

## Ten years on ionospheric observation with the Equatorial Atmosphere Radar

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Equatorial ionospheric observation with the Equatorial Atmosphere Radar (EAR) has been conducted since 2001, and its unique observational data has been obtained for almost one solar cycle. The EAR is sensitive to 3-m scale ionospheric irregularities, which can be regarded as a tracer of equatorial spread F (ESF) or plasma bubbles. ESF is one of the long-standing subjects in the low-latitude ionosphere particularly because plasma irregularities associated with ESF cause severe scintillation on satellite signals which results in communication/navigation outages. The rapid beam steering capability of the EAR, along with simultaneous ground-based and satellite observations, has revealed important aspects such as spatial/temporal structures of ESF and other intriguing phenomena. During solar maximum period, ESF plumes are observed just after sunset and traverse eastward until around midnight. During solar minimum period, on the other hand, the radar backscatter echoes are commonly observed around or after midnight and traverse westward, which are quite similar to the midlatitude-type irregularities observed with the MU radar in Japan. We will summarize observational results with the EAR during solar maximum and minimum periods, and discuss future potential of the ionospheric observation with the EAR.

Keywords: Equatorial Atmosphere Radar, plasma bubble, equatorial spread F, ionosphere, EAR