

SHINE Meeting, 2005 July 11-15 Working Group 2 Sessions

Monday, July 11

14:00 – 17:00 Topical Session (1/1): Are CMEs Driving the Solar Wind at Maximum or Along for the Ride? (Chairs: Richardson and Roussev)

This session will focus on the origins of variations in solar wind properties during the solar cycle (e.g., magnetic field strength, composition (He), modulation of cosmic rays, etc.) and to what extent CMEs play a role. We will discuss how the heliosphere responds to episodes of unusually enhanced solar activity, such as October – November of 2003, and how (I)CME properties vary during the solar cycle.

14:00 – 14:30 Invited Paper: *Variation in Average Solar Wind Conditions During the Solar Cycle – Is There a Role for ICMEs* (**Ian Richardson**, NASA/GSFC)

14:30 – 15:00 Invited Paper: *Heliospheric Flux and ICMEs* (**Mat Owens**, Boston Univ.)

15:00 – 15:20 Invited Paper: *Solar Wind Sources – Where Are We Now?* (**Janet Luhmann**, SSL/UCB)

15:20 – 15:50 Coffee Break

15:50 – 16:20 Invited Paper: *The Nature and Variability of the Open Magnetic Flux in the Heliosphere From In-situ Observations and MHD Models* (**Sue Lepri**, Univ. of Mich.)

16:20 – 16:40 Invited Paper: *Coronal Regulation of the Solar Wind Helium Abundance Over the Solar Cycle* (**Justin Kasper**, MIT)

16:40 – 17:00 General Discussion

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Working Group 2 Sessions

Tuesday, July 12

10:30 – 12:30 Topical Session (1/2): Modeling and Observations of Interplanetary shocks, (I)CMEs and SEPs (jointly with WG3; Chairs: Richardson and Roussev):
Science discussion will include: (1) How well do current modeling studies agree with observations?; (2) What is the 3-D structure of ICMEs and the related shock waves?; (3) How do shock parameters, shapes, and lateral extents change during propagation through the heliosphere?; and (4) How do the configurations of shocks and magnetic fields near the Sun influence particle acceleration (e.g., by shocks, stochastic acceleration at flare sites) and transport?

10:30 – 11:00 Invited Paper: *Using Energetic Particles to Understand the Interplanetary Characteristics of CMEs and Their Shocks* (**Hilary Cane**, NASA/GSFC)

11:00 – 11:30 Invited Paper: *Characterizing Interplanetary Shocks at 1 AU* (**Justin Kasper**, MIT)

11:30 – 12:00 General Discussion

14:00 – 17:00 Topical Session (2/2): Modeling and Observations of Interplanetary shocks, (I)CMEs and SEPs (jointly with WG3; Chairs: Desai and Richardson):

14:00 – 14:30 Invited Paper: *Post-Shock Compression and Forward-Reverse Shock Pair Resulting From CME Interaction With a Bimodal Solar Wind* (**Chip Manchester**, Univ. of Mich.)

14:30 – 15:00 Invited Paper: *SEP Acceleration at CME-Driven Shocks: The Possible Role of Acceleration in the Sheath Between the Shock and the CME* (**Jozsef Kota**, Univ. of Ariz.)

15:00 – 15:15 General Discussion

15:15 – 15:45 Coffee Break

15:45 – 16:15 Invited Paper: *Determination of the Properties of Interplanetary Shocks* (**Adam Szabo**, NASA/GSFC)

16:15 – 17:00 General Discussion

14:00 – 17:00 Topical Session (1/1): Origin and Evolution of the Solar Wind (jointly with WG1; Chairs: Abbett and Roussev):

Science discussion will include: (1) How well do we understand the physical connection from the photosphere through the corona to the heliosphere?; (2) What is the topology of the open magnetic field of the Sun, and how does it evolve?; and (3) What are the sources for heating and acceleration of the solar wind?

14:00 – 14:30 Invited Paper: *Diffusion of Open Magnetic Flux and Its Consequences* (**Len Fisk**, Univ. of Mich.)

14:30 – 15:00 Invited Paper: *Constraints on Coronal Hole Topology* (**Spiro Antiochos**, NRL)

15:00 – 15:15 General Discussion

15:15 – 15:45 Coffee Break

15:45 – 16:15 Invited Paper: *Relating the Sub-Parker Spiral Structure of the Heliospheric Magnetic Field to Dynamic Sources of Solar Wind* (**Nathan Schwadron**, SwRI)

16:15 – 16:45 Invited Paper: *Does the Chromosphere Have Heliospheric Impact?* (**Scott McIntosh**, SwRI)

16:45 – 17:00 General Discussion

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Working Group 2 Sessions

Thursday, July 14

10:30 – 12:30 Topical Session (1/2): End-to-End Modeling of CMEs and SEPs (jointly with WG1 and WG3; Chairs: Abbett and Roussev):

A principal determining factor for particle acceleration at CME-driven shocks is the strength and geometry of the magnetic field through which the shock propagates, i.e., the strength and geometry of the open magnetic flux. This problem also depends on having viable models for CME initiation and propagation. How soon after the onset of a solar eruption does a shock wave form, and how it evolves in time depends largely on how this shock wave is driven by the erupting coronal magnetic fields. To address the issue of shock origin during CMEs requires that real magnetic data be incorporated into a global model of the solar corona.

This session will focus on the progress and challenges in modeling CMEs and SEPs from the Sun to the Earth. We will discuss how solar particles are accelerated at CME-driven shocks and transported in interplanetary space, and what needs to be done to improve present models of CME initiation and evolution in the low corona.

10:30 – 11:00 Invited Paper: *CISM End-to-End Space Weather Modeling Progress and Plans* (Janet Luhmann, SSL/UCB)

11:00 – 11:30 Invited Paper: Present Status and Future Challenges of Modeling the Sun-Earth System (Robert Weigel, LASP/CU)

11:30 – 12:00 General Discussion

14:00 – 17:00 Topical Session (2/2): End-to-End Modeling of CMEs and SEPs (jointly with WG1 and WG3; Chairs: Roussev and Abbett):

14:00 – 14:30 Invited Paper: *Solar Energetic Particles: Acceleration and Transport in Realistic Magnetic Fields* (Igor Sokolov, Univ. of Mich.)

14:30 – 15:00 Invited Paper: *How Particles Are Accelerated to High Energies in Large SEP Events – A Secret Receipt* (Gang Li, IGPP/UCR)

15:00 – 15:15 General Discussion

15:15 – 15:45 Coffee Break

15:45 – 16:15 Invited Paper: *Finite Time Shock Acceleration and Fits to ESP Ion Spectra* (David Ruffolo, Mahidol Univ. - Bangkok)

16:15 – 16:45 Contributed Paper: *Solar and Heliospheric Models at the CCMC* (Peter MacNeice, Drexel Univ.)

16:45 – 17:00 General Discussion