

## MAGNETIC FIELD MEASUREMENTS ON THE C/NOFS SATELLITE: GEOMAGNETIC STORM EFFECTS IN THE LOW LATITUDE IONOSPHERE

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The Vector Electric Field Investigation (VEFI) suite onboard the C/NOFS spacecraft includes a sensitive fluxgate magnetometer to measure DC and ULF magnetic fields in the low latitude ionosphere. The instrument includes a DC vector measurement at 1 sample/sec with a range of  $\pm 45,000$  nT whose primary objective is to provide direct measurements of both  $\mathbf{V} \times \mathbf{B}$  and  $\mathbf{E} \times \mathbf{B}$  that are more accurate than those obtained using a simple magnetic field model. These data can also be used for scientific research to provide information of large-scale ionospheric and magnetospheric current systems, which, when analyzed in conjunction with the C/NOFS DC electric field measurements, promise to advance our understanding of the electrodynamics of the low latitude ionosphere. In this study, we use the magnetic field data to study the temporal and local time variations of the ring currents during geomagnetic storms. We first compare the *in situ* measurements with the POMME (the POtsdam Magnetic Model of the Earth) model in order to provide an in-flight "calibration" of the data as well as compute magnetic field residuals essential for revealing large scale external current systems. We then compare the magnetic field residuals observed both during quiet times and during geomagnetic storms at the same geographic locations to deduce the magnetic field signatures of the ring current. As will be shown, the low inclination of the C/NOFS satellite provides a unique opportunity to study the evolution of the ring current as a function of local time, which is particularly insightful during periods of magnetic storms. This paper will present the initial results of this study.