Session 3 – Equatorial and low latitude studies: ionospheric and thermospheric dynamics.

S3-P-07

Radar Observations of a Back-Scattering Region at the E-region Heights during Sunset in the Brazilian Sector

C. M. Denardini, M. A. Abdu, E. R. de Paula, C. M. Wrasse, J. H. A. Sobral

Instituto Nacional de Pesquisas Espaciais - P. O. Box 515 - S. J. Campos, SP, Brazil

Using the RESCO 50 MHz back-scatter radar (2.33 S, 44.2 W, DIP: -0.5), at Sao Luis, we have obtained Range Time Intensity (RTI) maps covering the equatorial electrojet heights during daytime and evening in the Brazilian sector. These maps revealed the appearance of a scattering region at about 108 km of height during the sunset period. It was observed mainly during summer period under quiet magnetic activities conditions. Back-scatter coherent radars are sensitive to field aligned meter-scale plasma irregularities and the type of 3-m irregularity region we have observed, and we present here has not been reported before to our best of knowledge. The occurrence of this echo region coincides in local time with the maximum intensity of evening pre reversal eastward electric field of the F region ionosphere. Theory of the divergence of the equatorial electrojet current in the evening ionosphere has been proposed (Haerendel and Eccles, 1992, JGR) to explain its partial contribution to the development of the pre reversal electric field. The theory predicts enhanced zonal electric field and hence vertical electric field below 300 km as necessary as consequence of the electrojet divergence in the evening. In this paper the experimental results of the enhanced echoes from higher heights of the EEJ region do seem to provide an evidences that the divergence of the equatorial electrojet current can indeed be the driver of the scattering region observed. For the present study we have selected some days of radar observation of the E region heights during summer under quiet and disturbed magnetic condition. We also have obtained the amplitude of F-region plasma drift (pre-reversal enhancement) over the same observatory, deduced from hmF2 obtained by the digisonde.

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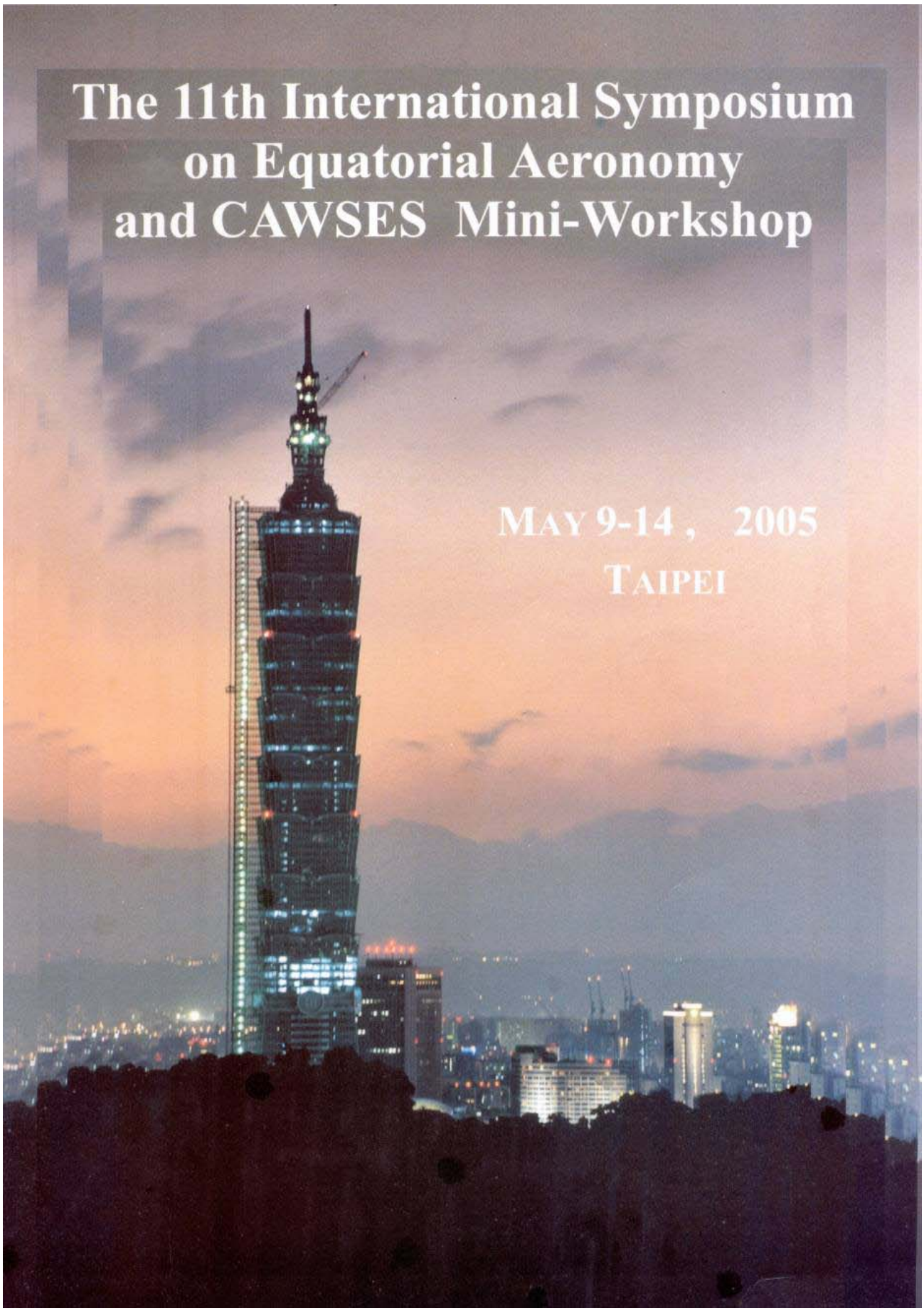
The 11th International Symposium on Equatorial Aeronomy and CAWSES Mini-Workshop



MAY 9-14 , 2005

TAIPEI

The 11th International Symposium on Equatorial Aeronomy and CAWSES Mini-Workshop

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Session 6: E-region plasma irregularities and instabilities. ---------- S6-1

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11:30-11:45	S3-O-13	Unexplained pre-sunrise uplifts near the magnetic equator *Michael J. Nicolls, Michael C. Kelley, Yogeshwar Sahai, Paulo R. Fagundes, and Washington L. C. Lima*
11:45-12:00	S3-O-14	The response of low-latitude thermosphere during magnetic disturbances as measured by the OI 630.0nm dayglow emissions obtained by the High Resolution Imaging Spectrograph (HIRISE) *D. Pallamraju and S. Chakrabarti*
12:00-12:15	S8-O-26 Invited	FORMASAT-3/COSMIC overview *C. Z. Frank Cheng*
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Poster Presentation Room: Instruction Room (14th Floor)

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S3-P-01	Westward Drift Velocities of the Ionospheric Plasma Bubbles over the Brazilian Region *Jose Sobral*
S3-P-02	VHF & L-band scintillation characteristics over an Indian Low latitude Station, Waltair (17.7°N, 83.3°E) *PVS Rama Rao, K Niranjan, DSVVD Prasad, S Tulasi Ram and S Gopi Krishna*
S3-P-03	TEC and L-band scintillation studies over the Equatorial and low latitude regions using the data of Indian GPS network *PVS Rama Rao, S Gopi Krishna, K Niranjan, DSVVD Prasad, G Uma and SNVS Prasad*
S3-P-04	Variations of an additional layer in the equatorial ionosphere *N. Balan and H. Alleyne*
S3-P-05	On the dependence of F layer movement on the nocturnal variations of 777.4 nm airglow intensity over low latitude *R. Sekar, D. Chakrabarty and R. Narayanan*
S3-P-06	Daytime, Vertical ExB Drift Velocities Inferred from Ground-based Magnetometer Observations in the Peruvian and Philippine Longitude Sectors *David Anderson, Adela Anghel, Jorge Chau, Oscar Veliz, Kiyo Yumoto*
S3-P-07	Radar Observations of a Back-Scattering Region at the E-region Heights during Sunset in the Brazilian Sector *C. M. Denardini, M. A. Abdu, E. R. de Paula, C. M. Wrasse, J. H. A. Sobral*
S3-P-08	Seasonal and longitudinal difference of the growth condition of equatorial plasma bubbles *Hyosub Kil, Bob DeMajistre, Larry Paxton, Yongliang Zhang, Brian Wolven, Danny Morrison*
S3-P-09	Ion Temperature Variation Observed by ROCSAT-1 Satellite in the Evening Sector *C. K. Chao, S. -Y. Su, and H. C. Yeh*
S3-P-10	Relationships between electron density and height in the post sunset equatorial ionosphere *K.J.W. Lynn, T.J. Harris and M. Sjarifudin*