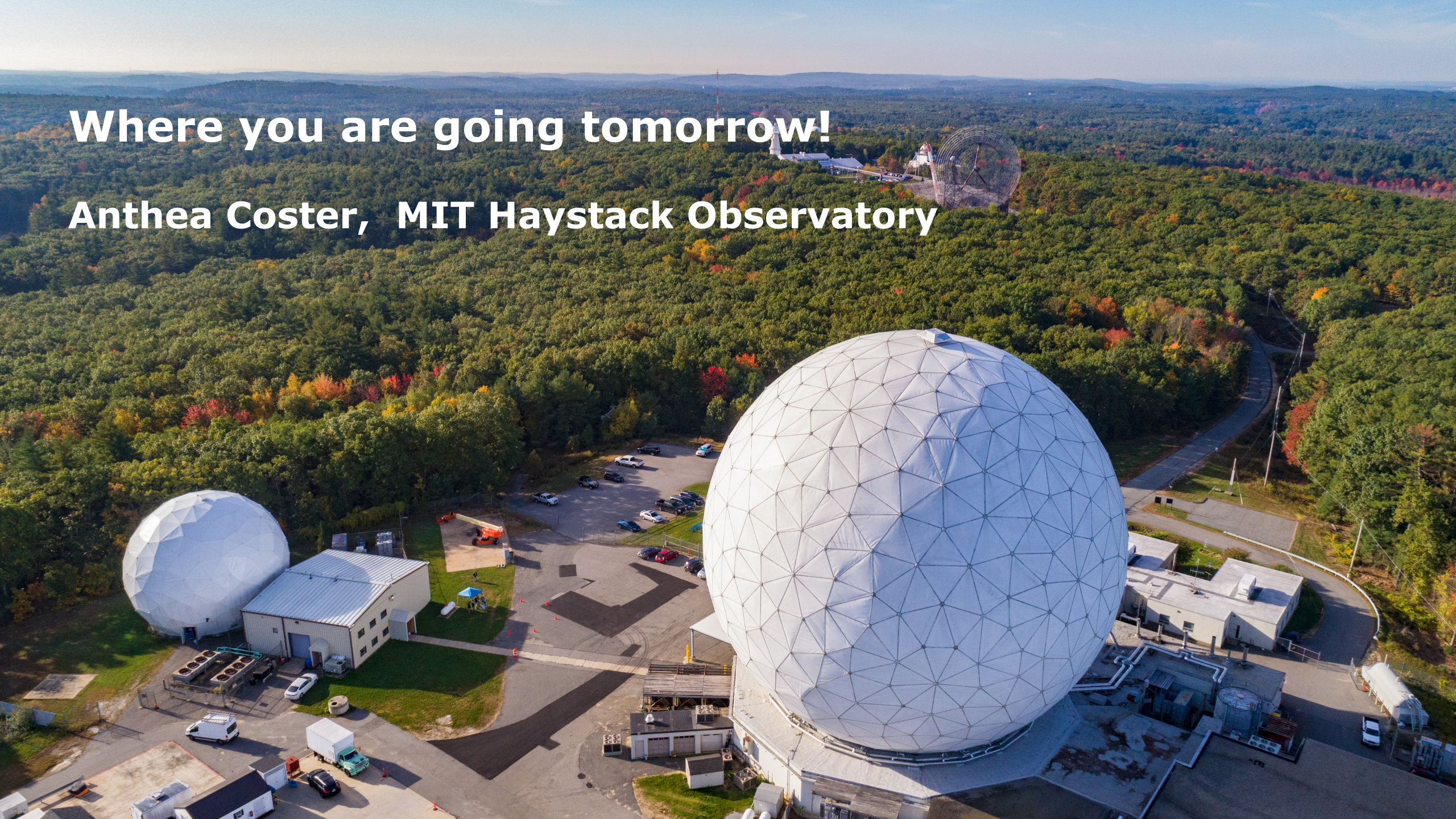


















**Where you are going tomorrow!**

**Anthea Coster, MIT Haystack Observatory**



4:00 pm	<b>70°</b>	 Cloudy	 24%	 E 6 mph	
5:00 pm	<b>70°</b>	 Cloudy	 22%	 ESE 6 mph	
6:00 pm	<b>70°</b>	 Cloudy	 21%	 E 6 mph	
7:00 pm	<b>70°</b>	 Cloudy	 24%	 ESE 6 mph	

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8:00 pm	<b>68°</b>	 Cloudy	 20%	 E 4 mph	
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# Three Agents of Space Weather

J.J.J. Kunches, NOAA

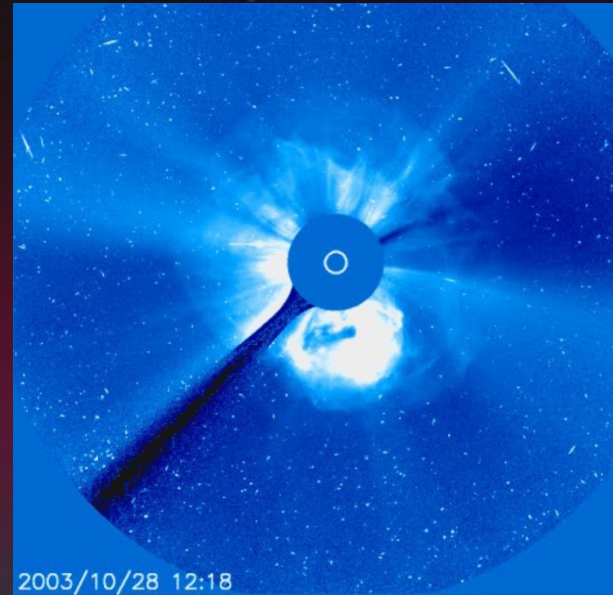
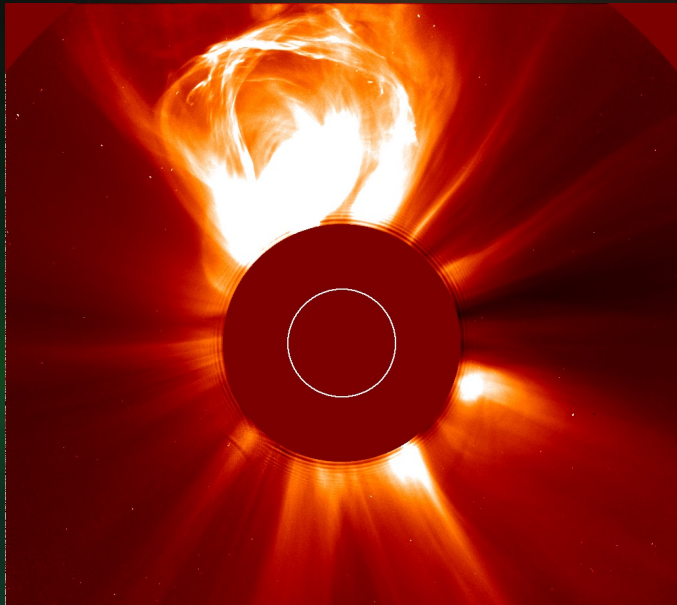
**Electromagnetic Emission**  
8 minutes to Earth

**Charged Particle Radiation**  
Tens of minutes to several hours to Earth

**Magnetized Plasma**  
18-96 hours to Earth

# Geomagnetic Storms (G Scale)

Coronal Mass Ejections (CMEs)  
create geomagnetic storms



- Arrival: ~20 – 90 hours
- Duration: hours to a day
- Creates Ionospheric storms

## ***Impacts...***


- Satellite Operations
- Aircraft operations
- Power grid operations
- GNSS operations
- Pipelines



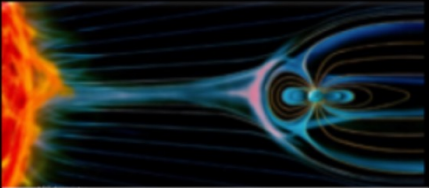
**SPACE WEATHER CONDITIONS** on NOAA Scales 🗖

24-Hour Observed Maximums			Latest Observed			Predicted 2024-07-23 UTC				
<b>R1</b>	<b>S1</b>	<b>G</b>	<b>R</b>	<b>S1</b>	<b>G</b>	R1-R2	60%	S1 or greater	<b>G</b>	➔
minor	minor	none	none	minor	none	R3-R5	15%		99%	

Solar Wind Speed: **271** km/sec     
 Solar Wind Magnetic Fields: Bt **7** nT, Bz **2** nT     
 Noon 10.7cm Radio Flux: **185** sfu


**MINOR Solar Radiation Storm Event** **S1**
Updated 2024 Jul 22 2206 EST/EDT


WHAT: A Low-Level Solar Energetic Particle Event in progress



**EVENT:**  
A solar radiation storm occurs when charged particles are accelerated by processes at or near the Sun and arrive in enough quantity at Earth. Storms of this level are not unusual.

**TIMING:**  
The event first began at 22/2206 EST/EDT and is expected to continue for several hours.

**EFFECTS:**  
Some impacts to HF communications in the polar regions; possible slight risk to space launch.



National Oceanic and Atmospheric Administration   
 Safeguarding Society with Actionable Space Weather Information   
 Space Weather Prediction Center, Boulder, CO

**G2 Watch for July 24th**  
*published: Tuesday, July 23, 2024 16:28 UTC*  
 A G2 Watch is in effect for 24 Jul due to the likely arrival of a halo CME that erupted on 21 Jul.

**S1-Minor Solar Radiation Storm Event from Far Side Halo CME**  
*published: Tuesday, July 23, 2024 16:27 UTC*  
 An S1 Minor Solar Radiation Storm Event began at 2206 EST on July 22, 2024. The storm is a result of CME activity on the far side of the Sun.

**GOES-U Satellite Successfully Launched!**  
*published: Wednesday, July 17, 2024 21:10 UTC*  
 GOES-U, which will be renamed GOES-19 once in orbit, successfully launched from Florida on June 25.

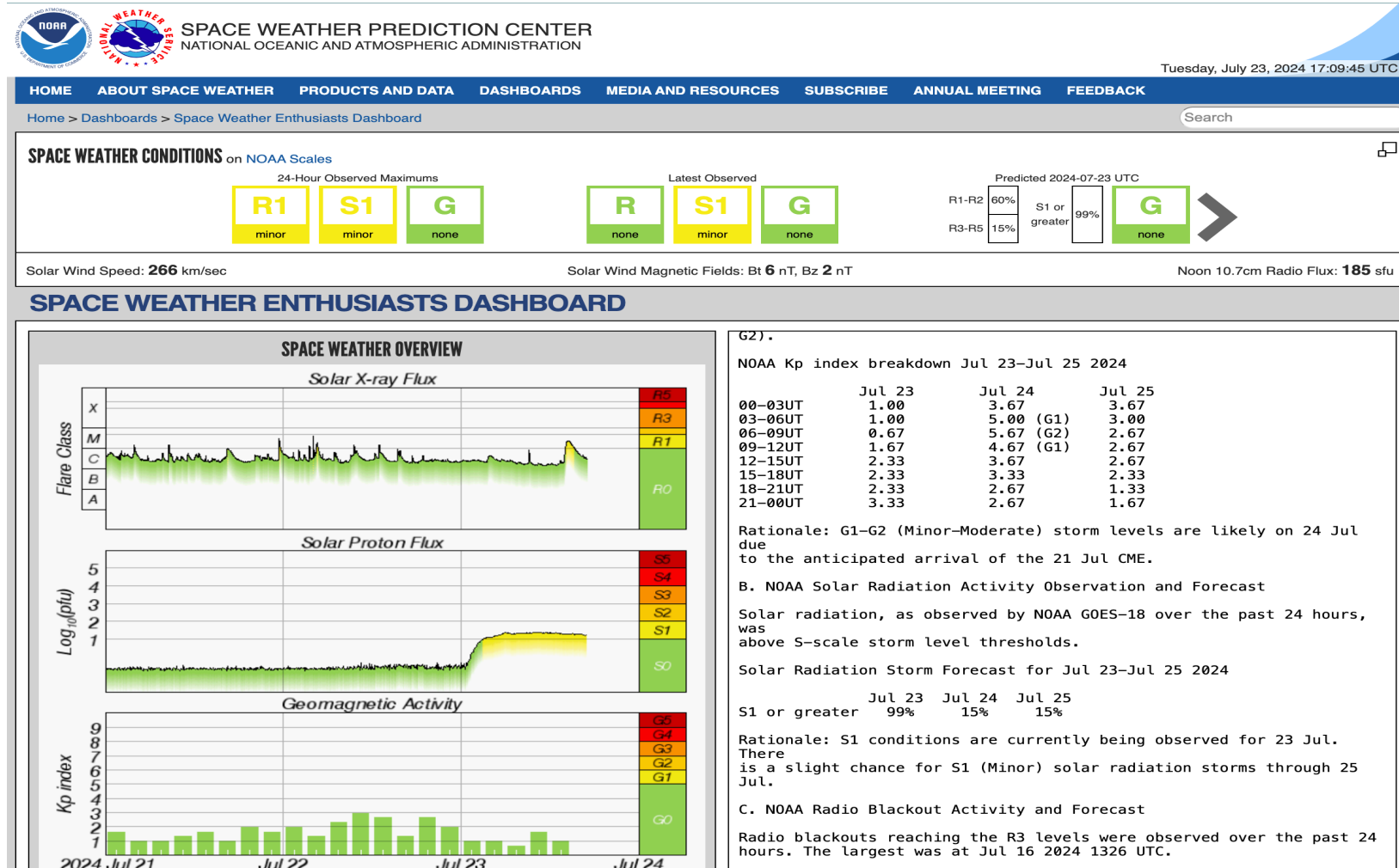
**Request for Information on Space Weather Scales**  
*published: Wednesday, July 17, 2024 21:09 UTC*  
 SWPC is seeking information from interested parties regarding a possible revision to the Space Weather Scales (SWS).

SERVING ESSENTIAL SPACE WEATHER COMMUNITIES

<b>Aurora</b> Global Positioning System (GPS)	<b>Aviation</b> Radio Communications	<b>Electric Power</b> Satellites	<b>Emergency Management</b> Space Weather Enthusiasts
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# https://www.swpc.noaa.gov/communities/space-weather-enthusiasts-dashboard





## CURRENT SPACE WEATHER CONDITIONS on NOAA Scales

R1 minor S1 minor G none

## 3-DAY FORECAST

:Product: 3-Day Forecast  
:Issued: 2024 Jul 23 1230 UTC  
# Prepared by the U.S. Dept. of Commerce, NOAA, Space Weather Prediction Center  
#  
A. NOAA Geomagnetic Activity Observation and Forecast

The greatest observed 3 hr Kp over the past 24 hours was 3 (below NOAA Scale levels).  
The greatest expected 3 hr Kp for Jul 23-Jul 25 2024 is 5.67 (NOAA Scale G2).

NOAA Kp index breakdown Jul 23-Jul 25 2024

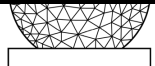
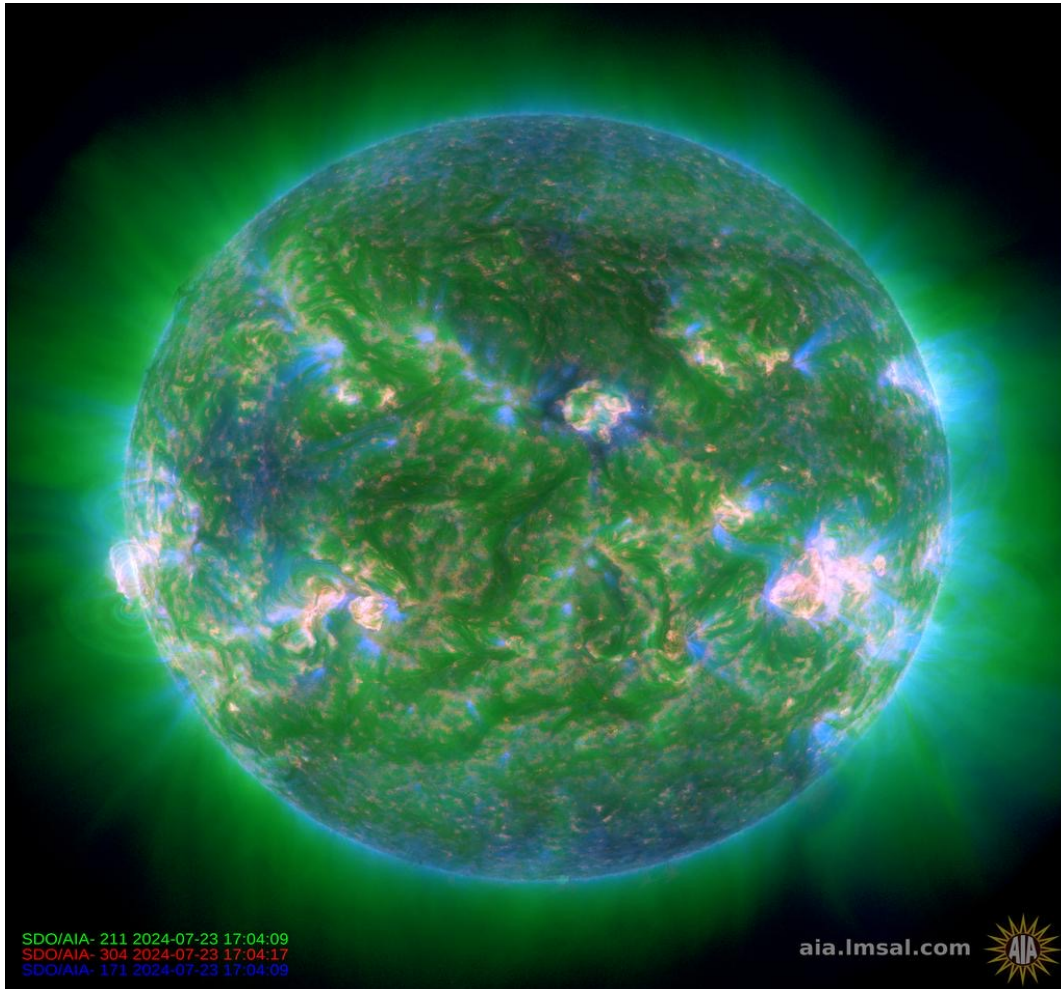
	Jul 23	Jul 24	Jul 25
00-03UT	1.00	3.67	3.67
03-06UT	1.00	5.00 (G1)	3.00
06-09UT	0.67	5.67 (G2)	2.67
09-12UT	1.67	4.67 (G1)	2.67
12-15UT	2.33	3.67	2.67
15-18UT	2.33	3.33	2.33
18-21UT	2.33	2.67	1.33
21-00UT	3.33	2.67	1.67

Rationale: G1-G2 (Minor-Moderate) storm levels are likely on 24 Jul due to the anticipated arrival of the 21 Jul CME.

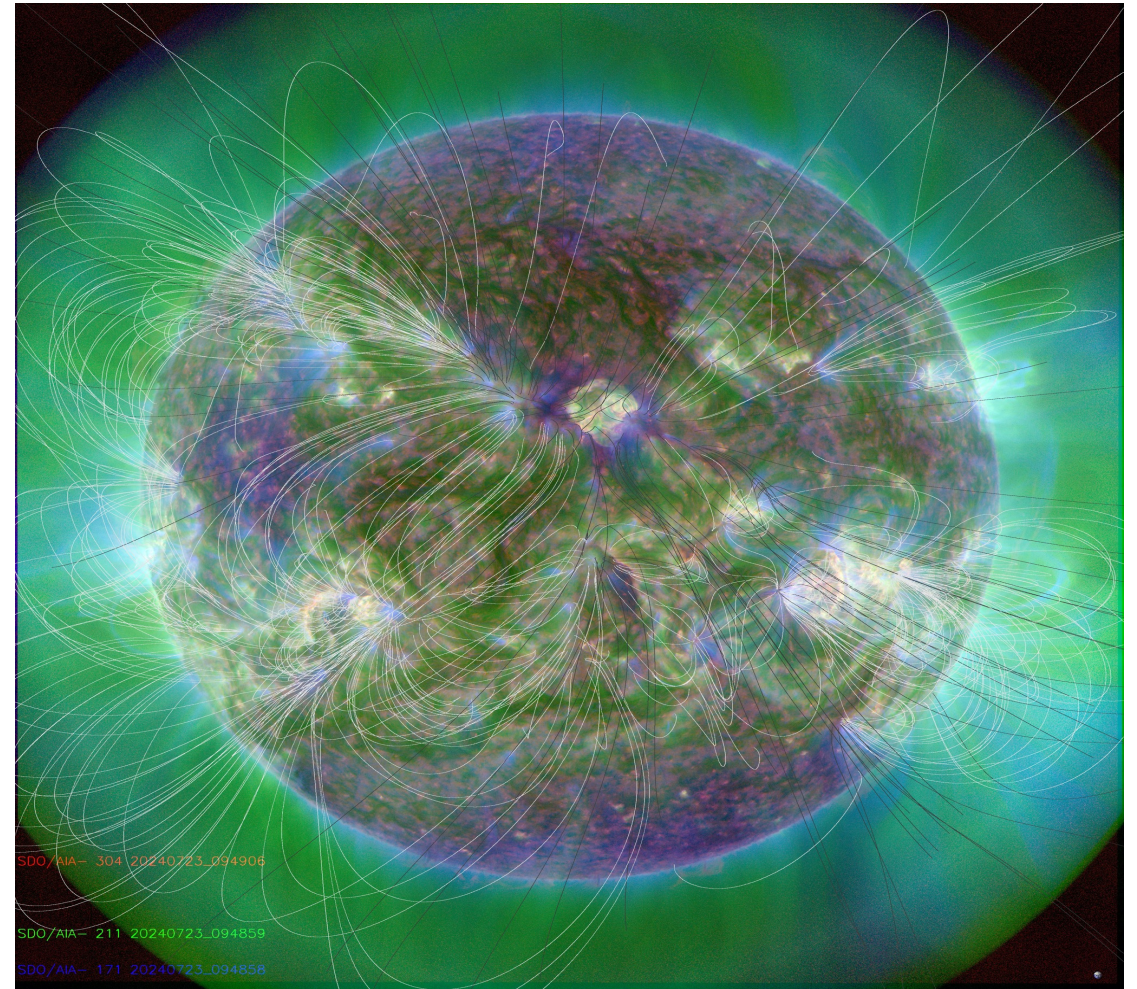
Usage Impacts Details History Data

This product is designed to be a one page, simple look at recently observed and a three day forecast of space weather conditions. A brief description of why conditions occurred or are forecast is also included for each category. Users requiring a more detailed explanation of events should refer to the Forecast Discussion.

[https://suntoday.lmsal.com/suntoday/?suntoday\\_date=2024-07-23](https://suntoday.lmsal.com/suntoday/?suntoday_date=2024-07-23)



**OBSERVATORY**





# KP information <https://kp.gfz-potsdam.de/en/data#c222>



## User specified Download

For large amounts of data please use "Download via HTTPS" below.

(\* Mandatory fields)

Start date \*

End date \*

Format selection \*

- Geomagnetic and solar indices (Kp, ap, Ap, SN, F10.7)
- Geomagnetic indices (Kp, ap)
- WDC-format
- ap\_monyr.ave
- Quiet and disturbed days
- JSON (Kp, ap, Ap, Cp, C9)

Detailed format descriptions

- Geomagnetic and solar indices
- Geomagnetic indices
- WDC-format
- ap\_monyr.ave
- Quiet and disturbed days
- JSON



# Geomagnetic and solar indices (Kp, ap, Ap, SN, F10.7)

2024	07	15	33799	33799.5	2604	5	1.000	1.000	1.333	0.667	0.667	0.667	1.333	3.000	4	4	5	3	3	3	5	15	5	246	233.2	240.9	0
2024	07	16	33800	33800.5	2604	6	3.333	2.000	2.000	1.000	1.333	2.667	2.000	2.000	18	7	7	4	5	12	7	7	8	287	241.9	249.9	0
2024	07	17	33801	33801.5	2604	7	0.667	1.333	1.667	1.000	2.000	1.333	1.000	0.667	3	5	6	4	7	5	4	3	5	283	223.8	231.1	0
2024	07	18	33802	33802.5	2604	8	0.667	0.667	1.000	1.333	1.000	1.000	1.333	0.667	3	3	4	5	4	4	5	3	4	289	208.7	215.5	0
2024	07	19	33803	33803.5	2604	9	0.333	1.333	1.333	0.667	1.000	1.000	1.333	1.000	2	5	5	3	4	4	5	4	4	277	201.6	208.2	0
2024	07	20	33804	33804.5	2604	10	2.000	1.667	2.000	1.667	1.000	2.000	2.333	1.000	7	6	7	6	4	7	9	4	6	232	207.4	214.1	0
2024	07	21	33805	33805.5	2604	11	1.333	0.333	0.333	0.333	1.000	1.333	2.000	1.667	5	2	2	2	4	5	7	6	4	218	197.9	204.2	0
2024	07	22	33806	33806.5	2604	12	2.000	1.333	1.667	3.000	2.000	1.000	2.333	1.667	7	5	6	15	7	4	9	6	7	180	185.0	191.0	0

# <https://spaceweather.gc.ca/forecast-prevision/solar-solaire/solarflux/sx-5-en.php>



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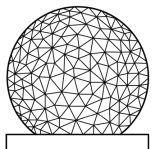
[Canada.ca](#) > [Natural Resources Canada](#) > [Space Weather Canada](#) > [Space weather forecast](#) > [Solar and space conditions](#) > [Solar radio flux](#)

## Solar radio flux - archive of measurements

Data Type	FTP (Text)	HTML	Plots
Monthly Averages	<a href="#">FTP</a>	<a href="#">HTML</a>	<a href="#">Plot</a>
Rotational Averages	<a href="#">FTP</a>	<a href="#">HTML</a>	<a href="#">Plot</a>
Daily flux values (October 28, 2004 to present)	<a href="#">FTP</a>	<a href="#">HTML</a>	None

## Details

**Daily flux values** are the radio emission from the Sun at a wavelength of 10.7 centimetres recorded daily. Values prior to October 28, 2004 are no longer available directly from the web site. They continue to be available through our FTP server. Please contact us using the [Contact Us - Email Form](#) for more information.

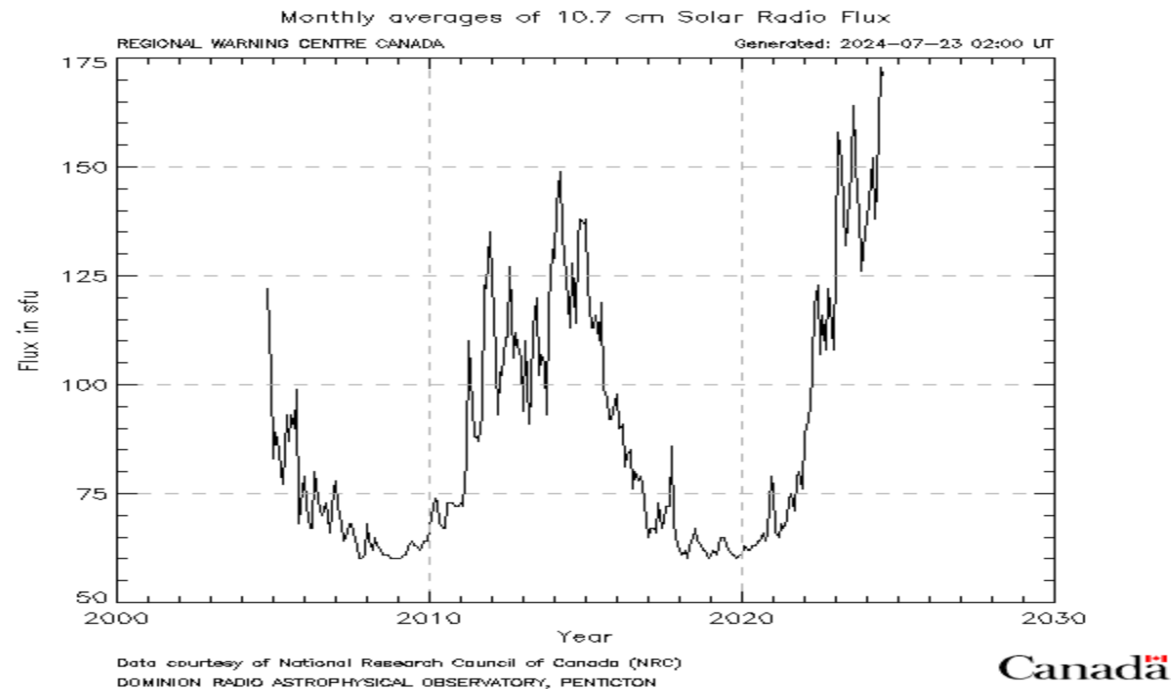


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HAYSTACK  
OBSERVATORY

# Solar Flux Values - HIGH

## Solar radio flux - plot of monthly averages

For an accessible version of the monthly averages, please view the [Monthly Averages \(HTML version\)](#).



The monthly averages are the radio emission from the Sun at a wavelength of 10.7 centimetres averaged over the month. Vertical scale units are in solar flux units ( $1 \text{ sfu} = 10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$ ), horizontal scale units are in years.

# <https://wdc.kugi.kyoto-u.ac.jp/dstdir/>

## Geomagnetic Equatorial Dst index Home Page

[Home Page](#) [WDC for Geomag, Kyoto](#) [E's magnetic field?](#) [Data Service](#) [I.-Magnet](#) [Link](#)

Welcome to WDC for Geomagnetism, Kyoto Dst index service

[Version definition of AE/Dst index](#)

1. [Real-time \(Quicklook\) Dst index](#)

2. [Provisional Dst index \[2017 - 2023\]](#)

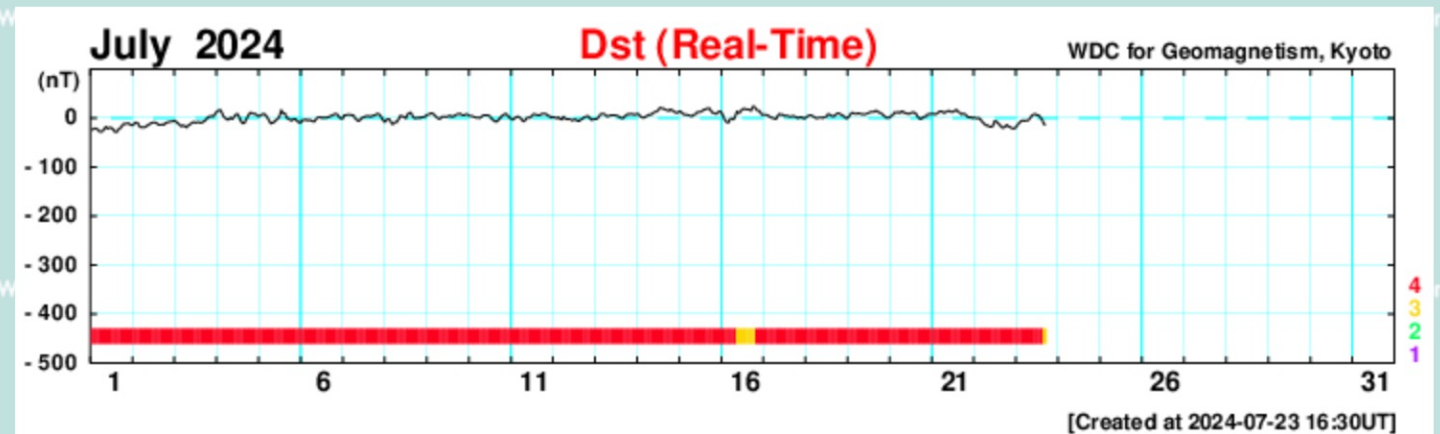
3. [Final Dst index \[1957 - 2016\]](#)

4. [Dst and AE \(Hourly Values\) indices](#)

Plot and data download are available except for real-time AE in

5. [On Dst index \(description in the IAGA Bulletin No 40\)](#)

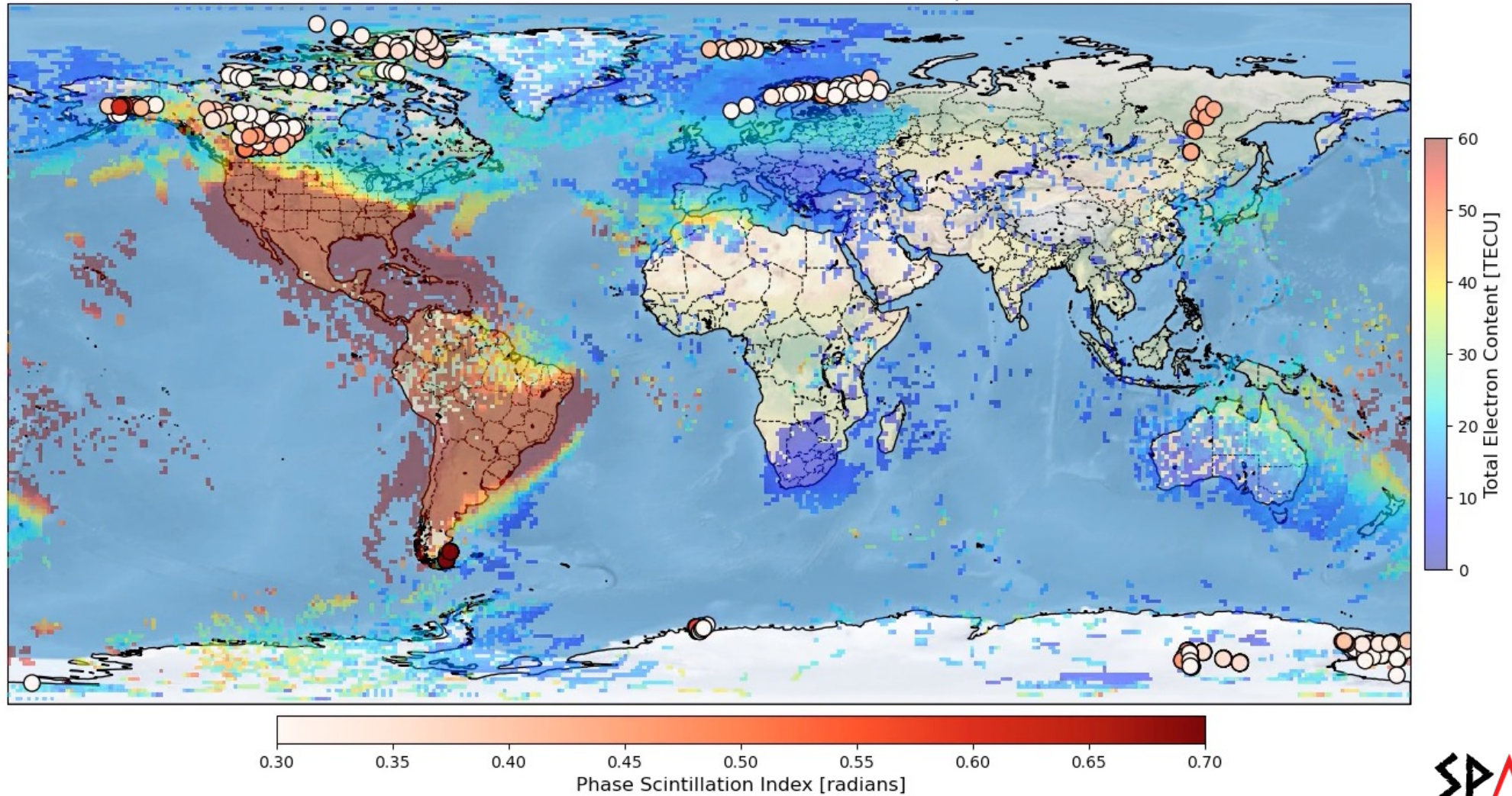
6. [List of papers using Dst index](#)



(The data for this month in the wdc-like format is [here](#).)

# ***SigmaPhi/TEC May 10, 2024***

Scin-TEC Orthographic Global Plots (Time: 21:20 - 21:25 UT | Date: 05/10/2024)



# PFISR TEC measurements during a substorm

