

OPTICAL AND ELECTRIC FIELD OBSERVATIONS OF LIGHTNING IN THE LOW LATITUDE IONOSPHERE GATHERED WITH PROBES ON THE C/NOFS SATELLITE

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The VEFI (Vector Electric Field Instrument) on the C/NOFS (Communications/ Navigation Outage Forecast System) satellite, launched in April, 2008), is in a near-equatorial, 13 degree inclination orbit with perigee and apogee of 401 and 867 km altitude, respectively. VEFI gathers high time resolution measurements of optical lightning amplitude from two optical diodes oriented in the north and south look directions perpendicular to the orbital track. It also gathers electric field measurements associated with lightning discharges, which contribute to the overall C/NOFS science mission of understanding ionospheric irregularities. In this talk, we examine lightning related optical and electric field signatures for individual events, and relate these new observations to other previous, *in situ* studies from rocket experiments. We will provide a statistical study of lightning phenomena observed since launch, using comparisons to the WWLLN (World Wide Lightning Location Network) measurements. We also present new science results relating to the relationship between lightning perturbations and density irregularities, and show that the ELF (Extremely Low Frequency) tail of lightning is occasionally the largest electric field contribution observed within ionospheric density depletions.

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