Sun – Solar Activity (Jean C. Santos)

Summary

The Sun showed little activity during the week, with a reduced number of active regions of low (alpha) and medium (beta) magnetic complexity present on the solar surface. During this period, only one M-class solar flare occurred, and several CMEs also occurred, but none of the halo type (angular width greater than 180 degrees). Two coronal holes with significant area (>2.0% of the solar disk area) were identified, which may have given rise to fast beams in the solar wind.

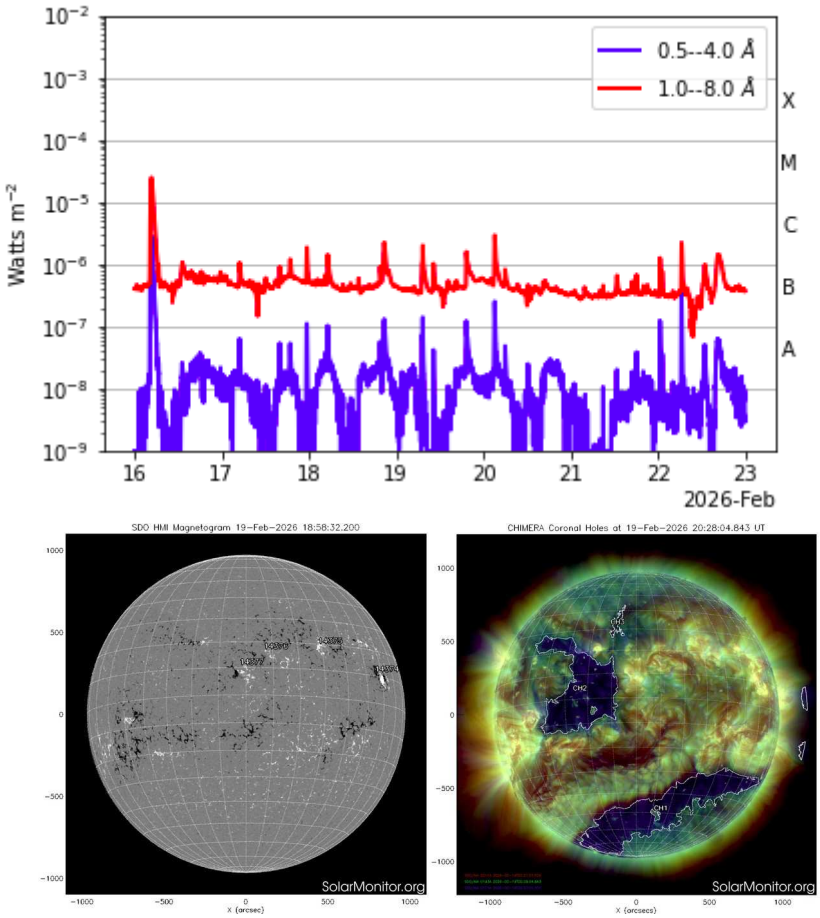

Figure 1 – X-ray flux measured by the GOES satellite (top panel) for the period of February 16-22, magnetic field in the line of sight (bottom left panel) and image at 193 angstroms (bottom right panel) measured on February 19, 2026.

Interplanetary Medium – IM – Daniele da S. F. Medeiros and Paulo R. Jauer
Period: February 16th to February 23rd.

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 with a complex structure 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 February 21st at 00:30 UT at +14.32 nT due to complex structure.

- The BxBy components presented variations in the analyzed period, keeping both oscillating within the interval [-11.38, +12.53] nT. Showing three rotations of the By component.

- The Bz component presents negative values for most of the week with a maximum negative -6.70 nT at 05:30 UT on February 22nd. It presented positive value of +9.44 nT on February 21st at 16:30 UT.

- The solar wind density maximum peaked on February 21st at 01:30 UT, reaching 14.89 protons/cm^3.

- The solar wind speed fluctuated between 452 to 701 km/s, with an increase on February 22nd starting at 06:30 UT due to complex structure.

- The magnetopause position remained relaxed almost throughout the analyzed period, reaching maximum compression (8.78 RE) at 01:30 UT on February 21st.

- The measured interplanetary Kp index reached a peak above to 5 (Kp > 5) on February 22nd, corresponding to a G1-level geomagnetic storm (minor geomagnetic storm), while the modeled interplanetary Kp index exhibited values above 6 (Kp > 6) characterizing a moderate geomagnetic storm (G2-level) on February 22nd due to complex structure.

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.

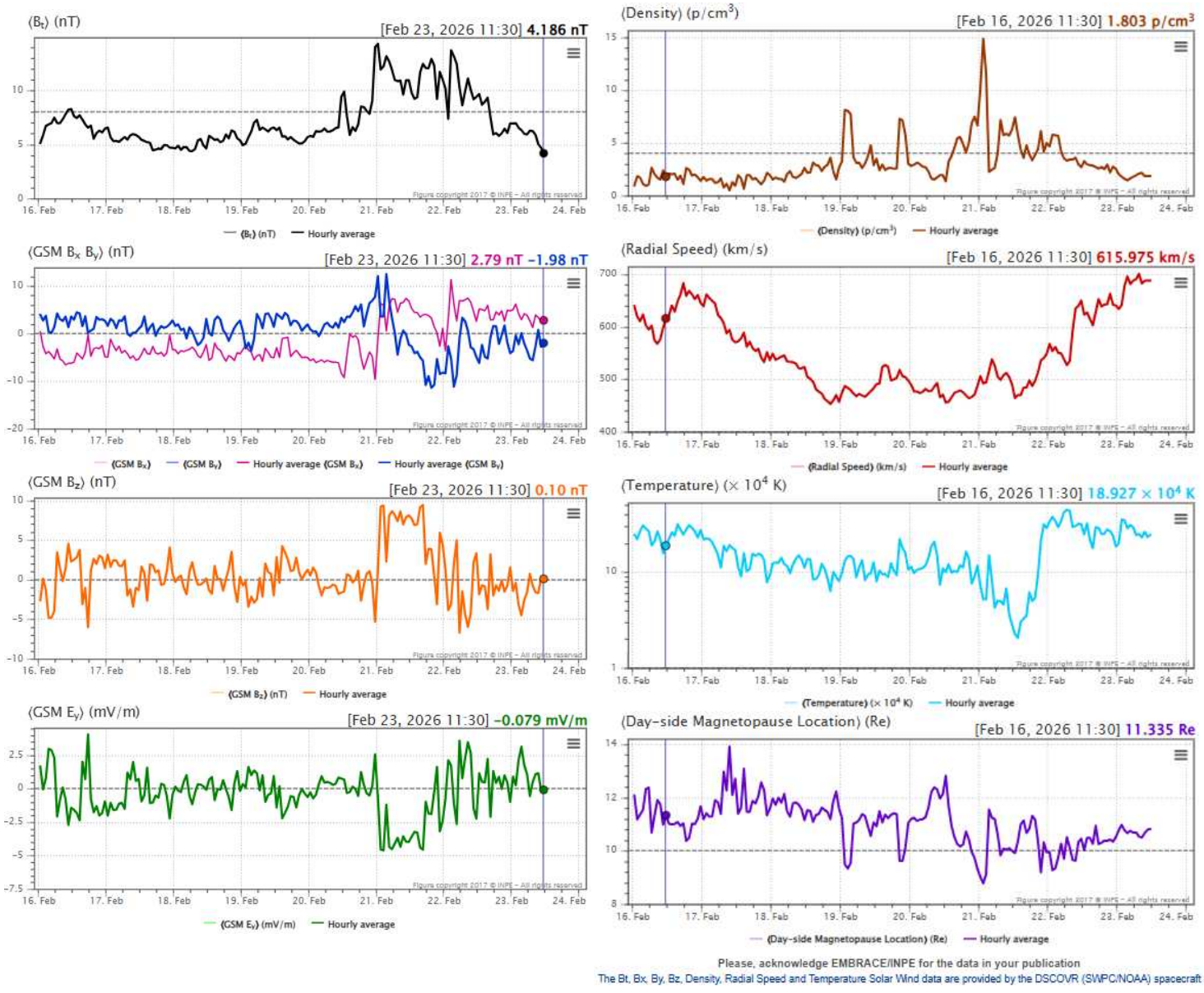

Figure 1: Illustrates a set of parameters observed in the solar wind by the DSCVR satellite.

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.

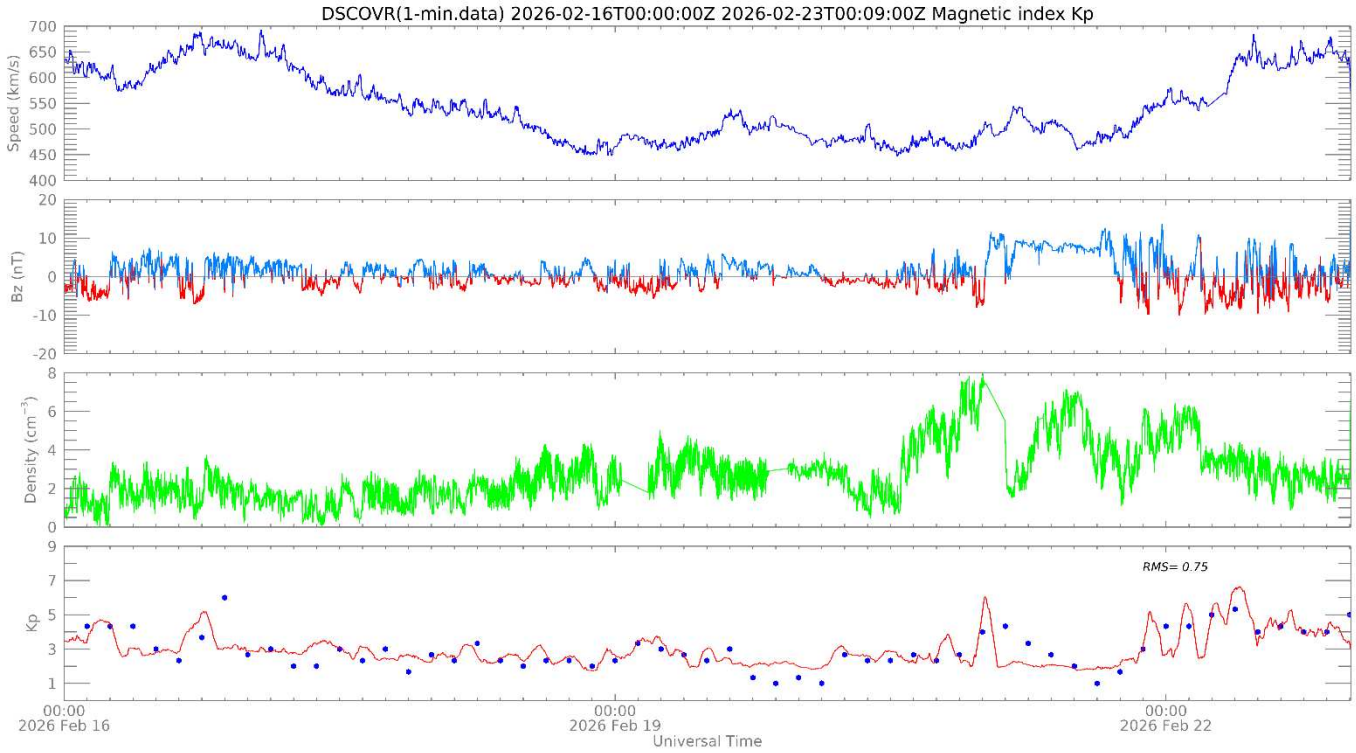

Figure 2: Illustrates a set of parameters observed in the solar wind by the DSCVR satellite and the Kp index by NOAA/SWPC, blue dot, and the modeling, red line.

Ionosfera – Digisonde (Laysa Resende)

Summary

This week, Spread F was observed across all Brazilian latitudes, including Boa Vista, São Luís, and Cachoeira Paulista. However, no Spread F signatures were detected around February 16–17 and February 21–22. Strong sporadic E (Es) layers persisted over Boa Vista, São Luís, and Cachoeira Paulista throughout the week. Notably, over São Luís, between February 17 and February 20, the Es layer index reached level 5 (Figure 1). Variations in the Maximum Usable Frequency (MUF) remained below the threshold required to classify the conditions as moderate.

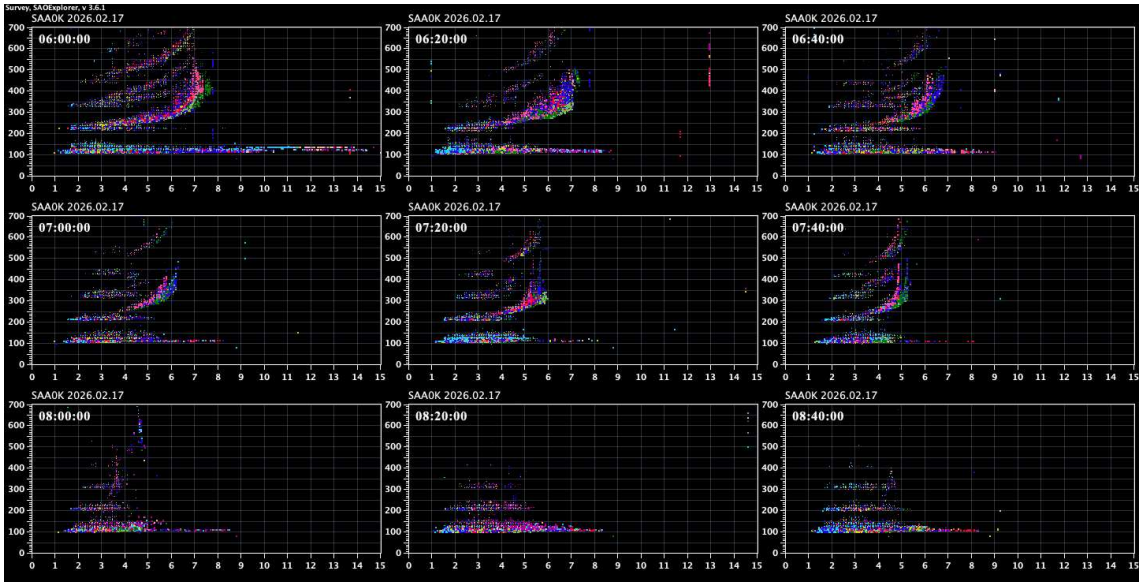

Figure 1 – Sequence of ionograms over São Luís, showing the strong Es layer (scale 5).