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Poster
Over the South American Magnetic Anomaly (SAMA), energetic electrons and protons from the inner radiation belt can precipitate into the upper atmosphere as a result of wave-particle interactions, particularly during geomagnetically disturbed conditions. This process alters the composition of both the neutral and ionized atmosphere and can contribute to ozone depletion. To investigate this behavior, we conducted a case study considering a geomagnetic storm on 22 June 2015, which was driven by the impact of an interplanetary coronal mass ejection (ICME). Observations from the Van Allen Probes are used to analyze energetic particle fluxes and wave activity in the inner radiation belt. These measurements are combined with data from the Proba-V satellite as it crosses over SAMA region, considering the electrons with energies of 500–600 keV and protons in the range of 9.5–13 MeV. Preliminary results indicate that the geomagnetic storm not only enhances precipitation, but also expands the region of precipitation beyond SAMA to approach both auroral and equatorial latitudes across the Brazilian sector. The increased wave activity inside the plasmasphere during the event, including hiss and magnetosonic waves, appears to play an important role in scattering inner radiation belt particles, leading to the observed precipitation. Ongoing analysis focus on calculating the resonance conditions between the observed waves and the precipitated particles, as well as investigating the physical conditions responsible for the generation of hiss and magnetosonic waves.
Poster session day
Wednesday, April 29, 2026
Poster location
11
Meeting homepage
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