Sol – Cecatto
Period: Apr. 28 – May 05, 2025

Summary

04/28 – No M/X flare; Fast (=< 450 km/s) wind stream; 4 CME can have component toward the Earth;
04/29 – M1.7, M1.3, M1.6 flares; Fast (=< 500 km/s) wind stream; 4 CME can have component toward the Earth;
04/30 – M2.0 flare; Fast (=< 500 km/s) wind stream; 4 CME can have component toward the Earth;
05/01 – No M/X flare; Fast (=< 500 km/s) wind stream; 4 CME can have component toward the Earth;
05/02 – No M/X flare; Fast (=< 650 km/s) wind stream; 2 CME can have component toward the Earth;
05/03 – No M/X flare; Fast (=< 800 km/s) wind stream; 2 CME can have component toward the Earth *;
05/04 – No M/X flare; Fast (=< 700 km/s) wind stream; 5 CME can have component toward the Earth;
05/05 – No M/X flare; Fast (=< 800 km/s) wind stream; 2 CME can have component toward the Earth
For.: Fast wind stream for the next 1-2 days; for while (35% M, 05% X) probability of M / X flares next 2 days; also, occasionally some other CME can present a component toward the Earth.
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Resumo

28/04 – Sem "Flare" M/X; Vento rápido (=< 450 km/s); 4 CMEs podem ter componente p Terra;
29/04 – "Flares" M1.7, M1.3, M1.6; Vento rápido (=< 500 km/s); 4 CME com componente p/ Terra;
30/04 – "Flare" M2.0; Vento rápido (=< 500 km/s); 4 CME com componente p/ Terra;
01/05 – Sem "Flare" M/X; Vento rápido (=< 500 km/s); 4 CME podem ter componente p Terra;
02/05 – Sem "Flare" M/X; Vento rápido (=< 650 km/s); 2 CME podem componente p Terra;
03/05 – Sem "Flare" M/X; Vento rápido (=< 800 km/s); 2 CME com componente p Terra;
04/05 – Sem "Flare" M/X; Vento rápido (=< 700 km/s); 5 CME podem ter componente p/ a Terra;
05/05 – Sem "Flare" M/X; Vento rápido (=< 800 km/s); 2 CME com componente para a Terra
Prev.: Vento rápido para os próximo(s) 1-2 dia(s); probabilidade de “flares” M/X (35% M, 05% X) nos próximos 02 dias; eventualmente alguma(s) outra(s) CME pode(m) apresentar componente dirigida para a Terra.

Geomagnetic Field

Responsible: Karen Sarmiento/ Lívia Alves

Summary

Rapid fluctuations in the amplitude of the northward component of the magnetic field (Hp) were recorded starting on May 1st on the nightside, indicating an intensification of current systems in the magnetotail. The GOES satellites detected minimum values of 32.8 nT in this component at 0630 UT on April 30 and 33 nT at 0415 UT on May 1. On April 30, an increase in the field amplitude was observed on the dayside, reaching 163 nT at 2115 UT. The AL index dropped significantly, reaching peaks below -1000 nT on May 1 (20 UT), May 2 (15 UT), and May 4 (17 UT), indicating an intensification of westward current systems in the auroral zone. This behavior is related to the increase in the AE index, which ranged from 1000 to 1500 nT on May 1 (20 UT) and May 3 (11 UT), and from 1500 to 2000 nT on May 2 (15 UT) and May 4 (17 UT), reflecting the strengthening of the auroral electrojet current system and characterizing periods of magnetic substorms across multiple intervals. These episodes suggest stretching and subsequent energy release in the magnetotail, with signatures of intense and moderate substorms on the nightside. The magnetic field remained predominantly active, alternating between different geomagnetic conditions: quiet (April 29), active (April 30), and minor G1 storm (from May 1 to May 5), oscillating between Kp 5- and 5+, as indicated by the Kp index, which reached a maximum of 5+ on May 3 (0–3 UT). The Dst index remained predominantly negative starting from May 1 (03 UT), reaching moderate storm levels with a minimum value of -67 nT on May 3 (24 UT). Data from the Embrace-Magnet magnetometer network recorded rapid variations in the H component starting on May 1, with a drop in the H component reaching a minimum value of -168.11 nT at 1704 UT at the Jataí (JAT) station, located within the influence region of the South Atlantic Magnetic Anomaly (SAMA).

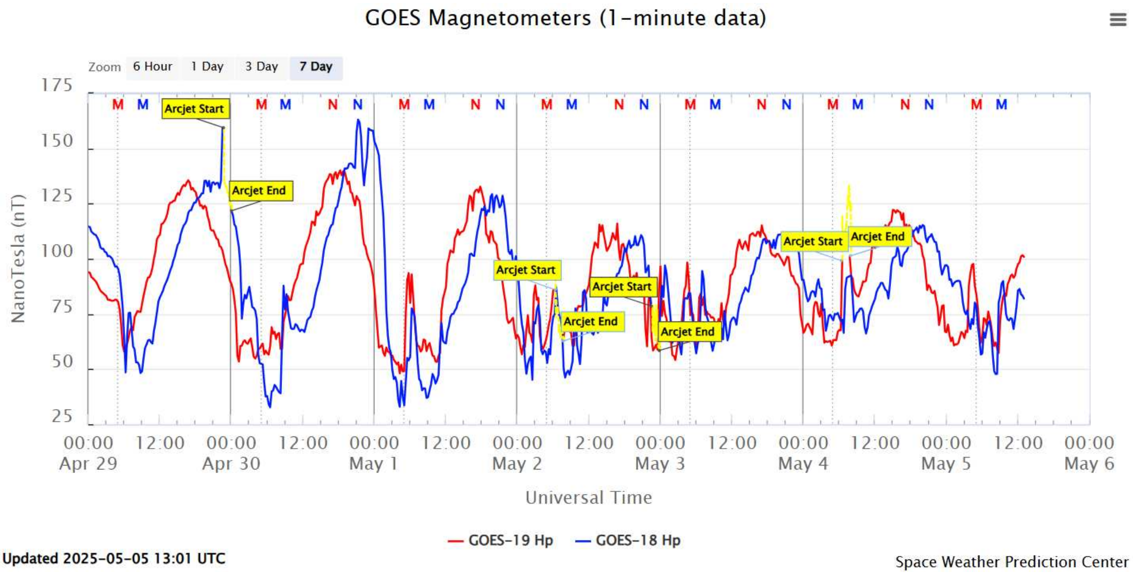

Figure 1- Magnetic field horizontal component at the GOES satellite orbit through.

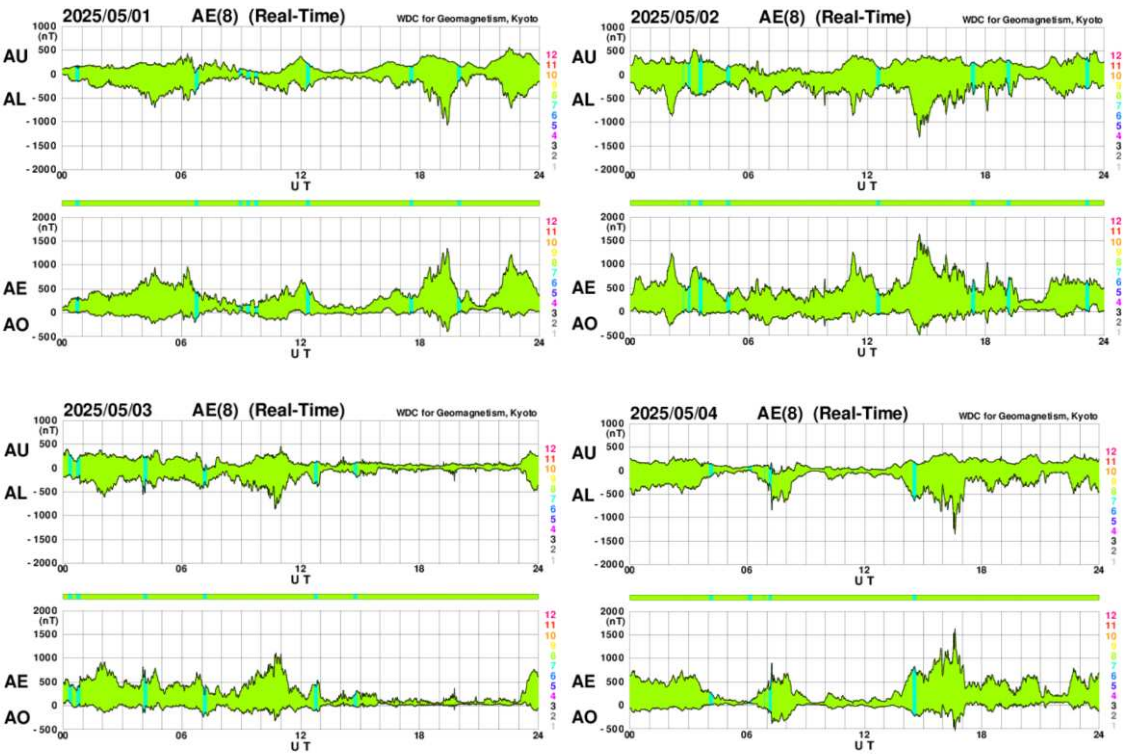

Figure 2- AE index.

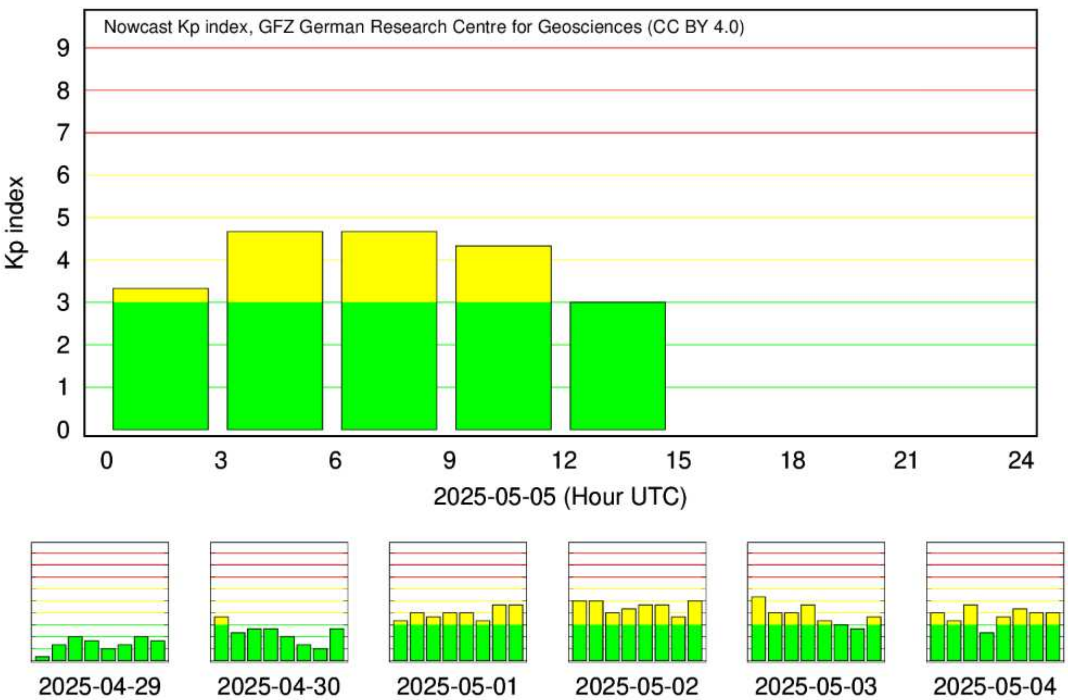

Figure 3- Kp index in logarithmic scale.

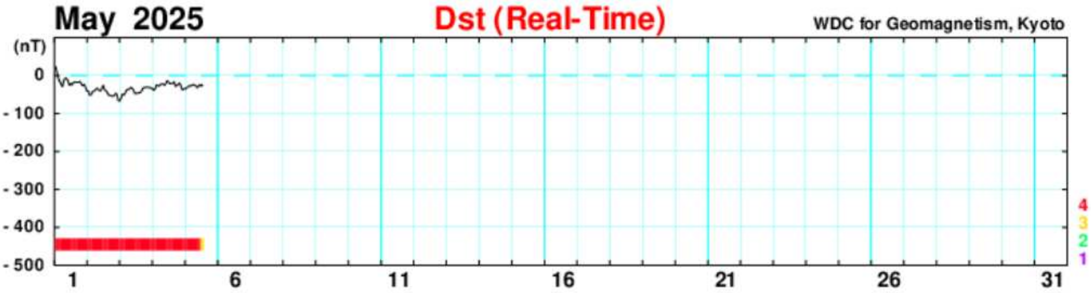

Figure 4- Dst Index

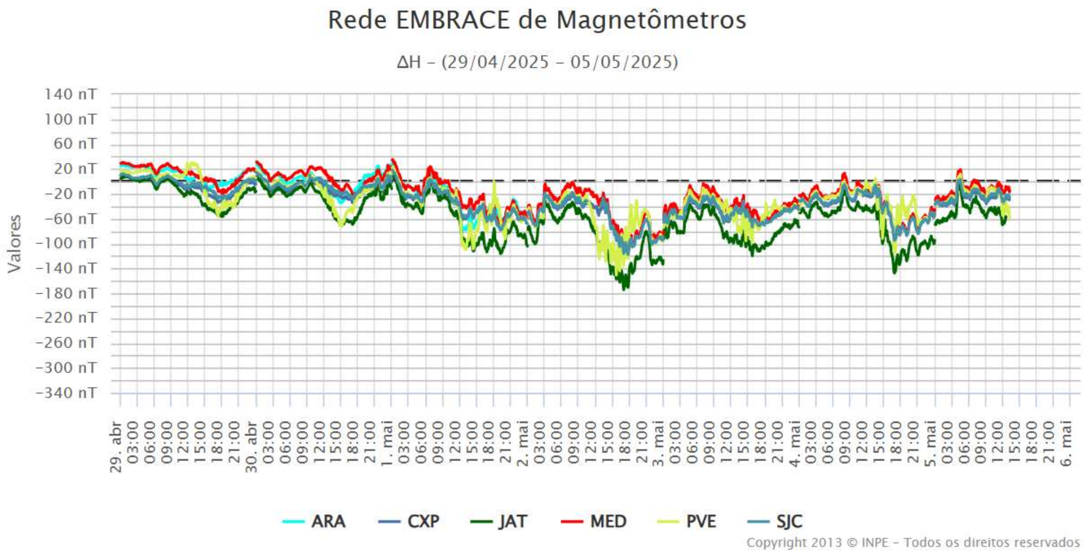

Figure 5- Daily variation of the geomagnetic field from H(nT) measured at Embrace MagNet.

EARTH'S RADIATION BELT

Responsible: Ligia Da Silva

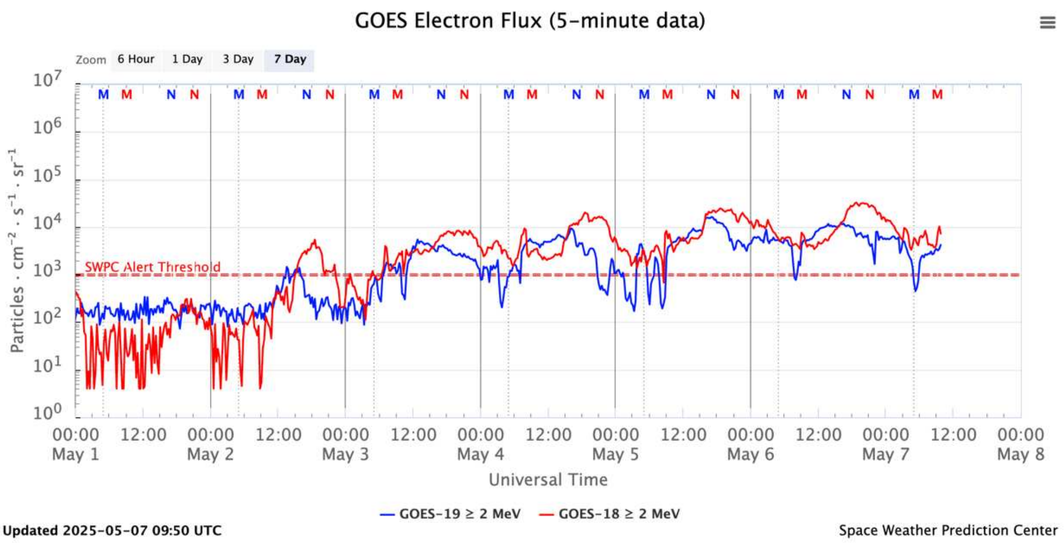

Figure 1: High-energy electron flux (> 2MeV) obtained from GOES-16 and GOES-18 satellite. Source: https://www.swpc.noaa.gov/products/goes-electron-flux

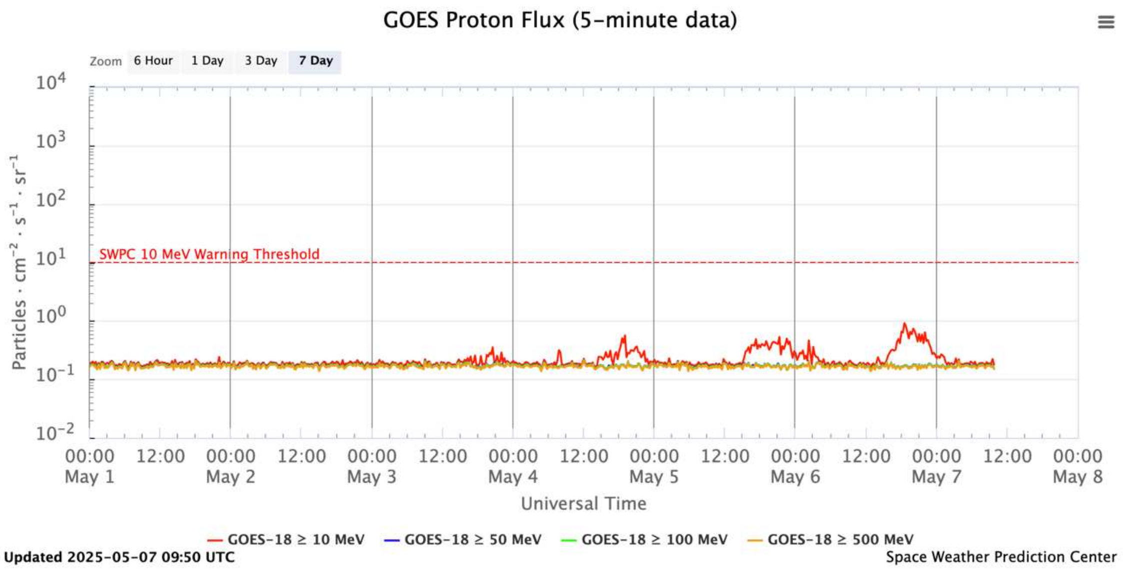

Figure 2: Proton flux (≥ 10MeV, ≥ 50MeV, ≥ 100MeV) obtained from GOES-18 satellite. Source: https://www.swpc.noaa.gov/products/goes-proton-flux

Summary

The high-energy electron flux (>2 MeV) in the outer boundary of the outer radiation belt obtained from geostationary satellite data GOES-16 and GOES-18 (Figure 1) is below the minimum threshold of 10^3 particles/(cm^2 s sr) until approximately 12:00 UT on May 2, showing a significant increase from this time onwards. This increase remains throughout the week with the flux close to 10^4 particles/(cm^2 s sr).

The proton flux ≥ 10MeV at the outer boundary of the outer radiation belt obtained from the geostationary satellite GOES-18 (Figure 2) showed a slight gradual increase for short time intervals on May 3, 4, 5 and 6.

Ionosphere - ROTI
Summary for Week 2364 (April 27 to May 3, 2025)

Carolina de Sousa do Carmo

In the week 2364 (April 27 to May 3, 2025), ionospheric irregularities (plasma bubbles) were observed at Boa Vista on July 27, and 29 to May 3. The Figure below shows the ROTI time series for four stations in the Brazilian sector (Boa Vista (BOAV), Bacabal (MABB), São Luis (SALU), and Cachoeira Paulista (CHPI)).

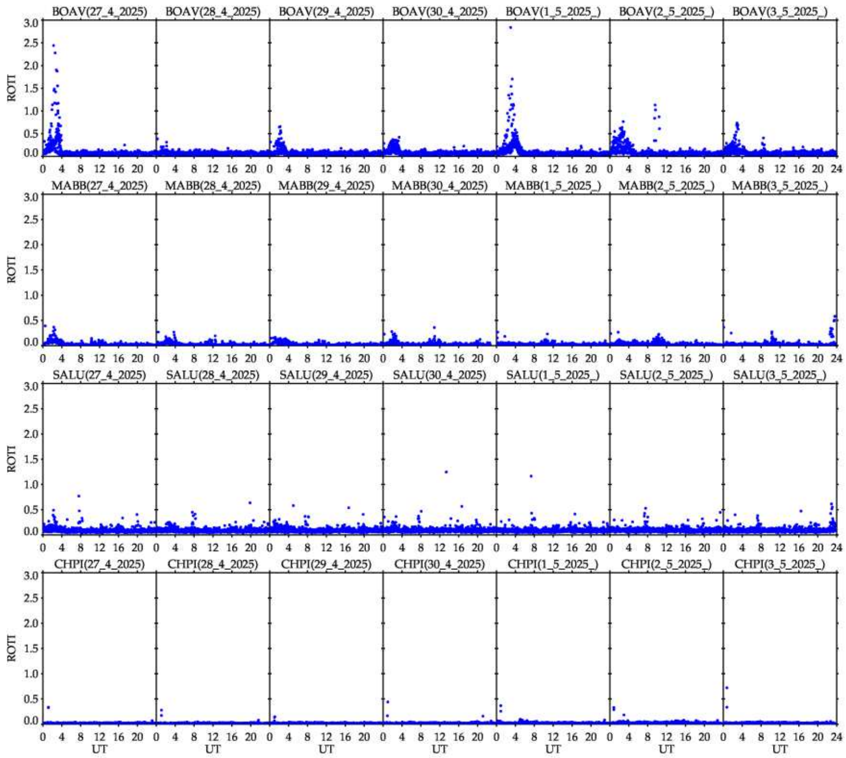

Figure – ROTI time series for four stations in the Brazilian sector (Boa Vista (BOAV), Bacabal (MABB), São Luis (SALU), and Cachoeira Paulista (CHPI)), from April 27 to May 3, 2025.