Sol – Atividade Solar (Jean C. Santos)

Resumo

Esta semana, observamos um grande número de regiões ativas no disco solar, com intensidades baixa (alfa), média (beta) e alta (beta-gama/beta-gama-delta). Essas regiões ativas deram origem a 10 erupções de classe M, entre 30 de setembro e 5 de outubro. Também foram observados buracos coronais de grande área no disco solar, visíveis em 193 imagens solares de angstrom, e um grande número de filamentos, visíveis em imagens de H-alfa. Durante a semana, o programa Cactus identificou 2 CMEs de Halo.

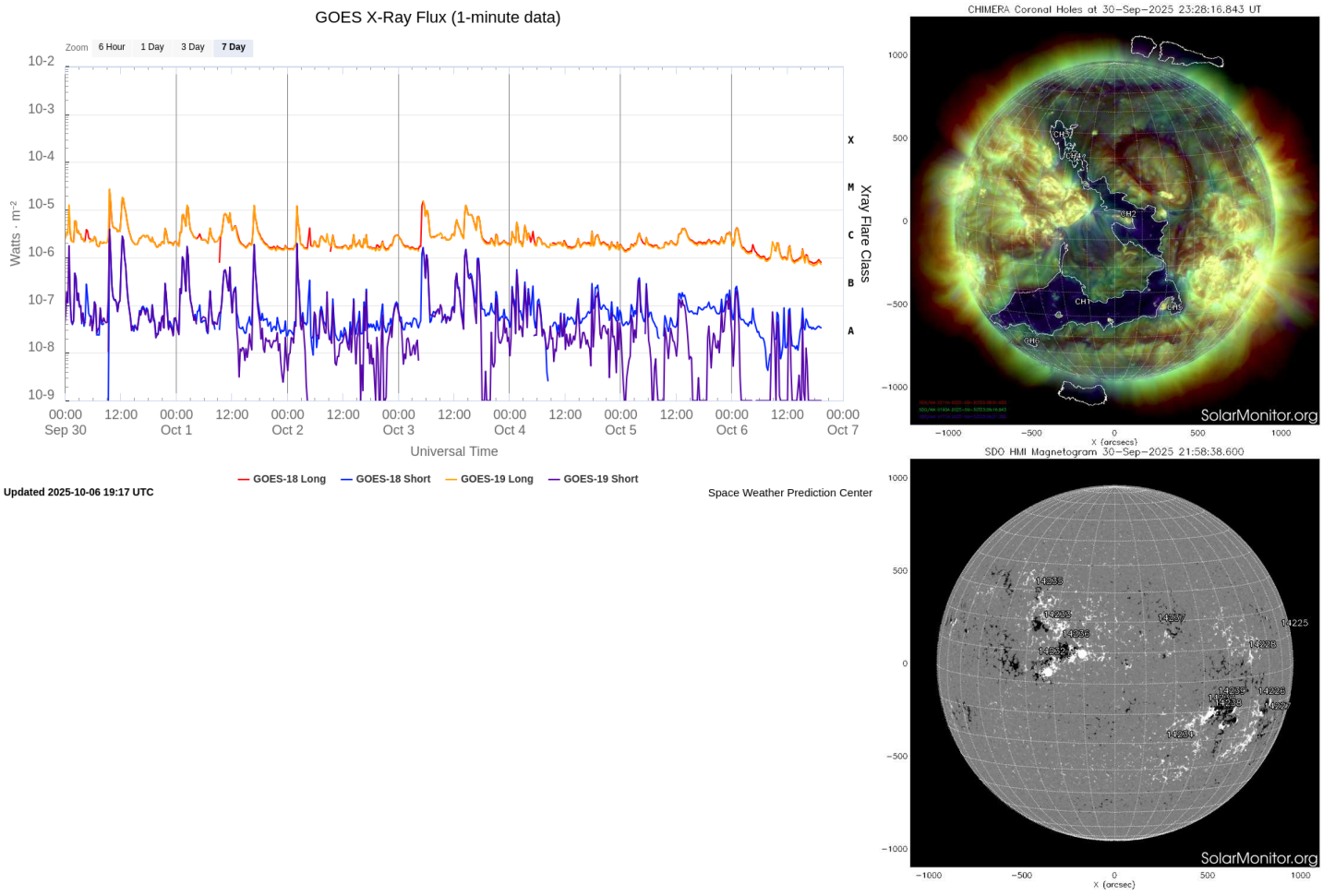


Figure 1 – Fluxo de raios X medido pelo GOES (painel superior) para o período de 30 de setembro a 6 de outubro, campo magnético na linha de visão (painel inferior esquerdo) e 193 angstroms (painel inferior direito) medidos em 30 de setembro de 2025 mostrando, respectivamente, regiões ativas e buracos coronais presentes no disco solar.

Interplanetary Medium – IM – Daniele da S. F. Medeiros and Paulo R. Jauer
Period: September 29th to October 6th.

Summary

Summary of IM conditions for the last week. The interplanetary medium region in the last week showed a moderate level of plasma disturbances due to the possible interaction of HSS structures identified by the DSCOVR satellite in the interplanetary medium.

- The magnitude of the interplanetary magnetic field component peaked on September 30th at 11:30 UT at +18.90 nT due to HSS.

- The BxBy components presented variations in the analyzed period, keeping both oscillating within the interval [-11.16, +12.80] nT. Showing two rotations of the By component.

- The Bz component presents negative values for most of the week with a maximum negative -15.33 nT at 04:30 UT on September 30th. It presented positive value of +10.00 nT on September 30th at 11:30 UT.

- The solar wind density maximum peaked on October 3rd at 22:30 UT at +15.82 protons/cm^\3, however, there is a gap in the data.

- The solar wind speed fluctuated between 375 to 784 km/s, with an increase on September 30th starting at 08:30 UT due to HSS.

- The magnetopause position remained relaxed almost throughout the analyzed period, reaching maximum compression (8.10 RE) at 04:30 UT on September 30th.

- The measured interplanetary Kp reached a peak above 7, while the modeled Kp reached a value above 8 on September 29th.

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.

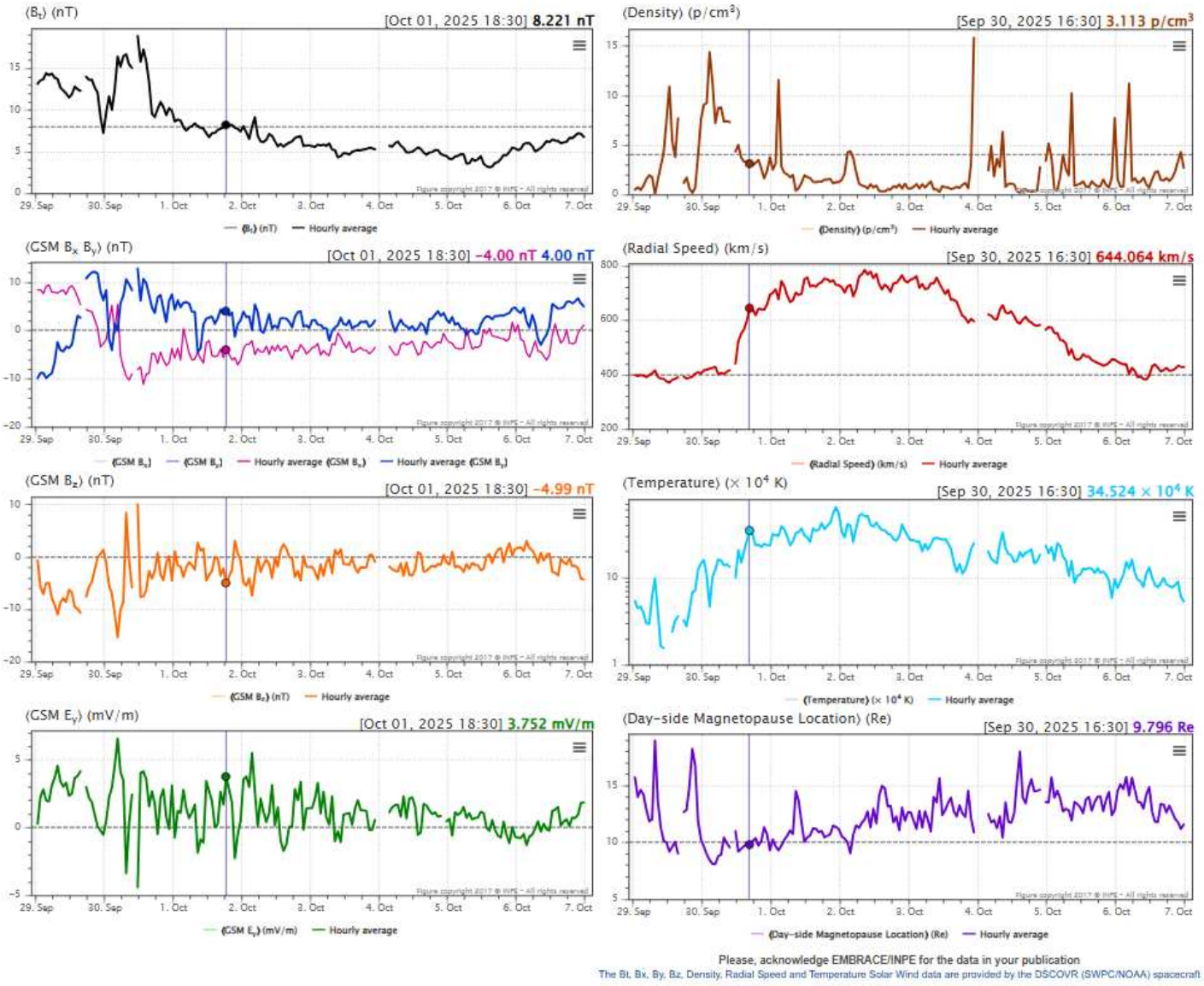


Figure 1: Illustrates a set of parameters observed in the solar wind by the DSCVR satellite.

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.

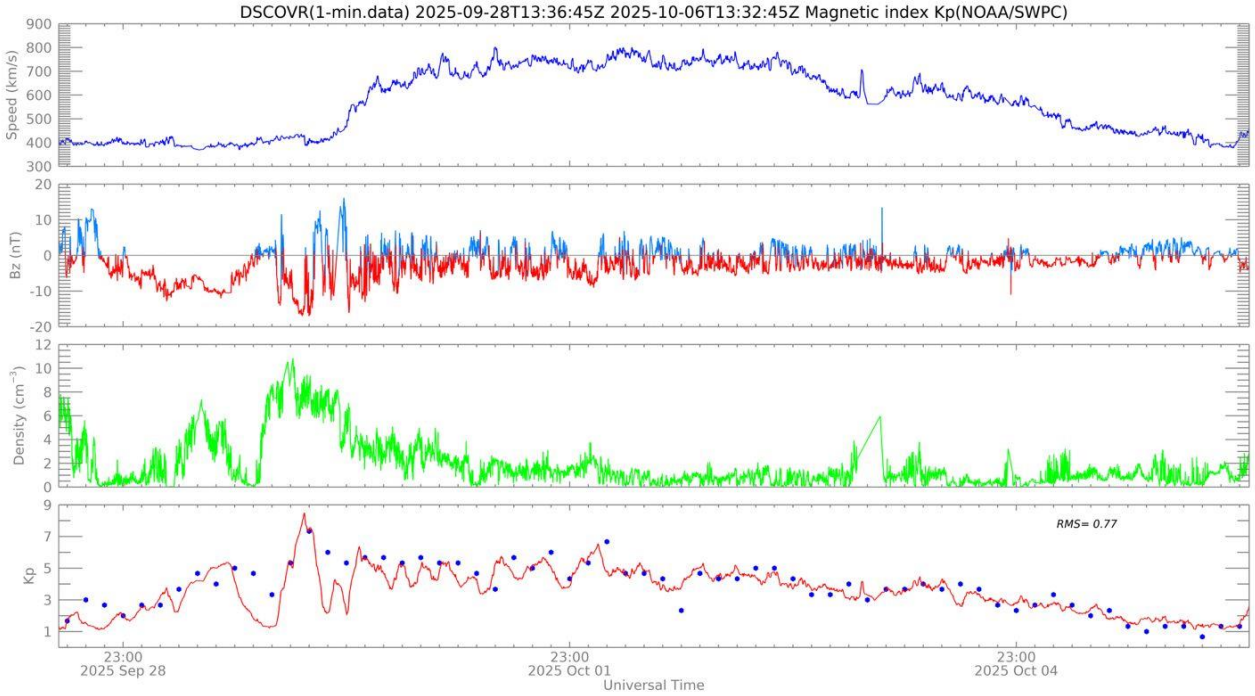


Figure 2: Illustrates a set of parameters observed in the solar wind by the DSCVR satellite and the Kp index by NOAA/SWPC, blue dot, and the modeling, red line**.**

EARTH'S RADIATION BELT

Responsible: Ligia Da Silva

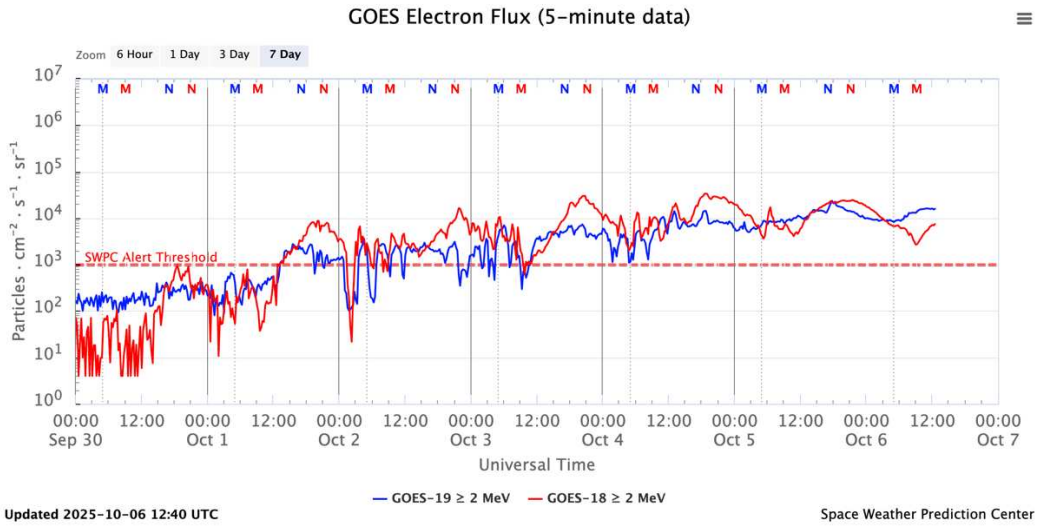


Figure 1: High-energy electron flux (> 2MeV) obtained from GOES-18 and GOES-19 satellite. Source: https://www.swpc.noaa.gov/products/goes-electron-flux

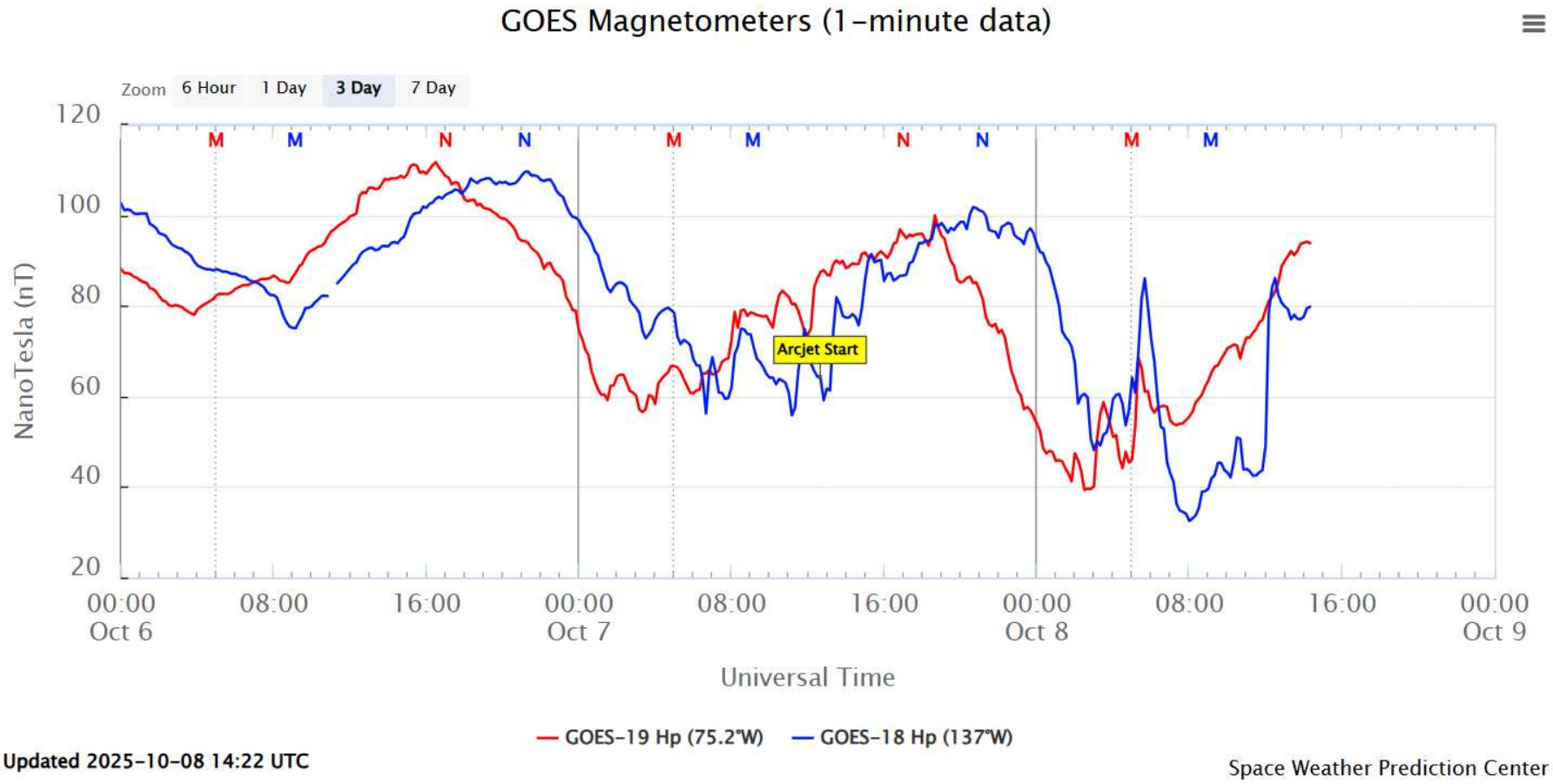
Summary

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) presents a significant increase from 15:30 UT on September 30th. The electron flux is above the minimum threshold of 10^3 particles/(cm^2 s sr) from October 1st, reaching values above 10^4 particles/(cm^2 s sr) on October 2nd, where it remains above 10^4 particles/(cm2 s sr) to this day.

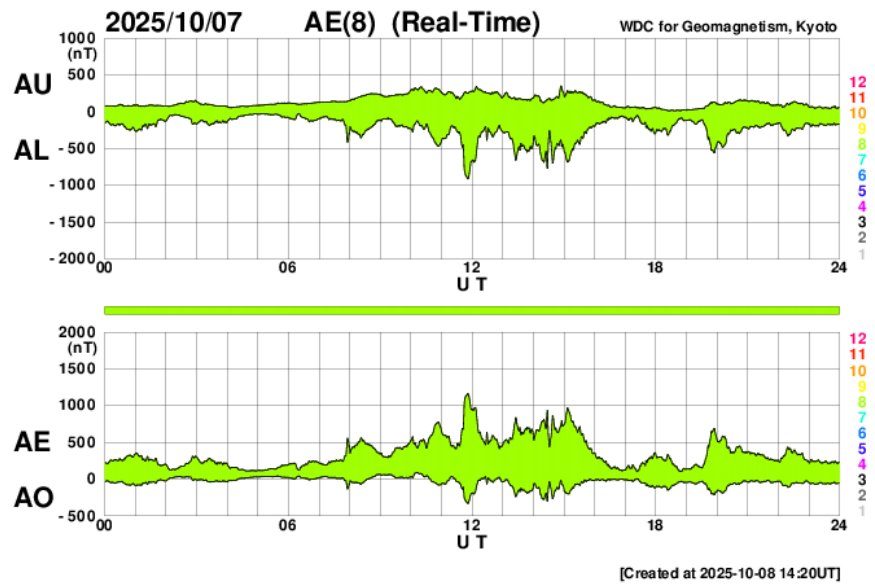
BOLETIM DE GEOMAGNETISMO 07/10/2025-08/10/2025

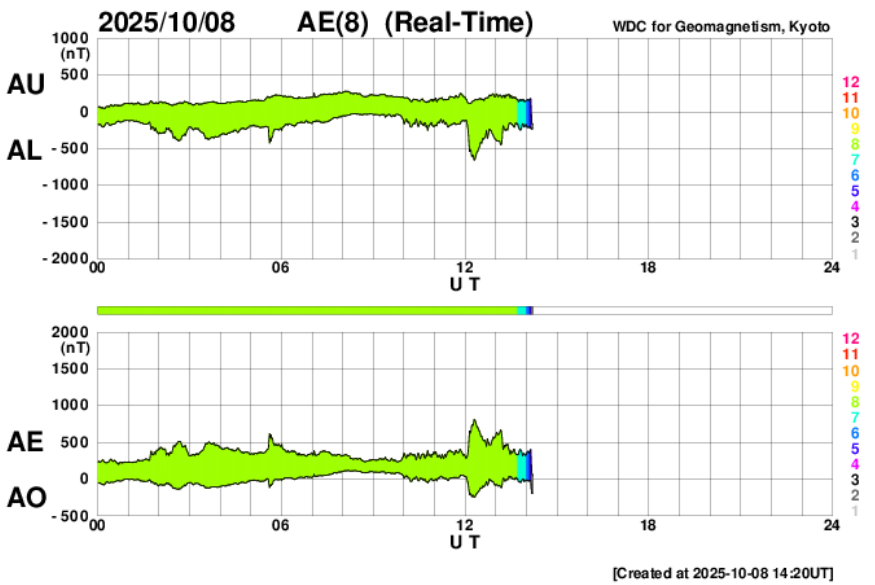
	WDC Kyoto	GFZ	WDC Kyoto	EMBRACE	EMBRACE
Dia	**AE máximo**	**Kp máximo**	**Dst mínimo**	**Ksa máximo**	**ΔHsa mínimo**
07/10/2025	~1000 nT	4o	-40 nT	5o	-60 nT
08/10/2025	> 500 nT	4o	-33 nT	5-	-60 nT

• Campo Magnetômetro GOES

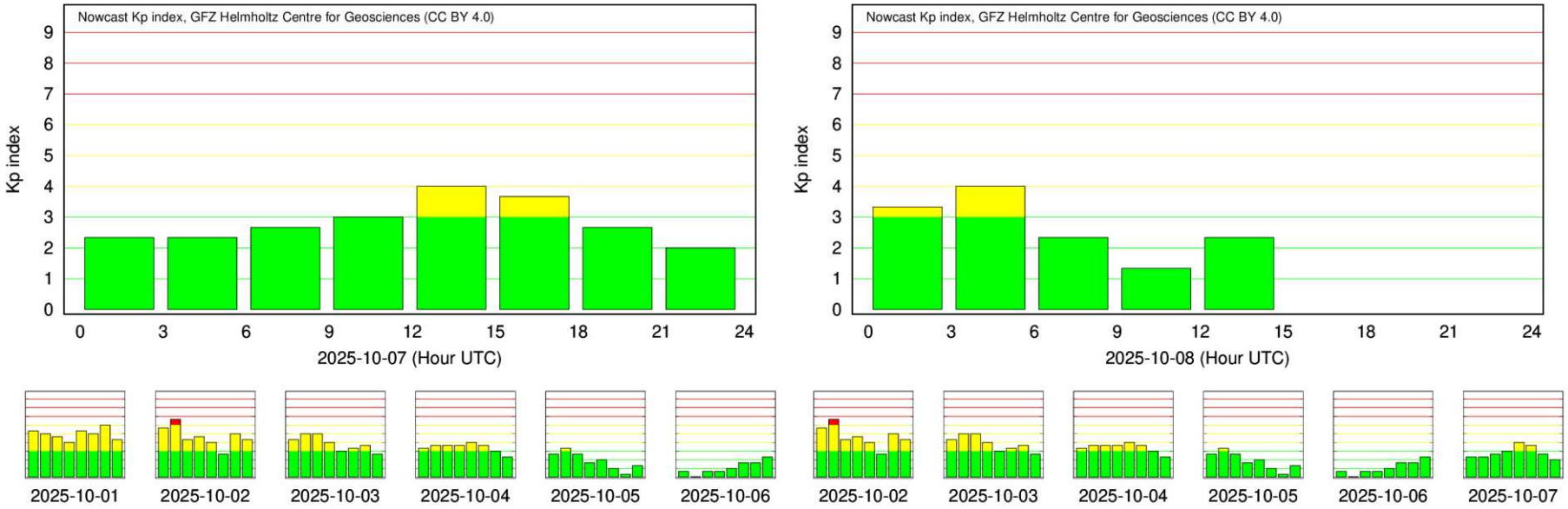


• Atividade auroral-**Índice *AE***

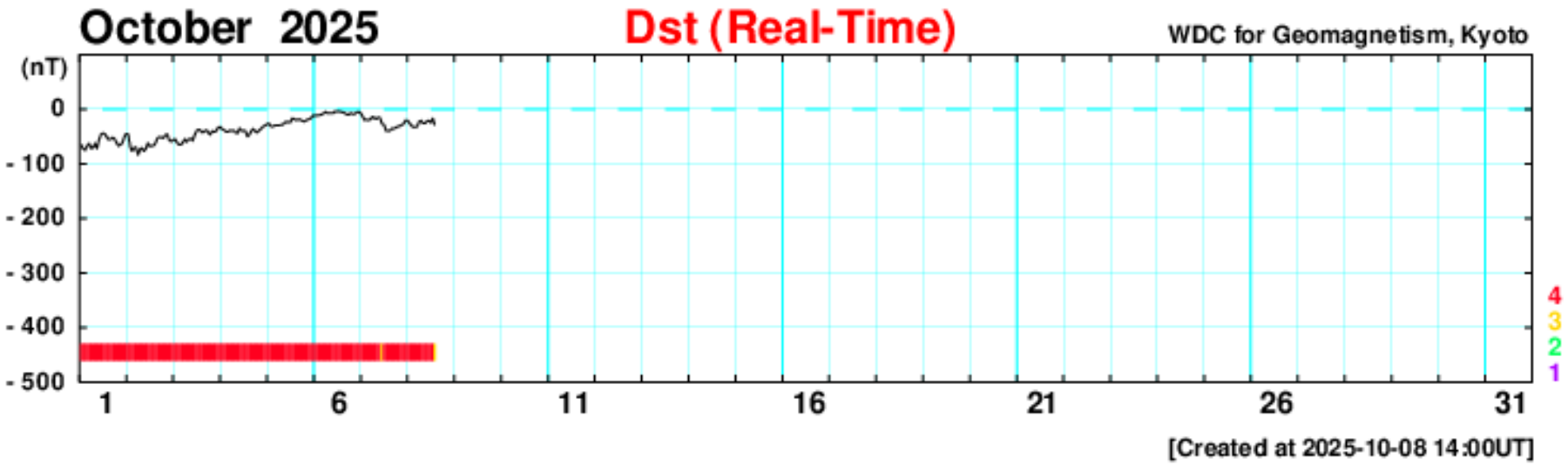




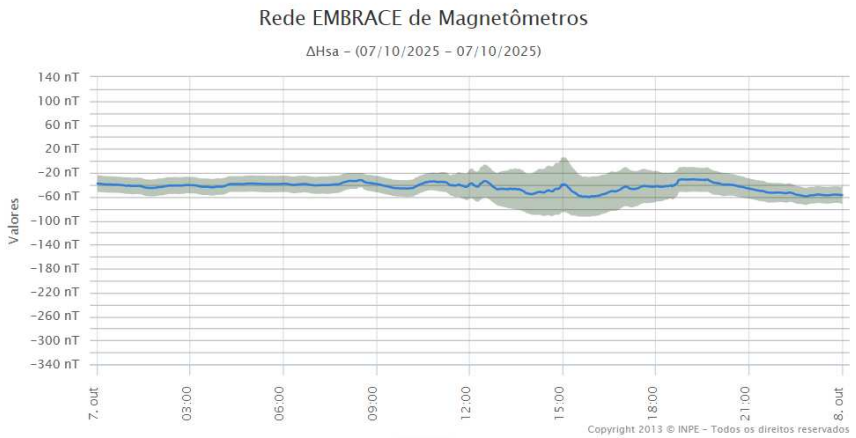
• Atividade magnética global-**Índice *Kp***



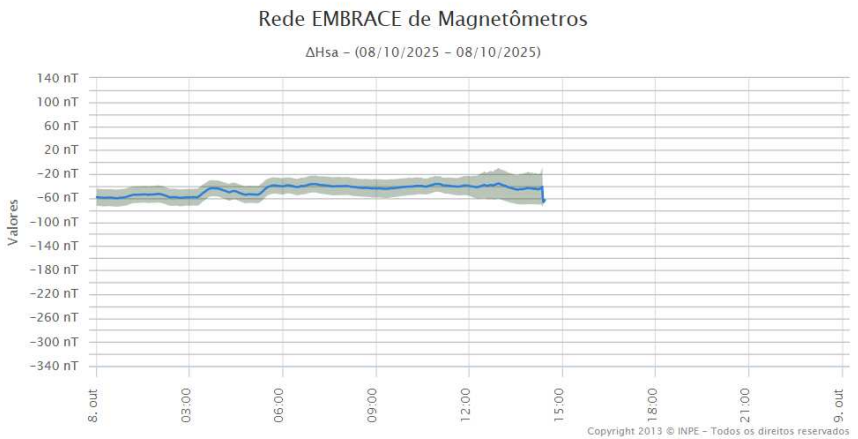
• Índice ***Dst***


October 2025
Dst (Real-Time)
WDC for Geomagnetism, Kyoto
(nT)
0
- 100
- 200
- 300
- 400
- 500
1
6
11
16
21
26
31
4
3
2
1
[Created at 2025-10-08 14:00UT]

• Atividade magnética na América do Sul-**Índice *ΔHsa***



Por favor, não esqueça de agradecer em sua publicação ao EMBRACE/INPE pelos dados aqui obtidos.



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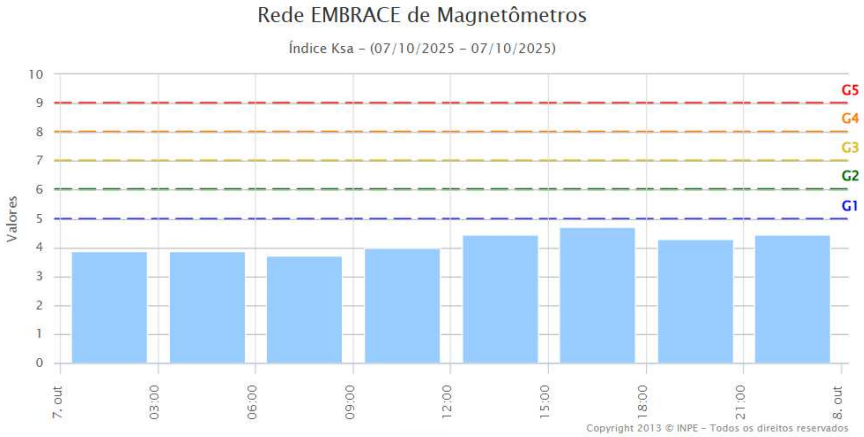
• Atividade magnética na América do Sul-**Índice *Ksa***



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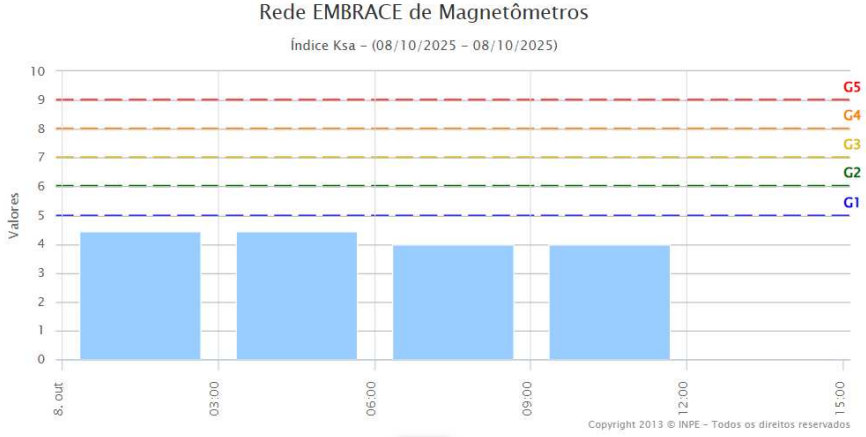

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Ionosfera – Digissonda (Laysa Resende)

Summary

This week, the F-region spread was observed in São Luís. In Cachoeira Paulista it was observed only from September 29. Unusual Es layers (Esa layers) were identified in Cachoeira Paulista between October 01 (Es4 index) and October 03 (Es3 index) (Figura 1). The Maximum Usable Frequency (MUF) showed normal variation over the Brazilian sector.

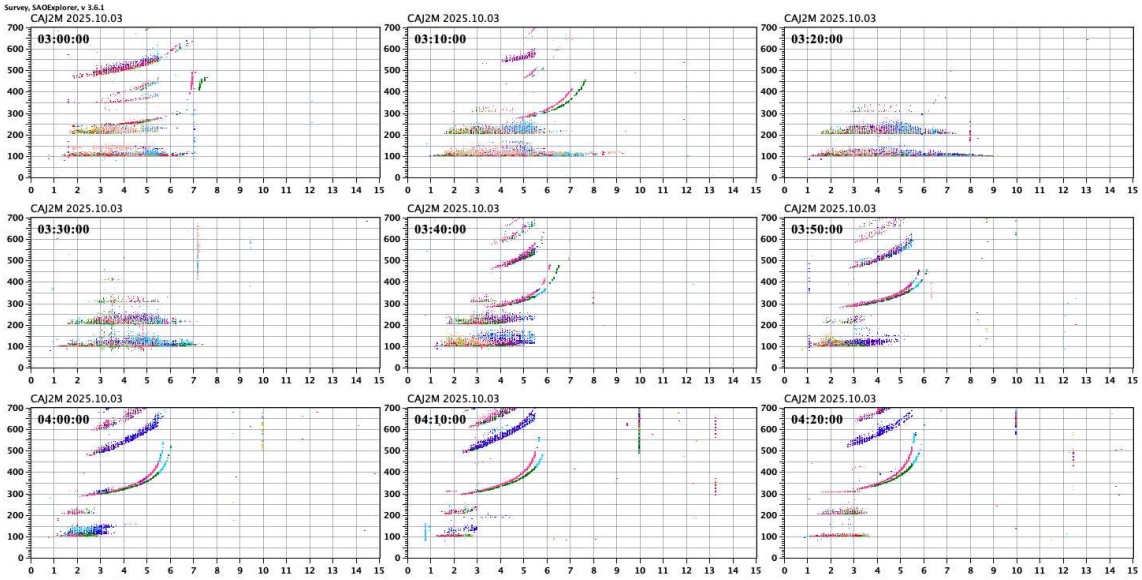

Figure 1 – Ionogram over Cachoeira Paulista, showing the Esa layer.