Inner Magnetosphere: Plasma and Ring Current

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"Betsey"
GEM Student Tutorial
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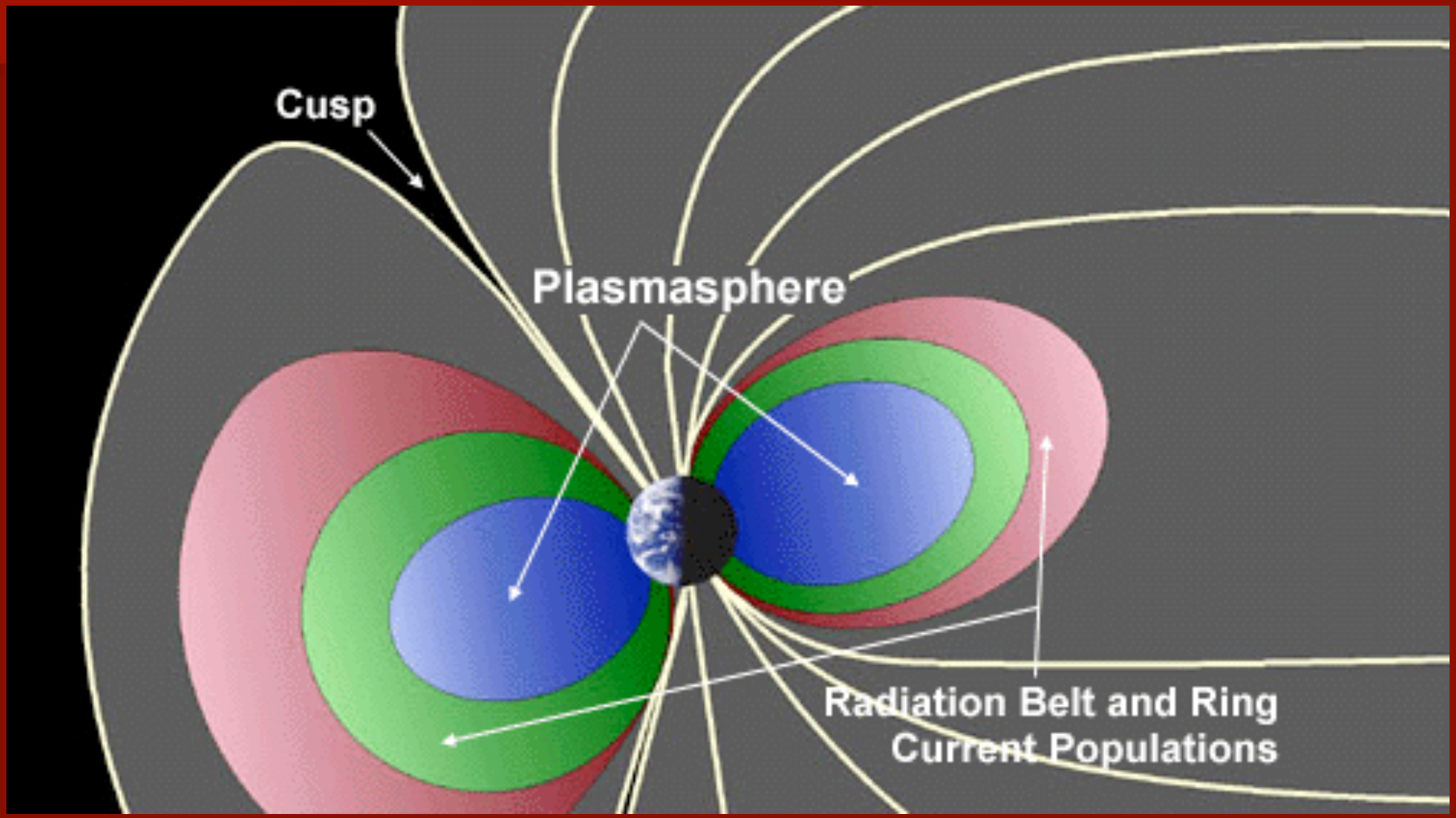
Session 2 Talk

- Goal:
  - Build off of Session 1 Talk by Raluca Ilie
  - Prepare us for the workshop
- Focus:
  - What do we not know yet?

Outline

- What areas from Raluca's talk are being studied right now?
- What kind of questions are being proposed by the field? Where can we find talks on these questions?
- Which posters might be good? (Not complete list)

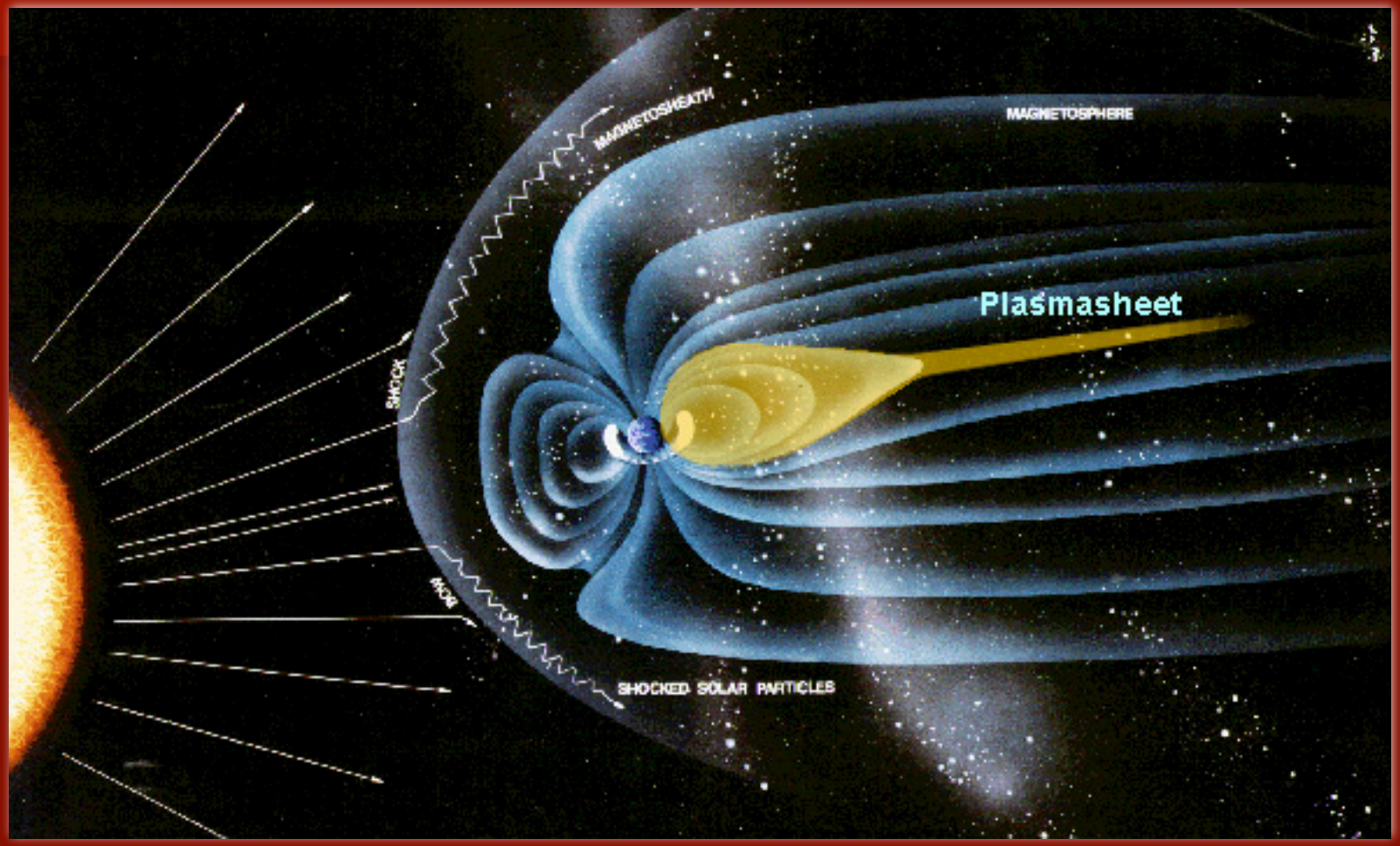
Plasmasphere



Questions on the Plasmasphere

- Space Radiation Climatology (Thursday 3:45-5:30pm Focus Group 9)
  - What are the climatological effects of the inner magnetosphere?
    - A review of Data and Simulations for the Ring Current and Plasmasphere

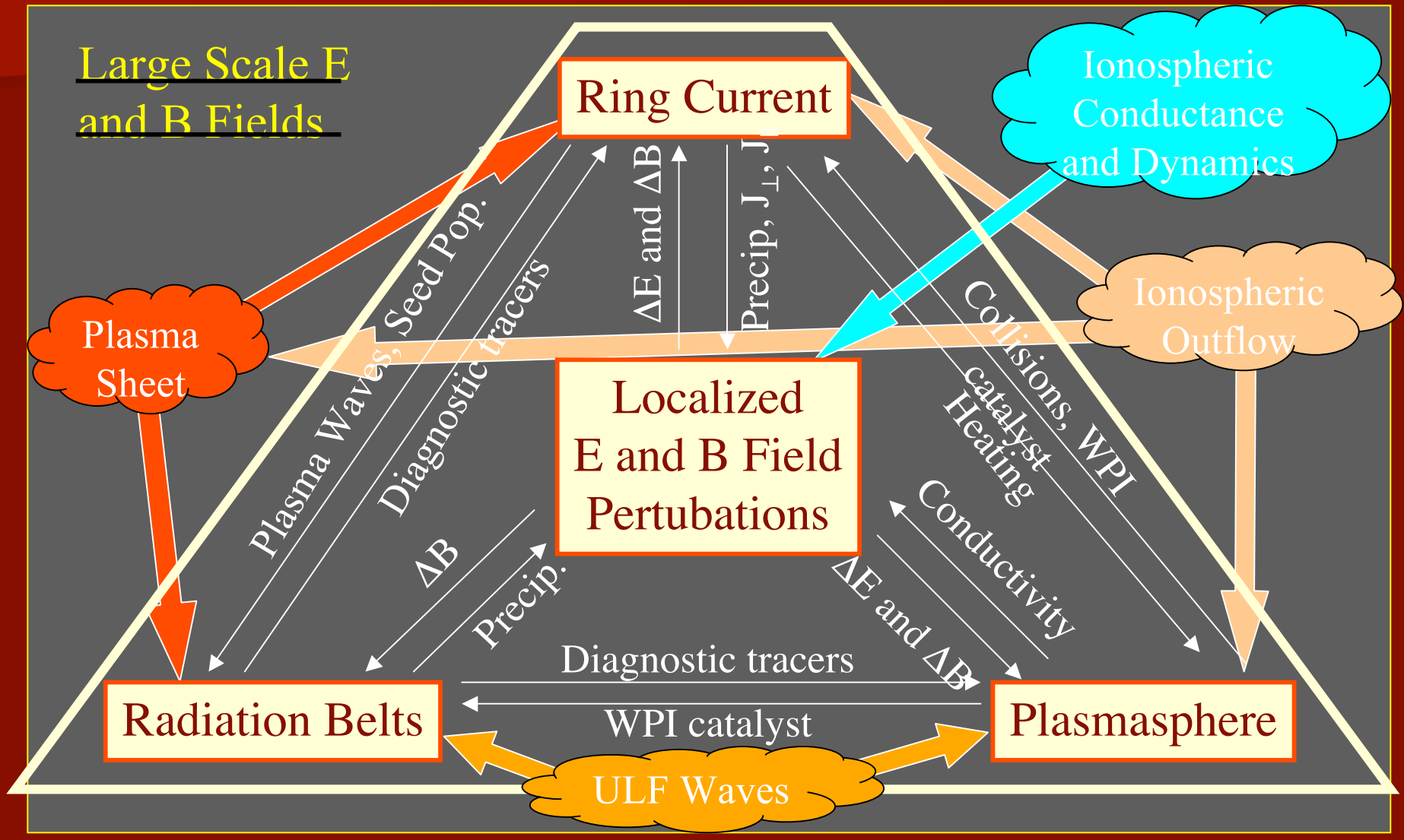
Plasma Sheet



Questions on the Plasma Sheet

- Near Earth Magnetosphere: Plasma, Fields, and Coupling (Wednesday 10:30-12:15pm Focus Group 8)
  - How do plasma sheet properties influence the morphology of the ring current?
  - Based on observed changes in the plasma sheet properties (temperature, density, ion composition, local time disturbance), can the structure/energy content of the ring current plasma be reproduced by simulations?
  - How does the ion composition in particular affect the inner magnetosphere plasma and the strength of a storm as portrayed by indices such as Dst?

Inner Magnetosphere Coupling



Questions on Inner Magnetosphere Coupling

- SHINE-GEM (Wednesday 1:30-3:15pm Focus Group 3)
  - What are the patterns in the solar wind which cause driving within the inner magnetosphere?
    - Use of Models and Observations.

Questions on Inner Magnetosphere Coupling

- Near Earth Magnetosphere: Plasma, Fields, and Coupling (Wednesday 1:30-3:15pm Focus Group 8)
  - What is the effect of the self-consistent interactions between the plasma and fields on the inner magnetosphere structure and dynamics?
  - What is the effect of the self-consistent feedback between plasma and magnetic field on the particle transport in the inner magnetosphere during activity such as storms and substorms?
  - How well specified is the convective electric field on an event basis?
  - How well do existing simulation tools treat the complex physics of the near-Earth magnetosphere, including particle transport, acceleration, and the field response (B-field stretching, convective potential shielding)?

Posters

- Tuesday
  1. Vahe Peroomian and Mostafa El-Alaoui, "Storm-time entry of solar wind ions into the magnetosphere".
  2. V. G. Merkin J. G. Lyon C. C. Goodrich, "A new ionospheric coupler/solver for global coupled models".
  3. B. Ramkumar, Patricia Reiff, J. E. Landivar, "Real-time prediction of magnetospheric activity using the Boyle index".
  4. E.J. Mitchell, N. E. Turner, D. Knipp, B. Emery, "Role of Shocks and Corotating Interaction Regions in Geomagnetic Energy Transfer during Storms".
  5. Asher Pembroke, Frank Toffoletto, John Lyon, Michael Wiltberger, "Analyzing RCM-LFM Coupled and Uncoupled Results, using Field-aligned Topological Grids".
  6. Yong Shi, Eftyhia Zesta and Larry R. Lyons, "Magnetopheric Current Response to Solar Wind Dynamic Pressure Enhancement During the September 25, 1998 Storm: Modeling and Observational Results".

Posters

- Thursday
  1. Tim Guild, Paul O'Brien, and Joe Mazur, "Inter-calibrating energetic proton observations in the inner magnetosphere".
  2. Raluca Ilie, Michael W. Liemohn, "Effectiveness of Solar Wind fluctuations in triggering a magnetic storm.".
  3. Wenlong Liu, X. Li, T. Sarris, C. Cully, V. Angelopoulos, D. Larson, A. Keiling, K. H. Glassmeier , "First particle injection event observed by THEMIS in conjunction with other ground and space measurement¨Cpreliminary results".
  4. H. Matsui, P. A. Puhl-Quinn, V. K. Jordanova, Y. Khotyaintsev, P.-A. Lindqvist, and R. B. Torbert, "Derivation of electric potential patterns in the inner magnetosphere using Cluster data set".
  5. Y. Nishimura, J. Wygant, T. Ono, M. Iizima, A. Kumamoto, D. Brautigam, R. Friedel, and A. Korth, "Intense Electric Field in the Inner Magnetosphere during Substorms".
  6. Yang Song Stanislav Sazykin Richard Wolf, "Reconciliation of fluid and kinetic plasma description in magnetospheric convection".

Posters

- Thursday con't
  1. Weichao Tu, Xinlin Li, Yue Chen, and G. D. Reeves, "Quantification of Radial Diffusion in Energizing MeV Electrons in the Inner Magnetosphere".
  2. Liang Wu and Frank R. Toffoletto, "Effects of pressure anisotropy on the inner-magnetospheric magnetic field ".
  3. Jichun Zhang, Richard A. Wolf, and Stanislav Sazykin, "Effects of gradient/curvature drift on depletion channels".
  4. Vahe Peroomian, Mostafa El-Alaoui, Pontus C:Son Brandt, "The storm-time population of the plasma sheet and ring current during the 17 April 2002 Storm: Observations and LSK Simulations".
  5. Chih-Ping Wang Larry R. Lyons Tsugunobu Nagai James M. Weygand Richard W. McEntire, "Dependences of the plasma sheet ions and electrons on interplanetary parameters under northward IMF".

Thank you

Any Questions?