

SESSION: Technology, Instruments, Techniques II

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Ion drift and effective mass estimates with the Swarm Langmuir probes

Johnathan Burchill and Matthias Foerster

Email: jkburchi@ucalgary.ca

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We present findings from a feasibility study of new techniques to derive along-track ion drift and effective ion mass using the European Space Agency Swarm electric field instruments (EFI). Each EFI has two spherical Langmuir probes and a planar fixed-bias probe. Current measurements from either of the spherical probes can be combined with current measurements from the planar probe to obtain any pair of the parameters of plasma density, effective ion mass, and along-track ion drift. Case studies and long-term trends show evidence of effective ion mass values at low to mid latitudes and along-track ion drift at high latitudes, consistent with expected geophysical trends.