



Estimating ionospheric property by using simultaneous observations of lightning optical emissions and whistlers from ISS GLIMS mission.

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The atmospherics from the lightning penetrating through the ionosphere and are observed as so-called lightning whistlers in the magnetosphere. Since ionosphere is the dispersive medium, group delays of whistler waves with different frequencies contain the information on the electron density along the propagation path. In this paper we estimate the critical frequency of the ionosphere F layer (f_oF2) by using the time delay between the lightning optical emissions and whistlers, which were simultaneously measured by Global Lightning and SprItE MeasurementS (GLIMS) mission onboard ISS. We found that the calculated f_oF2 by using group delay are in good agreement with those estimated from the classical dispersion analysis of lightning whistlers, IRI model and ionosonde for relatively small dispersion events. This method will be useful to cover the area where no ground-based measurements are available such as over the ocean and remote areas.