

Wavelike Structures in the Low-Latitude F region Using Beacon Satellites Wavelike Structures in the Low-Latitude F region Using Beacon Satellites

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The low-latitude F-region plasma is produced by solar radiation, and its gross structural features arise from plasma transport and re-distribution (1) along geomagnetic field (B) lines by a meridional neutral wind, and (2) in planes transverse to B by an electric field (E). The fundamental process is often referred to as the equatorial fountain, in which an eastward electric field, applied over the magnetic dip equator, drives the plasma upward; this transverse transport is accompanied by downward and outward transport along B, which is driven by gravity and diffusion. The enhancements in plasma density that form, one in each hemisphere, are known as the equatorial ionization anomalies. Embedded within these largest-scale structures is a hierarchy of smaller-scale wavelike perturbations that extend downward from perhaps 1000 km to nearly 10 cm. These structures include large-scale wave structure, traveling ionospheric disturbances, equatorial plasma bubbles, as well as the small-scale irregularities that are responsible for radio wave scintillations and radar backscatter. Because of the complex hierarchy of structures that can be present, comprehensive investigations require a network of sensors that can provide both spatial and temporal information with adequate spatial resolution, while providing the necessary geographical coverage. A brief review of some of the recent results regarding wavelike structures, obtained from studies using a broad network of instruments distributed throughout the Southeast Asian sector, is presented.

キーワード: Wavelike structures, Low Latitude F Region, Plasma Structures, Beacon Satellites
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