

Plasma Coupling in the Auroral Magnetosphere – Ionosphere System (POLARIS)

1st ISSI team meeting – focused on ionospheric electrodynamics

January 17-21, 2011, Bern, Switzerland

Confirmed attendance

Maria Hamrin (Umea Univ., Sweden), Tomas Karlsson (KTH, Sweden), Andreas Keiling (UCB/SSL, USA), Octav Marghitu (ISS, Romania), Rumi Nakamura (IWF, Austria), Hans Nilsson (IRF, Sweden), Joachim Vogt (JUB, Germany).

Students: Costel Bunescu (ISS, Romania), Eugen Sorbalo (JUB, Germany).

Time slots

09:30 – 13:00 morning session (c.b. at 11:00 – 11:30)

13:00 – 14:30 lunch

14:30 – 18:00 afternoon session (c.b. at 15:00 – 15:30)

Monday morning: Introduction

- ISSI, team, overall goals, topics, agenda, sub-groups (?), others (?)

Monday afternoon: (Open?) Questions in ionospheric electrodynamics

- Ionospheric current closure (meridional vs. longitudinal, local vs. remote, Pedersen vs. Hall, conductance vs. electric field driven).
- Electric field and plasma flow. Relevant boundaries (corotation boundary, convection reversal boundary) in relation to current (FAC, electrojets) and precipitation boundaries.
- Relative location of the boundaries and current closure features – depending on MLT, substorm phase, etc.
- Energy dissipation depending on current closure, and M – I coupling implications.
- Neutral winds – can we disregard them?
- Others?

Tuesday morning: Methods and tools

- Relevant scales.
- Optical data – what can we learn and what to do when not available.
- Investigation of in-situ data. The ALADYN method.
- Investigation of ground data.
- Potential equation on large and small scales. Relevant configurations. Boundary conditions.
- Combinations of the methods above (?)
- Others?

Tuesday afternoon and Wednesday morning: Available data

- Brief overview of the 29 FAST / aircraft conjunction events, from 1997 and 1998, based on the summary plots available at <http://gpsm.space.science.ro/ftp/om/polaris/2010>.
- Selection of promising events and further detailed examination of the selected events.
- Validation of the analysis tools.
- Are there systematic differences between 1997 and 1998? If yes, do they deserve more attention?
- FAST – DMSP event on Feb. 11, 1997, with DMSP some 1h MLT to the West, and the signature in electron data rather similar to FAST. One rare case with two spacecraft separated in longitude.
- Other data?
- Event(s) appropriate for publication?

Wednesday afternoon: Wrap-up, assignments, administration

- Tentative timing of the next workshops.
- POLARIS web site.
- AOB

Thursday and Friday: TBD

- Deeper exploration of some questions, to be decided on spot.

The tentative schedule above is meant to maximize the interaction during the 2.5 days of full attendance, Monday afternoon to Wednesday afternoon, when all the 9 team members coming to Bern are present.