



Yosemite National Park, California, USA | 9–14 February 2014



Magnetosphere-Ionosphere Coupling in the Solar System

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Yosemite National Park, California, USA

9-14 February 2014

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Vanderbilt University

Bob Schunk

Lead Institution
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Andy Nagy*

University of Michigan

Peter Banks*

Local Organizer in California

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Southwest Research Institute

Dan Baker

University of Colorado

*Organizer of original Yosemite meeting
in 1974

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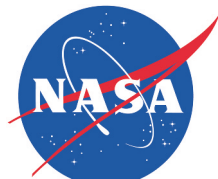
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Magnetosphere-Ionosphere Coupling in the Solar System

Meeting At A Glance

Sunday, 9 February

5:30 P.M. – 7:00 P.M. Welcome Reception
(*Yosemite Lodge – Cliff/Falls Room*)

Monday, 10 February

8:00 A.M. – 8:45 A.M. Welcome & Opening Remarks – Rick Chappell, Vanderbilt University
Magnetosphere-Ionosphere Coupling – History and Future – Jim Burch,
Southwest Research Institute

8:45 A.M. – 10:00 A.M. The Earth's Ionosphere as a Source I
(*Yosemite Lodge – Cliff/Falls Room*)

10:00 A.M. – 10:15 A.M. Break

10:15 A.M. – 12:20 P.M. The Earth's Ionosphere as a Source II
(*Yosemite Lodge – Cliff/Falls Room*)

12:20 P.M. – 4:30 P.M. Lunch and activities on your own

4:30 P.M. – 7:40 P.M. The Earth's Ionosphere as a Source III
(*Yosemite Lodge – Cliff/Falls Room*)

Tuesday, 11 February

8:00 A.M. – 10:05 A.M. The Effect of Low Energy Plasma on the Stability of Energetic Plasmas I
(*Yosemite Lodge – Cliff/Falls Room*)

10:05 A.M. – 10:20 A.M. Break

10:20 A.M. – 12:15 P.M. The Effect of Low Energy Plasma on the Stability of Energetic Plasmas II
(*Yosemite Lodge – Cliff/Falls Room*)

12:15 P.M. – 4:30 P.M. Lunch and activities on your own

4:30 P.M. – 7:25 P.M. Role of Currents and Electric/Magnetic Fields in Coupling Ion/Mag
(*Yosemite Lodge – Cliff/Falls Room*)

Wednesday, 12 February

8:00 A.M. – 10:05 A.M. Unified Global Modeling of Ionosphere and Magnetosphere at Earth I
(*Yosemite Lodge – Cliff/Falls Room*)

10:05 A.M. – 10:20 A.M. Break

10:20 A.M. – 12:15 P.M. Unified Global Modeling of Ionosphere and Magnetosphere at Earth II
(*Yosemite Lodge – Cliff/Falls Room*)

12:15 P.M. – 4:30 P.M. Lunch and activities on your own

4:30 P.M. – 7:10 P.M. Unified Global Modeling of Ionosphere and Magnetosphere at Earth III
(*Yosemite Lodge – Cliff/Falls Room*)

Thursday, 13 February

- 8:00 A.M. - 9:55 A.M. The Coupling of the Ionosphere and Magnetosphere at Other Planets and Moons in the Solar System I
(*Yosemite Lodge - Cliff/Falls Room*)
- 9:55 A.M. - 10:10 A.M. Break
- 10:10 A.M. - 12:15 P.M. The Coupling of the Ionosphere and Magnetosphere at Other Planets and Moons in the Solar System II
(*Yosemite Lodge - Cliff/Falls Room*)
- 12:15 P.M. - 4:30 P.M. Lunch and activities on your own
- 4:30 P.M. - 6:45 P.M. The Coupling of the Ionosphere and Magnetosphere at Other Planets and Moons in the Solar System III
(*Yosemite Lodge - Cliff/Falls Room*)
- 6:45 P.M. - 8:15 P.M. Break
- 8:15 P.M. - 10:00 P.M. Banquet Dinner
(*Abwahnee Hotel - Abwahnee Solarium*)

Friday, 14 February

- 8:00 A.M. - 10:05 AM The Unified Modeling of the Ionosphere and Magnetosphere at Other Planets and Moons in the Solar System I
(*Yosemite Lodge - Cliff/Falls Room*)
- 10:05 A.M. - 10:20 A.M. Break
- 10:20 A.M. - 12:15 P.M. The Unified Modeling of the Ionosphere and Magnetosphere at Other Planets and Moons in the Solar System II
(*Yosemite Lodge - Cliff/Falls Room*)
- 12:15 P.M. Box lunches available
- 12:45 P.M. - 2:40 P.M. Future Directions for MI Coupling Research
(*Yosemite Lodge - Cliff/Falls Room*)
- 2:40 P.M. - 2:45 P.M. Closing Remarks

SCIENTIFIC PROGRAM

SUNDAY, 9 FEBRUARY

5:30 p.m. – 7:00 p.m. **Registration and Welcome Reception**
Cliff/Falls Room

MONDAY, 10 FEBRUARY

8:00 a.m. – 8:45 a.m. **Welcome and Opening Remarks**
Presiding: Rick Chappell
Cliff/Falls Room
Jim Burch | Magnetosphere-Ionosphere Coupling—Past and Future

The Earth’s Ionosphere as a Source I
Presiding: Rick Chappell
Cliff/Falls Room

8:45 a.m. – 8:50 a.m. Video - Ian Axford

8:50 a.m. – 9:00 a.m. Remarks - Peter Banks

9:00 a.m. – 9:30 a.m. **Andrew W. Yau** | Measurements of Ion Outflows from the Earth’s Ionosphere (Invited)

9:30 a.m. – 10:00 a.m. **Stein Haaland** | Cold Ion Outflow from the Polar Cap Region: Cluster Results (Invited)

10:00 a.m. – 10:15 a.m. **Morning Break (Monday)**

The Earth’s Ionosphere as a Source II
Presiding: Jerry Goldstein
Cliff/Falls Room

10:15 a.m. – 10:20 a.m. Video - Bill Hanson

10:20 a.m. – 10:50 a.m. **Roderick A. Heelis** | Ionospheric Convection at High Latitudes (Invited)

10:50 a.m. – 11:20 a.m. **Asgeir Brekke** | IRS - the ultimate instrument for upper polar atmosphere research (Invited)

11:20 a.m. – 11:50 a.m. **Gang Lu** | Global Dynamic Coupling of the Magnetosphere-Ionosphere-Thermosphere System (Invited)

11:50 a.m. – 12:20 p.m. **John C. Foster** | Cold Plasma Redistribution in the Coupled Ionosphere-Magnetosphere System (Invited)

12:20 p.m. – 4:30 p.m. **On Your Own (Monday)**

The Earth's Ionosphere as a Source III

Presiding: Thomas E. Moore
Cliff/Falls Room

4:30 p.m. – 4:35 p.m. Video - Dick Johnson

4:35 p.m. – 4:40 p.m. Remarks - Rick Chappell

4:40 p.m. – 5:10 p.m. **Lynn M. Kistler** | Impacts of O⁺ Abundance In the Magnetosphere (Invited)

5:10 p.m. – 5:25 p.m. **Naritoshi Kitamura** | Very-low-energy O⁺ ion outflows during geomagnetic storms

5:25 p.m. – 5:55 p.m. **Robert McPherron** | The Possible Role of Magnetosphere-Ionosphere Coupling in Substorms (Invited)

5:55 p.m. – 6:25 p.m. **Michael W. Liemohn** | Ionospheric Contribution to Magnetospheric Ion Density and Temperature Throughout the Magnetotail (Invited)

6:25 p.m. – 6:55 p.m. **Jerry Goldstein** | Imaging the Magnetosphere (Invited)

6:55 p.m. – 7:25 p.m. **Naritoshi Kitamura** | Photoelectron flow and field-aligned potential drop in the polar wind (Invited)

7:25 p.m. – 7:40 p.m. **Iurii Cherniak** | The plasmaspheric electron content variations during geomagnetic storms

TUESDAY, 11 FEBRUARY

Effect of Low Energy Plasma on the Stability of Energetic Plasmas I

Presiding: Louis J. Lanzerotti
Cliff/Falls Room

8:00 a.m. – 8:05 a.m. Video - Richard Thorne

8:05 a.m. – 8:35 a.m. **Richard M. Thorne** | How whistler-mode waves and thermal plasma density control the global distribution of diffuse auroral precipitation and the dynamical evolution of radiation belt electrons (Invited)

8:35 a.m. – 9:05 a.m. **Daniel N. Baker** | Gradual Diffusion and Punctuated Enhancements of Highly Relativistic Electrons: Van Allen Probes Observations (Invited)

9:05 a.m. – 9:20 a.m. **Zhao Li** | Modeling gradual diffusion and prompt changes in radiation belt electron phase space density for the March 2013 Van Allen Probes case study

9:20 a.m. – 9:50 a.m. **Mary K. Hudson** | Simulated Magnetopause Losses and Van Allen Probe Flux Dropouts (Invited)

9:50 a.m. – 10:05 a.m. **Alexa J. Halford** | Summary of the BARREL 2013 Campaign and Early Results from the 2014 Campaign

10:05 a.m. – 10:20 a.m. **Morning Break (Tuesday)**

Effect of Low Energy Plasma on the Stability of Energetic Plasmas II

Presiding: Mary K. Hudson
Cliff/Falls Room

10:20 a.m. – 10:25 a.m. Video - Chung Park

10:25 a.m. – 10:30 a.m. Remarks - Don Carpenter

10:30 a.m. – 11:00 a.m. **Louis J. Lanzerotti** | Ring Current Measurements from the Van Allen Probes Mission (Invited)

11:00 a.m. – 11:30 a.m. **George B. Hospodarsky** | Plasma Wave Measurements from the Van Allen Probes (Invited)

11:30 a.m. – 12:00 p.m. **Vania K. Jordanova** | Modeling Wave Generation Processes in the Inner Magnetosphere (Invited)

12:00 p.m. – 12:15 p.m. **Yiqun Yu** | Studying Subauroral Polarization Streams (SAPS) During the March 17, 2013 Magnetic Storm: Comparisons between RAM Simulations and Observations

12:15 p.m. – 4:30 p.m. **On Your Own (Tuesday)**

Role of Currents and Electric/Magnetic Fields in Coupling Ion/Mag

Presiding: Roderick A. Heelis
Cliff/Falls Room

4:30 p.m. – 4:35 p.m. Video - George Reid

4:35 p.m. – 4:40 p.m. Remarks - Bob McPherron

4:40 p.m. – 5:10 p.m. **Robert Strangeway** | Ion Outflows: Causes, Consequences, and Comparative Planetology (Invited)

5:10 p.m. – 5:40 p.m. **William Lotko** | Ionospheric Control of Magnetic Reconnection (Invited)

- 5:40 p.m. – 5:55 p.m. **Michael W. Liemohn** | Nonlinear Magnetosphere-Ionosphere Coupling in Near-Earth Space via Closure of the Partial Ring Current
- 5:55 p.m. – 6:10 p.m. **Ian J. Cohen** | Sounding rocket observations of precipitation and effects on the ionosphere and model comparisons
- 6:10 p.m. – 6:40 p.m. **Robert L. Lysak** | Coupling of Magnetosphere and Ionosphere by Alfvén Waves at High and Mid-Latitudes (Invited)
- 6:40 p.m. – 6:55 p.m. **Yan Song** | Generation of Alfvénic Double Layers and Formation of Discrete Auroras by Nonlinear Electromagnetic Coupling between Magnetosphere and Ionosphere
- 6:55 p.m. – 7:10 p.m. **Stephen R. Kaeppler** | Closure of Field-Aligned Current Associated with a Discrete Auroral Arc
- 7:10 p.m. – 7:25 p.m. **Patricia H. Reiff** | Testing MHD Models by Conjugate Aurora Imaging

WEDNESDAY, 12 FEBRUARY

Unified Global Modeling of Ionosphere and Magnetosphere at Earth I

Presiding: Daniel N. Baker
Cliff/Falls Room

- 8:00 a.m. – 8:05 a.m. Video - Peter Banks
- 8:05 a.m. – 8:35 a.m. **Robert W. Schunk** | Magnetosphere-Ionosphere Coupling: Past, Present, and Future (Invited)
- 8:35 a.m. – 9:05 a.m. **Shasha Zou** | Formation of Storm Enhanced Density (SED) during Geomagnetic Storms: Observation and Modeling Study (Invited)
- 9:05 a.m. – 9:35 a.m. **Michael W. Liemohn** | The Superthermal Electrons Ionosphere-Magnetosphere Transport and Their Role in the Formation of Ion Outflows (Invited)
- 9:35 a.m. – 10:05 a.m. **Alex Glocer** | Coupling Ionospheric Outflow to Magnetospheric Models (Invited)
- 10:05 a.m. – 10:20 a.m. **Morning Break (Wednesday)**

Unified Global Modeling of Ionosphere and Magnetosphere at Earth II

Presiding: Peter Banks
Cliff/Falls Room

- 10:20 a.m. – 10:25 a.m. Video - Dick Wolf

- 10:25 a.m. – 10:55 a.m. **Richard Wolf** | Forty five years of the Rice Convection Model (Invited)
- 10:55 a.m. – 11:25 a.m. **Daniel T. Welling** | Recent Advances in Ionosphere-Magnetosphere Mass Coupling in Global Models (Invited)
- 11:25 a.m. – 11:55 a.m. **Roger Varney** | Review of global simulation studies of the effect of ionospheric outflow on the magnetosphere-ionosphere system dynamics (Invited)
- 11:55 a.m. – 12:25 p.m. **Mei-Ching H. Fok** | The Role of Ring Current in Magnetosphere-Ionosphere Coupling (Invited)
- 12:25 p.m. – 4:30 p.m. **On Your Own (Wednesday)**
- Unified Global Modeling of Ionosphere and Magnetosphere at Earth III**
 Presiding: Daniel T. Welling
 Cliff/Falls Room
- 4:30 p.m. – 4:35 p.m. Video - Don Fairfield
- 4:35 p.m. – 4:40 p.m. Remarks - Jim Slavin
- 4:40 p.m. – 5:10 p.m. **Vahe Perroomian** | Large-Scale Kinetic Simulations of Geomagnetic Storms with Realistic Ionospheric Ion Outflow Models (Invited)
- 5:10 p.m. – 5:25 p.m. **William K. Peterson** | A quantitative assessment of the role of soft electron precipitation on global ion upwelling
- 5:25 p.m. – 5:40 p.m. **Jonathan Krall** | How the Ionosphere-Thermosphere System Shapes the Quiet-Time Plasmasphere
- 5:40 p.m. – 5:55 p.m. **Tian Luo** | Effects of Polar Wind Outflow on the Storm-time Ring Current
- 5:55 p.m. – 6:10 p.m. **Paul Song** | Inductive-dynamic coupling of the ionosphere with the thermosphere and the magnetosphere
- 6:10 p.m. – 6:25 p.m. **Roger H. Varney** | Modeling the Interaction Between Convection and Cusp Outflows
- 6:25 p.m. – 6:40 p.m. **Vahe Perroomian** | An MHD Study of Geoeffectiveness of a CIR/HSS Storm Event
- 6:40 p.m. – 6:55 p.m. **John Meriwether** | Storm-time response of the mid-latitude thermosphere: Observations from a network of Fabry-Perot interferometers
- 6:55 p.m. – 7:10 p.m. **Matthew O. Fillingim** | Observations of Ionospheric Oxygen in the Vicinity of the Moon

THURSDAY, 13 FEBRUARY

The Coupling of the Ionosphere and Magnetosphere at Other Planets and Moons in the Solar System I

Presiding: Andrew Coates

Cliff/Falls Room

- 8:00 a.m. – 8:10 a.m. Video & Remarks - Andy Nagy
- 8:10 a.m. – 8:40 a.m. **Fran Bagenal** | Sources of Plasma for Jupiter's Magnetosphere (Invited)
- 8:40 a.m. – 9:10 a.m. **Melissa A. McGrath** | Planetary Aurora across the Solar System (Invited)
- 9:10 a.m. – 9:40 a.m. **James Slavin** | An Overview of Mercury's Plasma and Magnetic Field Environment (Invited)
- 9:40 a.m. – 9:55 a.m. **Larry Kepko** | The Substorm Current Wedge at Earth and Mercury
- 9:55 a.m. – 10:10 a.m. **Morning Break (Thursday)**

The Coupling of the Ionosphere and Magnetosphere at Other Planets and Moons in the Solar System II

Presiding: Andrew Nagy

Cliff/Falls Room

- 10:10 a.m. – 10:15 a.m. Video - Ferd Coroniti
- 10:15 a.m. – 10:45 a.m. **Margaret Kivelson** | An Overview of the Field and Plasma Environment of Jupiter and Saturn (and how an ionosphere can wag the tail and everything else) (Invited)
- 10:45 a.m. – 11:15 a.m. **George B. Hospodarsky** | Plasma wave observations with Cassini at Saturn (Invited)
- 11:15 a.m. – 11:45 a.m. **Andrew Coates** | Plasma Measurements at Non-Magnetic Solar System Bodies (Invited)
- 11:45 a.m. – 12:15 p.m. **Joseph H. Westlake** | The Coupling Problem at Titan: Where are the Magnetospheric Influences to Titan's Complex Ionosphere? (Invited)
- 12:15 p.m. – 4:30 p.m. **On Your Own (Thursday)**

The Coupling of the Ionosphere and Magnetosphere at Other Planets and Moons in the Solar System III

Presiding: Margaret Kivelson
Cliff/Falls Room

- 4:30 p.m. – 5:00 p.m. **Thomas Cravens** | Coupling of the Ionosphere and Magnetosphere at Other Planets and Moons in the Solar System (Invited)
- 5:00 p.m. – 5:30 p.m. **Ray Walker** | Simulation Studies of Magnetosphere Ionosphere Coupling in Outer Planet Magnetospheres (Invited)
- 5:30 p.m. – 5:45 p.m. **Zachary Girazian** | Characterizing the V1 layer in the Venus ionosphere using VeRa observations from Venus Express
- 5:45 p.m. – 6:00 p.m. **Paul Withers** | The morphology of the topside ionosphere of Mars under different solar wind conditions: Results of a multi-instrument observing campaign by Mars Express in 2010
- 6:00 p.m. – 6:15 p.m. **Laila Andersson** | Solar Wind Erosion of Mars Ionosphere
- 6:15 p.m. – 6:30 p.m. **Thomas Cravens** | Magnetosphere-Ionosphere Coupling at Jupiter and Saturn: Evidence from X-Ray Emission
- 8:15 p.m. – 10:00 p.m. **Banquet Dinner**
Ahwahnee Hotel

FRIDAY, 14 FEBRUARY

The Unified Modeling of the Ionosphere and Magnetosphere at Other Planets and Moons in the Solar System I

Presiding: Jim Burch
Cliff/Falls Room

- 8:00 a.m. – 8:05 a.m. Video - Tom Hill and Pat Reiff
- 8:05 a.m. – 8:35 a.m. **Thomas W. Hill** | Modeling M-I Coupling at Jupiter and Saturn (Invited)
- 8:35 a.m. – 9:05 a.m. **Xianzhe Jia** | Global Modeling of the Space Environments of Jupiter and Saturn (Invited)
- 9:05 a.m. – 9:35 a.m. **Ingo Mueller-Wodarg** | Simulation of the Magnetosphere-Ionosphere Connection at Saturn (Invited)
- 9:35 a.m. – 10:05 a.m. **Jared M. Bell** | 3-D Modeling of the Magnetosphere-Ionosphere Interaction in the Outer Solar System (Invited)
- 10:05 a.m. – 10:20 a.m. **Morning Break (Friday)**

The Unified Modeling of the Ionosphere and Magnetosphere at Other Planets and Moons in the Solar System II

Presiding: James F. Spann
Cliff/Falls Room

- 10:20 a.m. – 10:25 a.m. Video - Don Williams
- 10:25 a.m. – 10:30 a.m. Remarks - TBD
- 10:30 a.m. – 11:00 a.m. **Ying-Dong Jia** | Characterizing the Enceladus torus by its contribution to Saturn's Magnetosphere (Invited)
- 11:00 a.m. – 11:30 a.m. **Carol S. Paty** | From Ionospheric Electrodynamic at Mars to Mass and Momentum Loading at Saturn: Quantifying the Impact of Neutral-Plasma Interactions using Plasma Dynamic Simulations (Invited)
- 11:30 a.m. – 12:00 p.m. **Yingjuan Ma** | The Interaction of Rapidly Flowing Plasmas with Venus, Mars and Titan (Invited)
- 12:00 p.m. – 12:15 p.m. **Jan Paral** | Global Simulations of the Asymmetry in Forming Kelvin-Helmholtz Instability at Mercury
- 12:15 p.m. – 12:45 p.m. **Break - Grab Box Lunch**

Future Directions for MI Coupling Research

Presiding: Robert W. Schunk
Cliff/Falls Room

- 12:45 p.m. – 12:50 p.m. Video - Erwin Schmerling and Larry Kavanagh
- 12:50 p.m. – 12:55 p.m. Remarks - Peter Banks
- 12:55 p.m. – 1:25 p.m. **Thomas E. Moore** | Requirements for a Mission to study Thermosphere-Magnetosphere Coupling (Invited)
- 1:25 p.m. – 1:40 p.m. **James F. Spann** | A Novel Concept to Explore the Coupling of the Solar-Terrestrial System
- 1:40 p.m. – 2:40 p.m. Panel - Future Directions for MI Coupling in the Solar System (Ray Walker, Dave Klumpar)
- 2:40 p.m. – 2:45 p.m. **Closing Remarks - Rick Chappell and Andy Nagy**
Cliff/Falls Room

Paper Conservation: In alignment with the priority objectives of AGU's strategic plan, AGU will not provide the full printed abstracts for the Chapman conferences. You may access the abstracts via the on-line itinerary planner (IP) at <http://agu-cc13css.abstractcentral.com/itin.jsp>.