014/08/15	119	99	121	92	84	89	128	139	124	128	112	81	82	78	73	64	90	94	105	92	136	124	170	154	158	162	161
2014/09/11	164	157	165	120	156	85	91	75	91	75	72	87	90	76	139	203	159	200	160	166	164	105	128	125	106	86	75
2014/10/08	61	65	54	38	28	41	70	90	66	39	60	86	93	120	123	126	147	115	138	120	109	84	121	71	82	91	93
2014/11/04	99	113	107	96	92	78	63	70	89	104	117	100	91	95	92	72	83	68	64	66	111	120	170	155	166	156	153
2014/12/01	160	146	128	137	97	73	58	77	80	97	115	132	121	175	152	169	154	168	156	120	159	113	128	86	100	92	111
2014/12/28	108	113	102	94	101	113	122	124	89	102	106	101	125	146	133	111	93	89	62	75	49	78	62	57	50	63	70
2015/01/24	57	65	110	119	140	181	193	153	132	117	112	85	86	71	80	94	82	82	76	50	59	49	45	44	40	95	86
2015/02/20	53	54	49	44	63	64	39	58	70																		

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

Solar Cycle Prediction

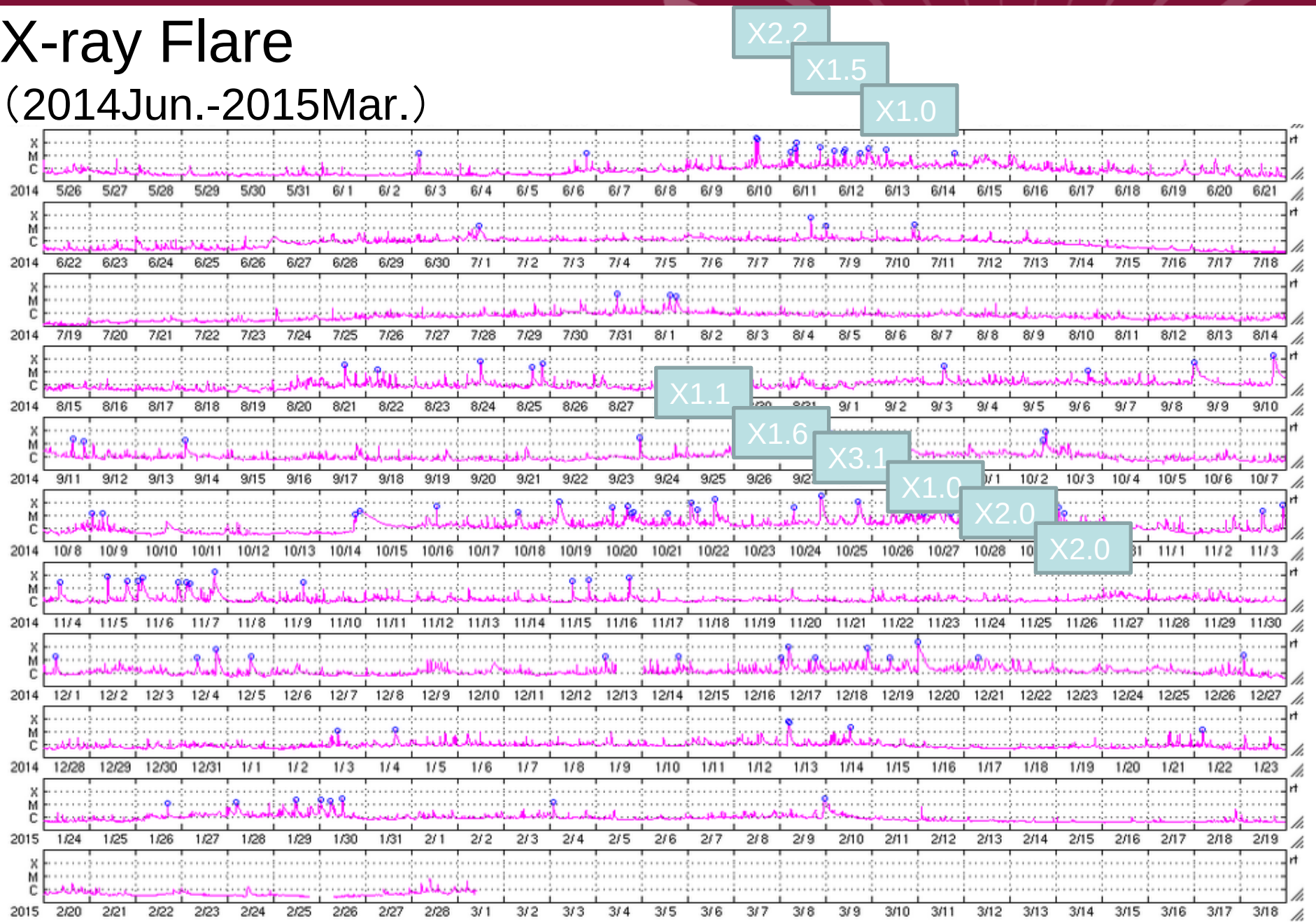
YYYYMM	M.SS	MAofSS
201401	81.8	77.3
201402	102.3	78.3
201403	91.9	80.8
201404	84.7	81.9 *
201405	75.2	80.5 *
201406	71.0	79.7 *
201407	72.4	78.6 *
201408	74.6	75.6 *
201409	87.6	
201410	60.6 *	
201411	70.1 *	
201412	78.0 *	
201501	67.0 *	
201502	44.8 *	



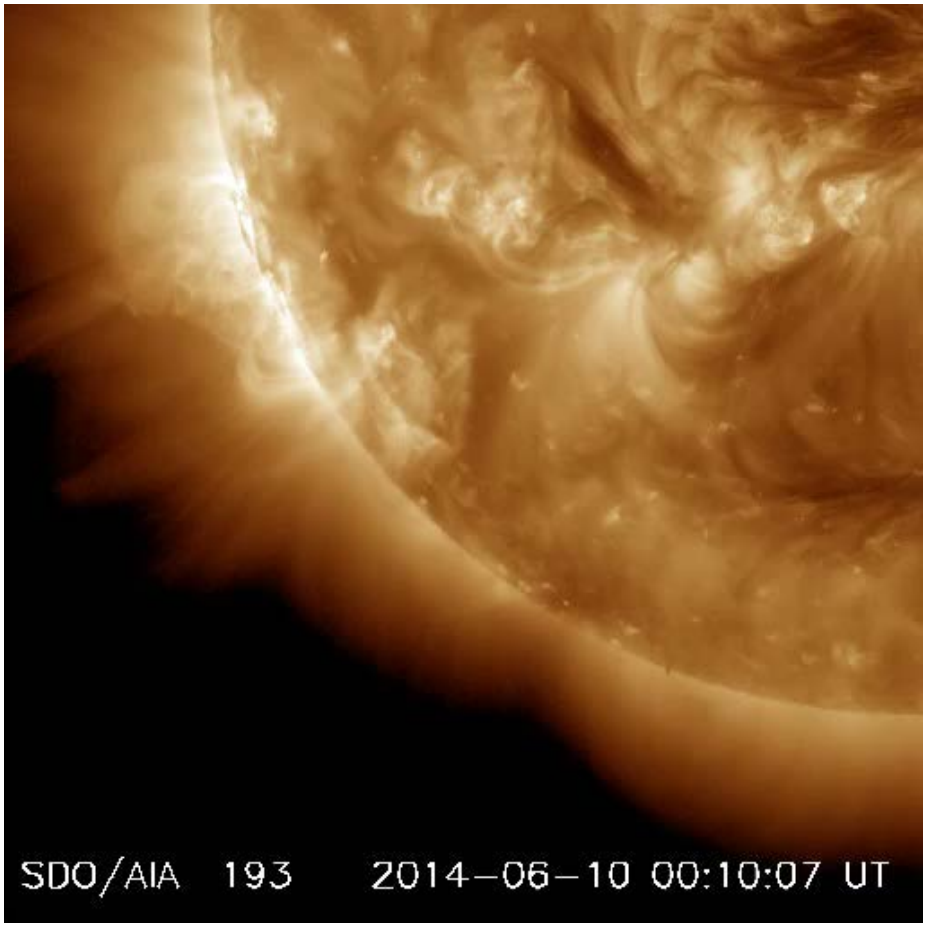
http://solarscience.msfc.nasa.gov/predict.shtml

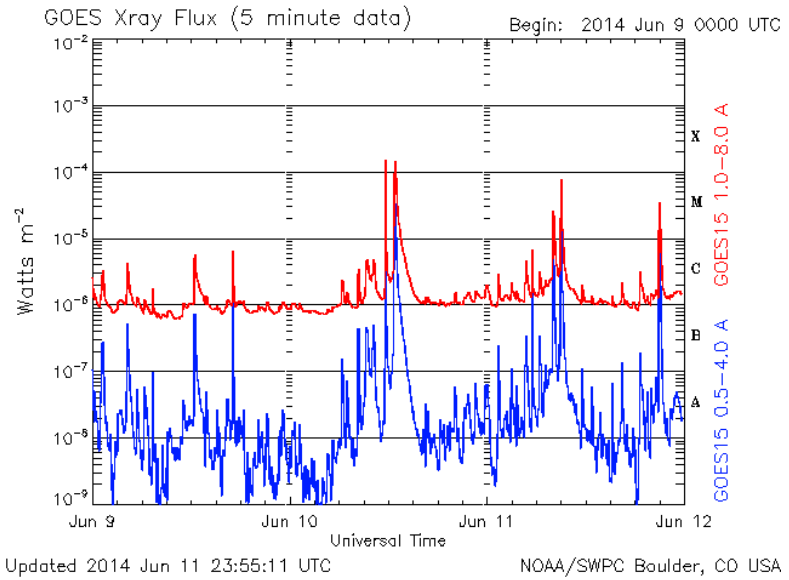
X-ray Flare

（2014Jun.-2015Mar.）

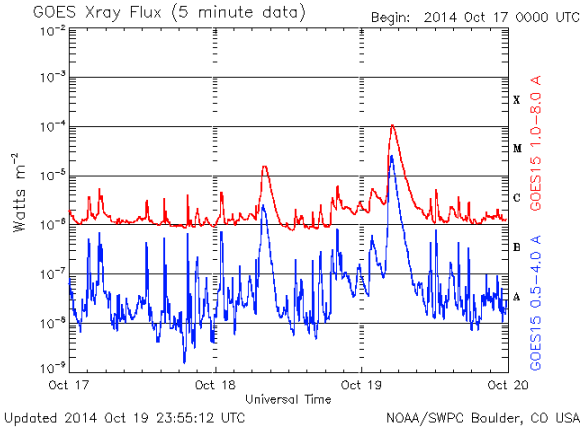


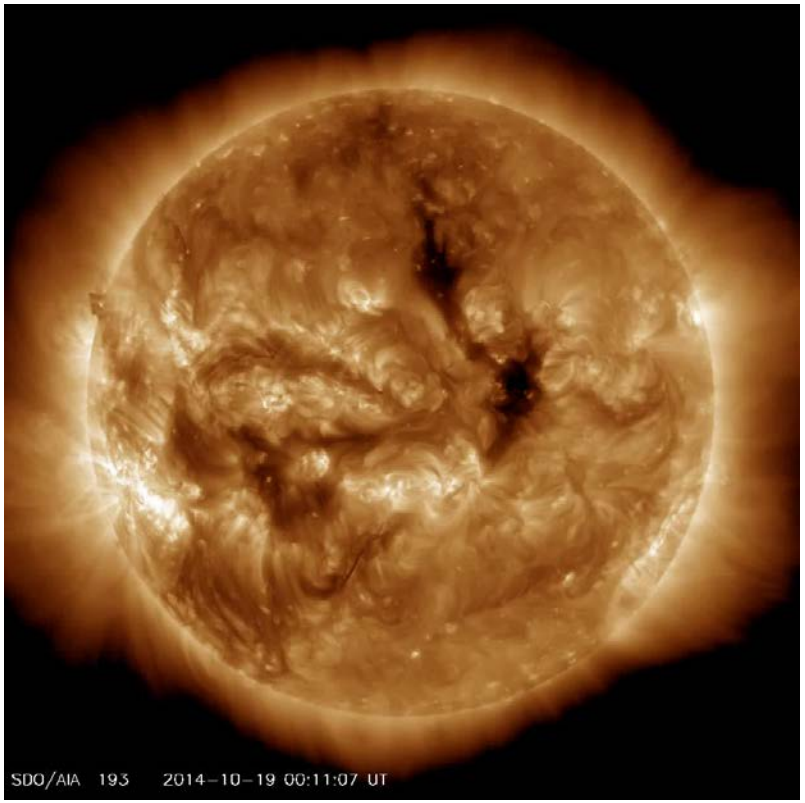
Region 2087
2014/Jun/10 11:36 X2.2
2014/Jun/10 12:36 X1.5
2014/Jun/11 08:59 X1.0

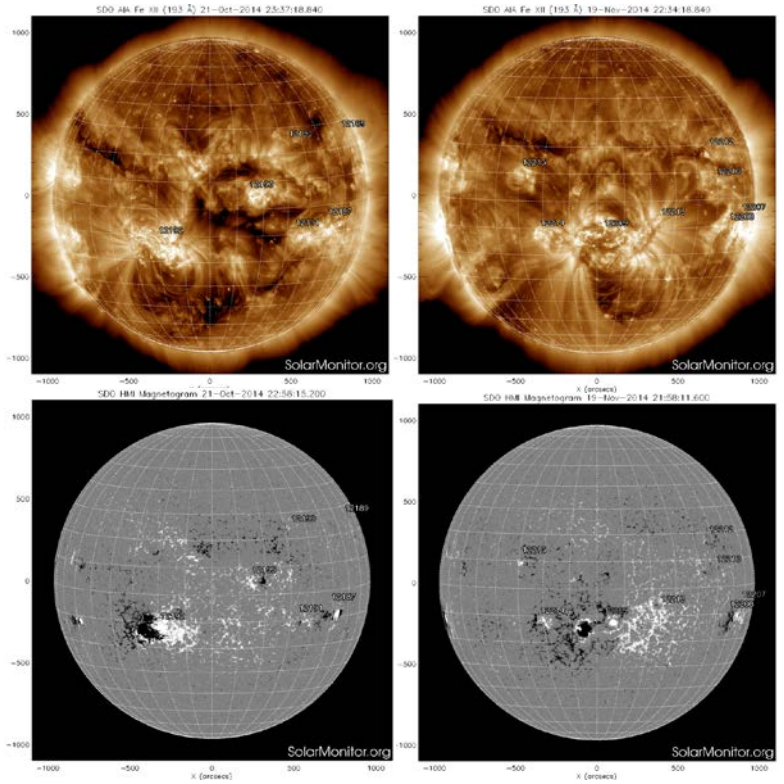




Region 2192
2014/Oct/19 0417 X1.1
2014/Oct/22 1402 X1.6
2014/Oct/24 2107 X3.1
2014/Oct/25 1655 X1.0
2014/Oct/26 1004 X2.0
2014/Oct/27 1412 X2.0

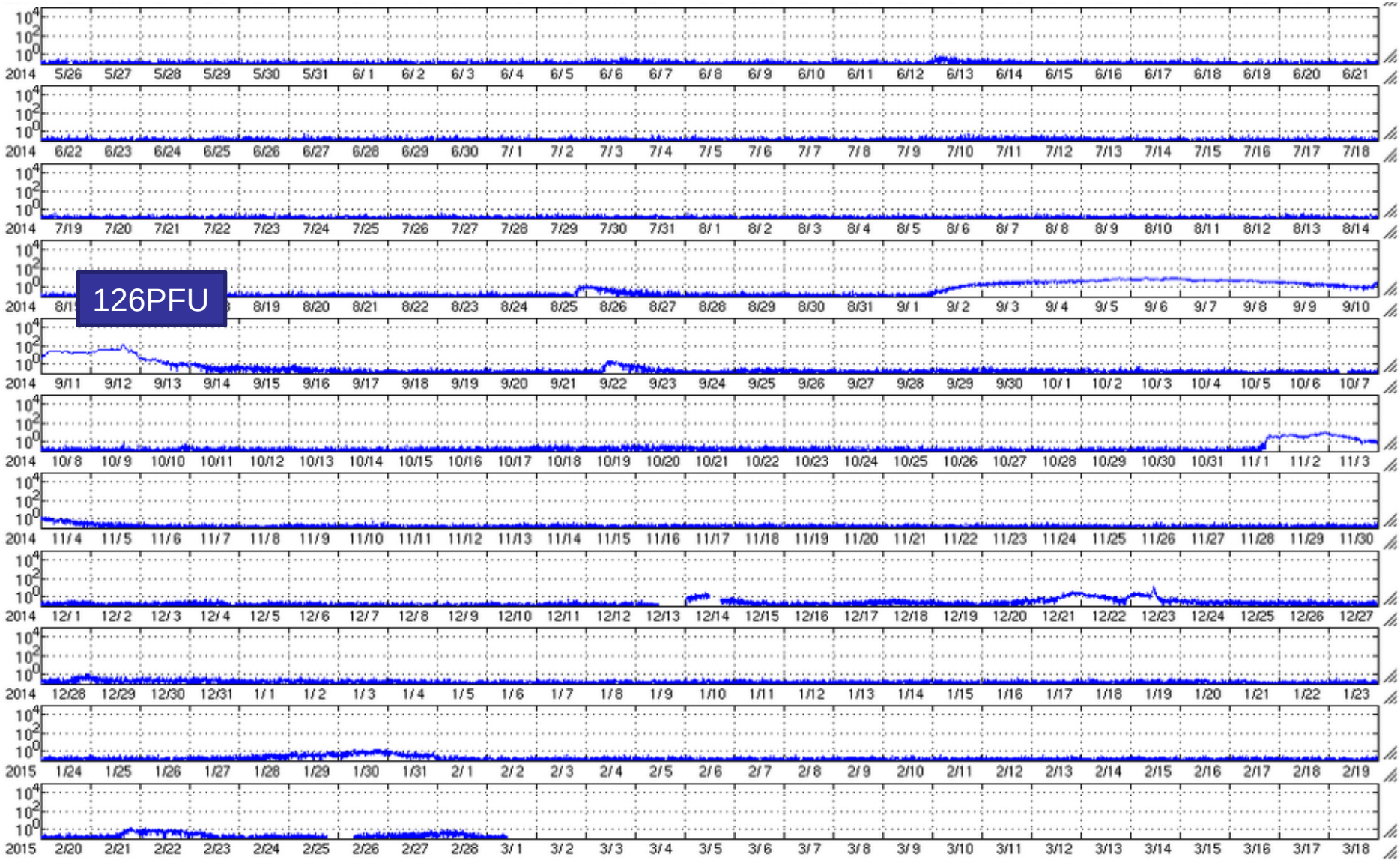






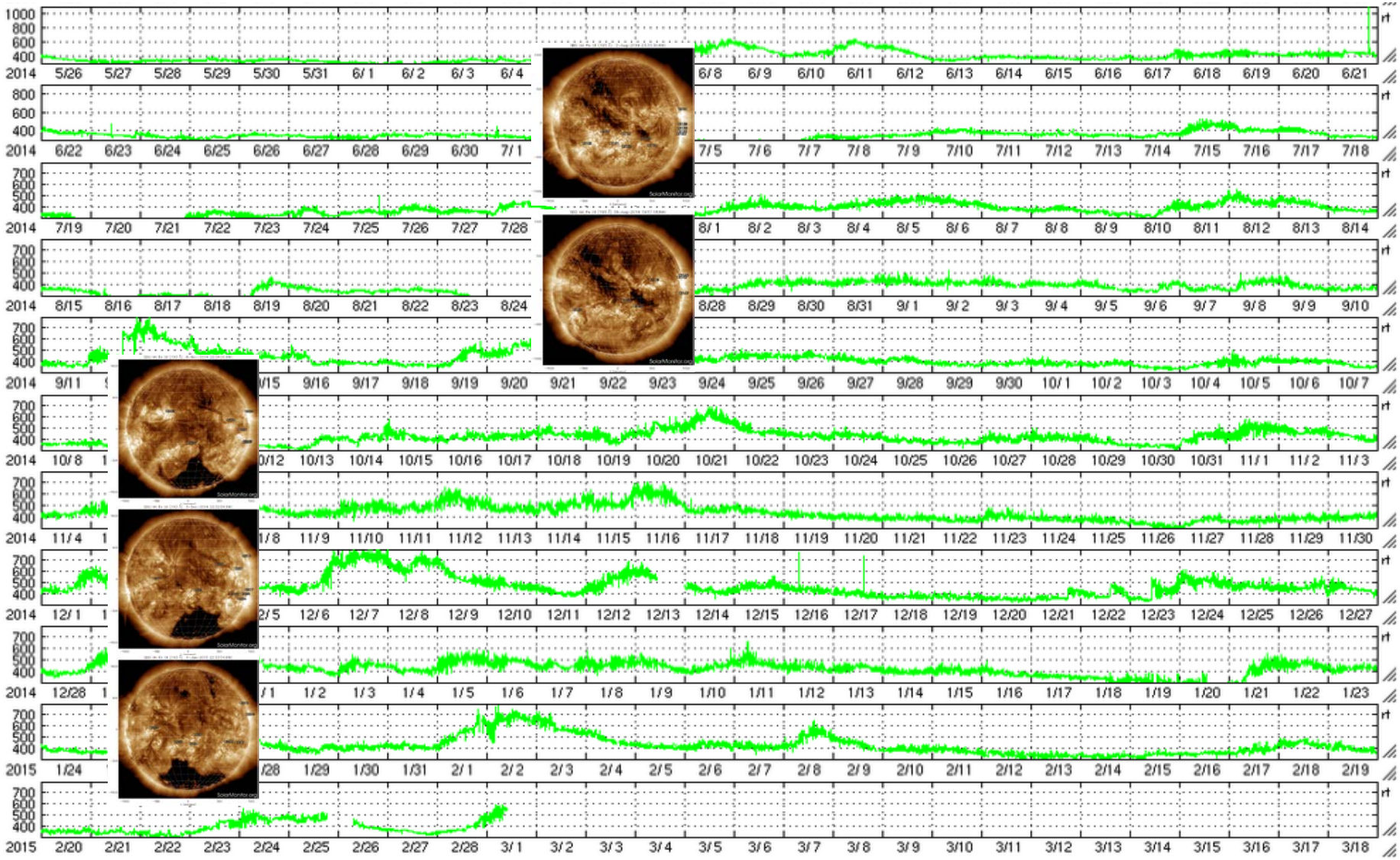
High energy particle (Proton)

（2014Jun.-2015Mar.）



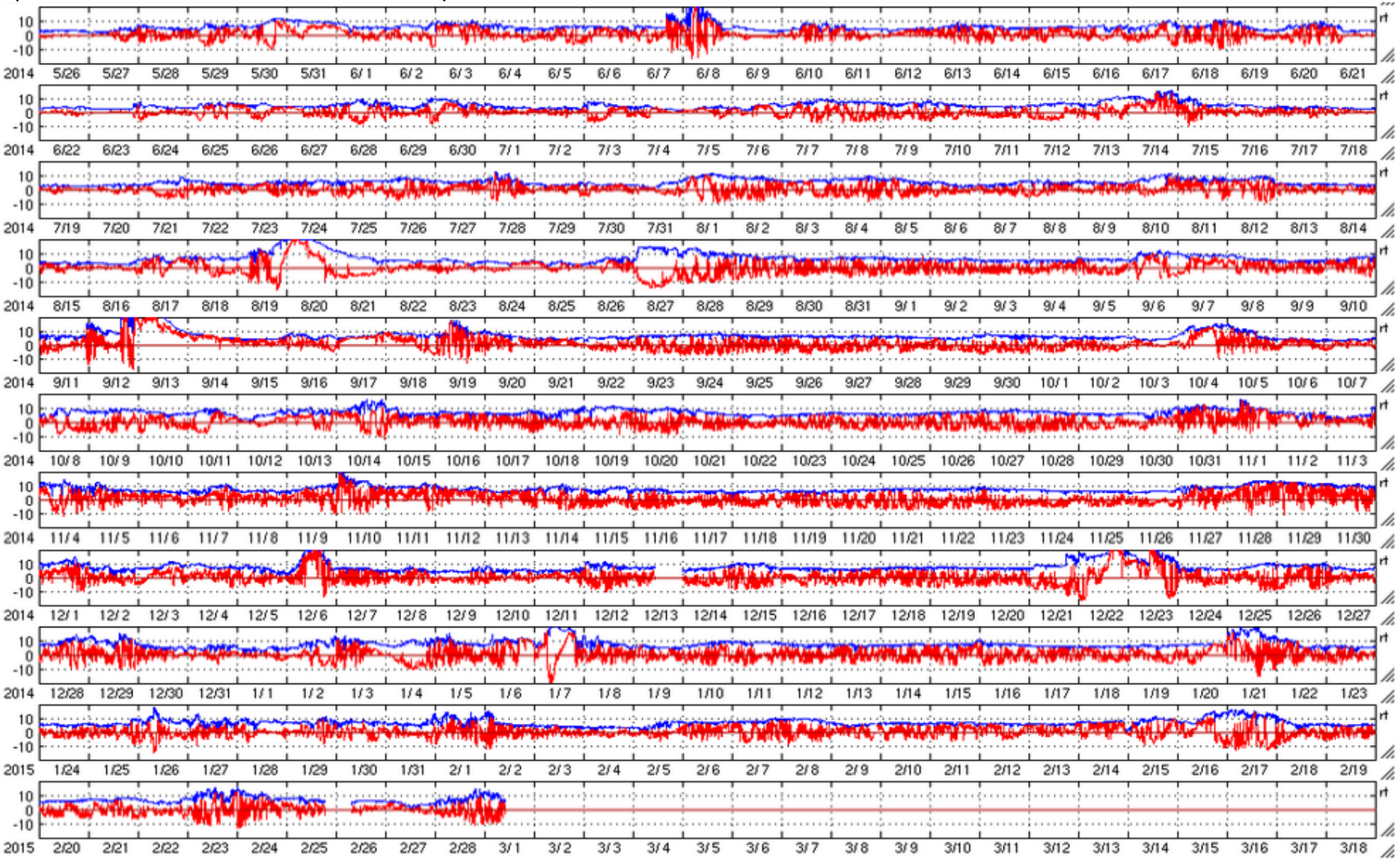
Solar Wind velocity

（2014Jun.-2015Mar.）



Solar Wind mag

（2014Jun.-2015Mar.）

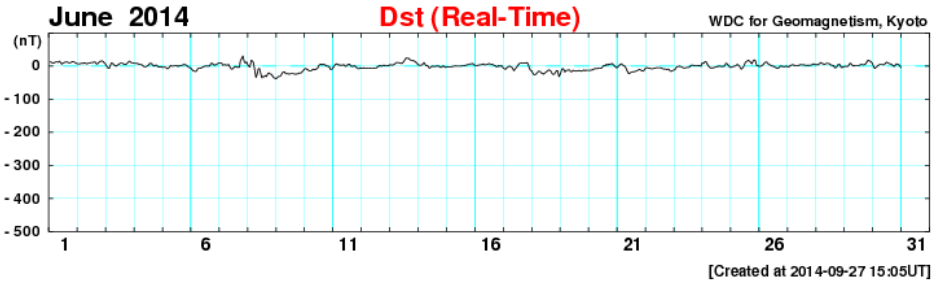


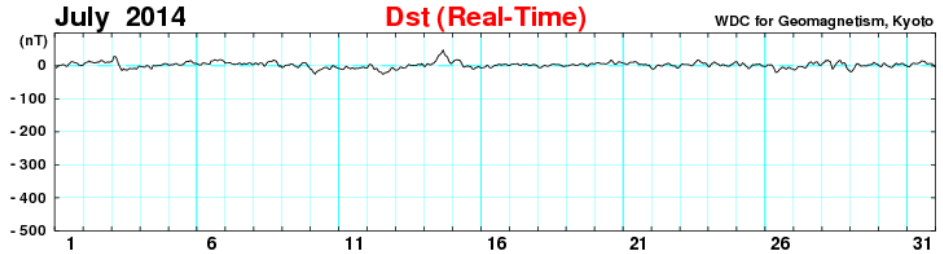
Sector structure

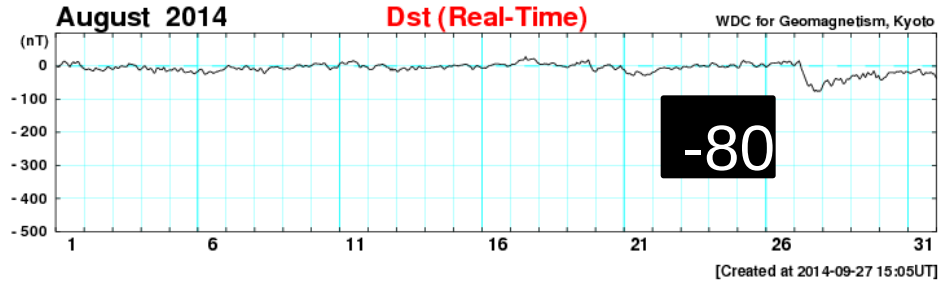
（2014Jun.-2015Mar.）

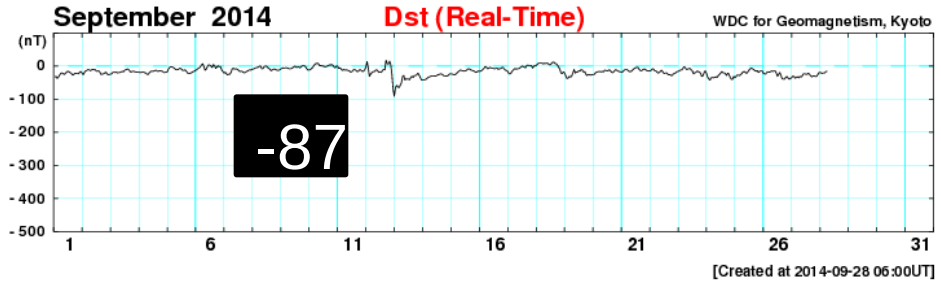
Dst Index

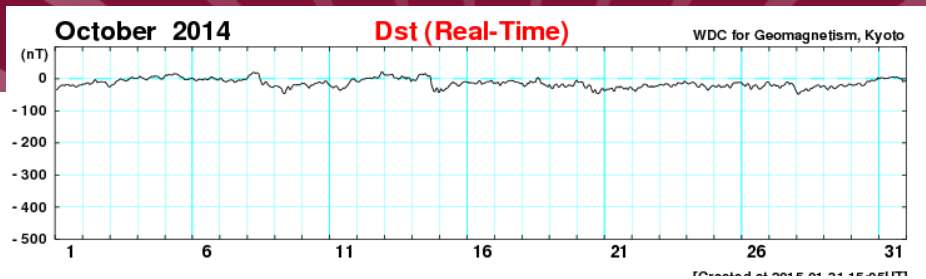
（2014Jun.-2015Mar.）

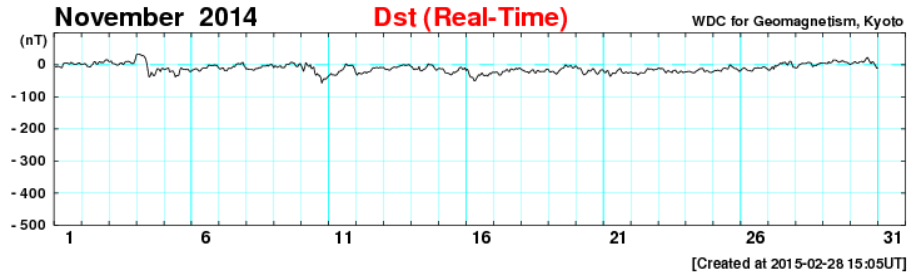


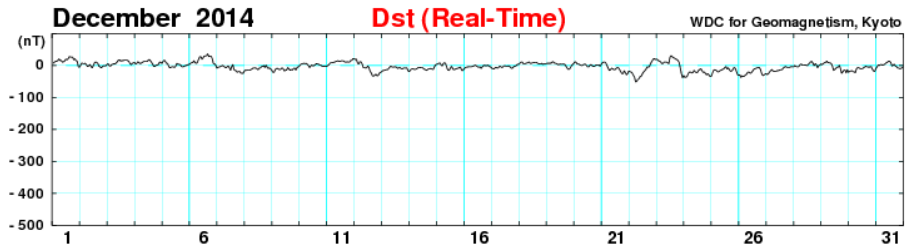


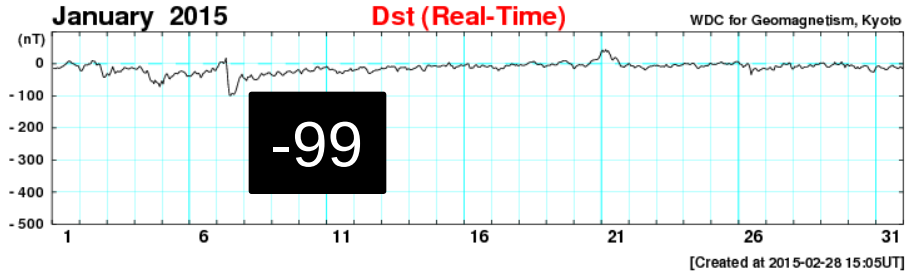


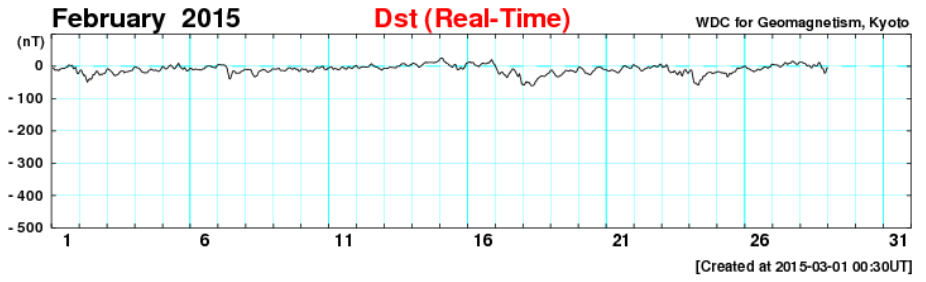












Space Weather Events Examples during this period （2014June.-2015March.）

Filament disappearance and related phenomena
- 6/4 Filament disappearance, formation of coronal hole, CME
- 6/7 1652 SI

Storms and related phenomena
- 9/8 2312 M4.5 flare CME
- 9/10 1721 X1.6 flare full halo CME
- 9/11 2344 SC strom
- 9/11 0255-9/12 2300 proton event（9/12 1555 max.126pfu）
- 9/12 1554-9/14 0000 SC storm
- 9/13 ionospheric strom

Huge sunspot activities and related phenomena
- 10/18-27 many X class flares, 2014/Oct/24 2107 X3.1 from AR2194

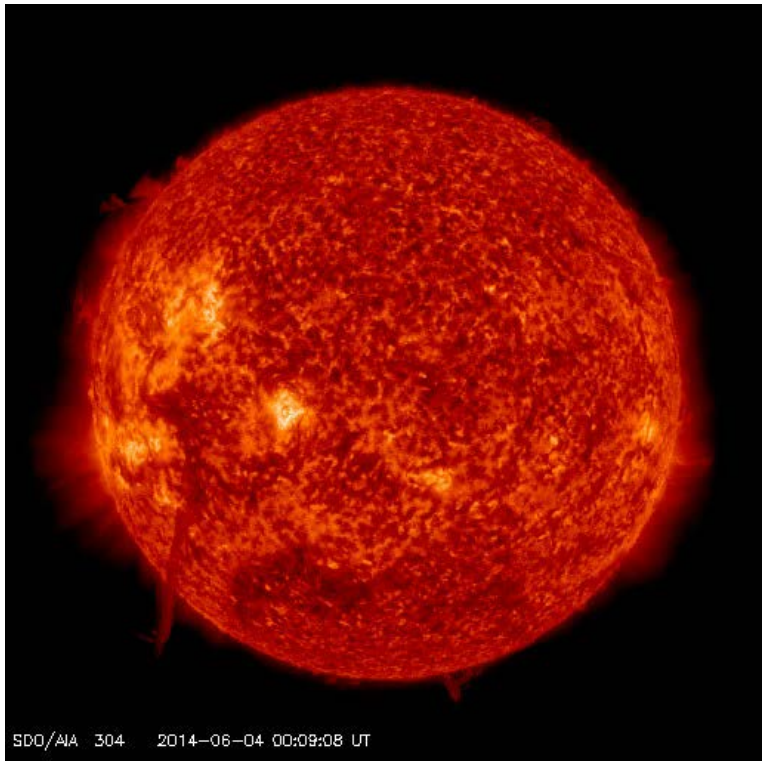
Storms and related phenomena
- 01/07 strom(-99nT)

Details

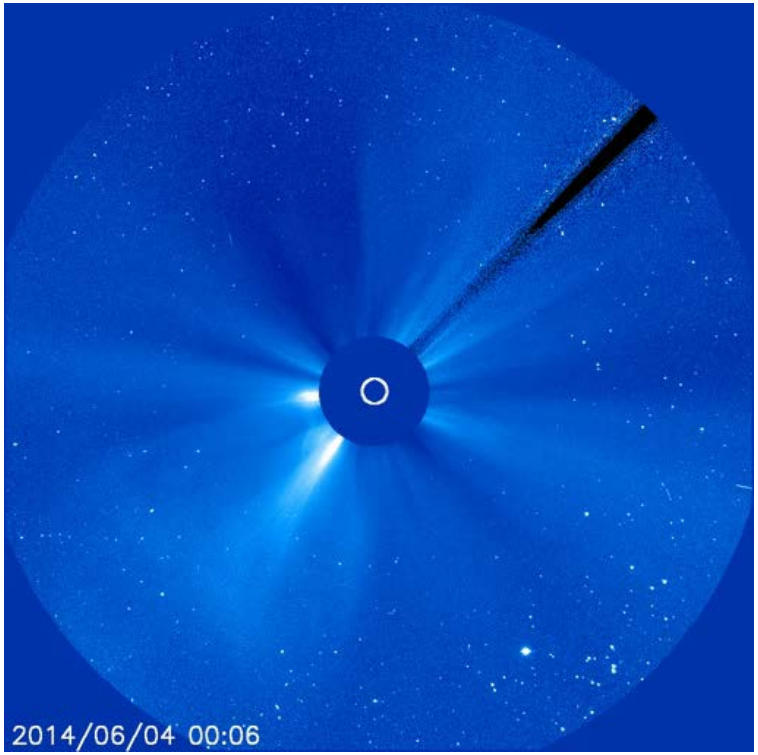
Filament disappearance and related phenomena

6/4 Filament disappearance, formation of coronal hole, CME

6/7 1652 SI



2014/06/04-05

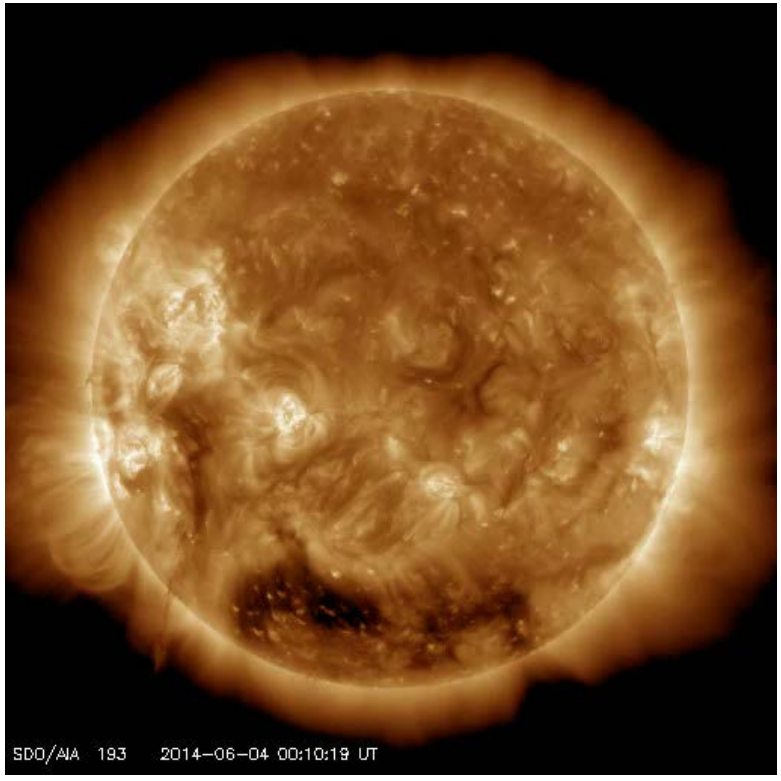


Details

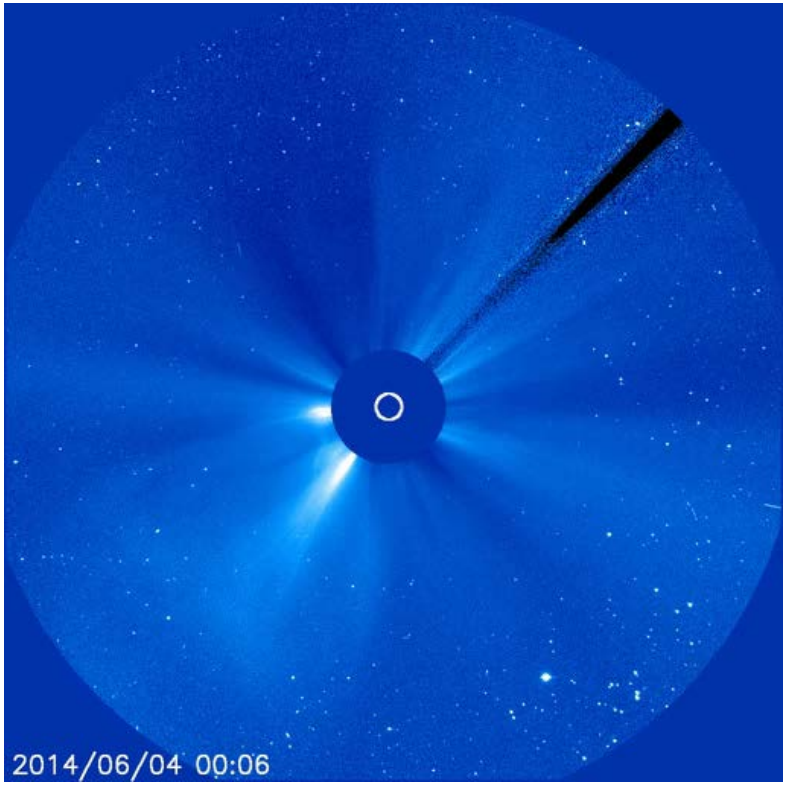
Filament disappearance and related phenomena

6/4 Filament disappearance, formation of coronal hole, CME

6/7 1652 SI



2014/06/04-05



Details

Filament disappearance and related phenomena
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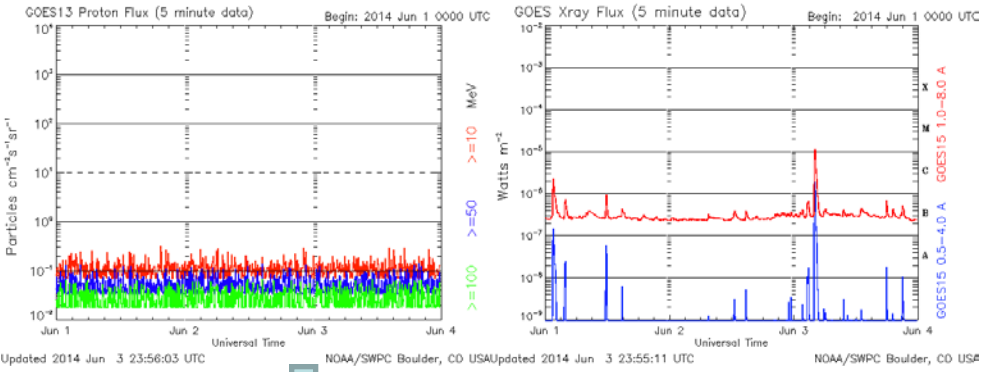
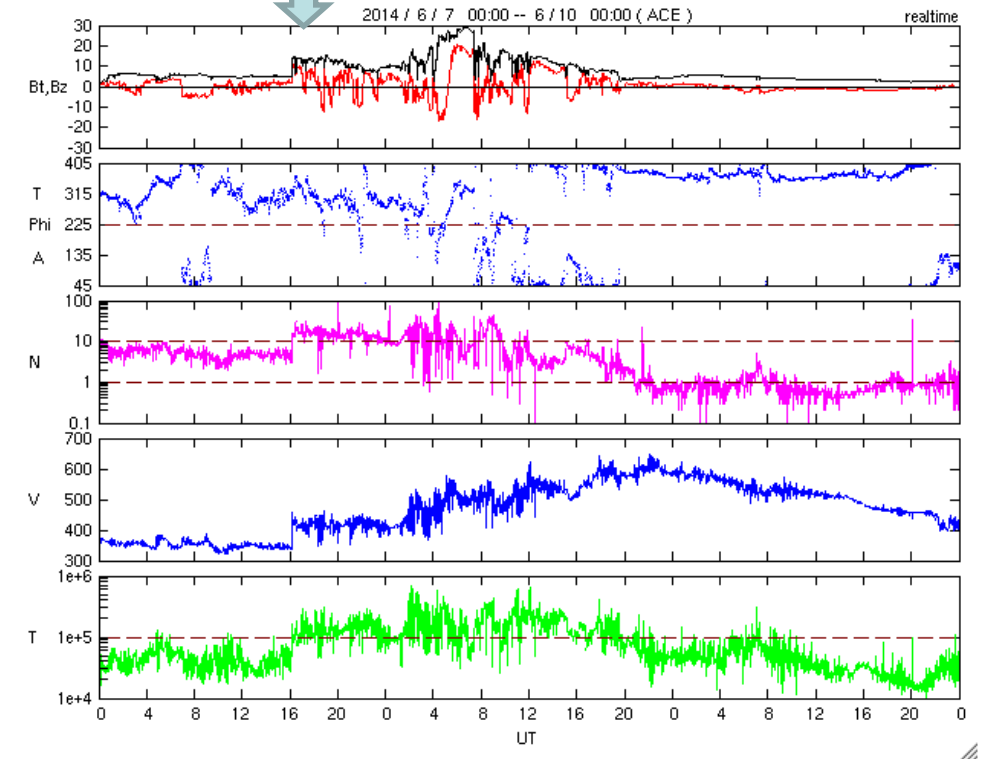
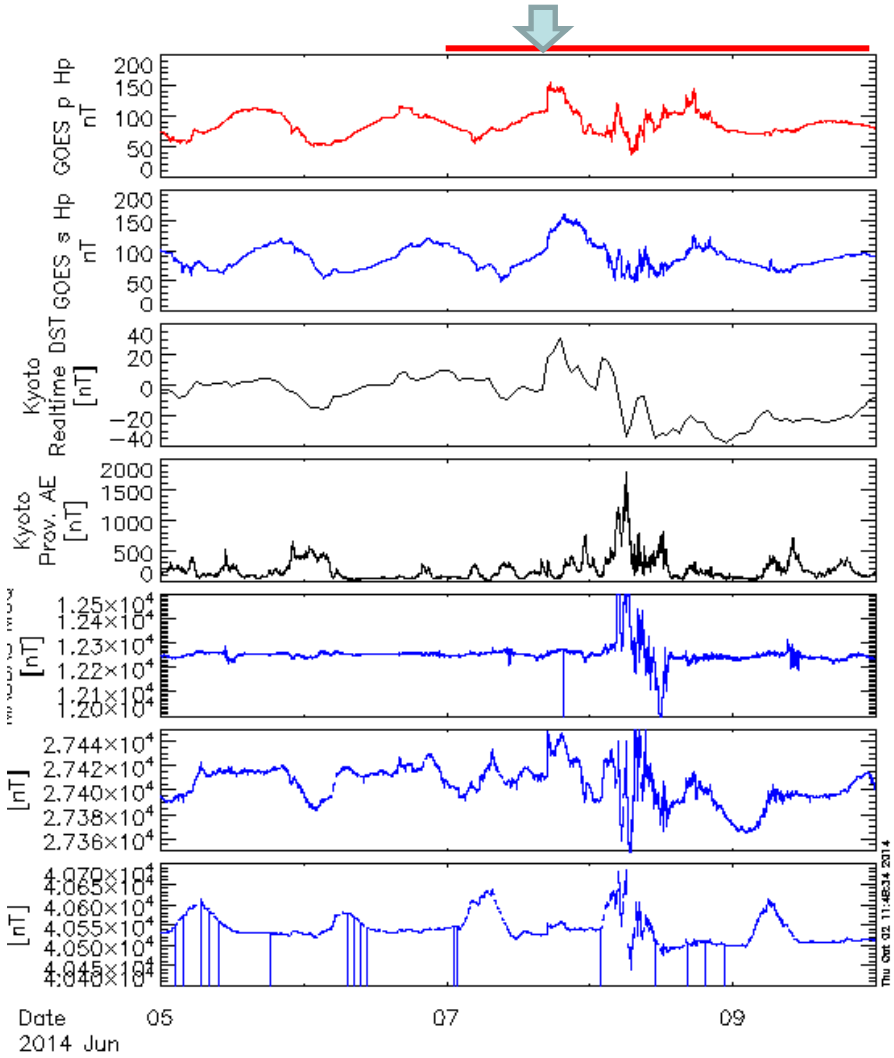


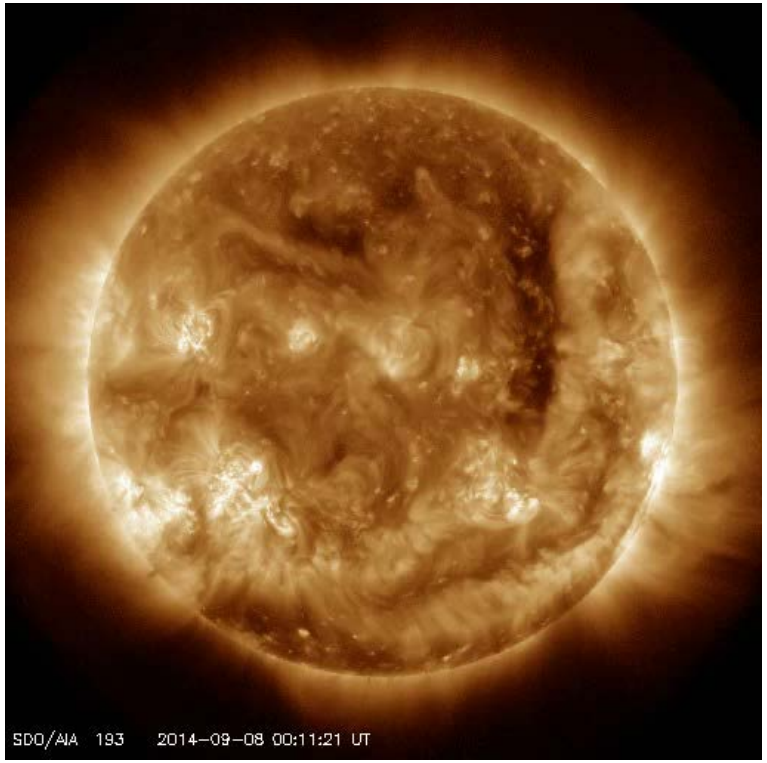


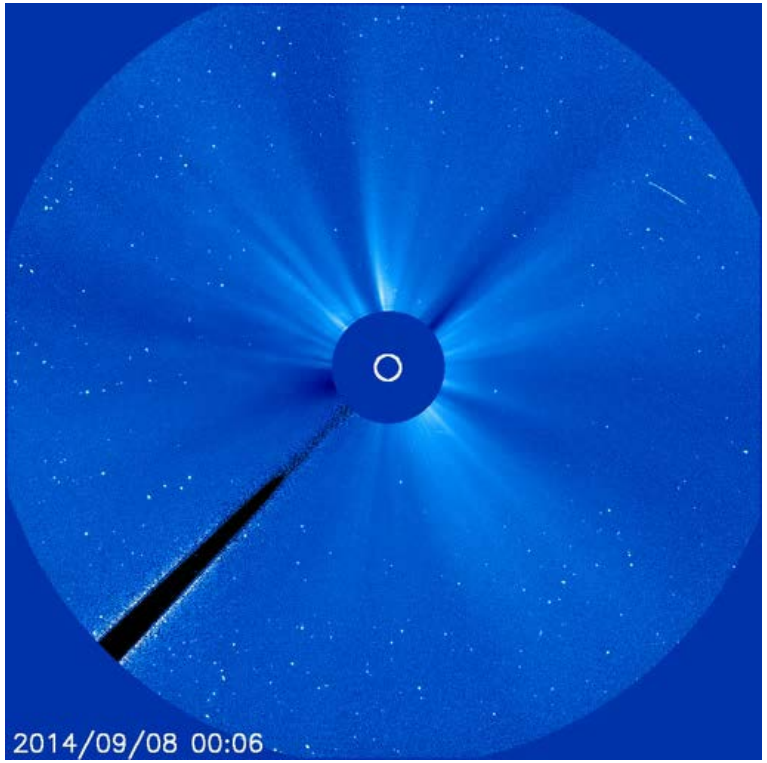


Details

Storms and related phenomena
- 9/8 2312 M4.5 flare CME
- 9/10 1721 X1.6 flare full halo CME
- 9/11 2344 SC strom
- 9/11 0255-9/12 2300 proton event（9/12 1555 max.126pfu）
- 9/12 1554-9/14 0000 SC storm（min. Dst: -91nT ）
- 9/13 ionospheric strom

2014/09/08-13





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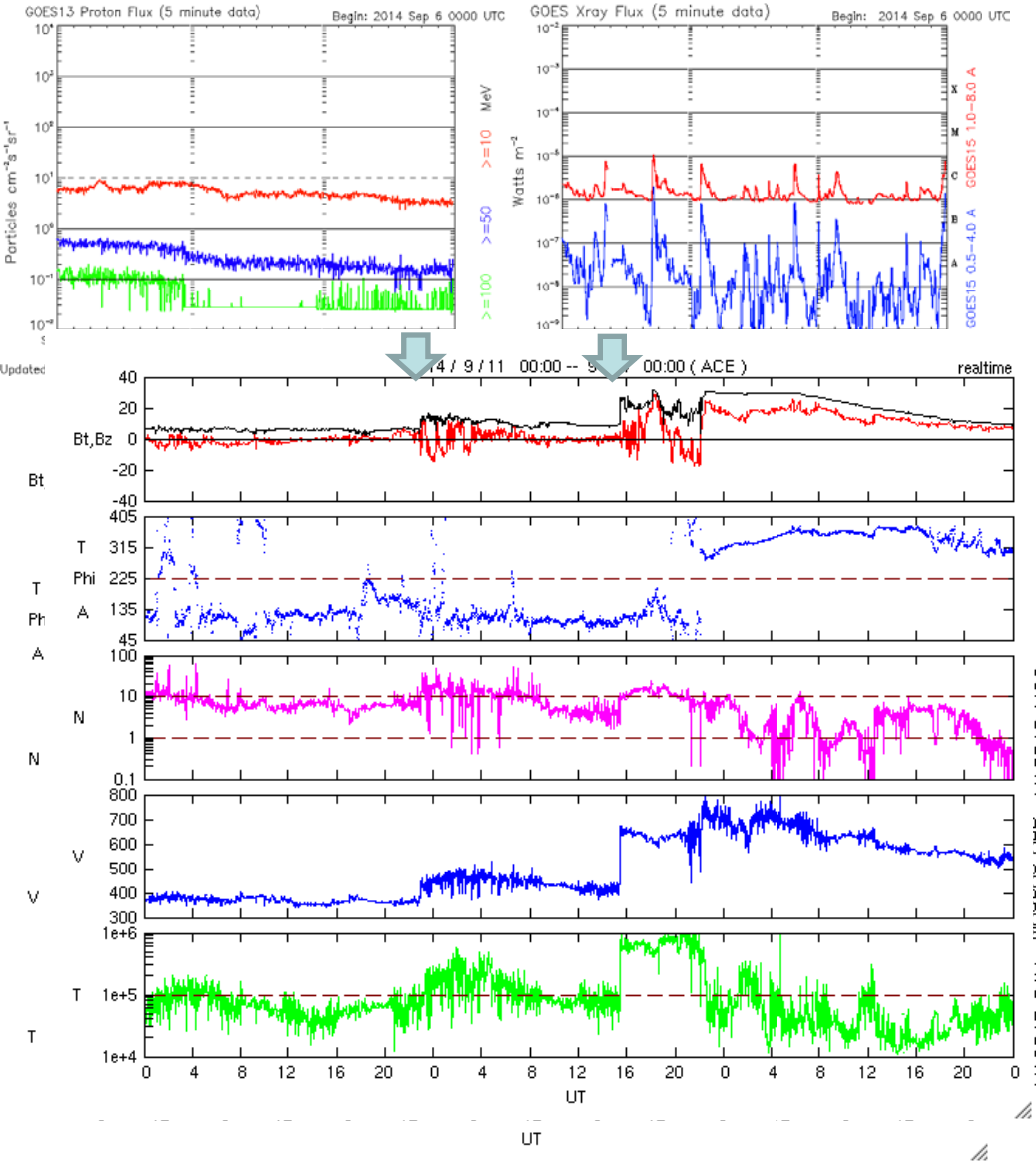
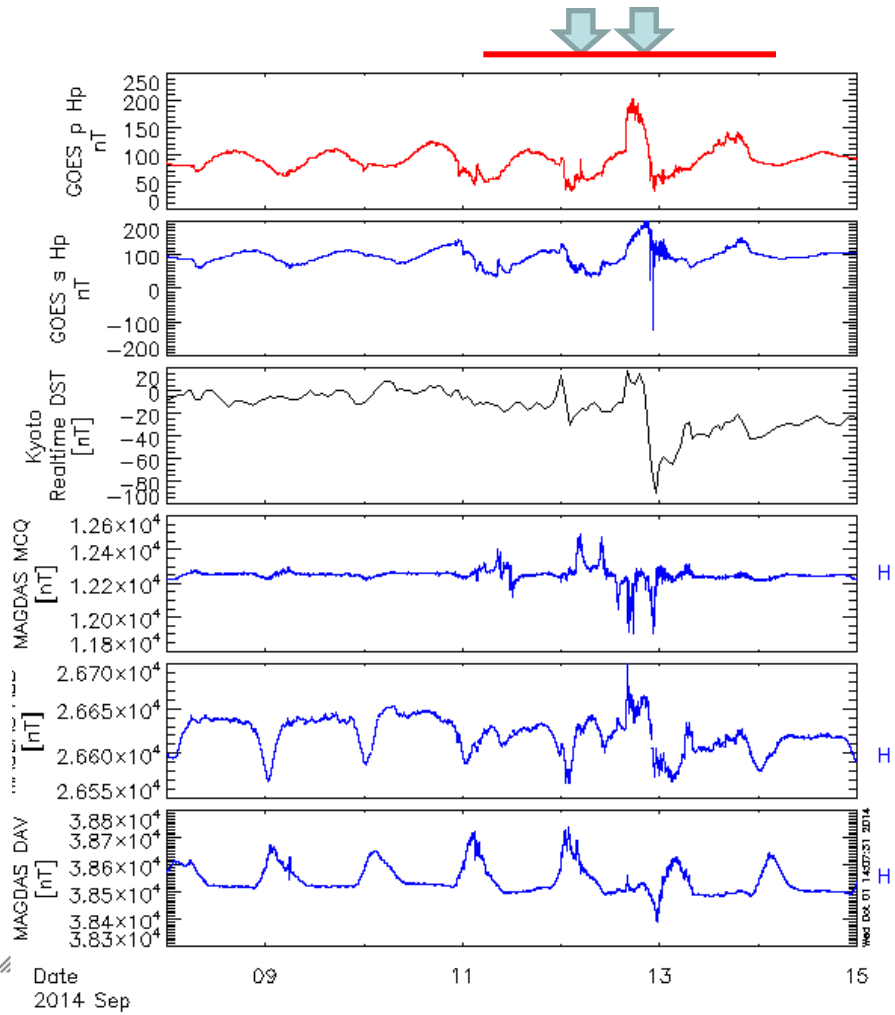
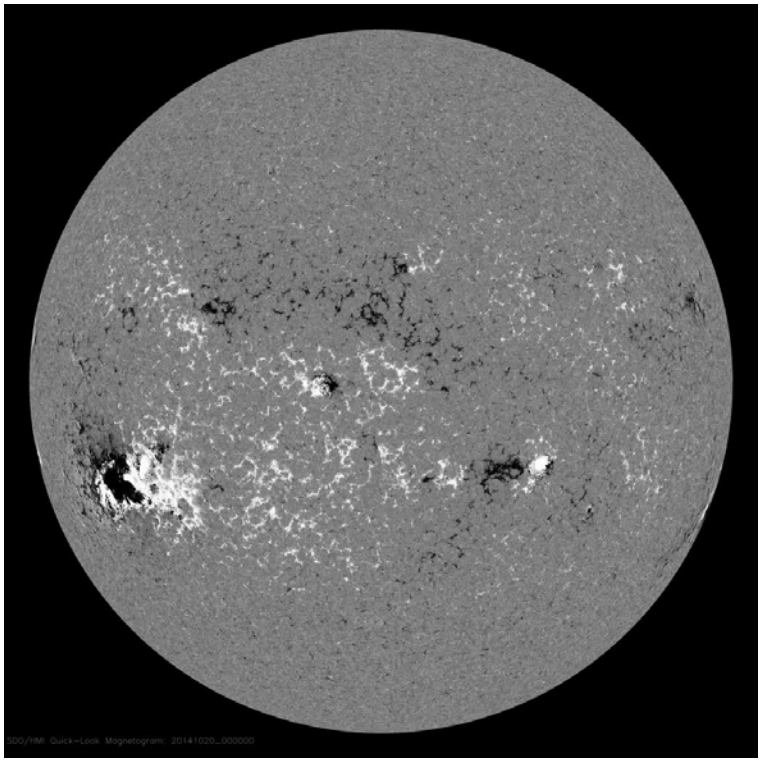


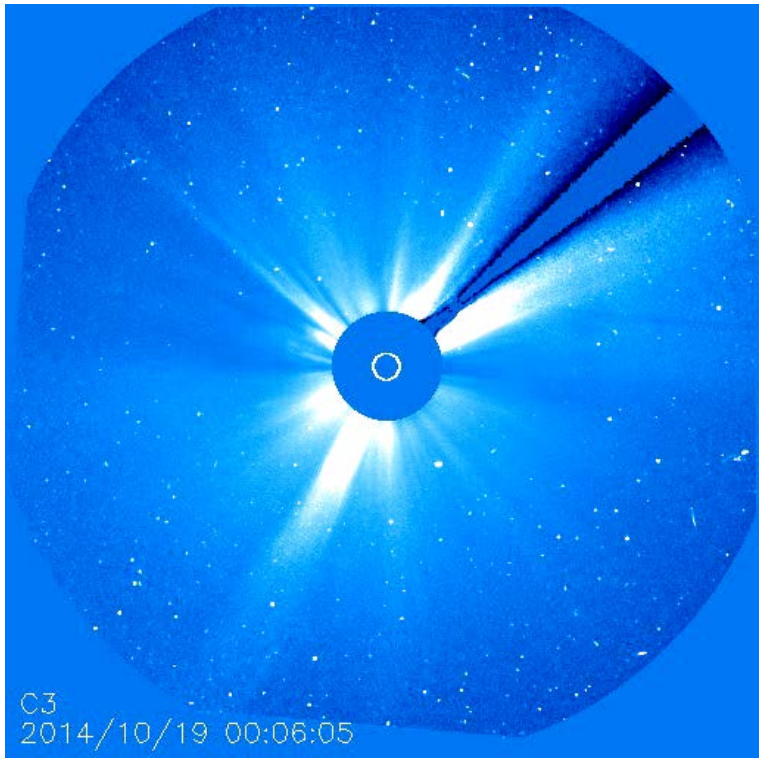


Details

Huge sunspot activities and related phenomena
Region 2192
2014/Oct/19 0417 X1.1, 2014/Oct/22 1402 X1.6, 2014/Oct/24 2107 X3.1
2014/Oct/25 1655 X1.0, 2014/Oct/26 1004 X2.0, 2014/Oct/27 1412 X2.0

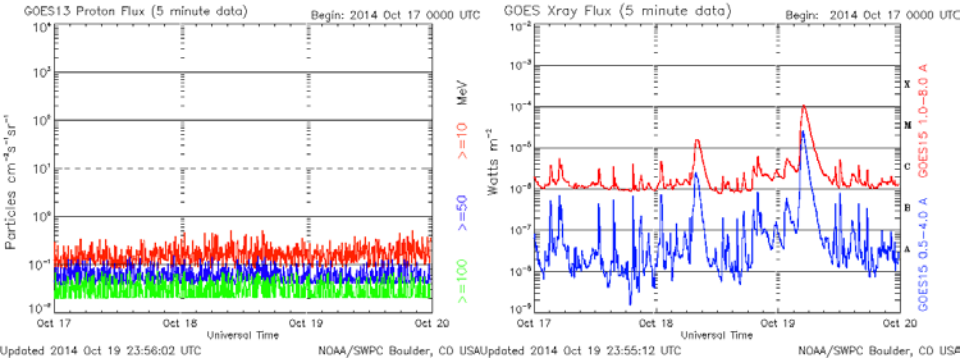


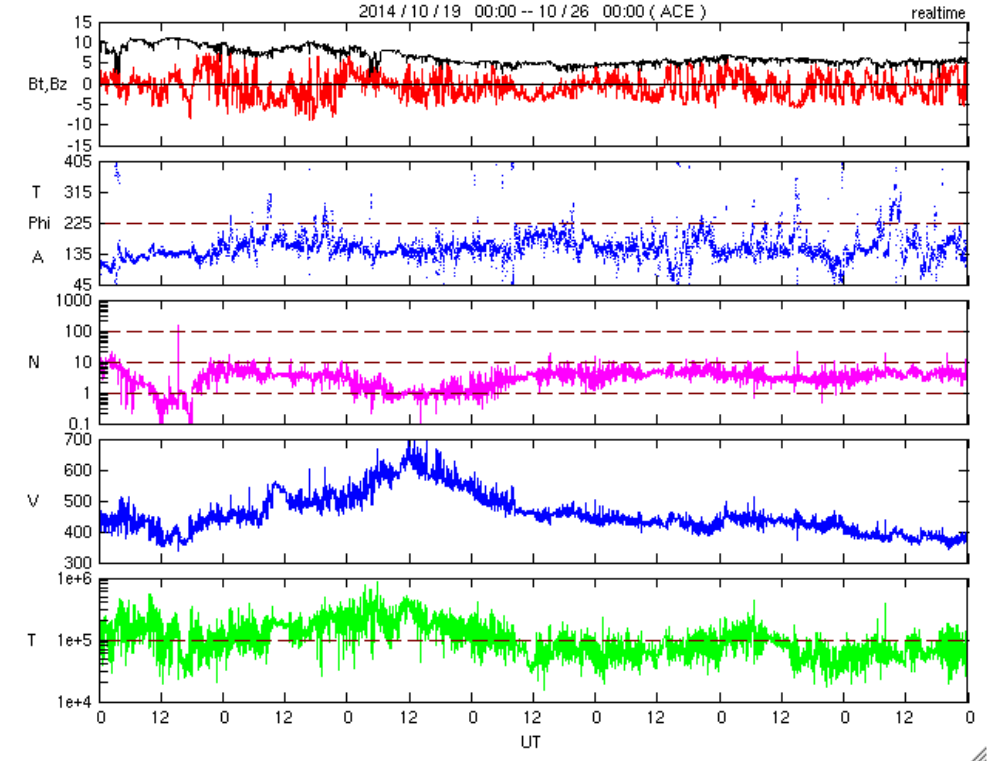
2014/10/19-26

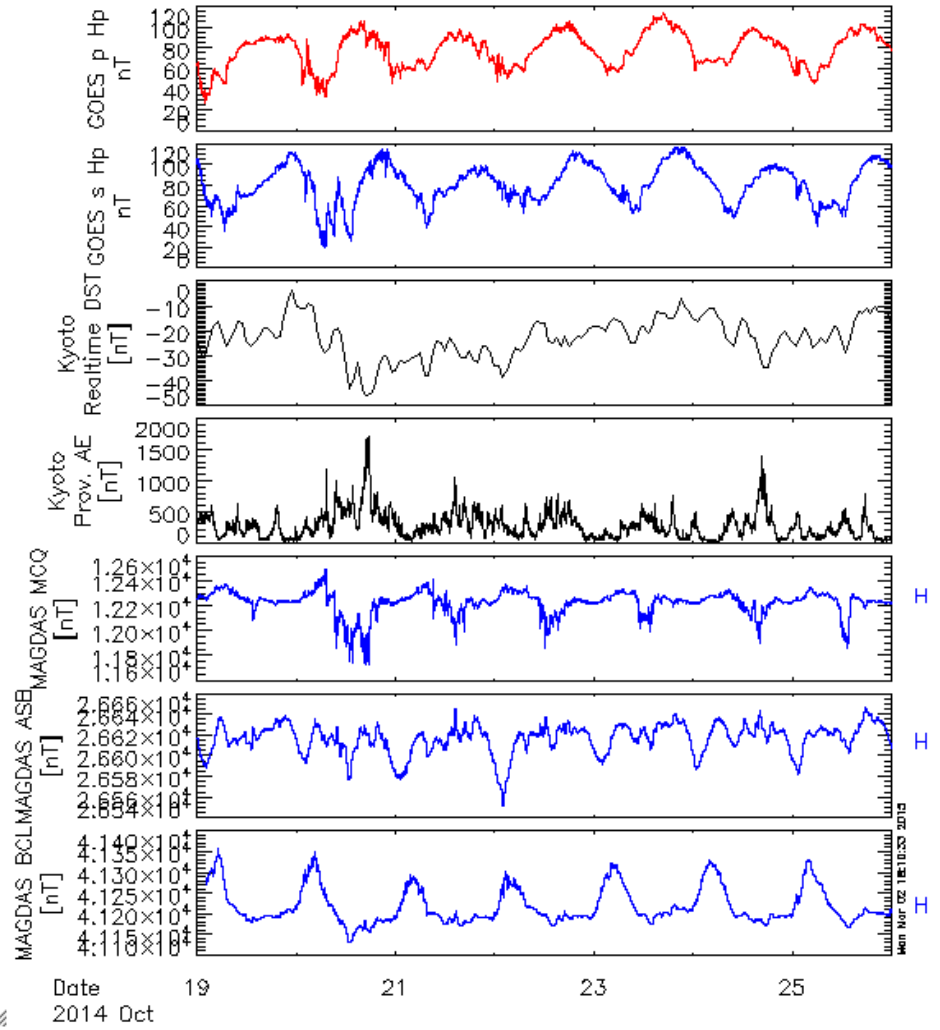


Details

2014/10/19-25

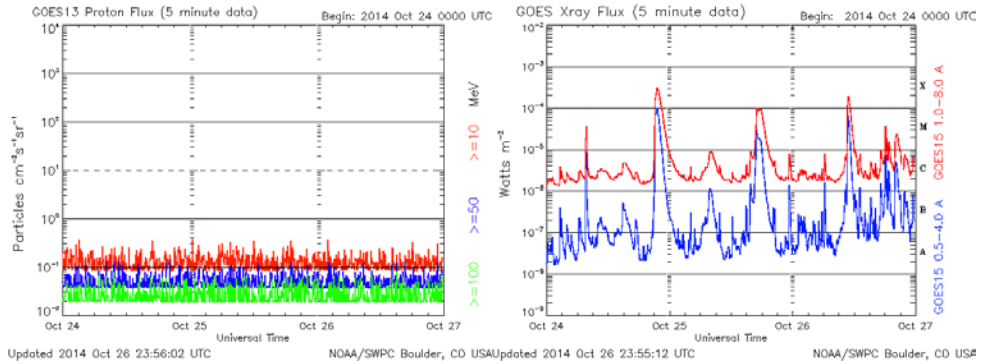


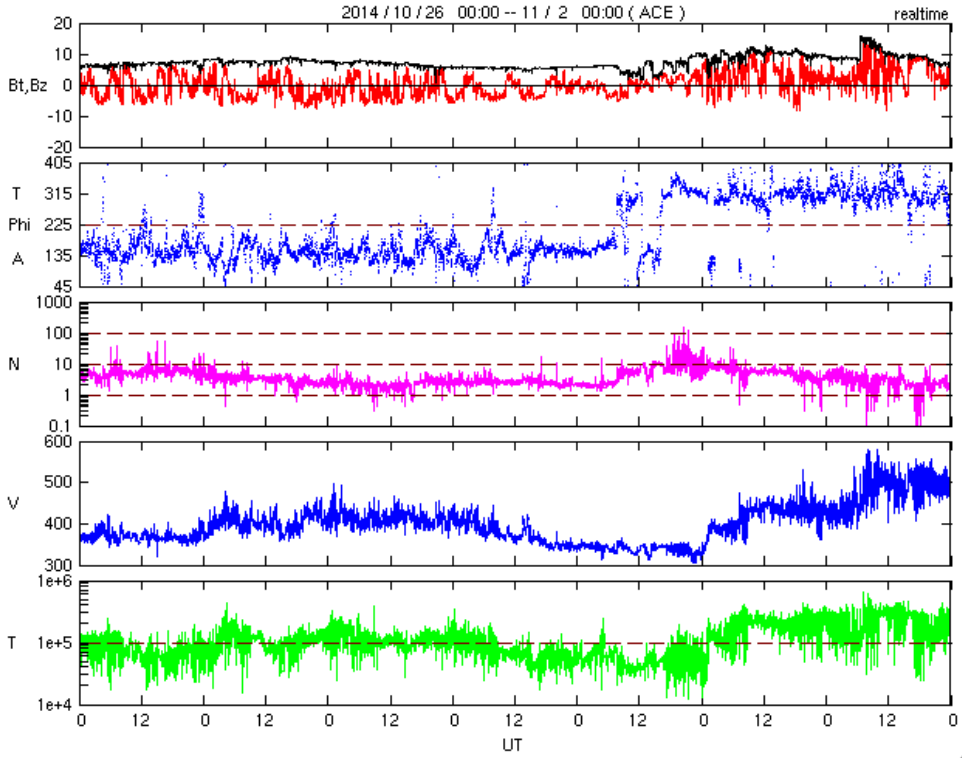


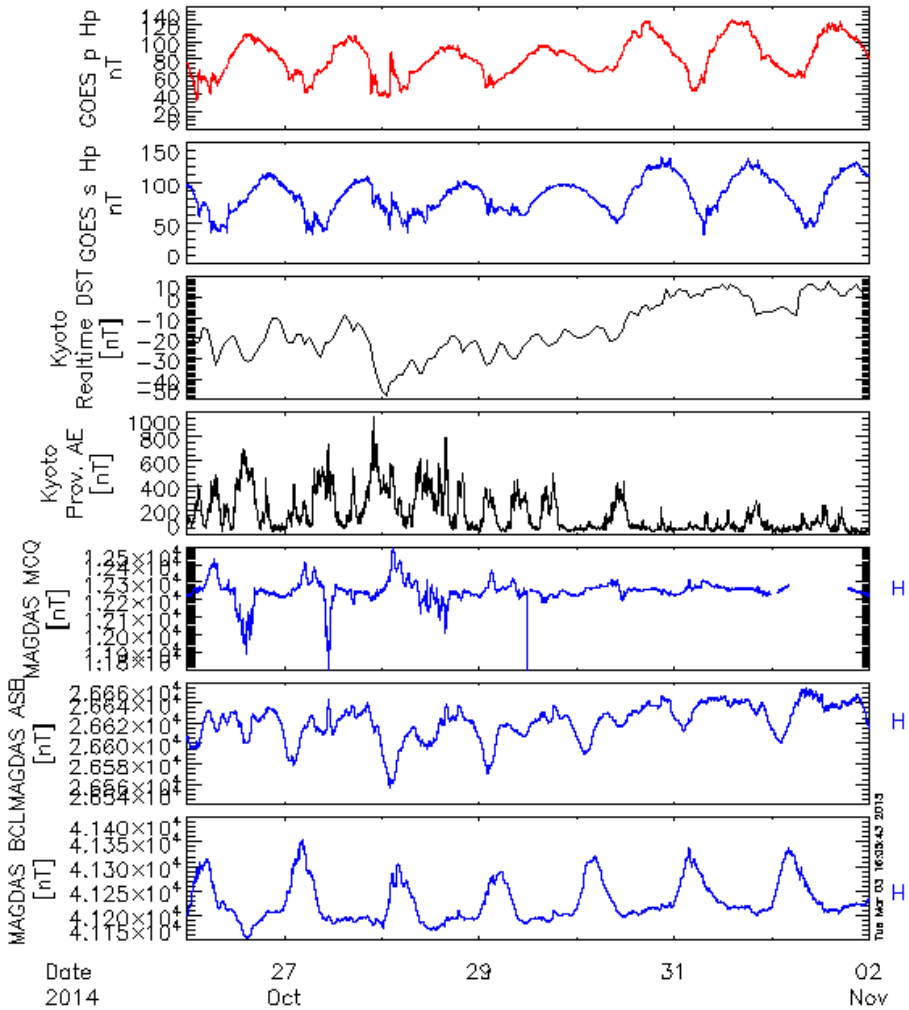


Details

2014/10/26-11/01



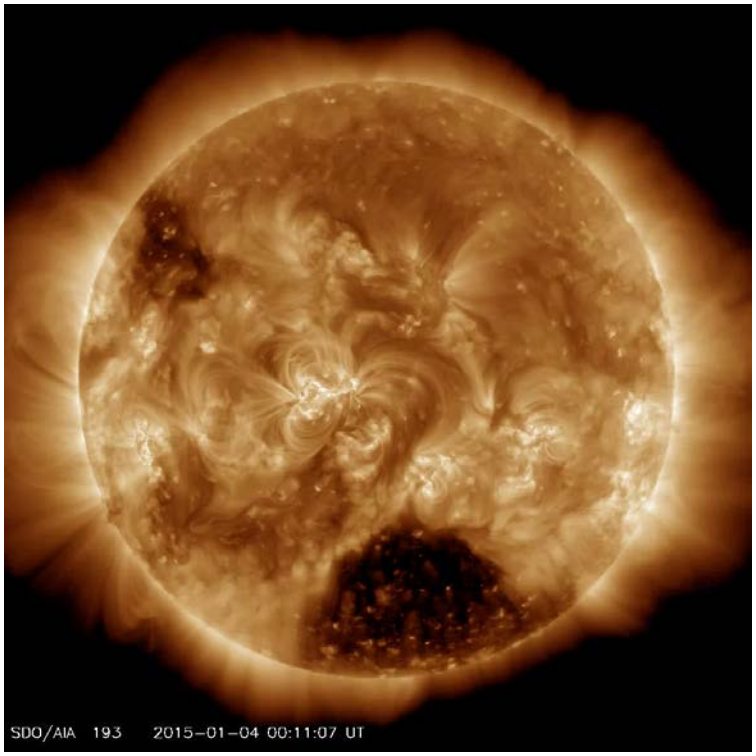


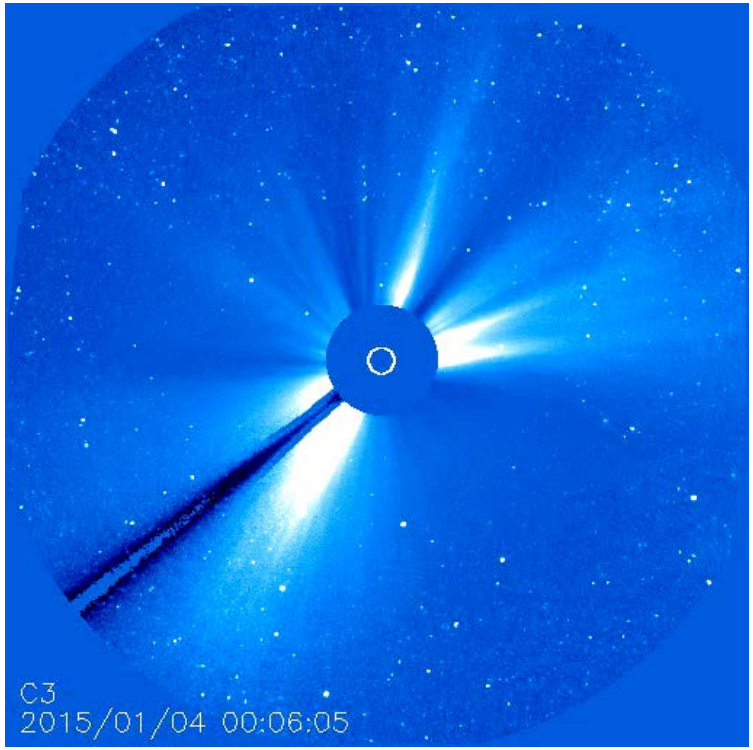


Details

Storms and related phenomena
01/07 strom(-99nT)

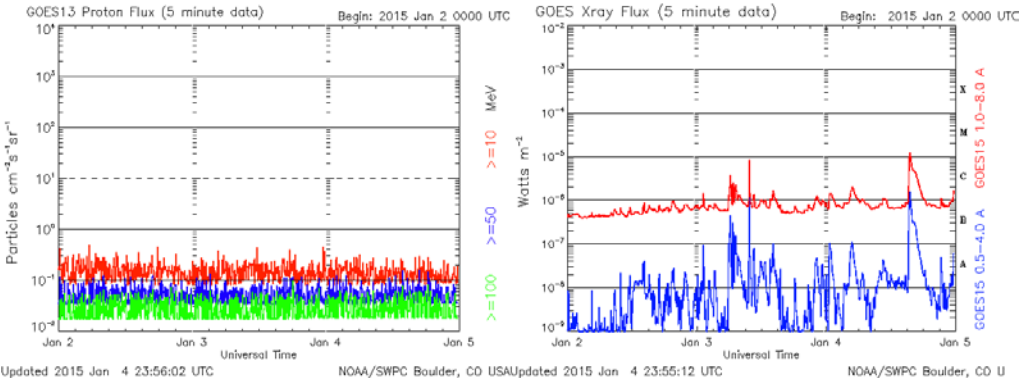
2015/01/04-09

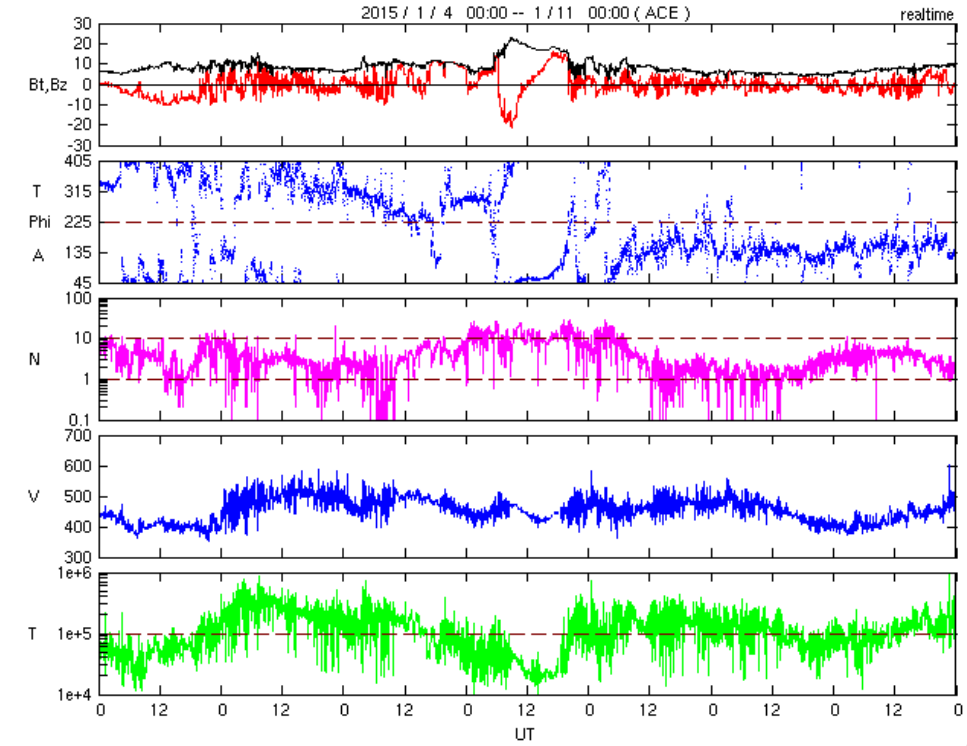


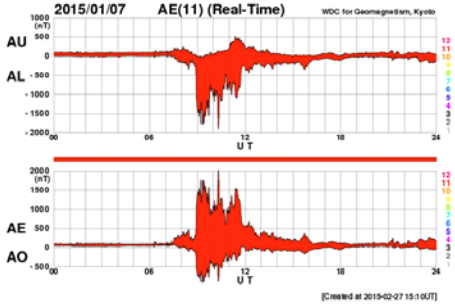


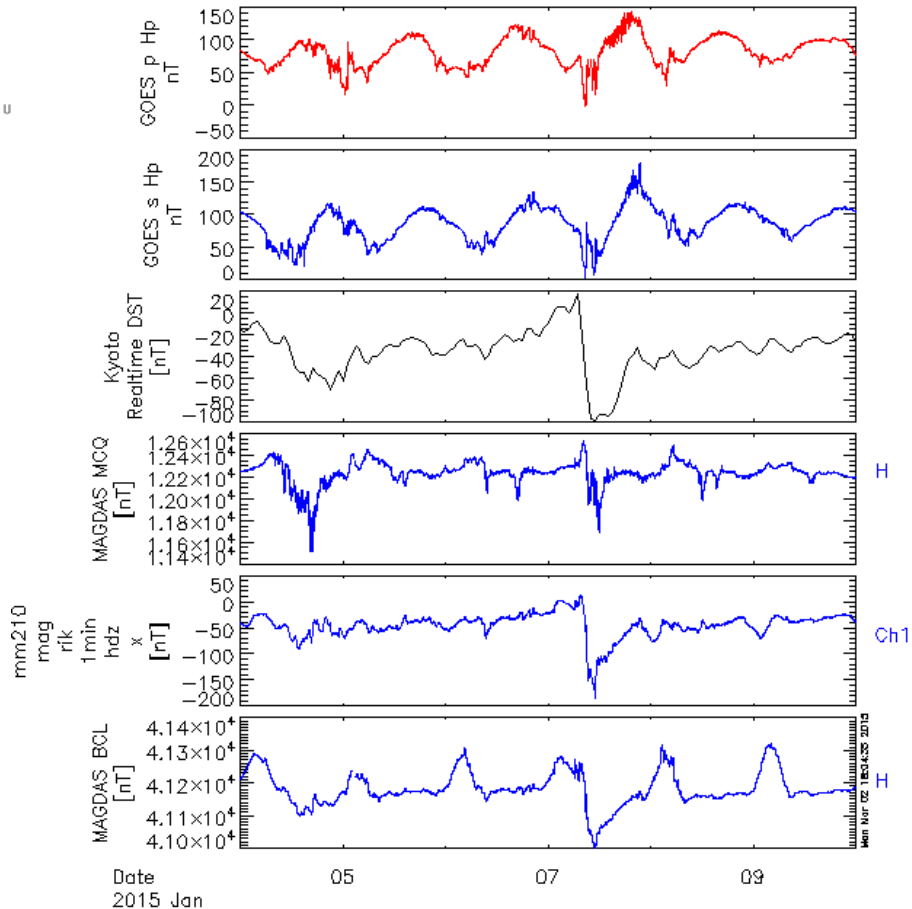
Details

2015/01/04-09









Summary

In this analysis period(between June, 2014 and March, 2015)…

- Decreasing sunspot number and solar activity except June and September
- Huge active region at October, but no significant influence from there to magnetosphere
- Weak magnetosphere responses during cycle 24 continues.

Thank you for your attention

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