Briefing Space Weather

2023/08/16

Reporting the week from July 31 to Aug. 7

1 Sun

1.1 Responsible: José Cecatto

07/31 – M1.6 flare; Fast wind stream (=< 500 km/s); 9 CME c.h.c. toward the Earth;
08/01 – M1.0, M1.2, M2.2, M1.3, M3.6, M1.5, M1.4, M1.0 flare; No fast wind stream; 4 CME c.h.c. toward the Earth *;
08/02 – M1.3, M1.2, M1.7, M1.3, M1.1 flares; No fast wind stream; 5 CME c.h.c. toward the Earth;
08/03 – M2.0 flare; No fast wind stream; 1 CME c.h.c. toward the Earth;
08/04 – M1.9 flare; No fast wind stream; 3 CME c.h.c. toward the Earth;
08/05 – M1.6, M2.1, X1.6 flares; Fast wind stream (=< 500 km/s); 12 CME c.h.c. toward the Earth;
08/06 – M5.5 flares; Fast wind stream (=< 500 km/s); 8 CME c.h.c. toward the Earth;
08/07 – M2.4 flare; Fast wind stream (=< 500 km/s); 2 CME c.h.c. toward the Earth
Prev.: No fast wind stream for the next 01-02 days; for the next 2 days (55% M, 10% X) probability of M / X flares;
also, occasionally other CME can present component toward the Earth.
c.h.c. – can have a component; * partial halo; ** halo

2 Sun

WSA-ENLIL (CME 023-07-31T23:36:00 UT, 2023-08-01T00:12:00 UT and 2023-07-31T23:12:00 UT)

- The simulation results indicate that the combined Coronal Mass Ejections will reach the DSCOVR mission between 2023-08-03T22:27:00 UT and 2023-08-04T12:27:00 UT WSA-ENLIL (CME 2023-08-01T12:36:00 UT)
- The simulation results indicate that the flank of CME will reach the DSCOVR mission between 2023-08-04T15:00:00 UT and 2023-08-05T05:00:00 UT WSA-ENLIL (CME 2023-08-02T09:12:00 UT)
- The simulation results indicate that the CME will reach the DSCOVR mission between 2023-08-04T20:50:00 UT and 2023-08-05T10:50:00 UT. WSA-ENLIL (CME 2023-08-05T07:12:00 UT)
- The simulation results indicate that the flank of CME will reach the DSCOVR mission between 2023-08-07T16:00:00 UT and 2023-08-08T06:00:00 UT. WSA-ENLIL (CME 2023-08-05T22:24:00 UT)
- The simulation results indicate that the flank of CME will reach the DSCOVR mission between 2023-08-08T23:00:00 UT and 2023-08-09T13:00:00 UT

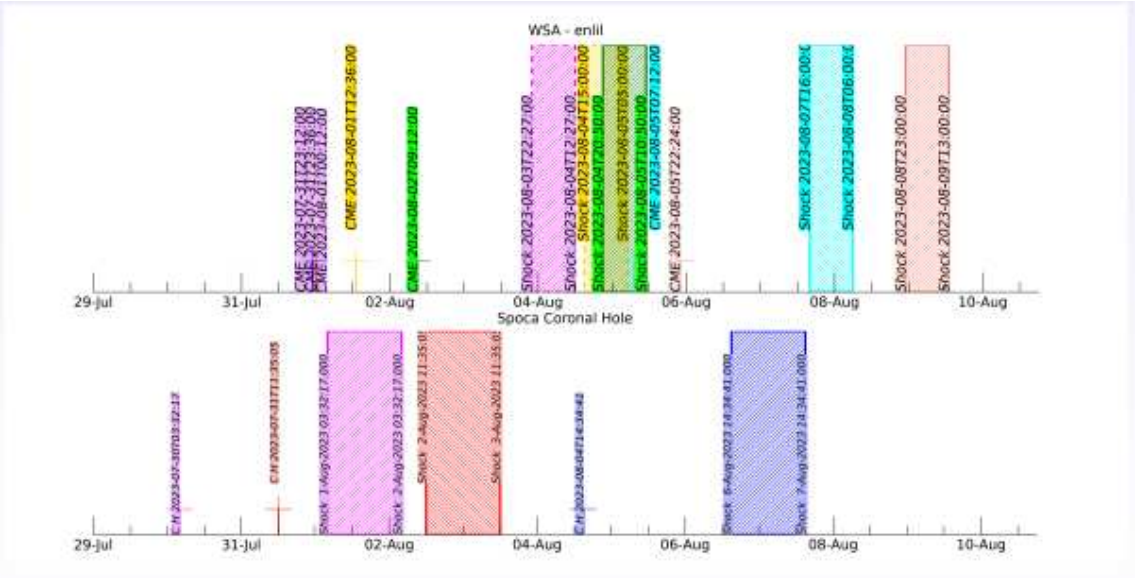

Figura 1: Arrival of solar wind structures.

3 ULF waves

3.1 Responsible: Graziela B. D. Silva

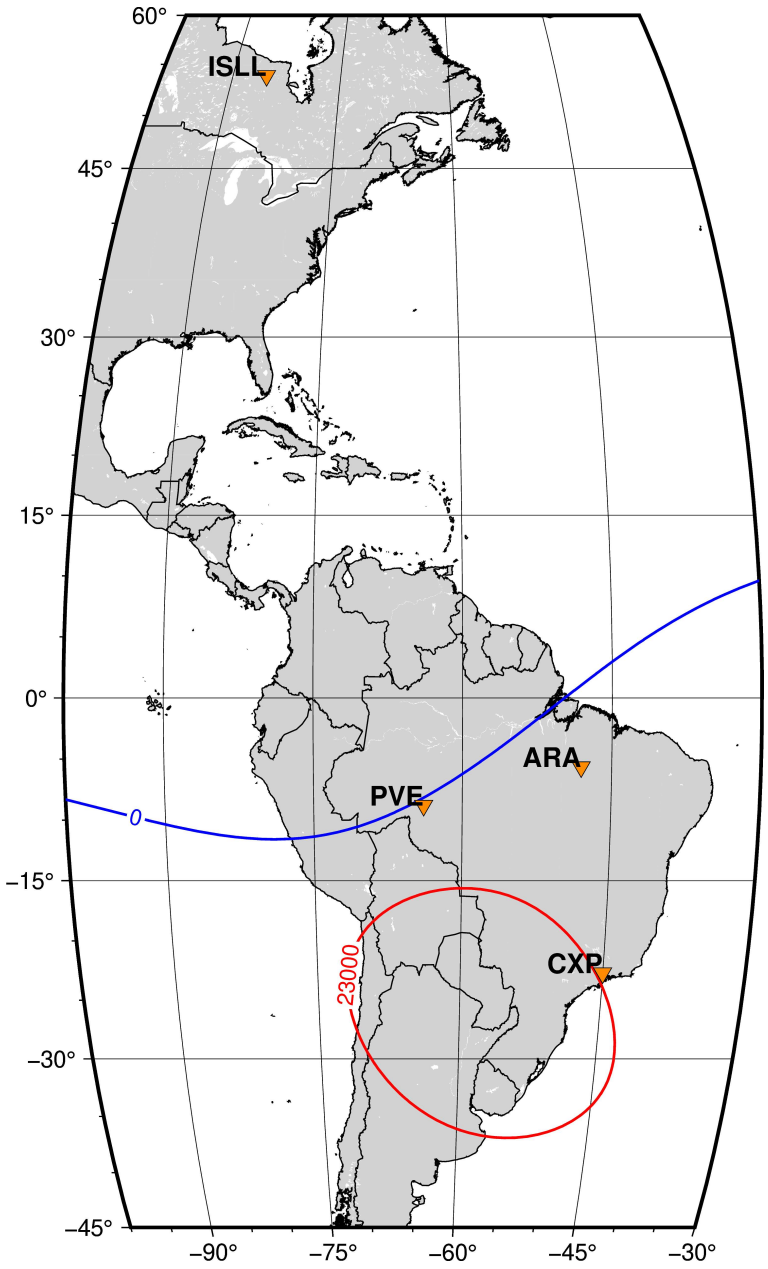

Figura 2: a) Map describing the geographic location of the stations together with the magnetic isolines to show that magnetic equator (blue) and the SAMA region (red). Cortesy: Karen Sarmiento.

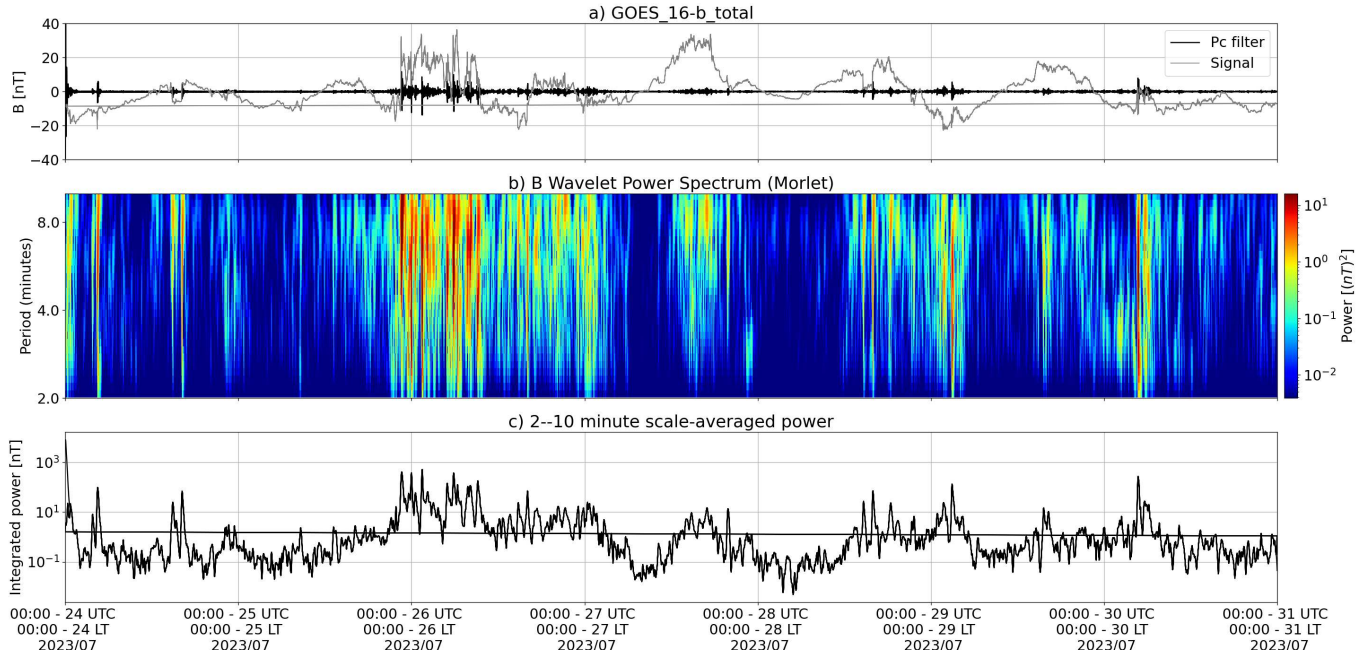

Figura 3: a) Timeseries of the geomagnetic field total component measured by GOES 16, together with the Pc5 fluctuation in black. b) Wavelet power spectrum of the filtered timeseries. c) Average ULF power in the period range from 2 to 10 minutes.

- The GOES 16 satellite in geosynchronous orbit (L $\sim$ 6.6) registered significant activity of Pc5 ULF waves over the week.

4 Geomagnetic activity

4.1 Responsible: Lívia Alves

From 01-05 August, the geomagnetic field was unsettled, the following occurences are highlighted:

- 1st, 2nd, and 4th: Embrace MagNet registered a shock enhancement of +20 nT
- 2nd, 3 rd, and 5th: Embrace MagNet registered instabilities and a drop of -90 nT at 08 UT, Dst = -94nT
- 5 th: AE index reached 1000 nT and Kp was 6+

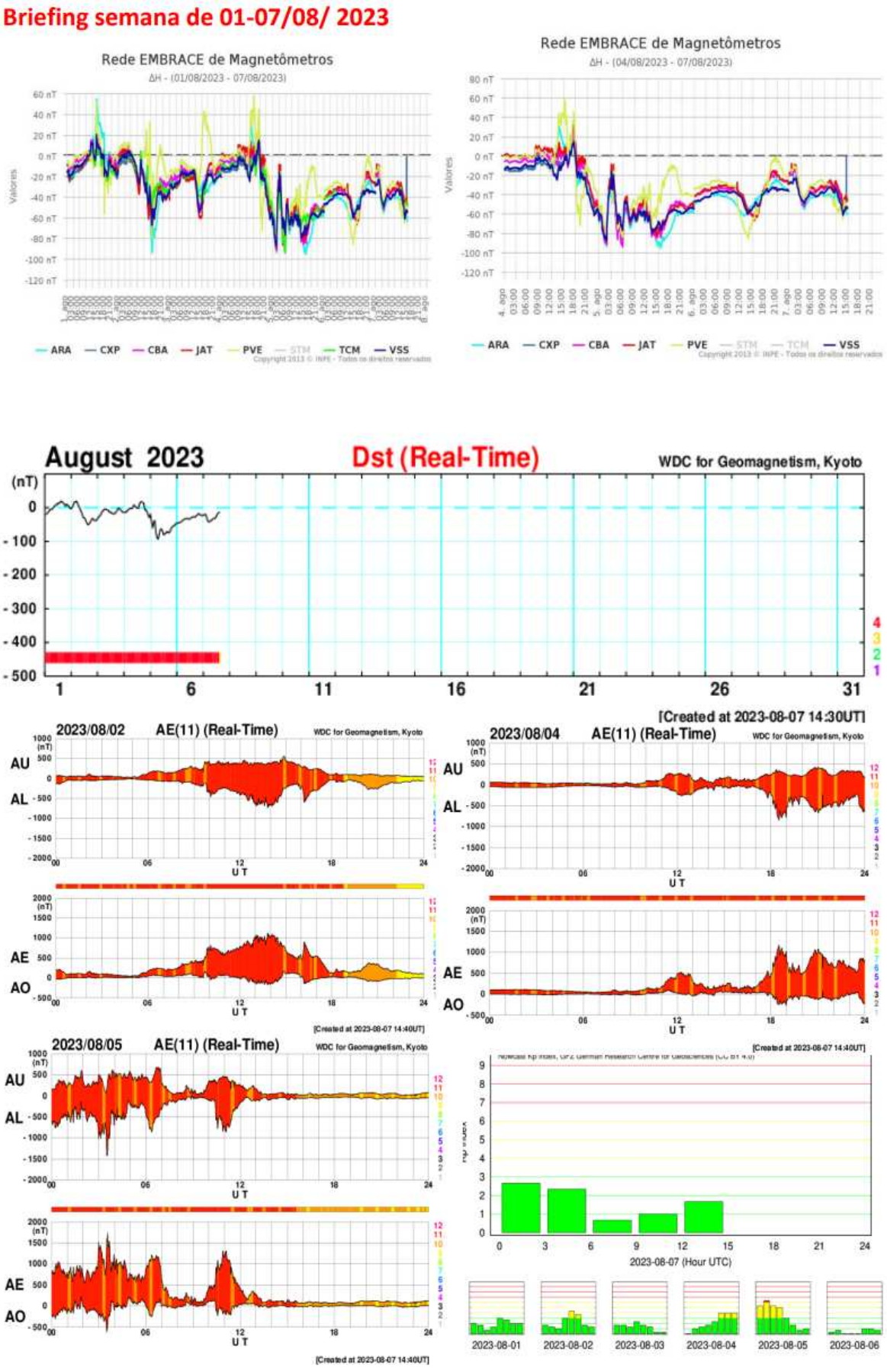

Figura 4: Time evolution of the geomagnetic field data measured on the ground and of the indices during the reported week.

5 ROTI

5.1 Responsible: Carolina de Sousa

In the week 2273 (July 30- August 5, 2023) there were no ionospheric irregularities (plasma bubble), except on 5 August. Figure 1 shows the ROTI time series for four stations in the Brazilian sector (Natal (RNNA), Bacabal (MABB), Cuiabá (CUIB) and São José dos Campos (SJSP)).

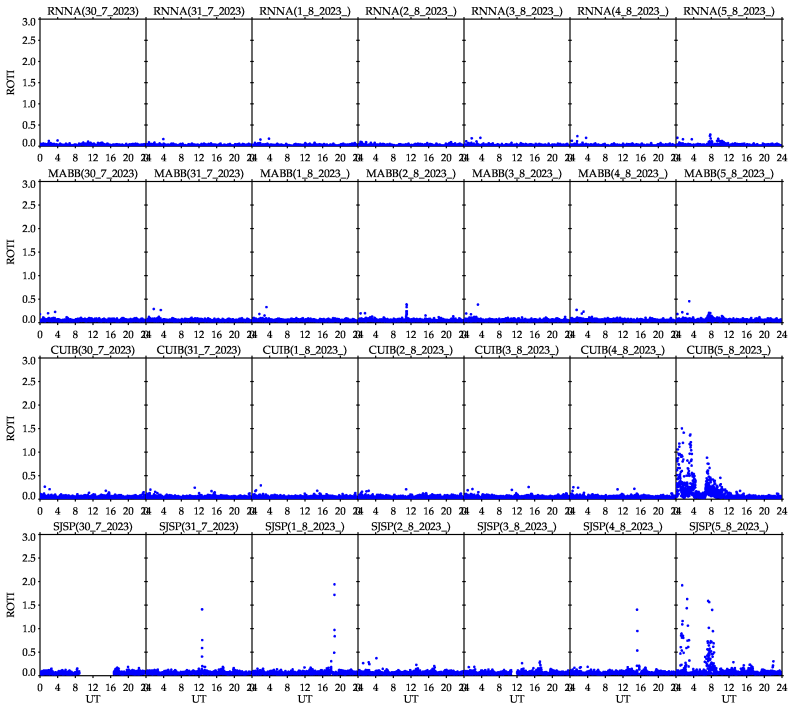

Figura 5: August 5, 2023.