

Low-to mid-latitude density irregularity pattern observed by ROCSAT-1 from 1999 to 2004 during moderate to high solar activity period

S.-Y. Su(1), C. K. Chao(2), C. H. Liu(3) and H. H. Ho(2)

(1) Institute of Space Science, and Center for Space and Remote Sensing Research, National Central University, Chung-Li, Taiwan, China. (2) Institute of Space Science, National Central University, Chung-Li, Taiwan, China. (3) Department of Communication Engineering, and Institute of Space Science, National Central University, Chung-Li, Taiwan, China.
(sysu@jupiter.ss.ncu.edu.tw / Phone: +88634227151x65752)

During moderate to high solar activity years of 1999 to 2004, ROCSAT-1 (now re-named FORMOSAT-1) made a good statistical observation of density irregularity distribution from equatorial region to midlatitude region. We will present two important findings from the statistical survey of density irregularity observations during this period. The first one is the existence of a latitudinal demarcation of irregularity distribution at $\sim 30^\circ$ in dip latitude to separate the equatorial irregularity from the midlatitude irregularity. The two different irregularity distributions exhibit opposite properties in magnetic, solar activity, and local-time variations. The second one is the yearly variation in the monthly/longitudinal distribution of equatorial irregularities in which the equatorial irregularity within a short longitude extent indicates drastic variation. This implies the existence of seeding perturbations with a finite scale length for the instability process, which is found to be about a couple of thousand kilometers.