



## Swarm Equatorial Electric Field Inversion Chain

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The day-time eastward equatorial electric field (EEF) in the ionospheric E-region plays a crucial role in equatorial ionospheric dynamics. It is responsible for driving the equatorial electrojet (EEJ) current system, equatorial vertical ion drifts, and the equatorial ionization anomaly (EIA). Due to its importance, there is much interest in accurately measuring and modeling the EEF for both climatological and near real-time studies. The Swarm satellite mission offers a unique opportunity to estimate the equatorial electric field from measurements of the geomagnetic field. Due to the near-polar orbits of each satellite, the on-board magnetometers record a full profile in latitude of the ionospheric current signatures at satellite altitude. These latitudinal magnetic profiles are then modeled using a first principles approach with empirical climatological inputs specifying the state of the ionosphere, in order to recover the EEF. We will present preliminary estimates of the EEF using the first Swarm geomagnetic field measurements, and compare them with independently measured electric fields from the JULIA ground-based radar in Peru.