

RWC-India report 28 October 2024

From: RWC-India [Regional Warning Center(RWC) of India for Space Environment], CSIR-NPL, New Delhi-110012

Relative Sunspot Number for 28 October 2024 is 198

10.7 CM Flux for 27 Oct 2024 is 246

Magnetic Activity [Ap] for 26 Oct 2024 is 011

Analysis of Solar Active Regions and Activity from 26/2100Z to 27/2100Z: Solar activity has been at low levels for the past 24 hours. The largest solar event of the period was a C9 event observed at 27/1326Z from Region 3878 (N18E72). There are currently 12 numbered sunspot regions on the disk.

Solar Activity Forecast: Solar activity is expected to be moderate with a chance for X-class flares on days one, two, and three (28 Oct, 29 Oct, 30 Oct).

Geophysical Activity Summary 26/2100Z to 27/2100Z: The geomagnetic field has been at quiet to active levels for the past 24 hours. Solar wind speed reached a peak of 507 km/s at 26/2156Z. Total IMF reached 23 nT at 26/2141Z. The maximum southward component of Bz reached -15 nT at 26/2146Z. Protons greater than 10 MeV at geosynchronous orbit reached a

peak level of 273 pfu at 27/1535Z. Electrons greater than 2 MeV at geosynchronous orbit reached a peak level of 136 pfu.

Geophysical Activity Forecast: The geomagnetic field is expected to be at active to major storm levels on day one (28 Oct), unsettled to minor storm levels on day two (29 Oct) and quiet to unsettled levels on day three (30 Oct). Protons are expected to cross threshold on day one (28 Oct), are expected to cross threshold on day two (29 Oct) and have a chance of crossing threshold on day three (30 Oct).

10.7 CM Predicted

28 Oct-30 Oct 245/245/245

Magnetic Activity Ap Predicted

Predicted 28 Oct-30 Oct 045-022-008

Energetic Particles

24 hr Summary

The greater than 2 MeV electron flux remained at normal to moderate levels. The greater than 10 MeV proton flux remained above the S2 (Moderate) alert threshold levels, reaching a peak value of 358 pfu at 28/1025 UTC. The 100 MeV flux values remained enhanced, reaching a peak of 0.56 pfu at 27/1420 UTC.

Forecast

The greater than 2 MeV electron flux is expected to be at moderate levels on 28-30 Oct, due to possible CME/CH HSS effects. The 10 MeV proton flux is expected to continue above 100 pfu (S2-moderate) threshold on 28 Oct, and expected to remain above the 10 pfu (S1-minor) threshold on 29 Oct. There is a chance that the 10 MeV proton flux will continue above threshold on 30 Oct.

Solar Wind

24 hr Summary

Solar wind parameters reflected nominal levels until 28/0446 UTC when a geomagnetic Sudden Impulse was observed at both ACE and DSCOVR. At that time, total field rapidly increased to peak near 24 nT, the Bz component initially went north before eventually seeing a southward deviation to -20 nT, and wind speeds increased to eventually peak near 613 km/s. The phi angle remained in a negative orientation.

Forecast

Elevated solar wind conditions are expected to persist on 28 Oct following the arrival of the CME that left the Sun on 26 Oct. Enhanced solar wind parameters are likely to persist into 29 Oct before eventually returning to nominal levels on 30 Oct.

Global Propagation Summary

Date	Latitude Band		
	Low	Middle	High
21 Oct	Normal	Normal	Normal

PCA Event : No event.

Global Propagation Forecast

Date	Latitude Band		
	Low	Middle	High
27 Oct	Normal	Normal	Poor

PCA Event : 10MeV Proton/PCA Event Began 26 10 2024 1850UT and is in progress

Global Propagation Forecast

Date	Latitude Band		
	Low	Middle	High
28 Oct	Normal	Normal-fair	Poor(PCA)
29 Oct	Normal	Fair	Poor-fair
30 Oct	Normal	Fair-normal	Fair

COMMENT: HF radio communication conditions on UT day 27-Oct were normal for low and middle latitudes. High latitudes were impacted by increased absorption from an S2 solar radiation storm. Antarctic riometers observed an increase in absorption of approximately 2db on 27-Oct. Degraded HF conditions expected on 28-Oct for middle latitudes due to anticipated geomagnetic activity from a CME arrival are likely to be weaker and possibly now occurring on 29-Oct. Shortwave fadeouts probable.

Regards,

RWC-India

Date: 28/Oct/2024.