Sun – Solar Activity (Jean C. Santos)

Summary

The Sun showed little activity during the week, with an average of one region of high magnetic complexity (beta-gamma) per day present on the solar surface. During this period, two M-class solar flares and one X-class flare occurred. The Cactus software identified eighteen CMEs up to April 1st, including one halo-type flare (angular width greater than 180 degrees). Only one coronal hole with a significant area (>2.0% of the solar disk area) was identified during this period, located at low latitudes on the Sun's surface.

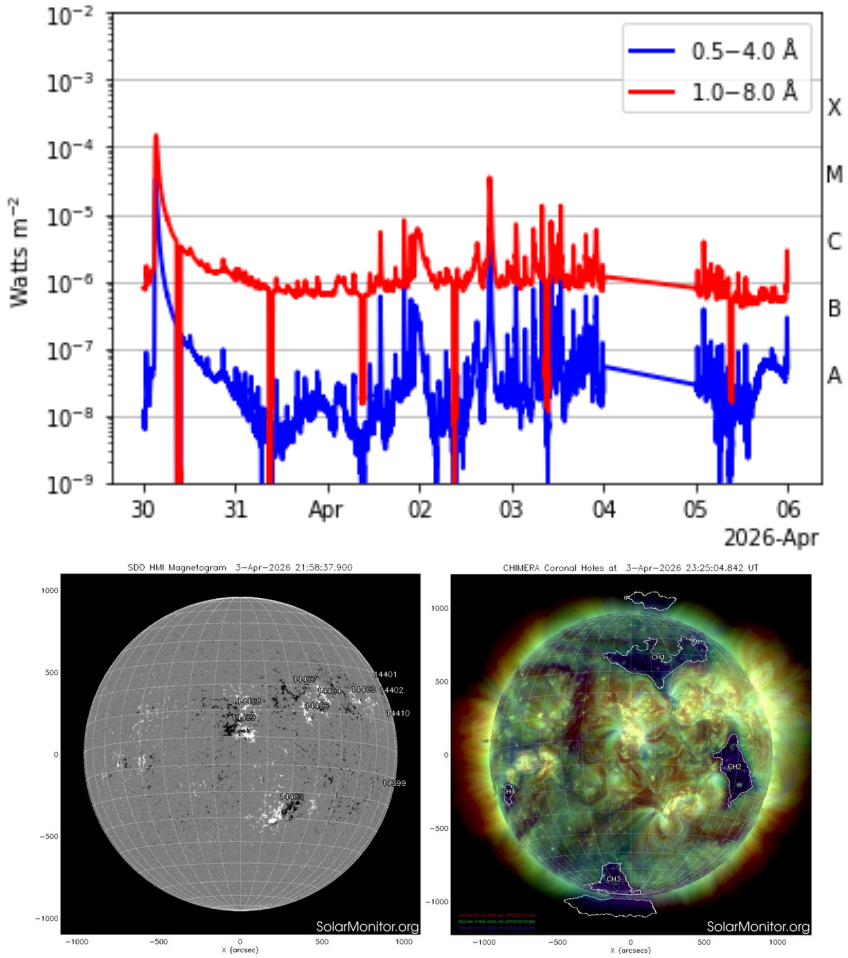

Figure 1 – X-ray flux measured by the GOES satellite (top panel) for the period from March 30 to April 5, magnetic field in the line of sight (bottom left panel) and image at 193 angstroms (bottom right panel) measured on April 3, 2026.

Interplanetary Medium – IM – Daniele da S. F. Medeiros and Paulo R. Jauer
Period: March 30th to April 6th

Summary

Summary of interplanetary medium (IM) conditions for the last week. The IM region in the last week showed a moderate level of plasma disturbances due to the possible interaction with CME identified by the DSCOVR satellite in the interplanetary medium. The interplanetary Kp index obtained by NOAA/SWPC and the modeling.

- The magnitude of the interplanetary magnetic field component peaked on April 2nd at 07:30 UT at +16.52 nT.

- The BxBy components presented variations in the analyzed period, keeping both oscillating within the interval [-11.36, +9.94] nT. Showing seven rotations of the By component.

- The Bz component presents negative values for most of the week with a maximum negative -10.03 nT at 06:30 UT on April 2nd. It presented positive value of +5.44 nT on April 1st at 20:30 UT.

- The solar wind density maximum peaked on April 1st at 22:30 UT, reaching 13.03 protons/cm^3.

- The solar wind speed fluctuated between 372 to 763 km/s, with an increse beginning at 21:30 UT on April 1st.

- The magnetopause position remained relaxed throughout the analyzed period.

- During the early part of the week, the measured and modeled interplanetary Kp index fluctuated between 1 and 4, indicating quiet geomagnetic conditions. On April 2nd, the index reached above 5 (Kp > 5), characterizing a minor geomagnetic storm (G1 level), while the modeled interplanetary Kp index showed a peak above 6 (Kp > 6), corresponding to a moderate storm (G2 level). On April 4th, the measured and modeled Kp values exceeded 6 (Kp > 6), classified as a moderate geomagnetic storm, ending the week with values fluctuating between 1 and 4 for both the measured and modeled Kp indices.

Figure 1 ilustrates a set of parameters observed in the solar wind by the DSCVR satellite. The measured solar wind parameters can be identified in the following order starting in column 1: Interplanetary magnetic field modulus (IMF), the Bx and By components, Bz component, convection electric field Ey. Column 2: Solar wind density, speed, temperature and the last graph represents the position of the subsolar magnetopause.

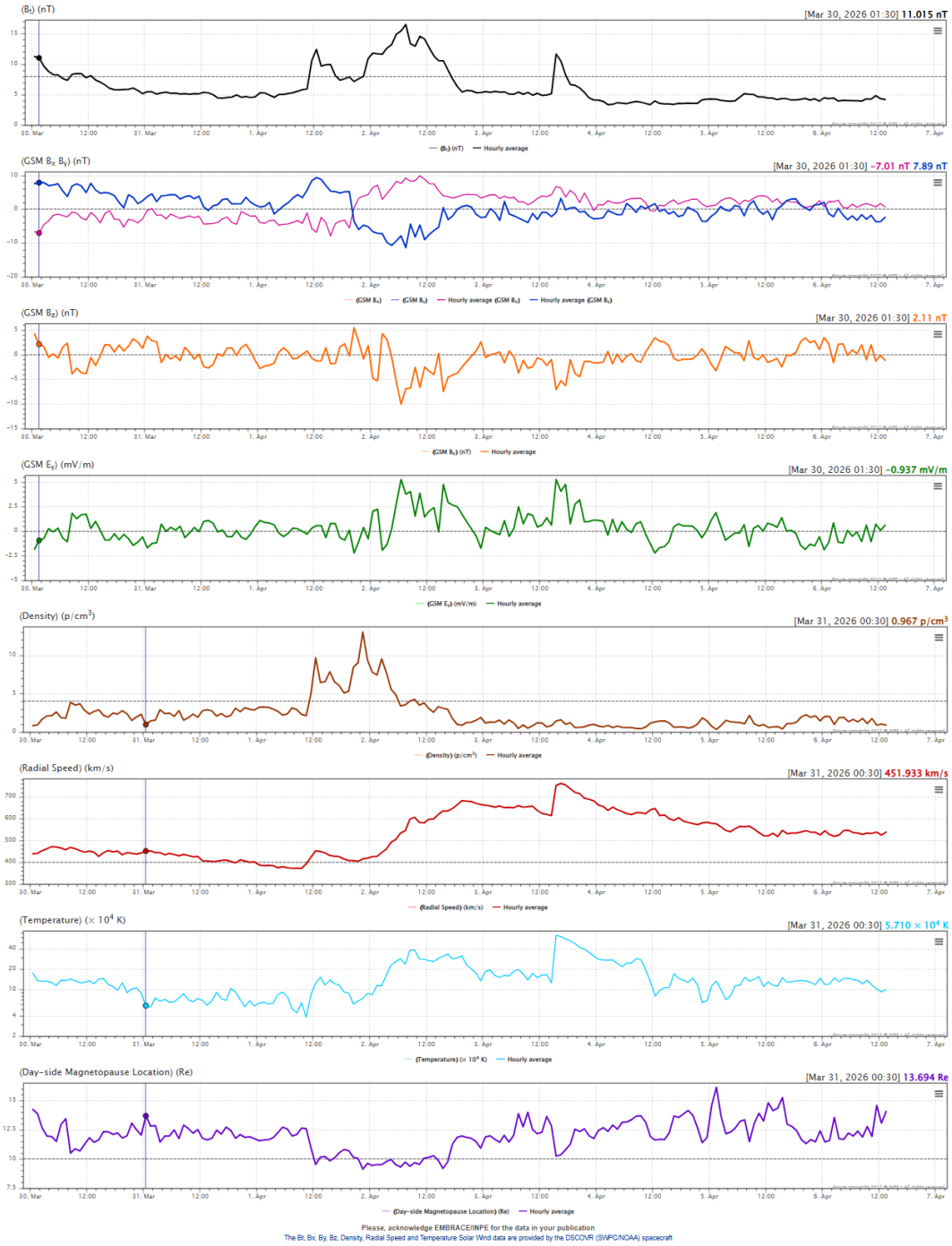

Figure 1: Illustrates a set of parameters observed in the solar wind by the DSCVR satellite.

Figure 2 illustrates a set of parameters observed in the solar wind by the DSCOVR satellite. The measured solar wind parameters can be identified in the following order, starting with the panels below: solar wind speed, Bz component of the interplanetary magnetic field (IMF), solar wind density, and the last graph represents the Kp index obtained by NOAA/SWPC and the modeling.

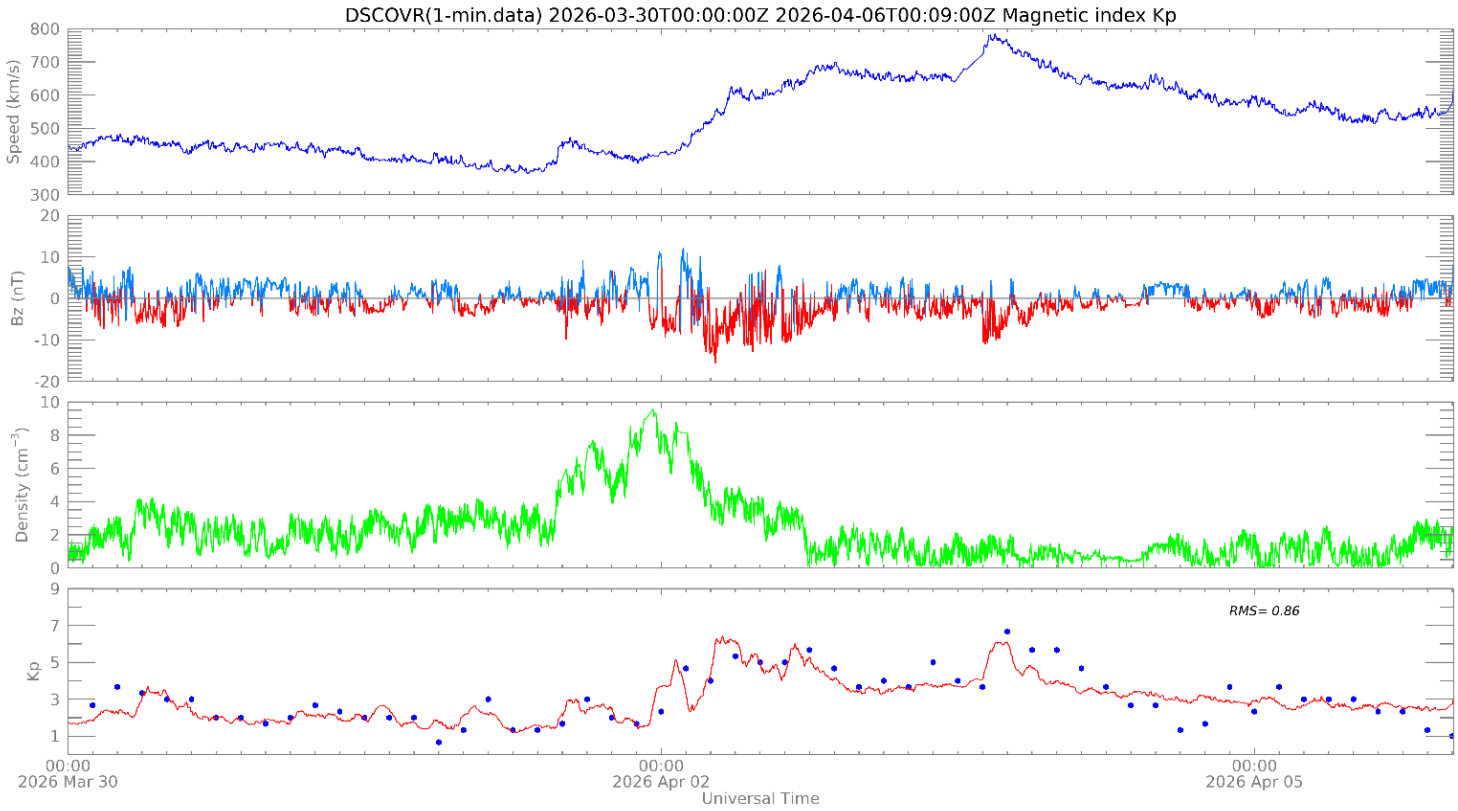

Figure 2: Illustrates a set of parameters observed in the solar wind by the DSCVR satellite and the Kp index by NOAA/SWPC, blue dot, and the modeling, red line.

Geomagnetic Field / Campo Geomagnético

Summary

During the week from March 31 to April 6, data from the Embrace magnetometer network recorded several instabilities, with emphasis on:

• **April 1–2:** The Embrace MagNet network magnetometers recorded a sudden impulse (SI) on April 1 around 12:00 UT, followed by a prolonged main phase that reached the minimum level of the H component at 19 UT on April 2. Throughout the main phase, several instabilities were observed, possibly related to the occurrence of waves in the Pc5 pulsation frequency range.

• **April 3–4:** The magnetometers recorded another SI around 15 UT, followed by a short main phase, with the H component reaching a minimum of approximately −140 nT on April 3, shortly after 18 UT.

• **April 1–4:** The AE index was active, exceeding 1000 nT on April 1 and increasing to values above 2000 nT on April 3. The minimum Dst index was recorded on April 3, reaching −82 nT. The highest Kp of the week was 7−, recorded on April 3.

Resumo

Na semana de 31 de março a 6 de abril, os dados provenientes da rede de magnetômetros Embrace registraram várias instabilidades, com destaque para:

- 01 a 02 de Abril: Os magnetometros da rede Embrace MagNet registraram um SI no dia 1 por volta das 12:00 UT, seguido de uma longa fase principal que atingiu o nível mínimo da componente H às 19 UT do dia 02/04. Ao longo da fase principal pode-se observar várias instabilidades possivelmente relacionada à ocorrência de ondas na faixa de frequência das pulsações Pc5.
- 03 e 04 de abril: Os magnetômetros registraram outro SI por volta das 15 UT, seguido de fase principal curta, com mínimo da componente H de cerca de -140 nT, no dia 03 logo após às 18h.
- 01 - 04 de Abril: o índice AE esteve ativo, acima de 1000 nT, no dia 01, aumentando para valores acima de 2000 nT no dia 03. O índice Dst mínimo foi registrado no dia 03, atingiu -82 nT. O Kp mais alto da semana foi 7-, registrado no dia 03 de abril.

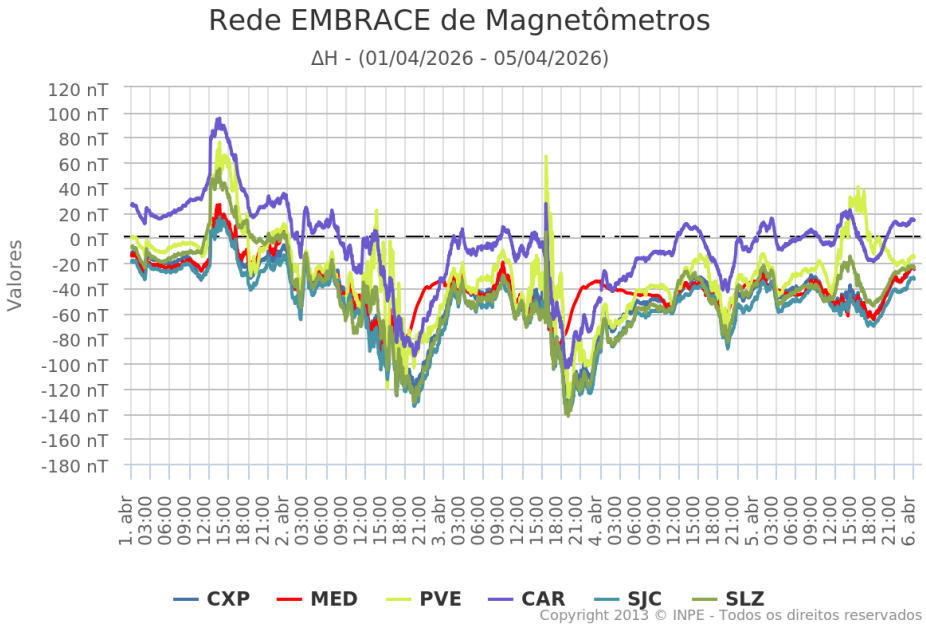

Figura 1.: Variação diurna da componente geomagnética H (nT) das estações da rede Embrace
Figure 1.: Daily variation of the geomagnetic field from H (nT) measured at Embrace MagNet

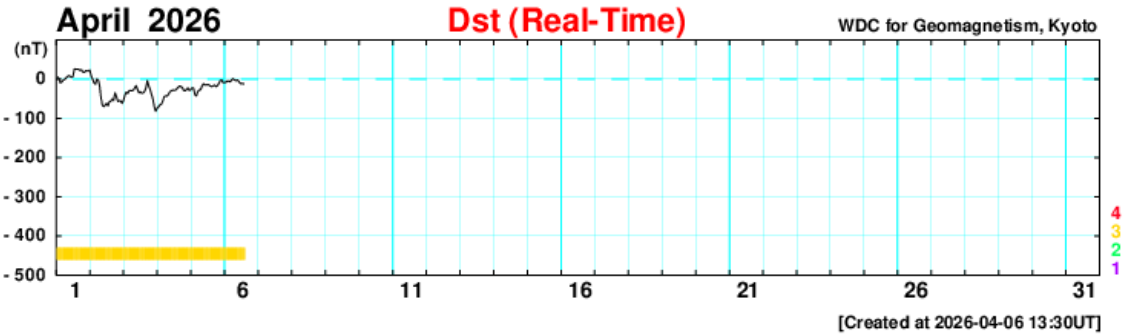

Figura 2.: Índice Dst.
Figure 2: Dst index

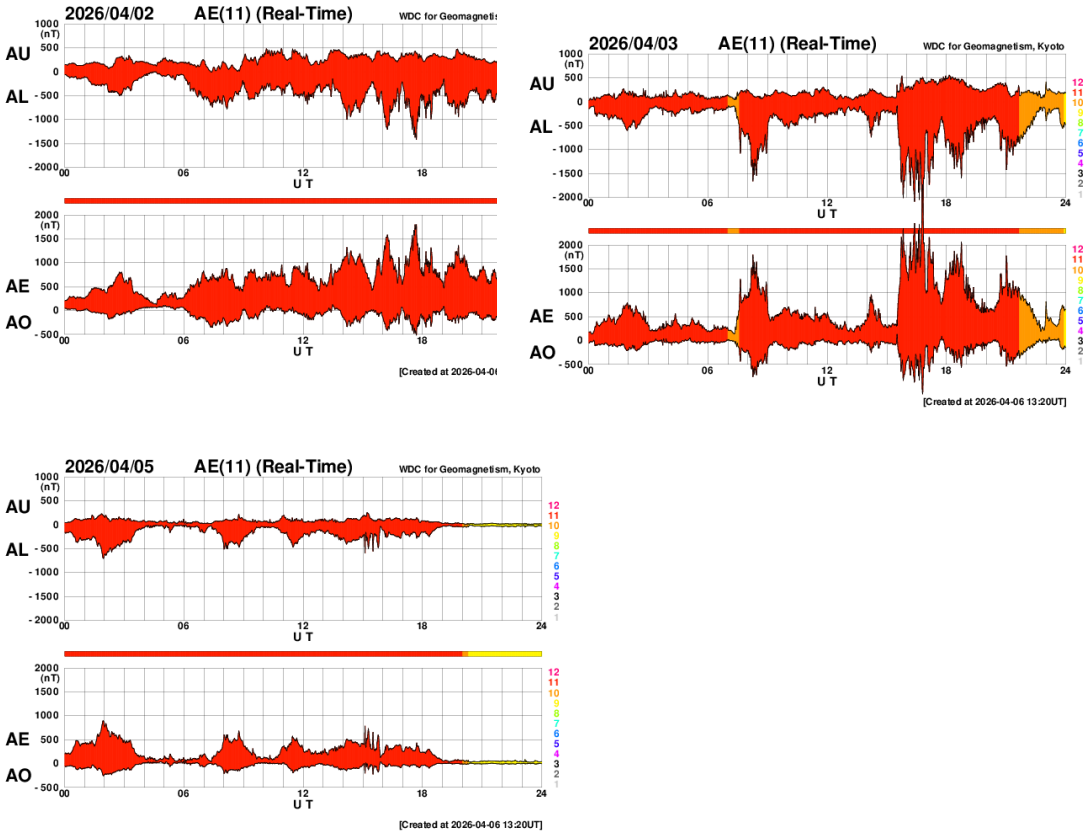

Figura 3.: Índice AE para os dias mais perturbados da semana.
Figure 3.: AE index for the most disturbed days in the current week.

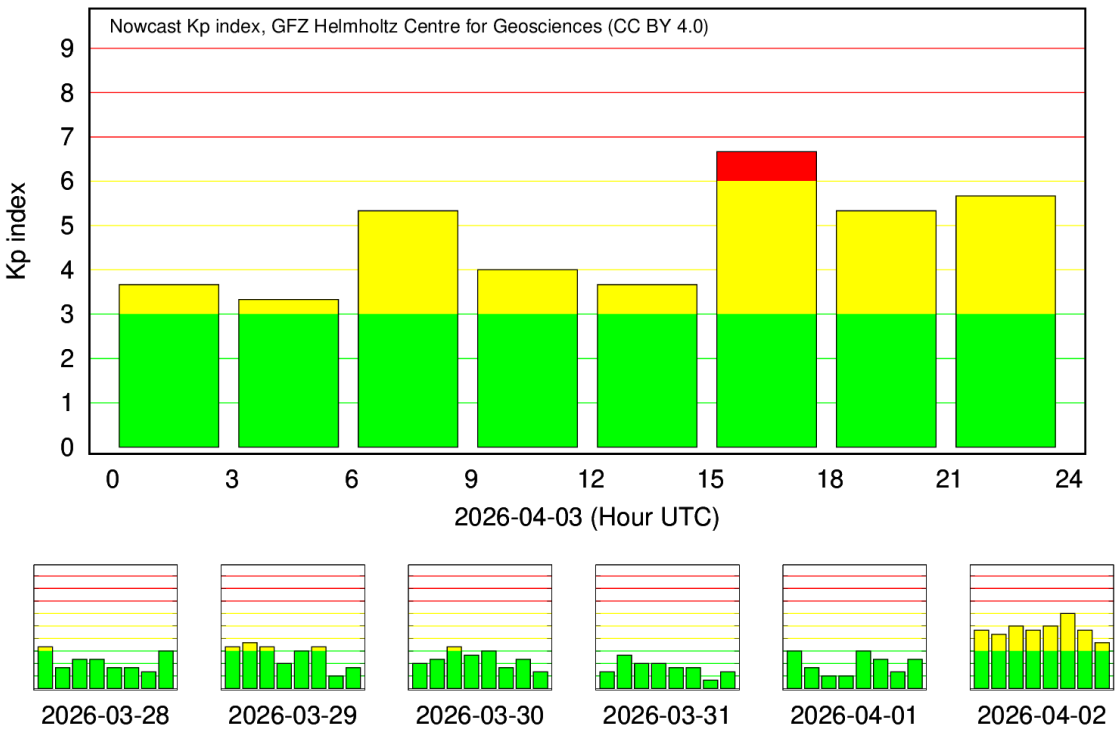

Figura 4.: Índice Kp.
Figure 4: Kp index for the current week

EARTH'S RADIATION BELT

Responsible: Ligia Da Silva

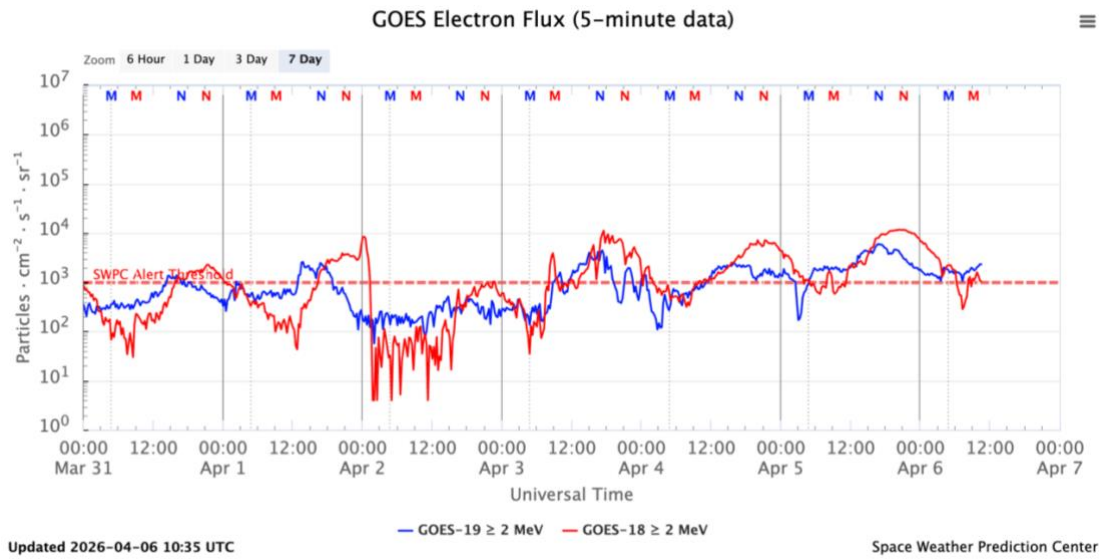

Figure 1: High-energy electron flux (> 2MeV) obtained from GOES-16 and GOES-18 satellite. Source: https://www.swpc.noaa.gov/products/goes-electron-flux

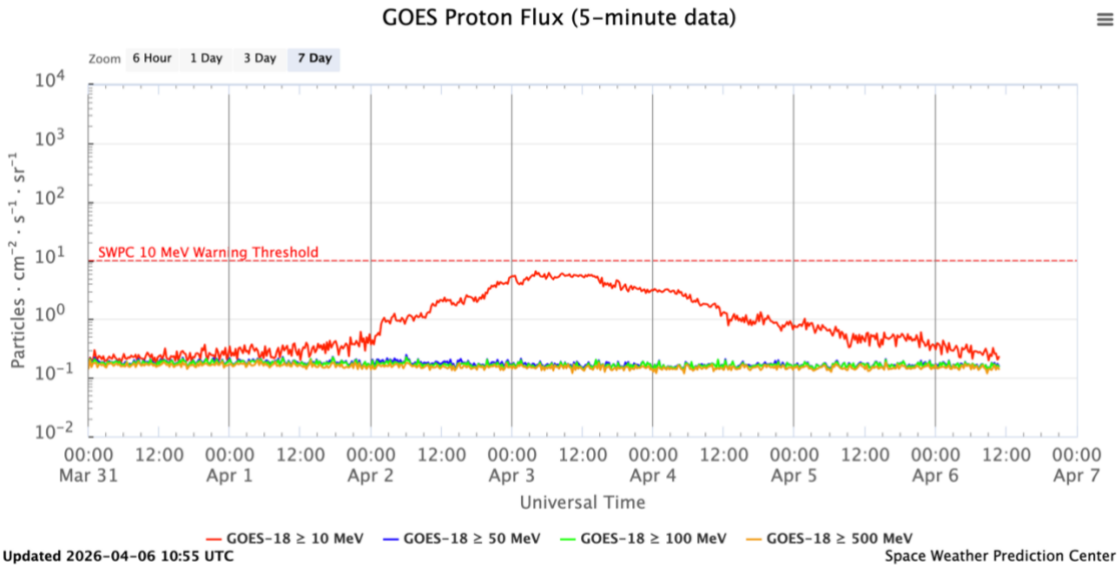

Figure 2: Proton flux (≥ 10MeV, ≥ 50MeV, ≥ 100MeV) obtained from GOES-18 satellite. Source: https://www.swpc.noaa.gov/products/goes-proton-flux

Summary

The inner magnetosphere observed from the GOES-18 satellite shows a high-energy electron flux (> 2 MeV) at the outer boundary of the Van Allen radiation belt. A dropout is observed at the beginning of April 2nd, remaining below the alert threshold (10^3 particles/(cm² s sr)) for more than 24 hours. From April 3rd onwards, the electron flux is around the alert threshold.

The proton flux ≥ 10 MeV at the outer boundary of the outer radiation belt obtained from the GOES-18 geostationary satellite (Figure 2) gradually increased from April 1st until reaching the alert threshold on April 3rd. After midday on April 3rd, the electron flux gradually decreased until reaching 10^{-1} particles/(cm² s sr) on April 6th.

Ionosfera – Digisonde (Laysa Resende)

Summary

This week, spread F was observed across Brazilian magnetic latitudes, including Boa Vista and São Luís, except on April 3–4, 2026 (Figure 1), likely in association with the magnetic storm that occurred on April 2, 2026. Sporadic E (Es) layers were weak throughout the week at Boa Vista, São Luís, and Cachoeira Paulista.

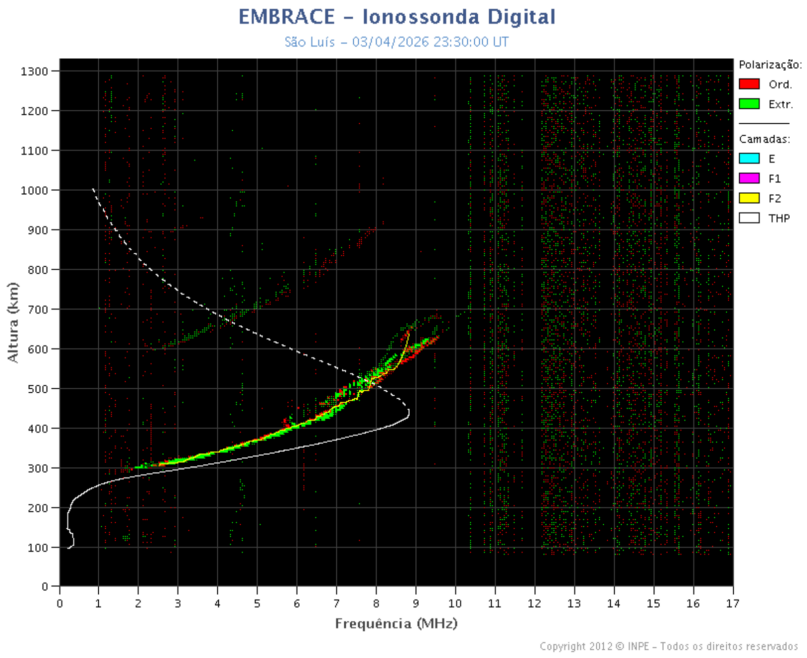

Figure 1 – Sequence of ionograms over São Luís, showing the absence of spread F.