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Temporal and Spatial Evolution of Poynting Flux Measured with Swarm

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Small Scale Dynamics of Poynting Flux Measured With Swarm

We present case studies of ionospheric Poynting flux using the instruments onboard the three ESA Swarm spacecraft. The three Swarm satellites each carry an Electric Field Instrument (EFI) that can be used to measure ion drift velocities. During the first months of the mission the satellites were in nearly circular, polar orbits at an altitude of 490 kilometers and were approximately 1000 kilometers from each other. During this time, they followed one after another in a pearls-on-a-string arrangement, separated by about one minute in time. This relatively close spatial formation allows comparisons to be done between electric field measurements on each satellite, revealing spatial and temporal structure. In this project we measure ionospheric Poynting Flux using each Swarm satellite. Cross correlation functions are calculated between measurements on each satellite and are used to determine the temporal and spatial scales of observed features.

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