SORCE Science Meeting

Solar and Anthropogenic Impacts on Earth: The Current Solar Minimum and Predictions for Future Decades

Wednesday, May 19, morning

8:00 – 8:10 a.m. Welcome: Tom Woods, LASP, University of Colorado, Boulder

Session 1. Total Solar Irradiance (TSI): Comparison of Solar Cycle Minima and Recent Validation Results
Chair: Tom Woods, LASP, University of Colorado, Boulder

8:10 – 8:40 a.m. Keynote: David Hathaway, NASA Marshall Space Flight Center, Huntsville, AL
Meridional Flow Variations: Implications for flux transport models

8:40 – 9:05 a.m. Dick Willson, NASA Jet Propulsion Laboratory, California
The Satellite Total Solar Irradiance Database

9:05 – 9:30 a.m. Claus Fröhlich, PMOD/WRC, Davos, Switzerland
Three Solar Cycles of Total Solar Irradiance Observations: How TSI is behaving differently and what can we learn about solar variability?

9:30 – 9:55 a.m. Wolfgang Finsterle, PMOD/WRC, Davos, Switzerland
PMO6/PREMOS – The Quest for SI-Traceable TSI Measurements

9:55 – 10:10 a.m. Devendra Lal, Scripps Inst. of Oceanography, Univ. of California, San Diego, Geoscience Research Division, La Jolla
Direct Measurements of Solar Activity in the Past 35,000 Years

10:10 – 10:45 a.m. Break

10:45 – 11:10 a.m. Steven Dewitte, Royal Meteorological Institute of Belgium, Brussels
Total Solar Irradiance Variations and Absolute Level: Status of our knowledge at the start of solar cycle 24

11:10 – 11:35 a.m. Greg Kopp, LASP, University of Colorado, Boulder
Total Solar Irradiance Instrument Validations Improve TSI Record

11:35 – 11:50 a.m. Alexander Shapiro, PMOD/WRC, Davos, Switzerland
Modeling of the Current TSI & SSI and its Reconstruction to the Past

11:50 – 1:00 p.m. Buffet Lunch provided at the Keystone Conference Center
**SORCE Science Meeting**

*Solar and Anthropogenic Impacts on Earth: The Current Solar Minimum and Predictions for Future Decades*

**Wednesday, May 19, afternoon**

**Session 2. Climate Changes: What’s the Future Going To Be?**
Chair: Peter Pilewskie, LASP, University of Colorado

1:00 – 1:30 p.m. **Keynote:** Georg Feulner, Potsdam Inst. for Climate Impact Research, Germany
*How Would a New Maunder Minimum Affect the Climate?*

1:30 – 1:55 p.m. Waleed Abdalati, CIRES, Univ. of Colorado, Boulder
*Ice Sheet Responses to Past and Current Climate Forcings*

**Session 3. Solar Spectral Irradiance (SSI): Solar Cycle Variation and Model Comparisons**
Chair: Greg Kopp, LASP, University of Colorado, Boulder

1:55 – 2:00 p.m. **Tribute to Dick Donnelly (Tom Woods)**

2:00 – 2:25 p.m. **Jerry Harder,** LASP, University of Colorado, Boulder
*Measured and Modeled Trends in Solar Spectral Irradiance Variability in the Visible and Infrared*

2:25 – 2:40 p.m. Will Ball, Imperial College London, UK
*Understanding Solar Spectral Variability: A six-year comparison between SIM observations and the SATIRE model*

2:40 – 3:05 p.m. **Matt DeLand,** Science Systems and Applications Inc. (SSAI), MD
*Comparison of Solar Minima Using Solar Ultraviolet Irradiance Data*

3:05 – 3:20 p.m. **Cassandra Bolduc,** Université de Montréal, Canada
*Near and Mid Ultraviolet Spectral Irradiance Modeling*

3:20 – 3:45 p.m. **Tom Woods,** LASP, University of Colorado, Boulder
*Lower Extreme Ultraviolet Irradiance During This Current Solar Cycle Minimum*

3:45 – 4:00 p.m. **Jeff Hall,** Lowell Observatory, Flagstaff, Arizona
*Spectral Variations of the Sun During the Recent Cycle Minimum*

4:00 – 4:25 p.m. **Gérard Thuillier,** LATMOS-CNRS, France
*A Composite Absolute Solar Irradiance Spectrum at Solar Minimum*

4:30 – 6:30 p.m. **Poster Session** – Brief Introduction and Reception
**SORCE Science Meeting**

**Solar and Anthropogenic Impacts on Earth: The Current Solar Minimum and Predictions for Future Decades**

**Thursday, May 20, morning**

**Session 4. Atmosphere and Ozone Changes: Has the Ozone Recovery Started Yet?**
*Chair: Bob Cahalan, NASA Goddard Space Flight Center, Greenbelt, Maryland*

8:15 – 8:40 a.m. **Rich Stolarski**, NASA GSFC, Greenbelt, MD  
*Impact of Solar Variability on Ozone and Temperature*

8:40 – 8:55 a.m. **Joanna Haigh**, Imperial College London, UK  
*The Solar Spectrum, Stratospheric Ozone and Solar Radiative Forcing of Climate: Implications of SORCE SIM measurements*

8:55 – 9:20 a.m. **KK Tung**, University of Washington, Seattle  
*Solar Cycle Influence on Climate: Recent Evidence*

9:20 – 9:35 a.m. **Robert Cahalan**, NASA GSFC, Greenbelt, MD  
*Modeling the Temperature Responses to Spectral Solar Variability on Decadal and Centennial Time Scales*

**Session 5. Space Weather Effects Observed During This Solar Cycle Minimum**
*Chair: Bob Cahalan, NASA Goddard Space Flight Center, Greenbelt, Maryland*

9:35 – 9:45 a.m. **Tribute to Jack Eddy (Robert Cahalan)**

9:45 – 10:10 a.m. **John Emmert**, Naval Research Laboratory, Washington DC  
*Observations of Record-low Thermospheric Density During the Current Minimum*

10:10 – 10:25 a.m. **Liying Qian**, HAO, NCAR, Boulder, Colorado  
*Thermosphere/Ionosphere Response to the Recent Solar Minimum*

10:25 – 10:55 a.m. **Break**

10:55 – 11:20 a.m. **Eduardo Araujo-Pradere**, CIRES, CU; NOAA SWPC, Boulder, CO  
*Implications of comparison of Physical Model Simulations and Data During the Last Solar Minimum*

11:20 – 11:35 a.m. **Giuliana de Toma**, HAO, NCAR, Boulder, CO  
*Evolution of Polar Magnetic Fields and Coronal Holes During the Extended Minimum Between Cycle 23 and 24*

11:35 – 12:00 p.m. **David Webb**, Boston College, Chestnut Hill, Massachusetts  
*How Do the Current Solar Wind and CME Data Compare to the Previous Minimum?*

12:00 – 1:15 p.m. **Box Lunch provided at the Keystone Conference Center**
SORCE Science Meeting

Solar and Anthropogenic Impacts on Earth:
The Current Solar Minimum and Predictions for Future Decades

Thursday, May 20, afternoon

Session 6. Solar Physics: What Do We Learn About the Sun from this Unique Cycle Minimum?
Chair: Gary Rottman, LASP, University of Colorado, Boulder

1:15 – 1:45 p.m. **Keynote:** Oran R. (Dick) White, LASP, University of Colorado
*What Have We Learned in 50 Years about TSI? Mini Maunder Minimum*

1:45 – 2:00 p.m. Eva Robbrecht, George Mason University, Fairfax, Virginia, and the Royal Observatory of Belgium, Brussels
*The Weak Polar Fields of Solar Cycle 23*

2:00 – 2:25 p.m. Ken Tapping, NRC, Herzberg Inst. of Astrophysics, BC, Canada
*Properties of the Sunspot Number and 10.7 cm Solar Flux Activity Indices, Their Interrelationship and Unusual Behaviour Since the Year 2000*

2:25– 2:50 p.m. Leif Svalgaard, Stanford University, Palo Alto, California
*Predicting the Solar Cycle*

2:50 – 3:30 p.m. Break

3:30 – 3:55 p.m. Paul Charbonneau, University of Montreal, Canada
*Abnormal Cycles from Normal Dynamos*

3:55 – 4:10 p.m. Mausumi Dikpati, HAO, NCAR, Boulder, CO
*Cycle 24 Onset: Why more delayed than predicted?*

4:10 – 4:25 p.m. Joan Feynman, NASA JPL, California Inst. of Technology
*Was the Recent Solar Cycle Minimum Unique?*

4:25 – 4:40 p.m. Andrés Muñoz-Jaramillo, Montana State University, Bozeman
*Are Changes in the Solar Meridional Circulation Responsible for the Current Minimum?*

6:30 – 9:30 p.m. SORCE Science Meeting Dinner – The Keystone Ranch
Cocktails are available at The Ranch beginning at 6:00 p.m.
For those who want it, bus service to The Keystone Ranch begins at 5:50 p.m.
SORCE Science Meeting

Solar and Anthropogenic Impacts on Earth: 
The Current Solar Minimum and Predictions for Future Decades

Friday, May 21, morning

Session 6 cont. Solar Physics: What Do We Learn About the Sun from this Unique Cycle Minimum? 
Chair: Gary Rottman, LASP, University of Colorado, Boulder

8:05 – 8:30 a.m. Marty Snow, LASP, University of Colorado, Boulder
Active Longitudes Over Three Solar Cycles

8:30 – 8:55 a.m. Richard Mewaldt, Caltech, Pasadena, California
Record-Breaking Cosmic-Ray Intensities During 2009 and 2010

Session 7. Recommendations for the Future: How to Improve the Climate Data Record? 
Chair: Tom Woods, LASP, University of Colorado

8: 55 – 9:25 a.m. Keynote: John Bates, NOAA, Asheville, North Carolina
The Future for Climate Monitoring by NOAA

9:25 –9:50 a.m. Peter Pilewskie, LASP, University of Colorado, Boulder
The Sun, Climate, and the Total and Spectral Solar Irradiance Sensor

9:50 – 10:20 a.m. Break

10:20 – 10:45 a.m. Bill Collins, University of California, Berkeley
The Future Evolution of the Earth’s Reflected Shortwave Spectrum

10:45 – 11:00 a.m. Madhulika (Lika) Guhathakurta, NASA Headquarters
Living With a Star Targeted Research and Technology Solar-Climate Program

11:00 – 11:25 a.m. Dean Pesnell, NASA GSFC, Greenbelt, Maryland
The Solar Dynamics Observatory: Your eye on the Sun

11:25 – 12:00 p.m. Meeting Summary / Discussion
**SORCE Science Meeting**

**Poster Session Presentations (in alphabetical order):**

*Chair: Marty Snow, LASP, University of Colorado*

**Gary Chapman**, San Fernando Observatory, California State University, Northridge
*The Quiet Sun TSI During 2009*

**Angie Cookson**, San Fernando Observatory, California State University, Northridge
*Choosing a TSI Composite for Examining Solar Minima: Revisiting a time period that could make a difference*

**Jean-Francois Cossette**, Université de Montréal, Canada
*Thermodynamic Signature of Magnetic Cycles in Global Simulations of Solar Convection*

**Matt DeLand**, Sergey Marchenko, and Glen Jaross, SSAI, Inc., Lanham, Maryland
*Trending the Solar Mg II Index with OMI UV-1 Data*

**André Fehlmann**, Physikalisches-Meteorologisches Observ./WRC, Davos, Switzerland
*The Cryogenic Solar Absolute Radiometer (CSAR) and a Monitor to Measure the Integrated Transmittance (MITRA) of Windows*

**Claus Fröhlich**, Physikalisch-Meteorologisches Observ./WRC, Davos, Switzerland
*Results from the Filterradiometers on VIRGO/SOHO over Solar Cycle 23*

**Margit Haberreiter**, LASP, Univ. of Colorado, Boulder
*NLTE Spectral Synthesis Based on 3D MHD Simulations - Towards the understanding of the role of small scale magnetic field for the quiet Sun intensity*

**Margit Haberreiter**, LASP, Univ. of Colorado, Boulder
*Modeling the UV/EUV for the Current Solar Minimum and Beyond*

**Joanna Haigh**, Imperial College, London, UK
*Solar Cycle Signals in Sea Level Pressure and Sea Surface Temperature*

**Doug Lindholm**, LASP, Univ. of Colorado, Boulder
*SORCE Solar Irradiance Data Products and the LASP Interactive Solar Irradiance Data Center (LISIRD)*

**Don McMullin**, Space Systems Research Corporation, Alexandria, Virginia
*Solar EUV Irradiance Measurements from STEREO*

**Aimee Merkel**, LASP, Univ. of Colorado, Boulder
*Modeling the SORCE Solar Variability in WACCM*
Jeff Morrill, Naval Research Laboratory, Washington, DC
Comparing Estimated and Observed Mg II Index at Solar Minimum: 1961 through 1981 vs 1978 to present

Jeff Morrill, Naval Research Laboratory, Washington, DC
Irradiance Calibration Using a Cryogenic Radiometer and a Broadband Light Source

Dora Preminger, San Fernando Observatory, California State University, Northridge
Different Models of TSI: Are they compatible with each other and with spacecraft composites?

Nicola Scafetta, ACRIM, Duke University, Durham, North Carolina
Empirical Evidence for a Celestial Origin of the Climate Oscillations and its Implications

Nicola Scafetta, ACRIM, Duke University, Durham, North Carolina
Total Solar Irradiance Composites and the Empirical Analysis of the Solar Contribution to Global Mean Air Surface Temperature Change

Ken Schatten, ai-solutions, inc., Lanham, Maryland
A Shallow Solar Dynamo, Recent Solar Minimum and Forecasting

James Struck, A French American Museum of Chicago, Dinosaurs Trees Religion and Galaxies Inc., IL
Naming 2008-09 Minimum and Responding to Severe Temperature Declines

Leif Svalgaard, Stanford University, Palo Alto, California
Heliomagnetic Field, 1835-2009

Leif Svalgaard, Stanford University, Palo Alto, California
PMOD TSI: SOHO keyhole effect, and possible degradation over time

Kim Thibault, Université de Montréal, Canada
Simulating the Sun's Magnetism on Several Scales in Time and Space

Gérard Thuillier, LATMOS-CNRS, France
PICARD: A mission based on measurements and modelling of the solar convective zone and climate