

R005-P13

ポスター 3 : 11/6 AM1/AM2 (9:00-12:30)

タイ・チュンポンにおける下向きに移動する沿磁力線不規則構造の VHF レーダー観測

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VHF radar observation of downward moving field-aligned irregularities in the F region over Chumphon, Thailand

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Plasma bubble is a localized plasma density depletion in the ionosphere. The plasma bubbles are generated at the magnetic equator through the Rayleigh-Taylor instability. The plasma density depletion moves to higher altitude by ExB drift due to the eastward polarization electric field generated in the plasma bubbles. On the other hand, Tulasi Ram et al. (2020) have reported downward development of field-aligned irregularities (FAIs) observed by the Equatorial Atmosphere Radar at Kototabang in Indonesia, which is located at low magnetic latitude (10 deg S dip latitude). The FAIs appeared at higher altitude at post-sunset, and extended to lower altitudes. In this study, by using a VHF radar at Chumphon in Thailand, located near magnetic equator, downward moving FAI echo regions were observed at the post-midnight on July 24, 2022. Around midnight (17 UT), FAI echo appeared around 300 km in altitude with narrow altitude range (less than 20 km). From 17:30 UT, the echo region extended to higher altitudes, and reached an altitude of 500 km. The downward extension of the echo region was also observed. The downward moving echo region was separated from the upward extending echo region. All-sky airglow imager install at the Chumphon radar site observed 630-nm airglow intensity depletion extending in the meridional direction. In order to compare the FAI echo region with the airglow structures, the FAI echo regions are mapped on the surface at the 630-nm airglow layer (250 km in altitude) along the magnetic field line. We found that the FAI regions moving upward and downward coincide with the airglow depletion, and that the airglow intensity was enhanced at the west of the airglow depletion. This result indicates that the plasma bubble in which FAI existed was embedded in the airglow enhanced region, where the F layer descent to lower altitudes increasing the airglow intensity. The downward motion of the FAI echo region may be caused by the downward motion of the F layer.