



# An introduction to a typical case of space weather

China  
08<sup>th</sup> July, 2024

# Contents

1

**Statistics on the Space Weather Advisory**

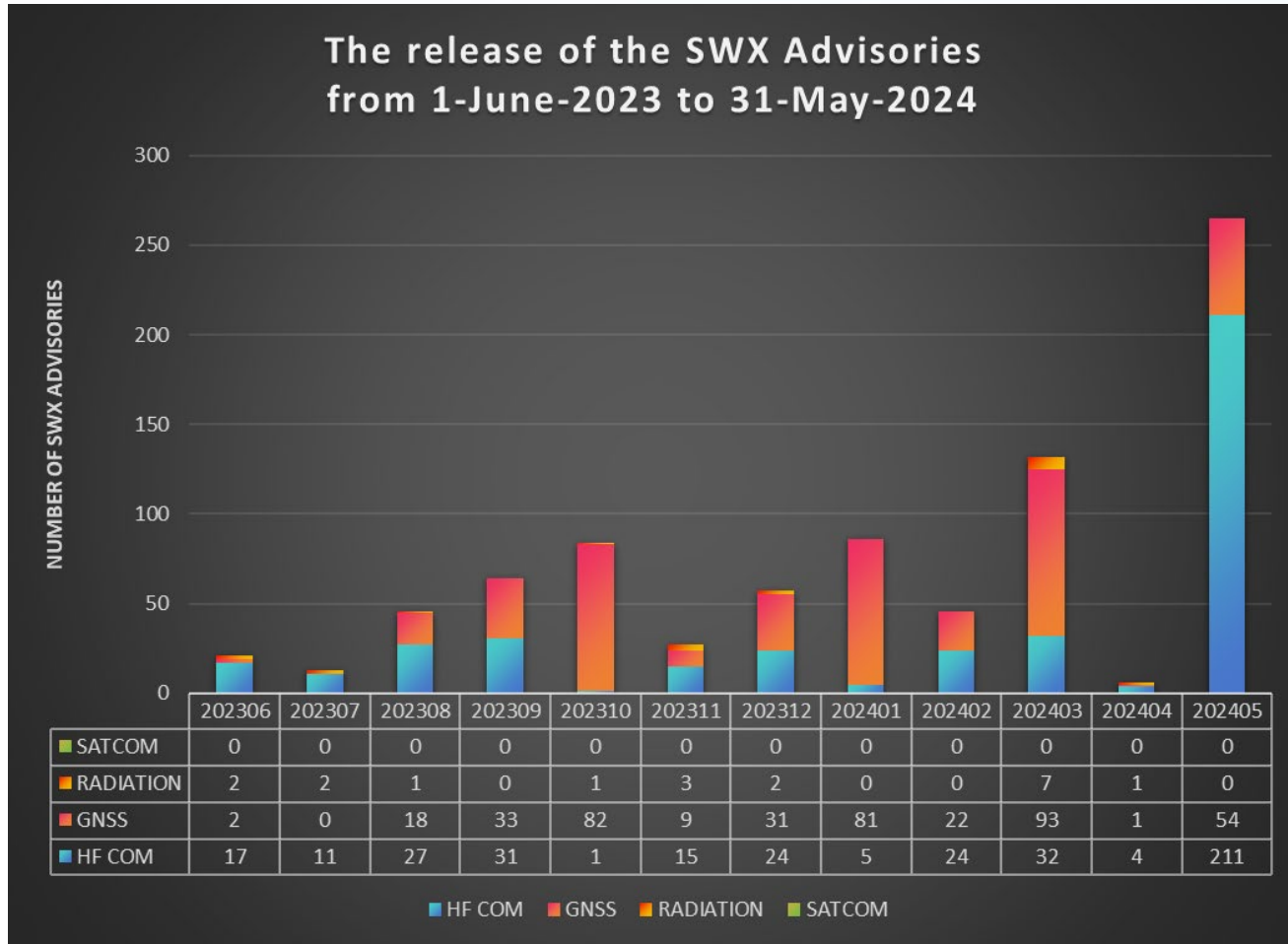
2

**Case study of a space weather event**

# Statistics on the Space Weather Advisory



# The issuance of the SWX Advisories



Statistical period: June 1, 2023 - May 31, 2024

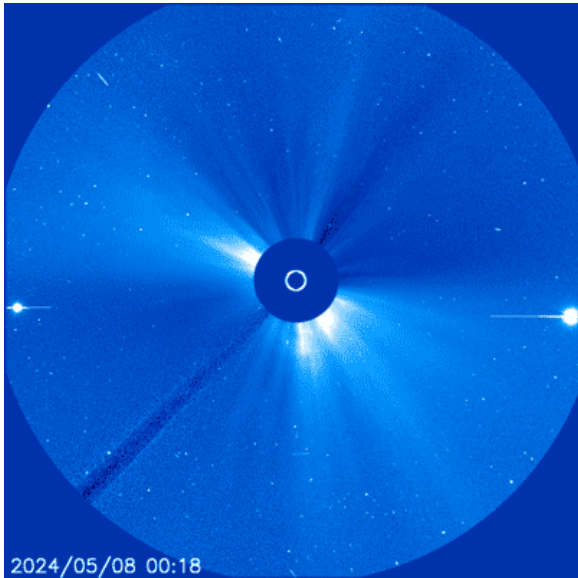
# Case study of a space weather event



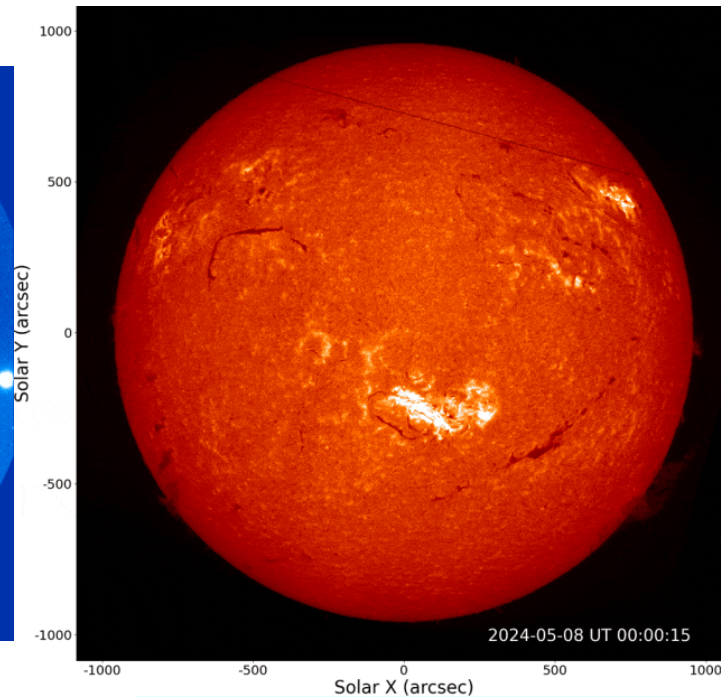
# A strong space weather case

Weather

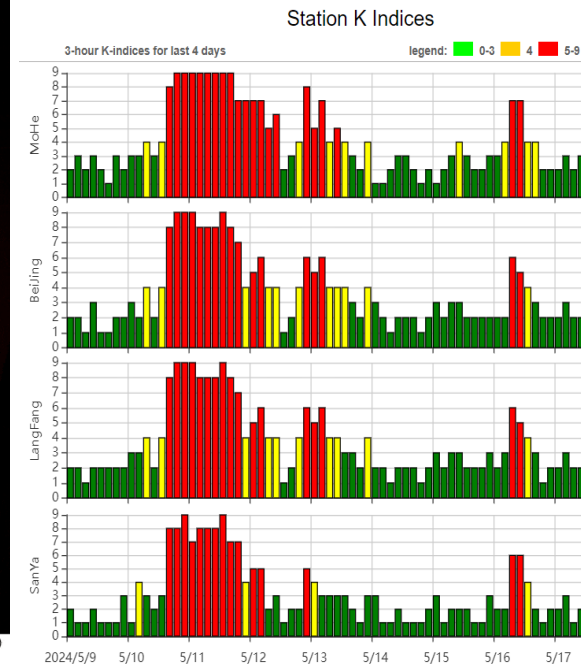
From May 9 to 16, 2024, the sun experienced a series of strong eruptions, with the strongest ones from May 10 to 12.



The coronal mass ejection process on May 8, 2024



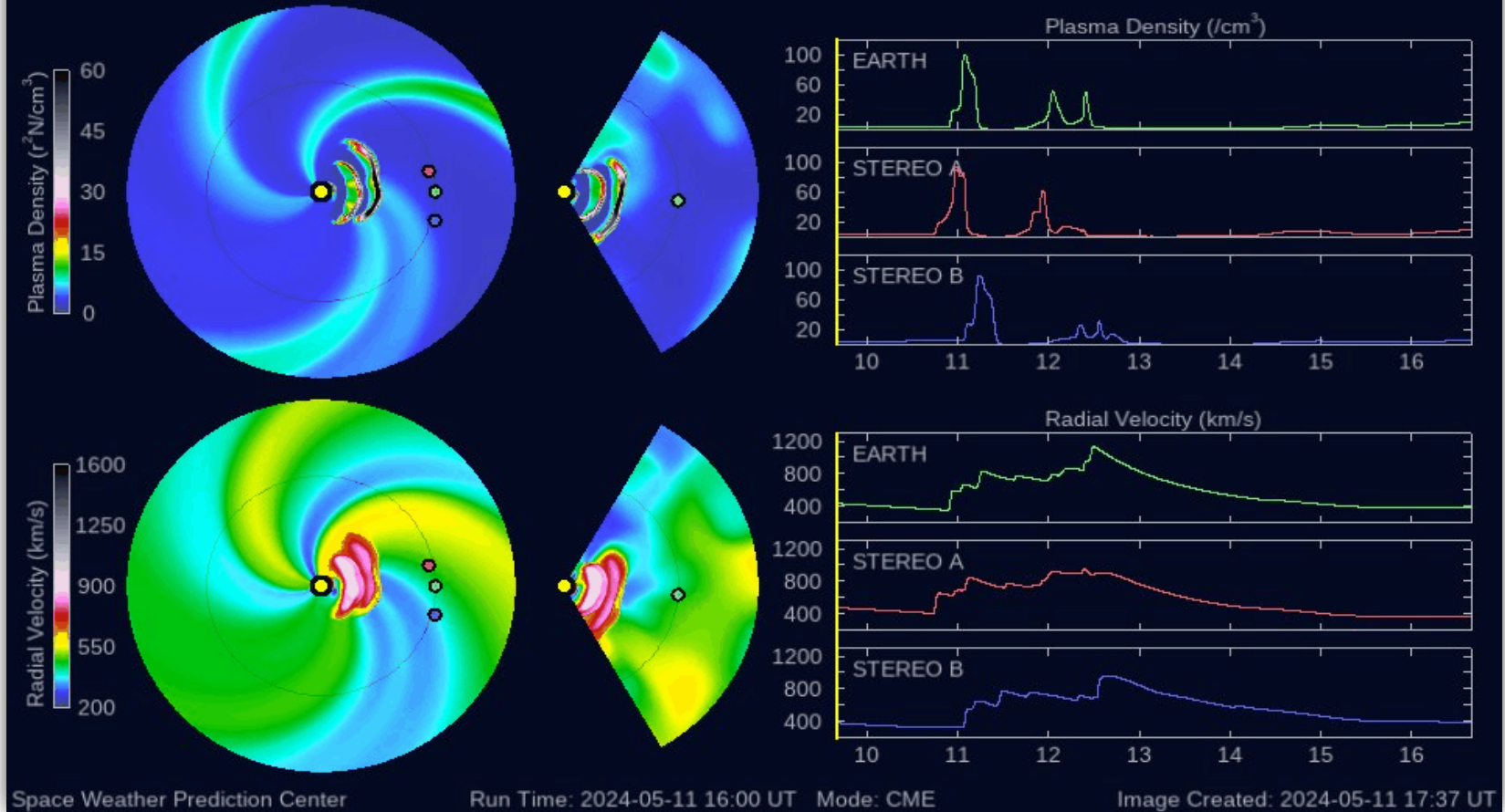
The H $\alpha$  band monitoring map of the Sun on May 8, 2024



Station K Indices during May 9-16, 2024

# A strong space weather case

2024-05-09 16:00:00



# Advisories issued during this case

May 9

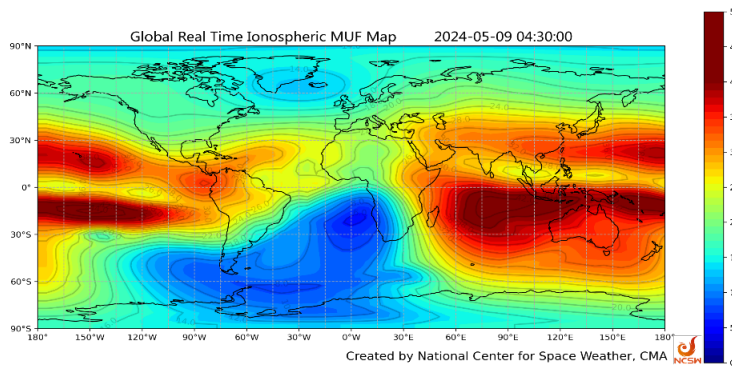
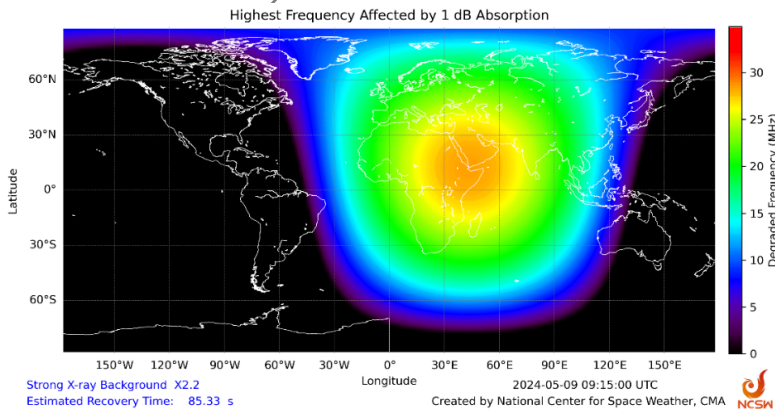


Solar activity is expected to be at high levels over 09-11 May.

**The geomagnetic activity is expected to be major storm levels on 10-May, declining to minor storm levels on 11-May.**

Periods of scintillation are expected to occur in the coming days.

SEPs are possible over 09-11 May.



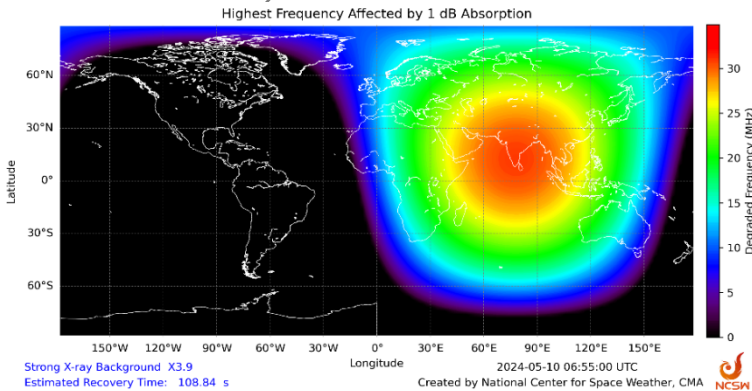
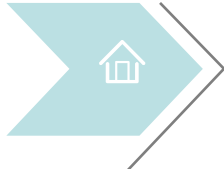
	MOD	SEV
HF COM	4	0
GNSS	0	0

**SWX Advisories**



# Advisories issued during this case

May 10

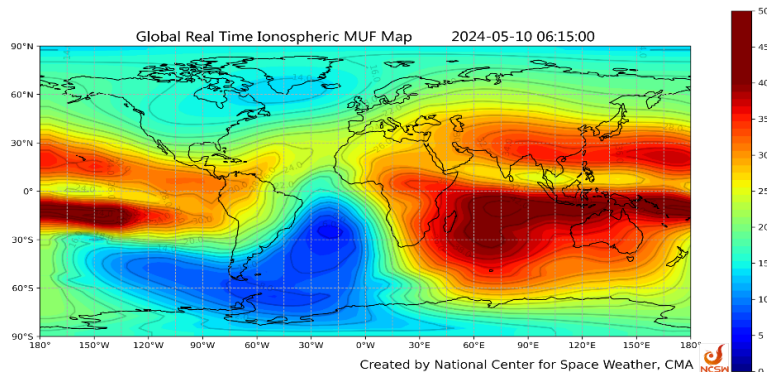


Solar activity is expected to be at high levels over 10-12 May.

**The geomagnetic activity is expected to be severe storm levels on 10-May, declining to major storm levels on 11-May and minor storm levels on 12-May.**

Periods of scintillation are expected to occur in the coming days.

SEPs are possible over 10-12 May.



	MOD	SEV
HF COM	5	2
GNSS	7	2

**SWX Advisories**

# Advisories issued during this case

May 11

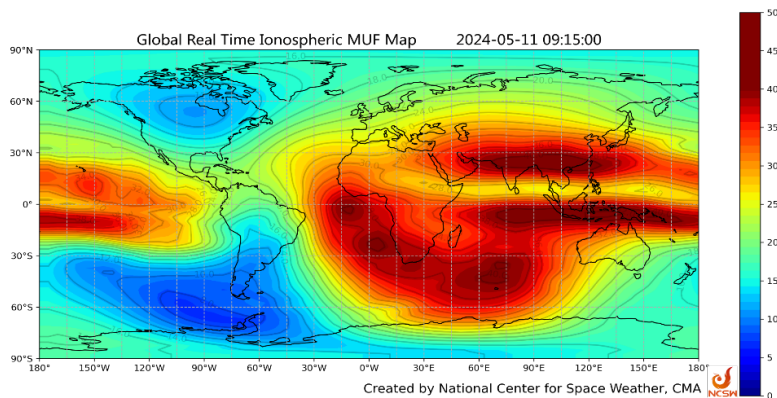
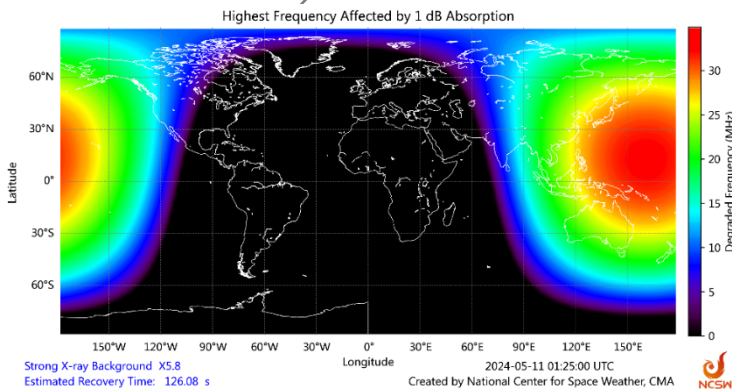


Solar activity is expected to be at high levels over 11-13 May.

**The geomagnetic activity is expected to be severe levels on 11-May and major storm levels on 12-May.**

Periods of scintillation are expected to occur in the coming days.

SEPs are possible over 10-12 May.

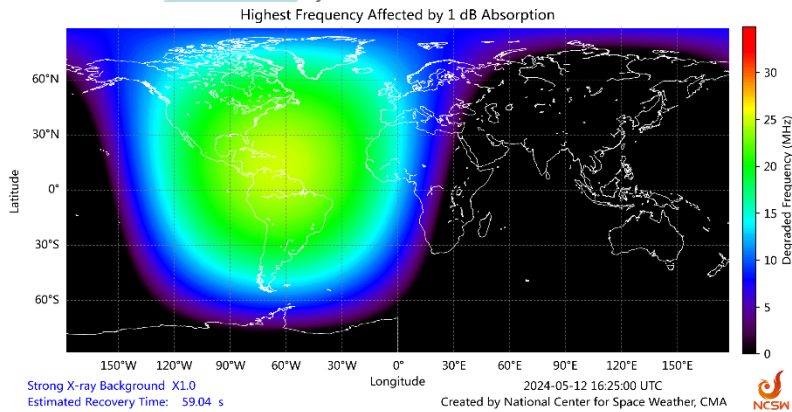


	MOD	SEV
HF COM	9	7
GNSS	11	0

**SWX Advisories**

# Advisories issued during this case

May 12

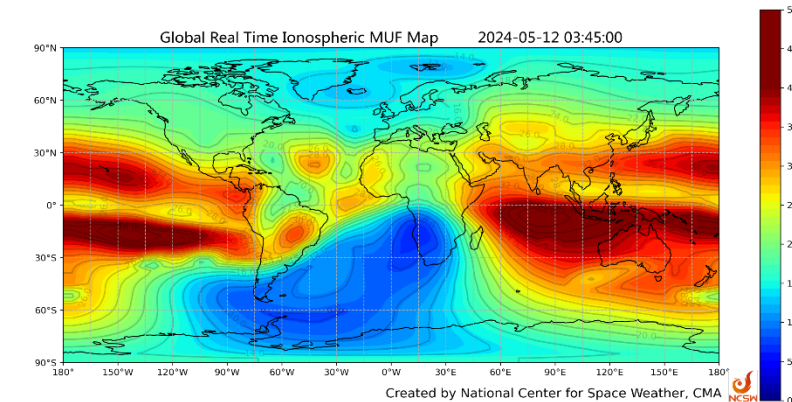


Solar activity is expected to be at high levels over 12-14May.

The geomagnetic field is expected to be at major to severe storm levels on 12-May with potentially a brief decline in the geomagnetic activity level, before increasing again during the second half of the UT day 12-May due to potential CME arrivals.

Periods of scintillation are expected to occur in the coming days.

**SEPs are possible to continue enhancements during 12-14 May.**

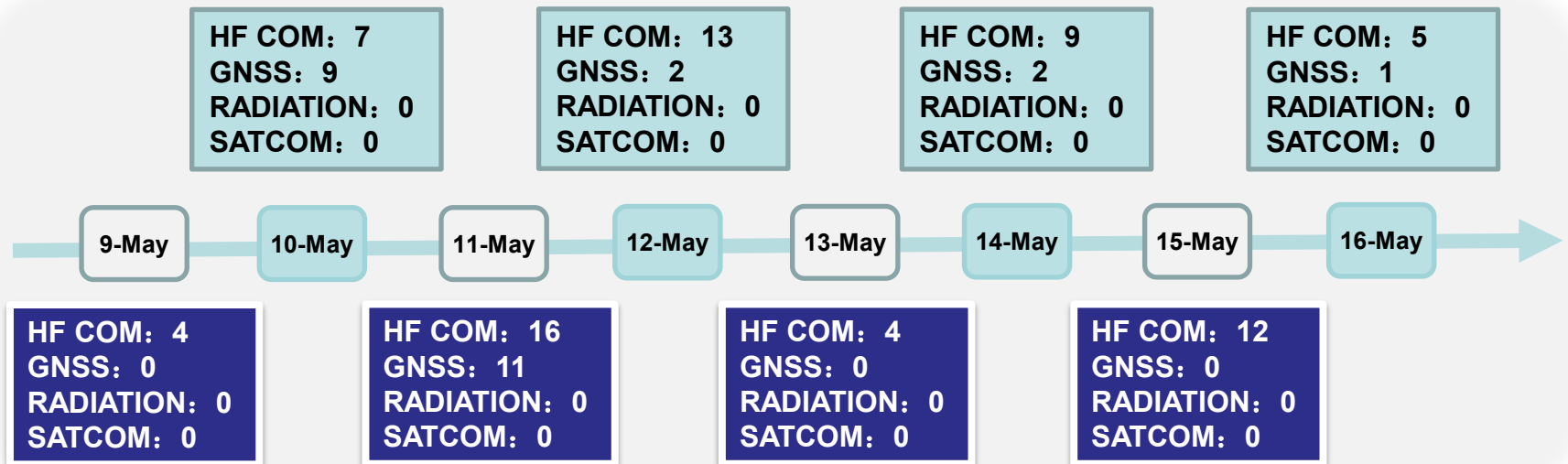


	MOD	SEV
HF COM	8	5
GNSS	2	0

**SWX Advisories**

# Advisories issued during this case

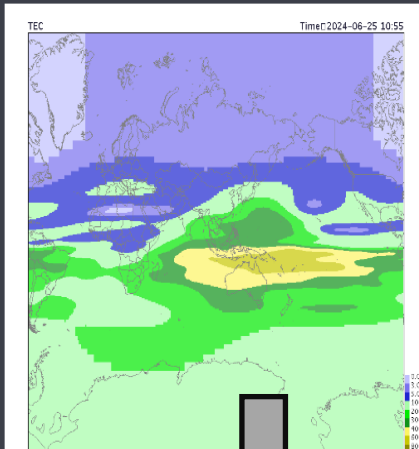
From 09:06 UTC on May 9, 2024, the on duty center (ACFJ) issued 95 advisories on this severe geomagnetic storm, including 4 GNSS SEV advisories, 21 GNSS MOD advisories, 14 HF COM SEV advisories, and 56 HF COM MOD advisories.



# Space Weather Service Website

The screenshot shows the website's main dashboard. At the top, the logo for the CHINA-RUSSIA CONSORTIUM is displayed, along with a navigation menu including Home, Warnings, Products, Space Weather Advisories, Cases&Events, Popular science&Rules, and Contact Us. Below the navigation, the 'RGS index' is shown for three consecutive days: 2024-06-29 UTC (R: none, S: none, G: none), 2024-06-28 UTC (R: none, S: none, G3: Strong), and 2024-06-27 UTC (R: none, S: none, G: none). The central part of the dashboard features three main sections: 'Total vertical ionospheric electron content' with a TEC map, 'Duty Center' (ACFJ), 'Three day forecast', and 'New message release' containing a detailed advisory for ACFJ. Arrows from these sections point to corresponding labels on the right side of the slide.

Total vertical ionospheric electron content



Duty Center

• ACFJ

Three day forecast

New message release

SWAL: ACFJ

ADVISORY NR: 2024/198

NR RPLC: 2024/197

SWX EFFECT: HF COM MOD

OBS SWX: 28/2222Z NO SWX EXP

FCST SWX +6 HR: 29/0500Z NO SWX EXP

FCST SWX +12 HR: 29/1100Z NO SWX EXP

FCST SWX +18 HR: 29/1700Z NO SWX EXP

FCST SWX +24 HR: 29/2300Z NO SWX EXP

RMK: EVENT UPDATE. END OF HF COM (MAX USABLE FREQ)

Duty Center

Three day forecast

Space Weather  
Advisory  
Information

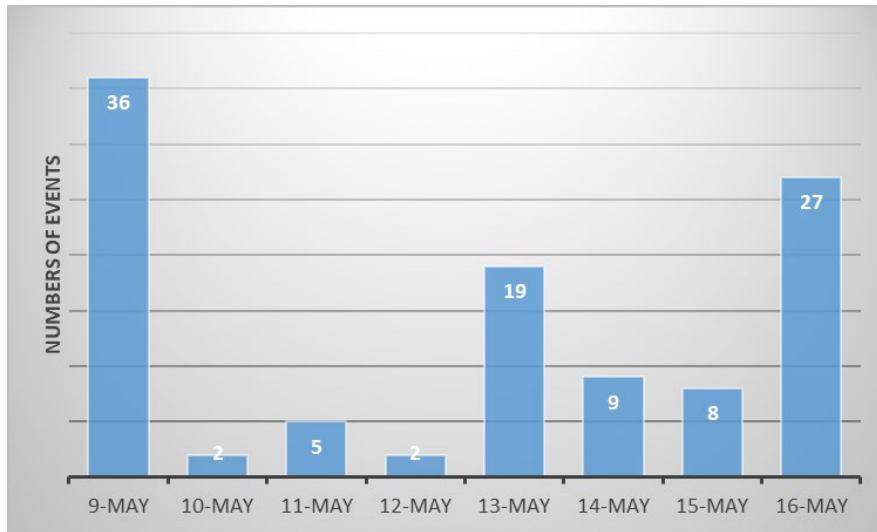
Total vertical ionospheric electron content (TEC)

There are also indices such as X-ray flux, Proton flux, and Solar wind. etc

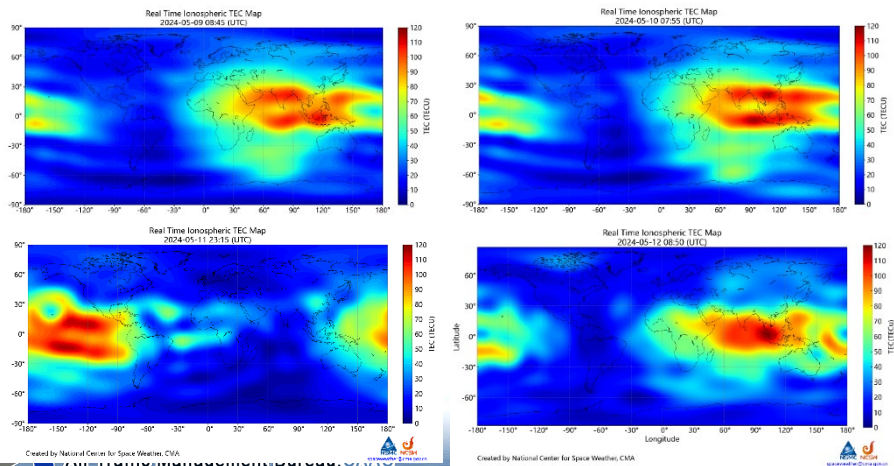
# Possible impact on civil aviation operations

## Impact

From May 9 to 16, China received a total of 108 reports of abnormal communication and navigation events in Civil Aviation.



Affected areas and time periods		
Date	No. of events	Affected areas
May 9	36	Beijing terminal, Qingdao area
May 10	2	Xi'an terminal
May 11	5	Beijing Terminal, Xi'an Terminal, Hefei Approach
May 12	2	Changsha area, Dalian approach
May 13	19	Beijing terminal
May 14	9	Beijing terminal; Wenzhou, Changsha, Wuhan area
May 15	8	E of North China, S of Northeast China, Central East China, S of Central and South China
May 16	27	Beijing terminal



**Thank you!**

