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BOOK OF ABSTRACTS

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penetration and disturbance dynamo processes that are the two main sources of the mid and low latitude storm time electric fields. In this presentation, we will present a new technique to validate the modeled electric fields and currents by using a network of magnetometers from ground and a LEO satellite.

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P6.20 LATITUDINAL DEPENDENCE OF COSMIC NOISE ABSORPTION IN THE IONOSPHERE OVER THE SAMA REGION DURING THE SEPTEMBER 2008 MAGNETIC STORM

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In this work we present and discuss some results of latitudinal dependence in the cosmic noise absorption (CNA) as observed by the South American Riometer Network (SARINET) operated in the South American Magnetic Anomaly (SAMA) region, during a moderate intensity geomagnetic storm that occurred on September 03, 2008. In our analysis, we used the data acquired by the imaging riometers installed at São Martinho da Serra (SSO - 29.4º S, 53.1º W), Concepcion (CON - 36.5º S, 73.0º W) and Punta Arenas (PAC - 53.0º S, 70.5º W) and by the single beam riometer installed at Trelew (TRW - 43.1º S, 65.2º W). A comparison among the selected riometer data showed that the mean CNA was more pronounced at SSO, which is the site located nearest to the center of the SAMA, but the second highest value was found at the farther station. Also, a second order polynomial curve fitting was performed in order to establish an empirical relationship between the mean CNA and the total intensity of the geomagnetic field at the riometer stations.

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P6.21 OPERATIONAL IONOSPHERIC DYNAMICS PREDICTION IN BRAZILIAN SPACE WEATHER PROGRAM

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It is shown the development and preliminary results of operational ionosphere dynamics prediction system for the Brazilian Space Program. The system is based on the Sheffield University Plasmasphere-Ionosphere Model (SUPIM), a physics-based model computer code describing the distribution of ionization within the Earth mid to equatorial latitude ionosphere and plasmasphere. The model outputs are given in a 2-dimensional plane aligned with Earth magnetic field lines, with fixed magnetic longitude coordinate. The code was adapted to provide the output in geographical coordinates. It was made referring to the Earth´s magnetic field as an eccentric dipole, using the approximation based on International Geomagnetic Reference Field (IGRF-11). During the system operation, several simulation runs are performed at different longitudes. The original code would not be able to run all simulations serially in reasonable time. So, a parallel version for the code was developed for enhancing the performance. After preliminary tests, it was frequently observed code instability, when negative ion temperatures or concentrations prevented the code

from continuing its processing. After a detailed analysis, it was verified that most of these problems occurred due to concentration estimation of simulation points located at high altitudes, typically over 4000 Km of altitude. In order to force convergence, an artificial exponential decay for ion-neutral collisional frequency was used above mentioned altitudes. This approach shown no significant difference from original code output, but improved substantially the code stability. In order to make operational system even more stable, the initial altitude and initial ion concentration values used on exponential decay equation are changed when convergence is not achieved, within pre-defined values. When all code runs end, an approximate neighbor searching technique was developed to obtain the ion concentration values in a regularly spaced grid, using inverse distance weighting (IDW) interpolation. A 3D grid containing ion and electron concentrations is generated for every hour of simulated day. Its spatial resolution is 1 degree of latitude per 1 degree of longitude per 10 Km of altitude. The vertical total electron content (VTEC) is calculated from the grid, and plotted in a geographic map. The whole process runs every day and predicts the VTEC values for South America region with almost 24 hours ahead. Recently, data from ionosondes can be assimilated in the system to improve its accuracy.

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P6.26 GEOMAGNETIC DISTURBANCE AND SOLAR PARTICLE EVENTS AND THEIR EFFECTS ON THE LOWER IONOSPHERE, USING SAVNET DATA

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Measurements performed by the VLF technique, using the South America VLF Network (SAVNET) are presented. The SAVNET project has been involved in the IHY activities (2004-2009) and since then in the International Space Weather Initiative (ISWI) program. Explosive solar events and emission of energetic particles have occurred in August 2011. The impacts on the upper atmosphere were observed through subionospheric propagation anomalies as seen in the temporal variations of the signal amplitude and phase recorded on long VLF-paths. In this connection, comparing quiet and disturbed days, the phase exhibited unusual higher values that might be associated with excesses of ionization in the lower ionosphere region. These and other aspects of these geomagnetic disturbances in the ionosphere will be further discussed.

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