Geophysical Research Abstracts
Vol. 20, EGU2018-5000-1, 2018
EGU General Assembly 2018

Coordinated studies of magnetosphere-ionosphere coupling using e-POP and Swarm

Andrew Yau (1), Gregory Enno (2), H. Gordon James (3), and Rune Floberghagen (4)

(1) University of Calgary, Physics and Astronomy, Canada (yau@ucalgary.ca), (2) University of Calgary, Physics and Astronomy, Canada (enno@phys.ucalgary.ca), (3) Natural Resources Canada, Canada (emjhgj@sympatico.ca), (4) ESRIN, Italy (rune.floberghagen@esa.int)

The CASSIOPE small satellite and the constellation of Swarm satellites (Swarm A, B, and C) were both launched in late 2013 into polar orbits. The science operation of the Enhanced Polar Outflow Probe (e-POP) on CASSIOPE was recently integrated to the Swarm science operation, as the fourth component to the Swarm satellite constellation, under the ESA Third Party Mission Programme. The integrated e-POP and Swarm operation has enabled or enhanced a host of coordinated studies of magnetosphere-ionosphere coupling (MIC), including the Earth's magnetic field and related current systems, upper atmospheric dynamics, auroral dynamics, and related coupling processes between the magnetosphere, ionosphere, thermosphere, and plasmasphere.
These coordinated studies take advantage of the complementary nature of the orbital (altitude and local time) coverage and unique measurement capabilities between e-POP and Swarm. In this talk, we present examples of such studies on (a) small-scale structures of magnetic field perturbations at high latitudes, (b) thermospheric density variations and plasma density irregularities, (c) electrodynamics of the auroral arcs, and (d) ionospheric-plasmaspheric re-filling.