

Studies on ionospheric F-region irregularities with the MU radar and GPS network

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The F-region field-aligned irregularity (FAI) is investigated by using the MU radar and the GPS receiver network over Japan. With the MU radar we conducted simultaneous FAI and IS (incoherent scatter) observations in 1997--1999. It is found that the F-region FAI occurs at the bottomside of the F-region ionosphere. The data from the GPS receiver network of the Geophysical Survey Institute were used to determine horizontal structure of the total electron content (TEC) over Japan. From the comparison between the FAI-echo and TEC structures, it is found that they both have similar propagation characteristics. In some cases wave-like structures of the FAI appeared at the certain phase of the southwestward-propagating TEC structures.