

## A role of equatorial atmospheric waves in plasma bubble generation

# Tadahiko Ogawa[1]; Yasunobu Miyoshi[2]; Yuichi Otsuka[1]

[1] STELAB, Nagoya Univ.; [2] Earth and Planetary Sci, Kyushu Univ.

Relationships between plasma bubble generation in the equatorial ionosphere and atmospheric wave activity are investigated. To monitor routinely plasma bubble occurrences, we have conducted 1.6-GHz GPS ionospheric scintillation measurements at Kototabang, West Sumatra in Indonesia (0.2 S, 100.3 E; dip lat. 10.4 S). The results, combined with data of neutral wind at around 90 km altitude over Kototabang and Earth's brightness temperature (Tbb: a proxy of tropospheric activity), indicate the following: 1) scintillations occur mostly from post-sunset to midnight in equinoctial months, 2) scintillation occurrence and temporal variations of Tbb and neutral wind have planetary-wave periods, i.e., periods from a few days to several tens of days, and 3) the scintillations tend to be enhanced when high and low Tbb regions are located over the Indian Ocean in the west of Kototabang. In this paper, using the Kyushu University General Circulation Model (GCM), we investigate a possible role of atmospheric waves in the thermosphere in seeding plasma bubble generation. This GCM models well planetary waves below 120 km altitude and short-scale gravity waves (periods from 1 to 4 hours; east-west wavelengths from a few hundred km to 1000 km) in the thermosphere, and seems to support that atmospheric waves propagating upward from below contribute to the seeding of plasma bubbles.