Sol – Cecatto
Period: April 22 – 29, 2024

Summary

04/22 – M1.0, M1.6, M1.1, M1.6, M2.8, M1.0, M1.5 flares; Fast (=< 500 km/s) wind stream; 7 CME can have component toward the Earth;
04/23 – M1.7, M1.0, M2.3 flares; No fast wind stream; 10 CME can have component toward the Earth *;
04/24 – M1.7, M1.0, M2.3, M1.2, M1.1 flares; No fast wind stream; 8 CME can have component toward the Earth *;
04/25 – M2.2, M1.3, M1.6 flares; No fast wind stream; 7 CME can have component toward the Earth;
04/26 – No M/X flare; No fast wind stream; 6 CME can have component toward the Earth;
04/27 – M1.3, M1.6 flares; Fast (=< 550 km/s) wind stream; 5 CME can have component toward the Earth **;
04/28 – No M/X flare; Fast (=< 500 km/s) wind stream; 5 CME can have component toward the Earth;
04/29 – M2.5, M3.7 flares; Fast (=< 500 km/s) wind stream; 2 CME can have component toward the Earth;
Forecast: Fast wind stream for today and next 1-2 days; for while (35% M, 05% X) probability of M / X flares next 2 days; also, occasionally some other CME can present a component toward the Earth.

Resumo

22/04 – "Flares" M1.0, M1.6, M1.1, M1.6, M2.8, M1.0, M1.5; Vento rápido (=< 500 km/s); 7 CMEs podem ter uma componente para a Terra;
23/04 – "Flares" M1.7, M1.0, M2.3; Sem vento rápido; 10 CME podem ter uma componente para a Terra *;
24/04 – "Flares" M1.7, M1.0, M2.3, M1.2, M1.1; Sem vento rápido; 8 CME podem ter uma componente para a Terra *;
25/04 – "Flares" M2.2, M1.3, M1.6; Sem vento rápido; 7 CME podem ter uma componente para a Terra;
26/04 – Sem "flare" M/X; Sem vento rápido; 6 CME podem ter uma componente para a Terra;
27/04 – "Flares" M1.3, M1.6; Vento rápido (=< 550 km/s); 5 CME podem ter uma componente para a Terra **;
28/04 – Sem "flare" M/X; Vento rápido (=< 500 km/s); 5 CME podem ter uma componente para a Terra;
29/04 – "Flares" M2.5, M3.7; Vento rápido (=< 500 km/s); 2 CME podem ter uma componente para a Terra
Prev.: Vento rápido para hoje e próximo(s) 1-2 dia(s); probabilidade de “flares” M/X (35% M, 05% X) nos próximos 02 dias; eventualmente alguma(s) outra(s) CME pode(m) apresentar componente dirigida para a Terra.

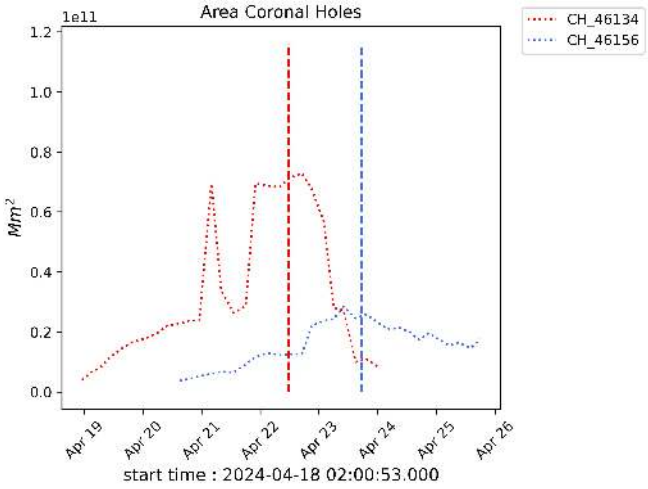
Solar - WSA-ENLIL

EMC (https://ccmc.gsfc.nasa.gov/donki/):

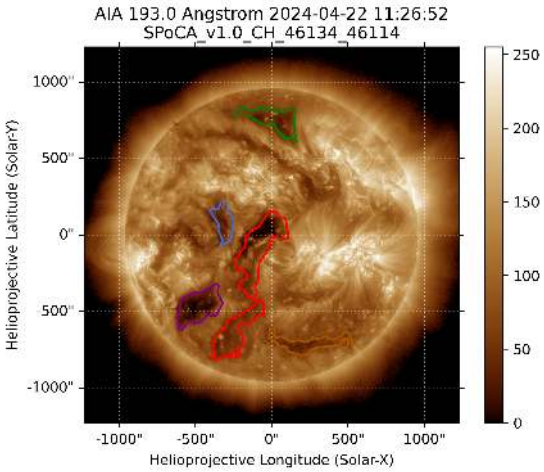
WSA-ENLIL(CMEs 2024-04-23 09:12:00 UT, 2024-04-23 18:12:00 UT, 2024-04-23 18:24:00 UT and 2024-04-24 01:48:00 UT)
The simulation results indicate that the flank of CME will reach the DSCOVR mission between
2024-04-26 15:00:00 UT and 2024-04-27 05:00:00 UT.

WSA-ENLIL(CME 2024-04-24 01:48:00 UT)
The simulation results indicate that the flank of CME will reach the DSCOVR mission between
2024-04-27 09:00:00 UT and 2024-04-27 23:00:00 UT.

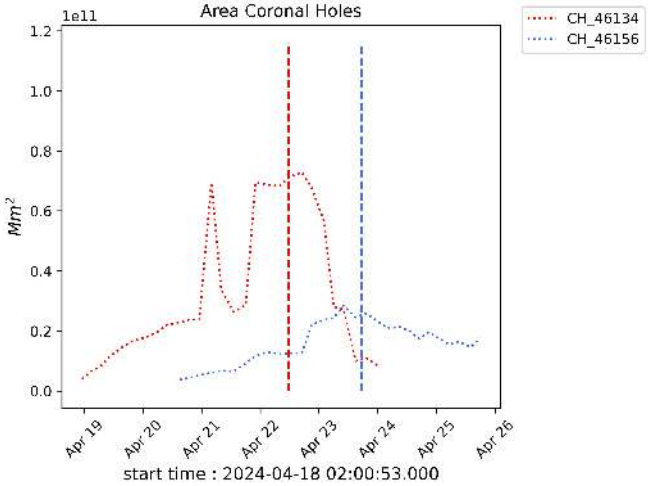
Solar - Coronal holes Spatial Possibilistic Clustering Algorithm (SPoCAS):



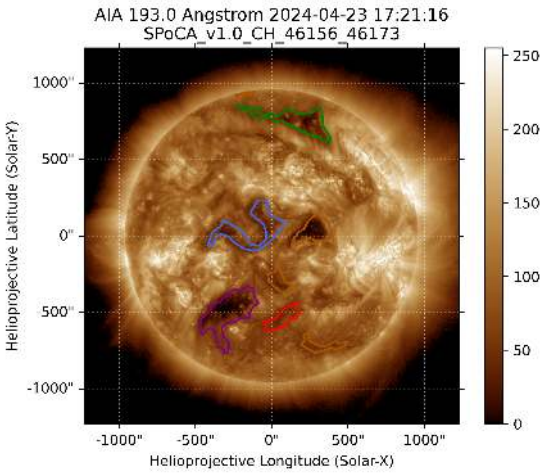
(a) The solid black line depicts the products of the sum of areas for each detection interval performed by SPOCA between April 15 and 25, 2024.



(b) Above the 193 Å image of the Sun are highlighted coronal holes observed by SPOCA around 11:26 UT on April 22, 2024 (red dot line).

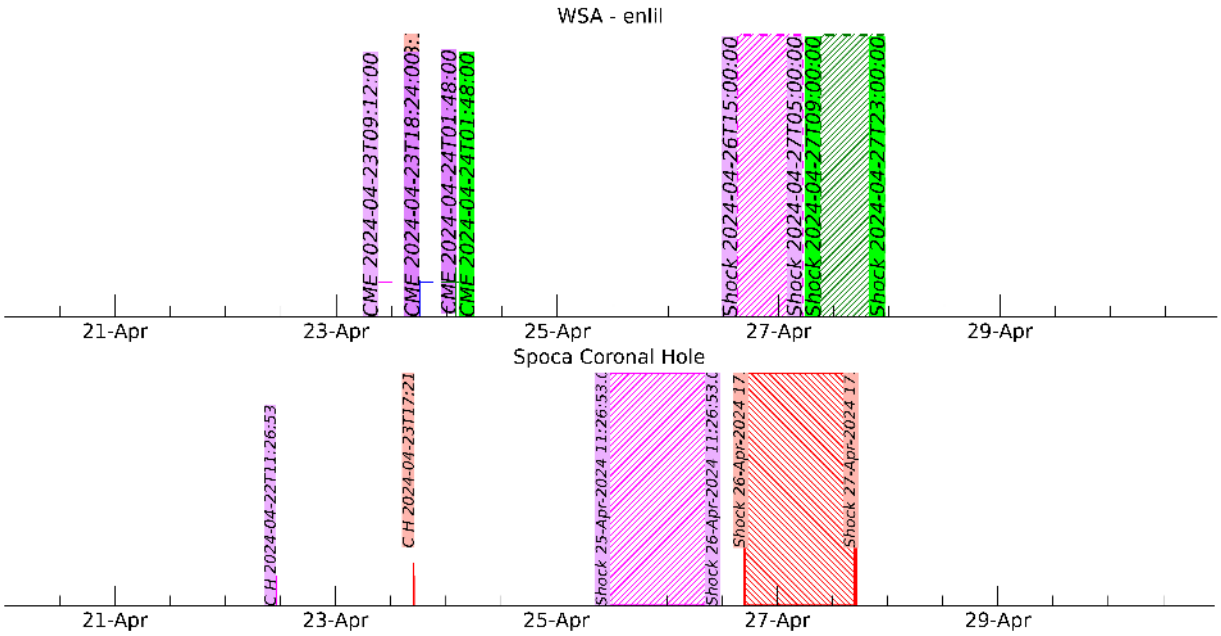


(a) The solid black line depicts the products of the sum of areas for each detection interval performed by SPOCA between April 15 and 25, 2024.



(b) Above the 193 Å image of the Sun are highlighted coronal holes observed by SPOCA around 17:21 UT on April 23, 2024 (blue dot line).

Solar - WSA - ENLIL and SPoCA



EARTH'S RADIATION BELT

Responsible: Ligia Da Silva

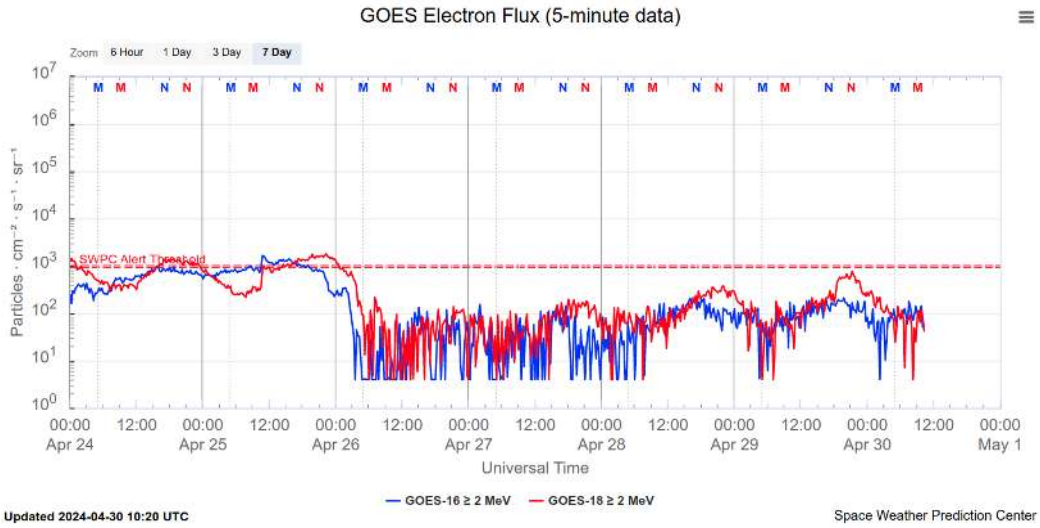


Figure 1: High-energy electron flux (> 2MeV) obtained from GOES-16 and GOES-18 satellite. Source: https://www.swpc.noaa.gov/products/goes-electron-flux

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) is around 10^3 particles/(cm^2 s sr) until the end of April 25th. After this, a "dropout" was observed, in which the electron flux remained confined below 10^2 particles/(cm^2 sr) until mid-April 27, followed by a gradual increase.

Geomagnetic Field

Responsible: Karen Sarmiento/ Lívia Alves

Summary

During the week of 23/04 to 29/04, active magnetic field conditions prevailed between 26-28/04, reaching the level of minor G1 storm. The GOES magnetometers recorded rapid fluctuations in the amplitude of the north component of the magnetic field on 26-27/04, with a minimum value reaching about 36 nT on 26/04 on the night side. Aurora activity in both hemispheres reflected instabilities and intensification of the Auroral Electrojet currents, with the AE index between 1000nT and 1500nT on 26/04 (15-17 UT) and for some short periods just exceeding 500nT. The Kp index reached conditions of minor magnetic storm (G1) on 26/04 (15-18 UT) and returned to calm period conditions on 29/04 (Kp=2o). The Dst index remained predominantly negative, reaching a minimum value of -56T on 29/04 (17 UT), indicating an intensification of the ring current that coincided with the negative Bz component of the interplanetary magnetic field, which reached values close to -10nT at 14 UT on 26/04. The Embrace Magnet network magnetometers detected rapid variations in the magnetic field at the end of the day on 26 until the early hours of 27/04 and at the end of 28 and the beginning of 29/04, resulting from the passage of two ICMEs that did not have a significant initial impact on the magnetosphere, but caused a decrease in the H component of up to -152 nT during the main phase of the storm.

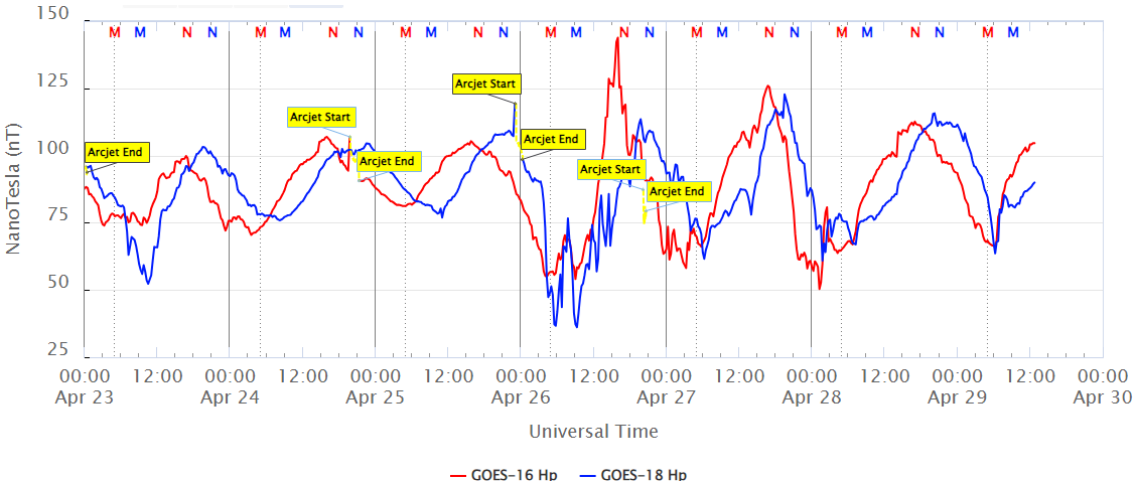


Figure 1- Magnetic field horizontal component at the GOES satellite orbit through.

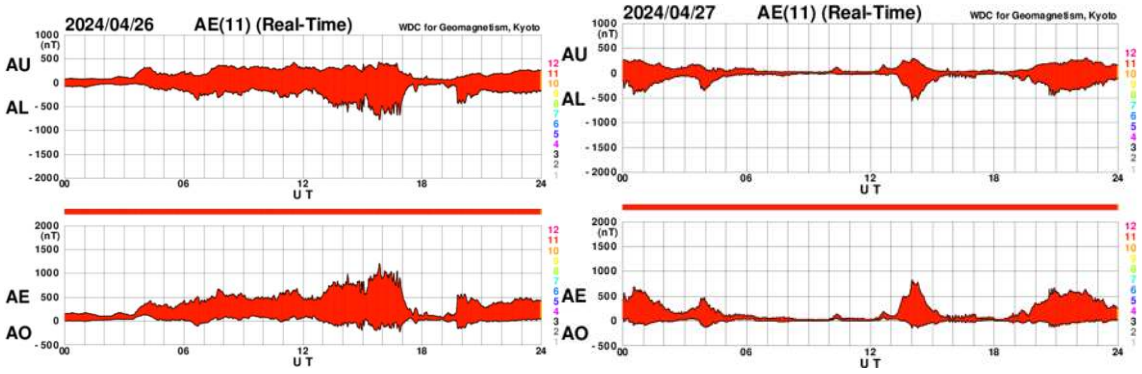


Figura 2- Índice AE para os dias da semana com maior atividade auroral.

Figure 3- Dst Index.

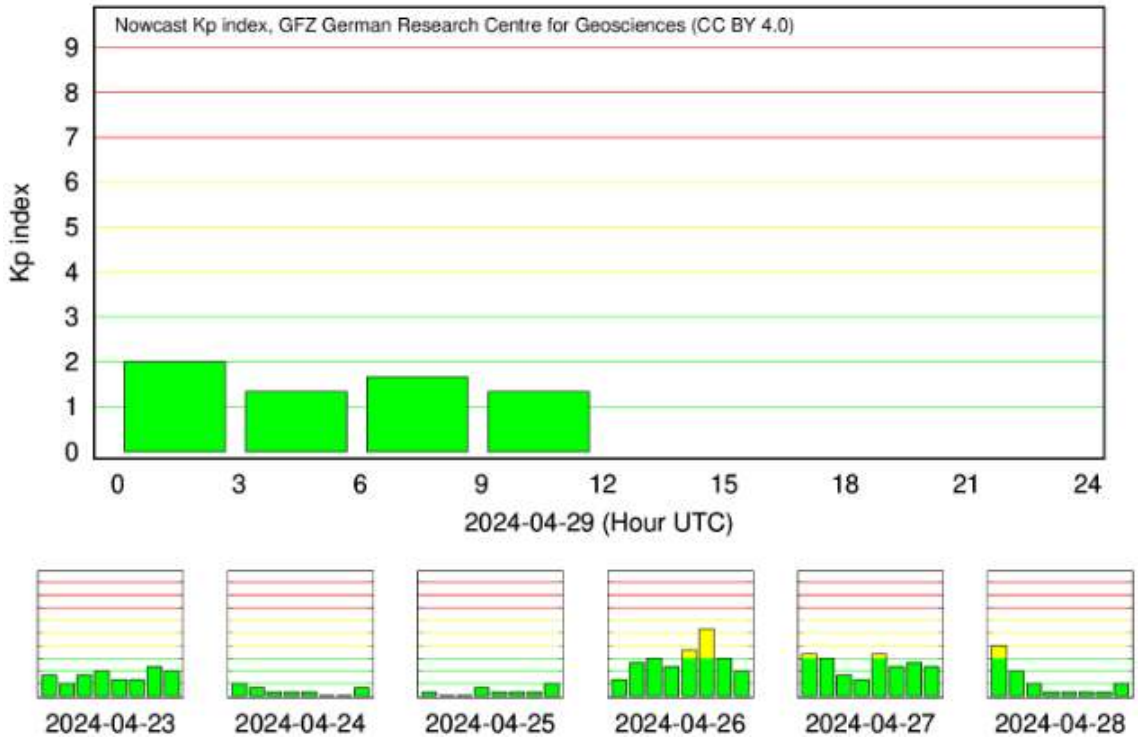


Figure 4- Kp index for the current week in logarithmic scale.

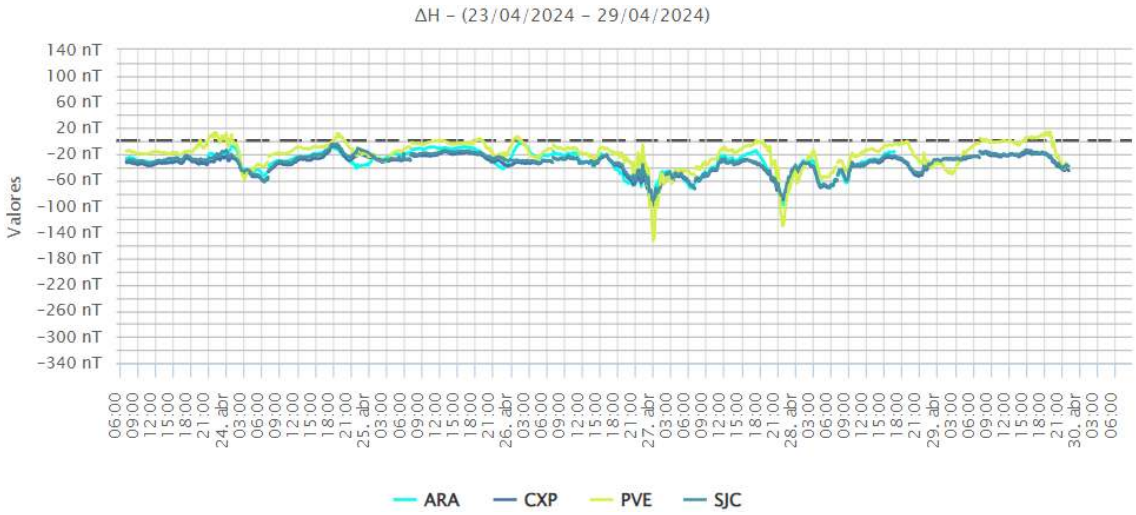


Figure 5- Daily variation of the geomagnetic field from H(nT) measured at Embrace MagNet.

Ionosfera – Digissonda (Laysa Resende)

Summary

Spread F was observed in the region closest to the magnetic equator only. In Cachoeira Paulista, it was not observed spread F. The Es layer reached values of scale 4 in São Luís (Figure 1) and scale 3 in Cachoeira Paulista.

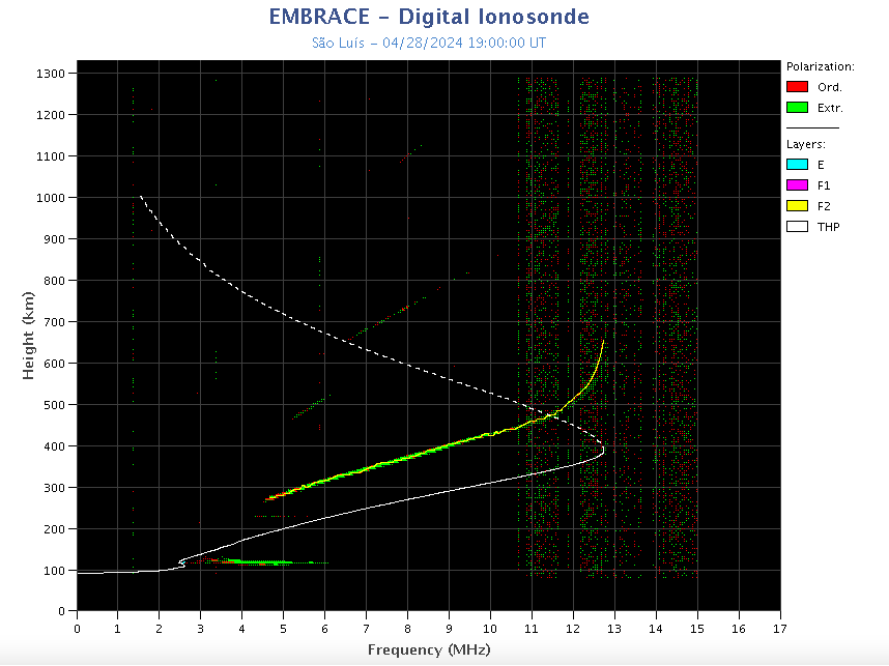


Figure 1 – Ionogram over São Luís, showing the Es layer (scale 4).

Ionosphere - ROTI
Summary for Week 2311 (April 21 to 27, 2024)

Carolina de Sousa do Carmo

In the week 2311 (April 21 to 27, 2024), ionospheric irregularities (plasma bubbles) were observed on Abril 24 and 25 at RNNA. The Figure below shows the ROTI time series for four stations in the Brazilian sector (Natal (RNNA), Bacabal (MABB), Cuiabá (CUIB) and São José dos Campos (SJSP)).

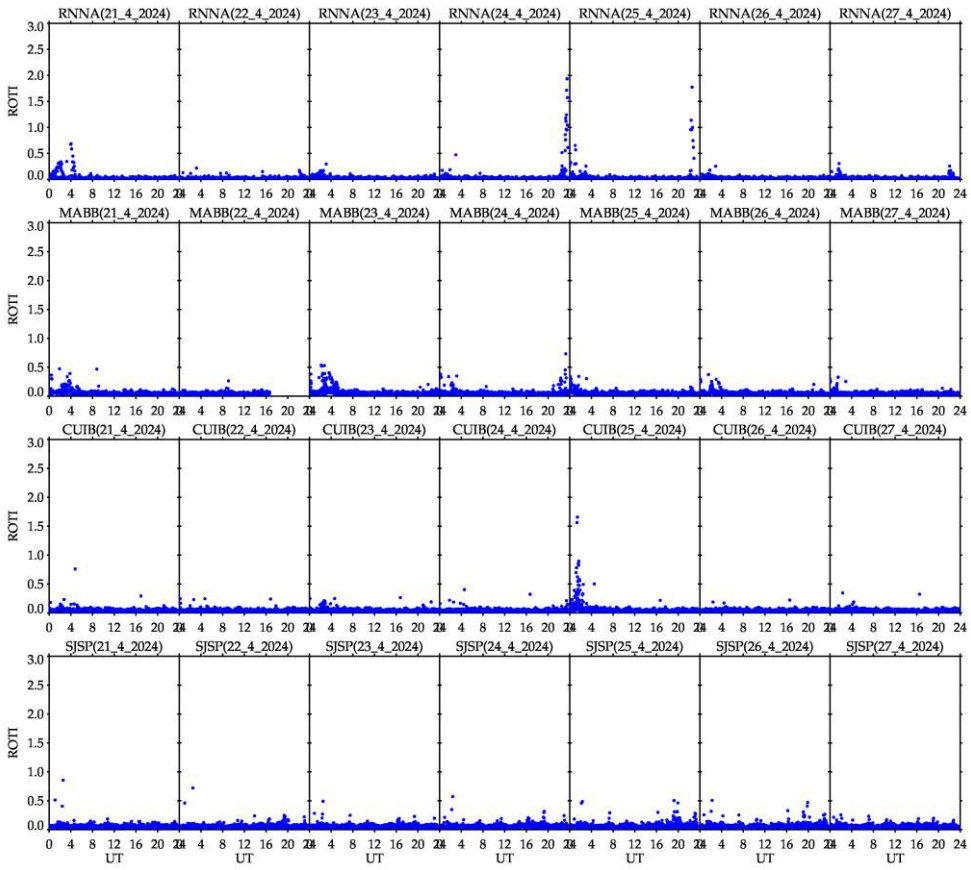


Figure – ROTI time series for four stations in the Brazilian sector (Natal (RNNA), Bacabal (MABB), Cuiabá (CUIB) and São José dos Campos (SJSP)), from April 21 to 27, 2024.