



Interplanetary Medium – IM – Daniele da S. F. Medeiros and Paulo R. Jauer
Period: October 13th to October 20th.

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 Kp index obtained by NOAA/SWPC and the modeling.

- The magnitude of the interplanetary magnetic field component peaked on October 18th at 07:30 UT at +19.14 nT due to HSS.
- The BxBy components presented variations in the analyzed period, keeping both oscillating within the interval [-15.40, +12.50] nT. Showing sixteen rotations of the By component.
- The Bz component presents negative values for most of the week with a maximum negative -7.44 nT at 18:30 UT on October 18th. It presented positive value of +9.46 nT on October 18th at 07:30 UT.
- The solar wind density maximum peaked on October 18th at 03:30 UT at +42.46 protons/cm³.
- The solar wind speed fluctuated between 375 to 720 km/s, with an increase on October 18th starting at 06:30 UT due to HSS.
- The magnetopause position remained relaxed almost throughout the analyzed period, reaching maximum compression (7.57 RE) at 03:30 UT on October 18th.
- The measured interplanetary Kp reached a peak above 3, while the Kp modeled reached nearly 7 on October 18th.

Figure 1 illustrates 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.

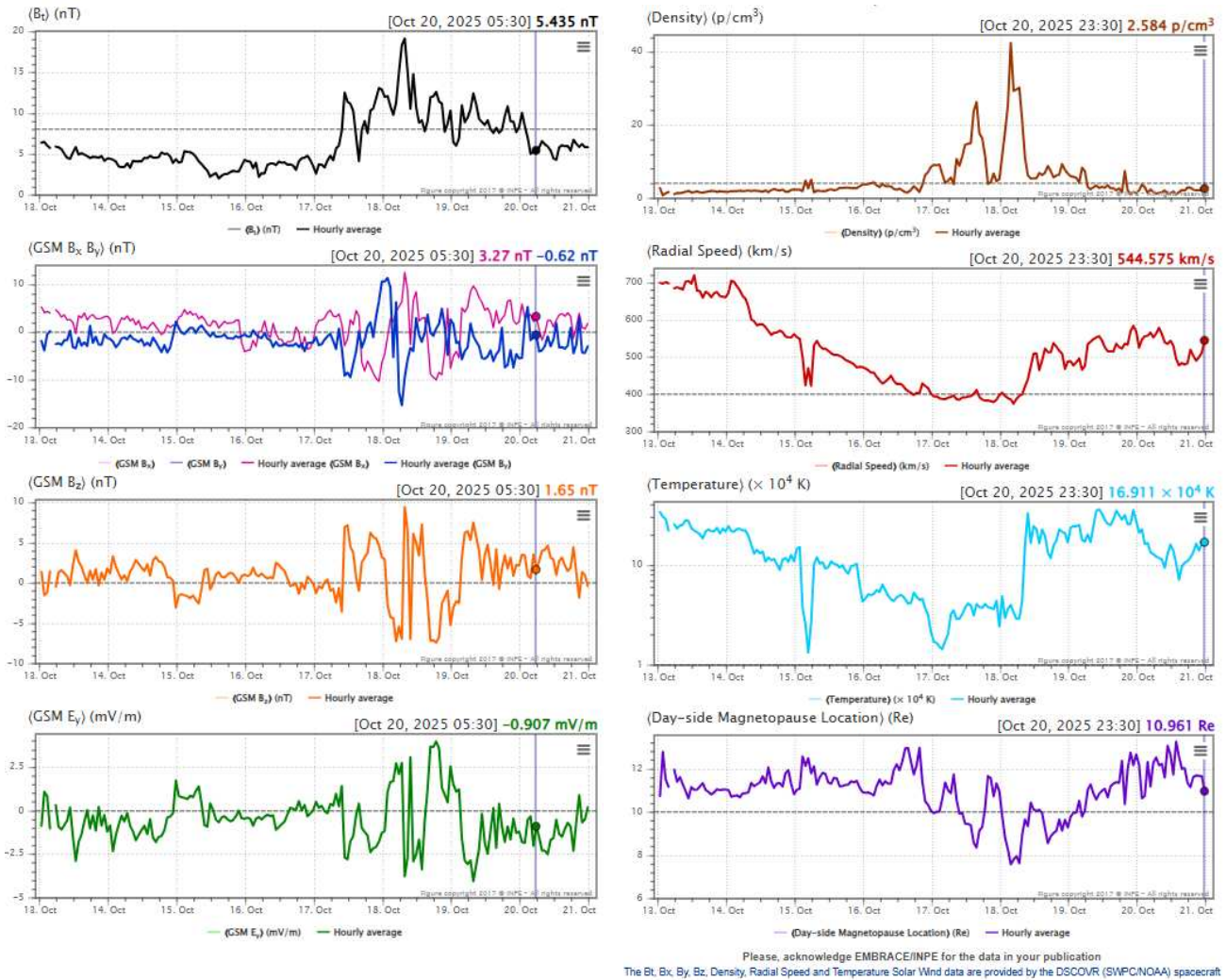


Figure 1: Illustrates a set of parameters observed in the solar wind by the DSCVR satellite.

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.

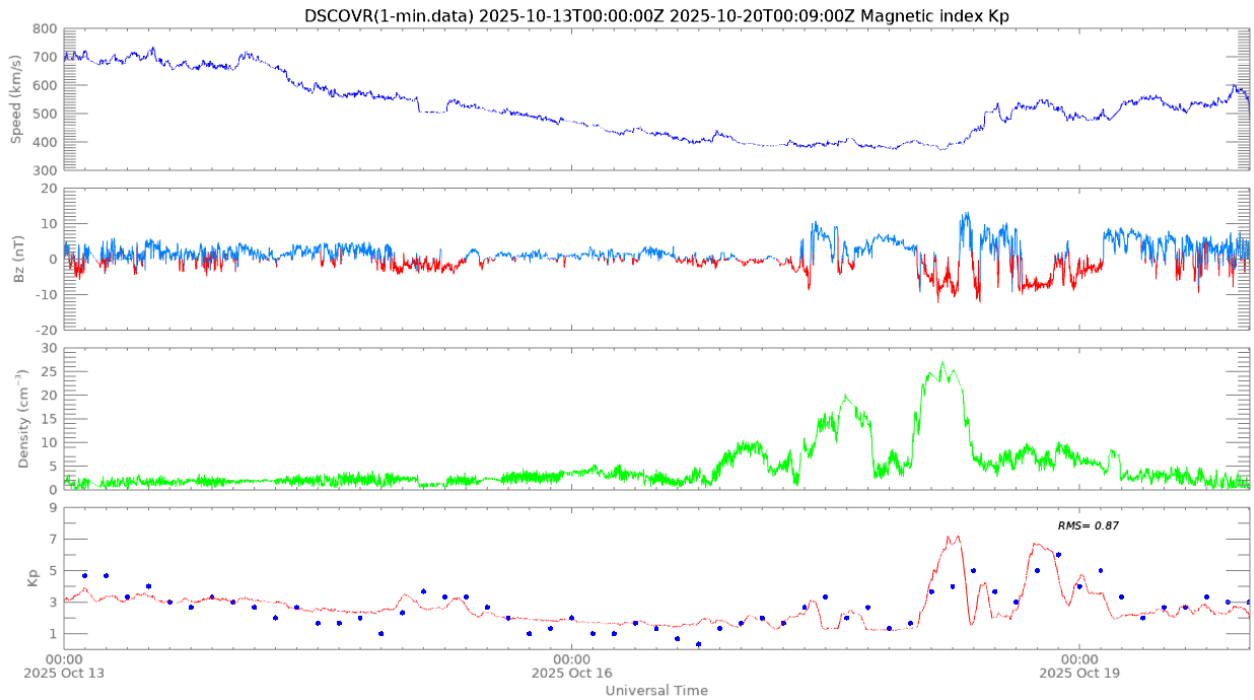


Figure 2: Illustrates a set of parameters observed in the solar wind by the DSCVR satellite and the Kp index by NOAA/SWPC, blue dot, and the modeling, red line.

Geomagnetic field

Responsible: Karen Sarmiento /Livia Alves/Sony Su Chen

Summary

Between October 15 and 22, the geomagnetic field showed variations consistent with a G2-level geomagnetic storm ($K_p=6$). The K_p index peaked at 6+ between 18:00 and 21:00 (UTC) on October 18, characterizing a moderate-intensity geomagnetic storm. During this same period, the K_{sa} index also reached its maximum value of 60. The Dst index, on the other hand, dropped to -59 nT at 20:00 (UTC) on October 18, signaling a moderate geomagnetic storm, while the dH_{sa} index reached its minimum value of -114 nT at the same time. Between October 18 and 19, auroral activity showed instabilities. However, from October 20 onward, geomagnetic indices began to show a trend of returning to typical values for quiet periods. In the last 24 hours, geomagnetic activity has remained predominantly quiet.

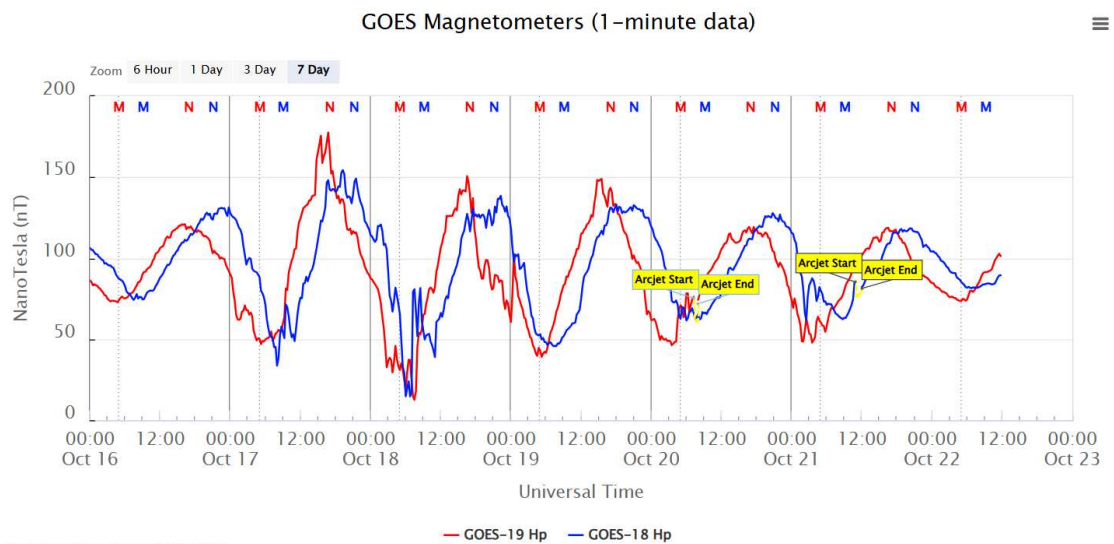


Figure 1 - Magnetic field measurement at the GOES satellite position.

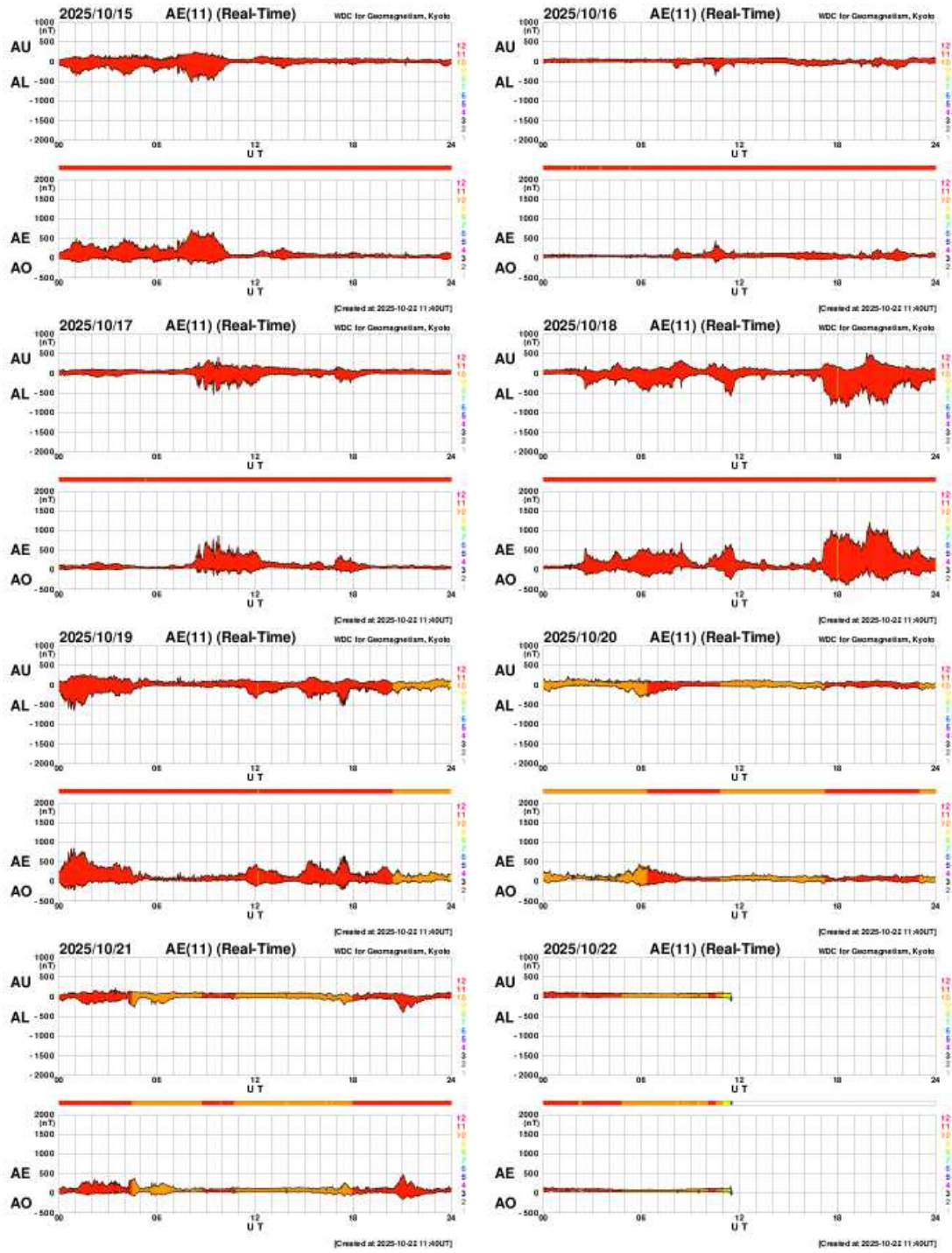


Figure 2 – AE index for the days of the week.

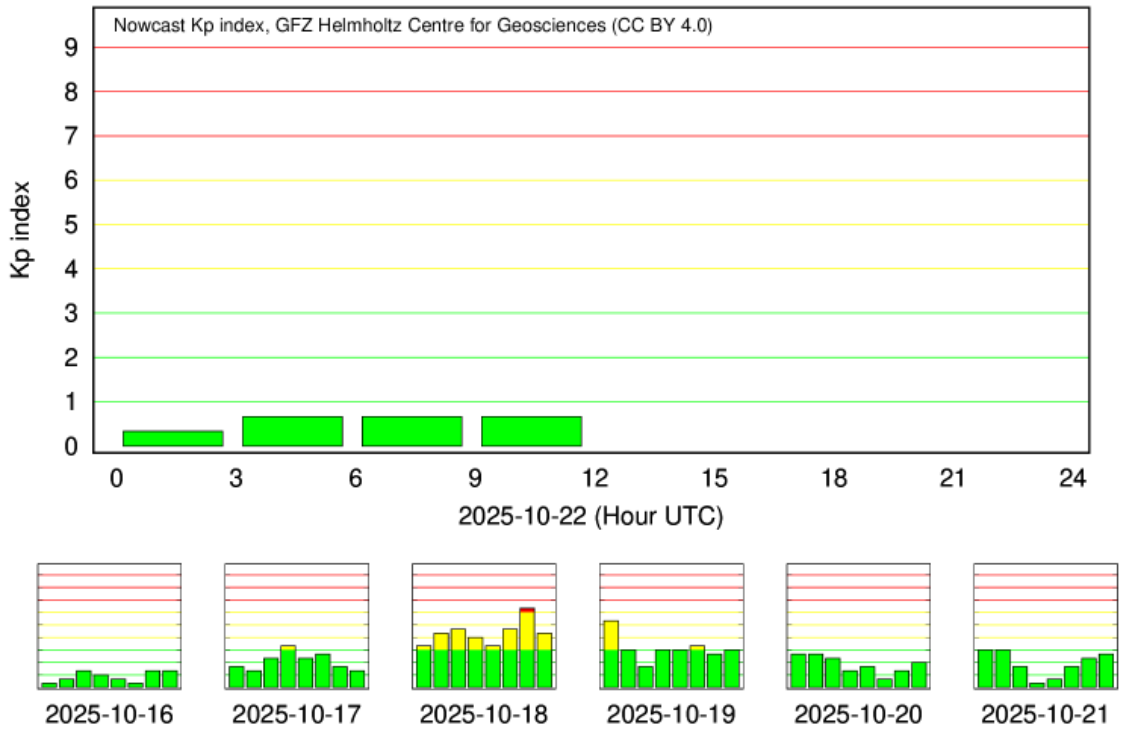


Figure 3 – Kp index on a logarithmic scale.

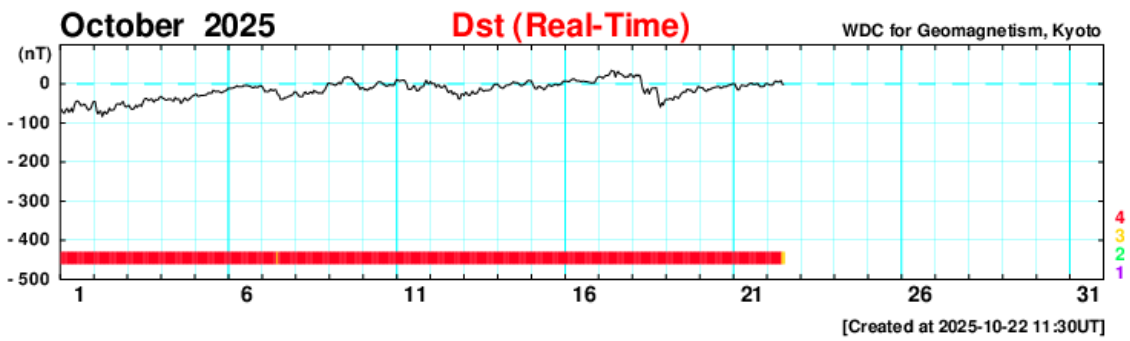
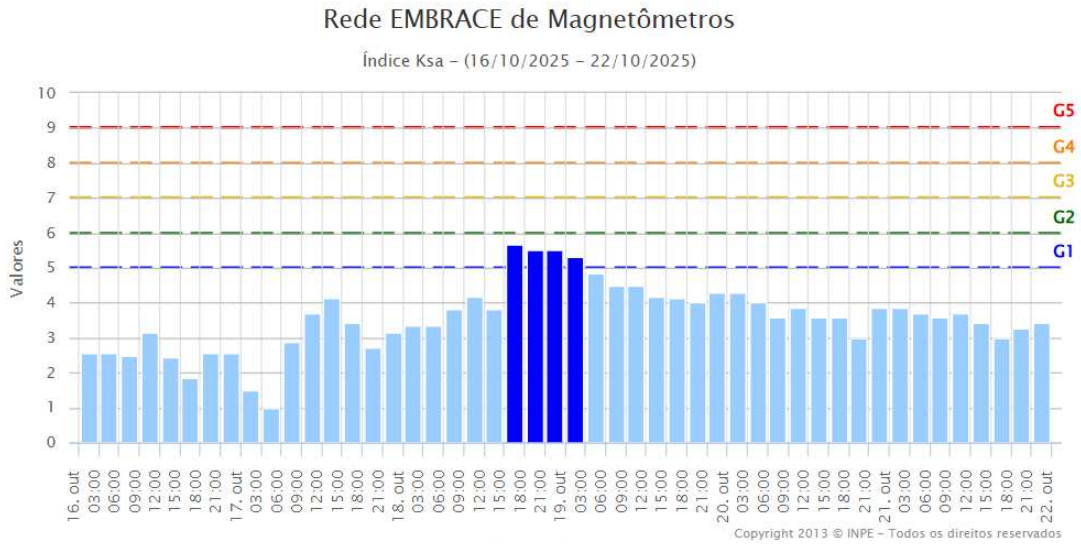


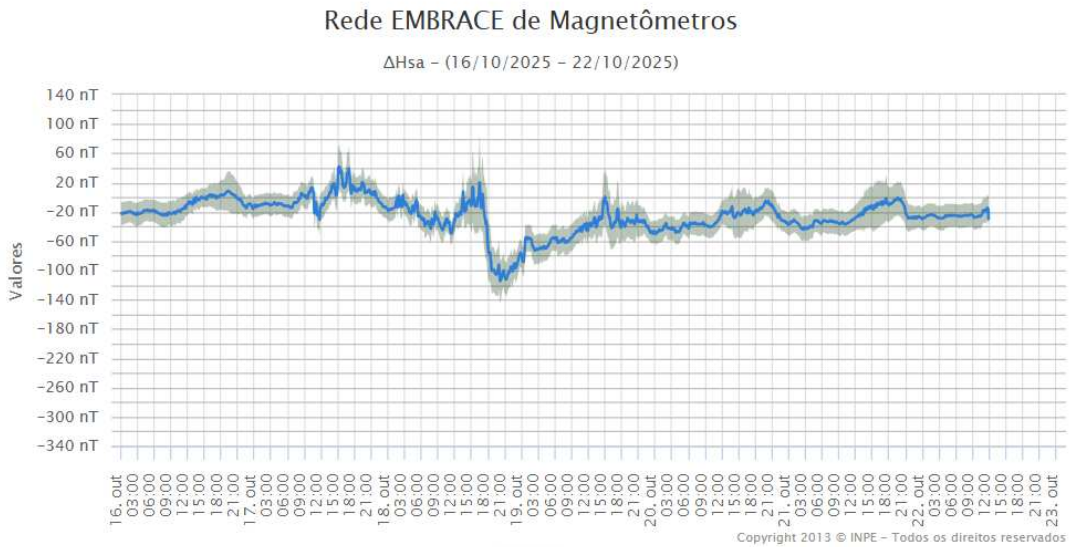
Figure 4 – Dst index.



[Ajuda](#)

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

Figure 5 – Geomagnetic index in South America – Ksa Index.



[Ajuda](#)

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Figure 6 – Geomagnetic index in South America – ΔH index at magnetic stations of the EMBRACE Program.

Ionosfera – Digisonda (Laysa Resende)

Summary

This week, the F-region spread was observed in Boa Vista. In Cachoeira Paulista it was observed only from October 16. Unusual Es layers were identified in Cachoeira Paulista on October 13 (Es4 index) The Maximum Usable Frequency (MUF) showed normal variation over the Brazilian sector.

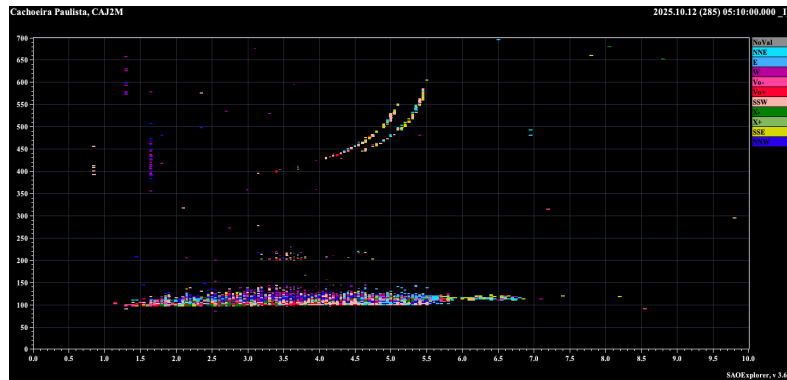


Figure 1 – Ionogram over Cachoeira Paulista, showing the atypical Es layer.