

Past, Present, and Future Role in Earth Science Research
SORCE's 5th Anniversary Science Meeting
La Posada Resort, Santa Fe, New Mexico
February 5-7, 2008

Monday, February 4

5:30 – 6:30 p.m. Welcome Reception

Tuesday, February 5

Session 1. Variability of the Solar Irradiance Over the Solar Cycle

We will review total and spectral solar irradiance variations over the 11-year solar cycle and discuss potential causes and indicators of this variability.

Chair: Gary Rottman, LASP, University of Colorado

8:30 – 8:40 a.m. Welcome

8:40 – 9:20 a.m. Keynote: Tom Woods, LASP, University of Colorado
What We've Learned from SORCE – Solar Cycle Maximum to Minimum

9:20 – 9:45 a.m. Judith Lean (Invited), Naval Research Laboratory, Washington, DC
Comparison of Solar Irradiance Variability Models with SORCE Observations

9:45 – 10:10 a.m. Greg Kopp (Invited), LASP, University of Colorado
The History and Future of TSI and SSI Measurements

10:10 – 10:40 a.m. Break

10:40 – 11:05 a.m. Gérard Thuillier (Invited), Service d'Aéronomie du CNRS, France
Space Station SOLSPEC Investigations: Measurements of the Absolute Spectral Irradiance from 165 to 3080 nm On-Board SOLAR

11:05 – 11:20 a.m. Steven Dewitte, Royal Meteorological Institute of Belgium, Brussels
Measured Total Solar Irradiance Cycle Variability: Status at the End of Cycle 23

11:20 – 11:35 a.m. Claus Fröhlich, Physikalisch-Meteorologisches Observatorium Davos, Switzerland
TSI Variation: What can we Learn from the Last Three Solar Cycles?

11:35 – 12:00 p.m. Gary Chapman (Invited), San Fernando Observatory, California State University
Long-Term Ground-Based TSI Measurements

12:00 – 1:00 p.m. Lunch at La Posada

1:00 – 1:15 p.m. Alexander Ruzmaikin, Jet Propulsion Laboratory, Cal. Institute of Technology
Solar Irradiance: Modes of Variation

1:15 – 1:30 p.m. Matt DeLand, Science Systems and Applications Inc. (SSAI), MD
Comparison of Long-Term Solar UV Irradiance Data Set and Proxy Model Data

- 1:30 – 1:45 p.m.** **Yvonne Unruh**, Imperial College, London, UK
Irradiance Variations on Rotational Timescales: A Comparison Between SORCE Measurements and the SATIRE Model
- 1:45 – 2:10 p.m.** **Doug Biesecker (Invited)**, NOAA, Space Weather Prediction Center, Boulder, CO
Predictions of the Solar Cycle, Past and Present

Session 2. Atmospheric Models, Processes, and Solar Irradiance

We will discuss the influence of solar cycle irradiance variability in atmospheric models and chemical and dynamical processes related to stratospheric ozone variations.

Chair: Erik Richard, LASP, University of Colorado

- 2:10 – 2:50 p.m.** **Keynote: Michael King**, NASA Goddard Space Flight Center, Greenbelt, MD
NASA's Earth Observations of the Global Environment: Our Changing Planet and the View from Space
- 2:50 – 3:15 p.m.** **David Lary (Invited)**, NASA Goddard Space Flight Center, Greenbelt, MD
Long-Term Multi-Dataset Analysis
- 3:15 – 3:45 p.m.** **Break**
- 3:45 – 4:00 p.m.** **Kiyotaka Shibata**, Meteorological Research Inst. (MRI), Tsukuba, Japan
Temperature and Ozone Response to the 11-Year Solar Cycle in the Tropical Stratosphere as Revealed by Ensemble Simulation of Chemistry-Climate Model
- 4:00 – 6:00 p.m.** **Poster Session – Introduction (Marty Snow) and Reception**

Wednesday, February 6

Session 2 Continued

Chair: Erik Richard, LASP, University of Colorado

- 8:30 – 9:10 a.m.** **Keynote: Mark Schoeberl**, NASA Goddard Space Flight Center, Greenbelt, MD
The Aura Mission
- 9:10 – 9:35 a.m.** **Paul Newman (Invited)**, NASA Goddard Space Flight Center, Greenbelt, MD
Estimating When the Antarctic Ozone Hole Will Recover
- 9:35 – 10:00 a.m.** **Jay Mace (Invited)**, University of Utah, Salt Lake City
A Description of Hydrometeor Layer Occurrence Statistics Derived from the First Year of Merged CloudSat and CALIPSO Data
- 10:00 – 10:25 a.m.** **Terry Nathan (Invited)**, University of California, Davis
On the Connection Between Solar Spectral Irradiance, Planetary Wave Drag and the Zonal-Mean Circulation
- 10:25 – 11:00 a.m.** **Break**

Session 3. Models of Solar Processes Affecting Climate

We will discuss the solar physical processes that cause irradiance variations over time periods of years to centuries.

Chair: Greg Kopp, LASP, University of Colorado

11:00 – 11:40 a.m. Keynote: Mark Miesch, High Altitude Observatory, NCAR, Boulder, CO
Processes that Cause Solar Irradiance Variability

11:40 – 1:00 p.m. Lunch – On your own

1:00 – 1:25 p.m. Karel Schrijver (Invited), Lockheed Martin ATC, Palo Alto, CA
Magnetic Flux Transport Modeling

1:25 – 1:50 p.m. Sami Solanki (Invited), Max Planck Institute, Lindau, Germany
Solar Irradiance and Activity Reconstructions on Timescales up to Millennia

1:50 – 2:15 p.m. Juan Fontenla (Invited), LASP, University of Colorado
Modeling the Spectral and Total Irradiance from Solar Atmospheric Structures

2:15 – 2:30 p.m. Mark Rast, LASP, University of Colorado
Latitudinal Variation in the Solar Intensity During the Decline of Cycle 23

2:30 – 3:00 p.m. Break

3:00 – 3:25 p.m. David Hathaway (Invited), NASA Marshall Space Flight Center, Huntsville, AL
Estimating the Next Solar Cycle

3:25 – 4:05 p.m. Keynote: Tom Ayres, Ctr. for Astrophysics & Space Astronomy, Univ. of Colorado
How Star-Like is the Sun; How Solar-Like are the Stars?

4:05 – 4:20 p.m. Jeffrey Hall, Lowell Observatory, Flagstaff, AZ
Brightness Variations of Solar Analogs during Activity Cycles and Grand Minima

Session 4. Climate Models, Processes, and Solar Irradiance

We will talk about the influence of solar cycle irradiance variability on climate change and in climate models.

Chair: Jerry Harder, LASP, University of Colorado

4:20 – 5:00 p.m. Keynote: Caspar Ammann, National Center for Atmospheric Research, Boulder, CO
IPCC Report and Possible Solar Contributions to Climate Change

5:00 – 5:15 p.m. Robert Cahalan, NASA, Goddard Space Flight Center, Greenbelt, MD
Modeling the Wavelength and Time Dependence of Solar Forcing of Earth's Atmosphere and Ocean Mixed Layer

6:15 – 6:50 p.m. Optional Gathering – Staab House Lounge, La Posada
(walk to dinner together)

7:00 – 9:30 p.m. – Science Dinner – La Casa Sena

Thursday, February 7

Session 4 Continued

Chair: Bob Cahalan, NASA, Goddard Space Flight Center

- 8:30 – 9:10 a.m. Keynote: Tom Crowley**, University of Edinburgh, Scotland
Fire vs. Fire: Do Volcanoes or Solar Variability Contribute More to Past Climate Change?
- 9:10 – 9:35 a.m. David Rind (Invited)**, NASA Goddard Inst. for Space Studies (GISS), NY
Exploring the Tropospheric Response to Solar Forcing
- 9:35 – 10:00 a.m. Gavin Schmidt (Invited)**, NASA GISS, New York, NY
Modeling Solar Cycle Impacts on Tropical Hydrology and Proxy Records
- 10:00 – 10:20 a.m. Break**
- 10:20 – 10:35 a.m. Richard Keen**, University of Colorado, Boulder
Climate Forcing Since 1960: What Does the Moon Have to Say?
- 10:35 – 11:00 a.m. Dave Young (Invited)**, NASA Langley Research Center, Hampton, VA
CLARREO Overview
- 11:00 – 11:25 a.m. Steve Volz (Invited)**, NASA Headquarters, Washington, DC
NASA ES New Mission Concepts for the Future
- 11:25 – 11:45 a.m. Summary**

POSTERS:

- 1.1. Douglas Allen**, Dordt College, Sioux City, IA
*Using *SORCE* Data in the College Classroom*
- 1. 2. Gary Chapman (Angie Cookson)**, San Fernando Observatory, California State University
TSI and Ground-Based Data: What Can be Learned?
- 1.3. Jerry Harder**, LASP, University of Colorado
*Spectral Decomposition of the TSI Record Using the *SORCE* TIM and SIM Instruments*
- 1.4. Dora Preminger**, San Fernando Observatory, California State University
The Relationship between Sunspots and the Variability of the Solar Corona
- 1.5. Martin Snow**, LASP, University of Colorado
*Ultraviolet SSI Variability from two *SOLSTICES**
- 1.6. Rodney Viereck**, Space Weather Prediction Center, NOAA, Boulder, CO
*Solar EUV Observations from the NOAA *GOES 13* Satellite*

1.7. Tom Woods, LASP, University of Colorado

XUV Photometer System (XPS): Improved Solar Irradiance Algorithm Using CHIANTI Spectral Models

1.8. Erik Richard, LASP, University of Colorado

Solar Spectral Irradiance Variability in the Near-Infrared and Correlations to the Variability of Total Solar Irradiance during the Declining Phase of Solar Cycle 23

1.9. David Harber, LASP, University of Colorado

Absolute Optical Power and Irradiance Comparisons with SORCE/TIM and Glory/TIM Instruments

1.10. Jeff Morrill, Naval Research Laboratory, Washington, DC

NRL Long Term Solar UV Irradiance Model: Status and Future Plans

1.11. Doug Lindholm, LASP, University of Colorado

SORCE Solar Irradiance Data Products

1.12. Christopher Pankratz, LASP, University of Colorado

LASP Interactive Solar Irradiance Datacenter (LISIRD)

2.1. Saumitra Mukherjee, Jawaharlal Nehru University, New Delhi, India

Extragalactic Cosmic Ray Can Affect Sun-Earth Environment and Environment of the Earth

2.2. Jae N. Lee, Stony Brook University, NY

The Role of Solar Forcing in the Tropical Circulation

3.1. Rock Bush, Stanford University, CA

Michelson Doppler Imager Observations of the Solar Radius over Cycle 23

3.2. Dibyendu Nandy, Montana State University

Reconstructing Solar Variability Over Multiple Timescales

3.3. Leif Svalgaard, ETK, Houston, TX

Reconstructing TSI from Heliospheric Magnetic Field as Deduced by McCracken from Cosmic Ray Modulation

4.1. Sheila Lynch, Northeast Advanced Vehicle Consortium, Boston, MA

Applying Relativity to Earth Climate Data: The Damhsa Theory Signs of the Inflationary Universe

4.2. Guoyong Wen, NASA Goddard Space Flight Center and UMBC

Modeling Lunar Borehole Temperature in Order to Reconstruct Historical TSI and Estimate Surface Temperature in Permanently Shadowed Regions