

Global Plasma Irregularity Monitoring by COSMIC-2, SWARM, ICON, and GOLD

*Shih-Ping Chen¹, Charles (C. H.) Lin¹, Panthalingal Krishanunni Rajesh¹, Richard Eastes², MinYang Chou³

1. Department of Earth Sciences, National Cheng-Kung University, Taiwan, 2. Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, CO, USA, 3. COSMIC Program Office, University Corporation for Atmospheric Research, Boulder, CO, USA

This study presents conjunction observations of the equatorial plasma bubbles (EPBs) by L-band scintillation, density fluctuation, vertical plasma drift, and airglow emission at various altitudes in the F layer using the COSMIC-2, SWARM, ICON, and GOLD data. Result shows that locating the EPBs by in-situ measurements highly dependent on the orbit inclinations, thus the EPB occurrence detected by COSMIC-2, SWARM, and ICON display distinct pattern in both temporal and spatial aspects, but these detections are well collocated with the 135.6nm EIA emission gaps in the GOLD monitoring images at Atlantic-Brazilian longitude sector. The collaboration of the COSMIC-2, SWARM, ICON, and GOLD missions provides us rapid and detailed observation of three-dimensional structure of EPBs in Atlantic-Brazilian region. The preliminary results of the vertical drift velocity measured by the ion velocity meter (IVM) at/within the detected EPBs are also compared with the theoretical SAMI-3 model.

Keywords: FORMOSAT-7/COSMIC-2, Equatorial Plasma Bubble, Scintillation, Global-scale Observations of the Limb and Disk (GOLD)

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