SNS • SORCE News Source

Solar Radiation and Climate Experiment Monthly Newsletter **Nov. – Dec. 2013**

2014 SORCE Science Meeting
Jan. 28-31 Cocoa Beach, FL

The 2014 SORCE Science Meeting is an 11-year celebration in honor of SORCE's observations over the full 11-year solar cycle. We will focus on ***Variability in the Sun and Climate over the SORCE Mission***, as we look back at what we have learned over the last 11 years during the SORCE mission. We are looking for new understanding of the evidence for and mechanisms involved in decadal variability in the Sun and climate. For more information on the science key questions we hope to address, please visit the SORCE Meeting website.

Science Program

We have a great 3.5-day science agenda lined to explore variations in the Sun's radiation and in the Earth environment. Below are the six sessions and the speakers (in alphabetical order for now) with in each session. A detailed description of each session can be found on the meeting website. You also find the individual abstracts on the SORCE website.

Confirmed Speakers:

(as of 12/3/2013, alphabetical order within each session)

1. Role of the Sun in Climate Change during the SORCE Mission

William Ball, Imperial College London, UK
SSI and Stratospheric Ozone: A new assessment of the relationship using Bayesian Inference

Cassandra Bolduc, Université de Montréal, Canada
Modelling Stratospheric Ozone Variability with the MOnteCArlo SSI Model (MOCASSIM)

Robert Cahalan, NASA GSFC, Greenbelt, MD
After 11 Years with SORCE – What's New? What's Next?

Josefino Comiso, NASA GSFC, Greenbelt, MD
Sea Ice Changes in Recent Decades

Joanna Haigh, Imperial College London, UK
Sun-Climate Solar Cycle Effects and Climate Change – A Review

Aimee Merkel, LASP, University of Colorado-Boulder
Further Evidence of Solar Cycle Variability in Middle Atmospheric Ozone and the Importance of Incorporating SSI in Atmospheric Modeling

Martin Mlynczak, NASA Langley, Hampton, VA
Influence of Solar Variability on the Structure, Composition, and Energy Balance of the Atmosphere from 2002 to 2014

Anna Shapiro, PMOD/WRC, Switzerland
The Stratospheric Response to a Discrepancy of the SSI Data

2. SSI Measurements

David Bolsée, Belgium Inst. for Space Aeronomy, Brussels
Accurate Determination of the TOA Solar Spectral NIR Irradiance Using a Primary Standard Source and Bouguer-Langley Technique

Gaël Cessateur, PMOD/WRC, Switzerland
THE PREMOS/PICARD Radiometer: An overview after 3 years of observations

Matthew DeLand, SSAI, Lanham, MD
Solar Cycle 24 Variability Observed by Aura OMI

Jerry Harder, LASP, University of Colorado-Boulder
Observations of Solar Variability in the 240-2400 nm Range using SORCE SIM

Jeff Morrill, NRL, Washington, DC
Title coming soon…

Christian Muller, Belgium Inst. for Space Aeronomy, Brussels
Full Solar Rotations Observed by the SOLAR Payload on the ISS in December 2013 and June2014

Werner Schmutz, PMOD/WRC, Switzerland
Variations of Near-UV and Visual Solar Spectral Irradiance as Measured by VIRGO/SoHO and PREMOS/Picard

Gérard Thuillier, LATMOS/CNRS, France
SOLSPEC: Recent results and status

Tom Woods, LASP, University of Colorado-Boulder
Reference Solar Spectra for Earth Science Research

3. Decadal and Longer Sun-Climate Variations

Jürg Beer, Eawag, Dubendorf, Switzerland
Solar Variations and Climate Change: The view from ice cores

Roger-Maurice Bonnet, ISSI, Bern, Switzerland
Review and Discussion of Past and Future Climates, of their Astronomical, Solar, and Anthropogenic Forcing. Strategies for Future Space and Modeling Research

Gerald North, Texas A&M University
Paleoclimatic Analysis of Solar Cycle Imprint on Greenland Surface Temperatures

Alexander Ruzmaiken, JPL, California Inst. of Technology
Sun-Climate Variations on Centennial Time Scales

Guoyong Wen, NASA GSFC and Morgan State University, Baltimore, MD
Climate Responses to Spectral Solar Forcing in GISS GCMAM

Dong Wu, NASA GSFC, Greenbelt, MD
The s=0 Atmospheric Oscillations in 35-Year MERRA Zonal Wind and Temperature

4. TSI Measurements and Composites

Jean-François Cossette, Université de Montreal, Canada
Cyclic Thermal Signature in a Global MHD Simulation of Solar Convection

Wolfgang Finsterle, PMOD/WRC, Switzerland
Of Straying Photons, Shiny Apertures, and an Inconstant Solar Constant – Advances in TSI Radiometry

Claus Fröhlich, PMOD/WRC, Switzerland
New and Improved Version of the VIRGO TSI and PMOD Composite

Shashi K. Gupta, SSAI, Lanham, MD
Projection of SORCE Total Solar Irradiance Measurements 5-10 Days Forward for Near Real-Time Applications

Greg Kopp, LASP, University of Colorado-Boulder
"Variability" in the TSI Over the SORCE Mission – and Beyond

Jae N. Lee, NASA GSFC and JCET, Univ. of Maryland, Baltimore County
Rotational Variations in Total Solar Irradiance Observations: From SORCE/TIM, ACRIM/ACRIM III, and SoHO/VIRGO

Richard Willson, ACRIM PI, Coronado, California
ACRIM3 Characterization by the LASP/TRF and the Total Solar Irradiance Database

5. SSI Composites, Proxies, Models

Serena Criscuoli, NSO, Sacramento Peak, Sunspot, NM
Interpretation of SIM Measurements from Analysis of 3D MHD Simulations

Thierry Dudok de Wit, LPC2E/CNRS and Univ. of Orléans
Multi-Wavelength Solar Radio Observations and their use as Solar Proxies for Upper Atmospheric Modeling

Juan Fontenla, NorthWest Research Associates, Boulder, CO
The UV SSI of the Sun Compared to Cooler Stars, Similarities and Differences

Registration & Hotel Reservations Cut-off Date: Dec. 20th

Margit Haberreiter, PMOD/WRC, Switzerland
SOLID – a European Project towards a Comprehensive Solar Irradiance Data Exploitation

Matthieu Kretzschmar, LPC2E, CNRS Univ. of Orléans
Assessment of Solar Irradiance Datasets for the SOLID Project

Natalie Krivova, Max-Planck-Institut, Katlenburg-Lindau, Germany
Modelling Solar Irradiance with SATIRE

Micha Schöll, LPC2E, CNRS University of Orléans, France
First Steps Towards a Homogeneous SSI Data Set: Selection, merging and quality assessment

Alexander Shapiro, PMOD/WRC, Switzerland
How to Constrain the Spectral Profile of the Solar Irradiance Variability?

Martin Snow, LASP, University of Colorado-Boulder
The Magnesium II Index: 35 Years and Counting

Sami Solanki, Max Planck Institute, Goettingen, Germany
Towards the Next Generation of Solar Irradiance Reconstruction Models

Rich Stolarski, Johns Hopkins University, Baltimore, MD
The Impact of Solar Spectral Irradiance Variations on Stratospheric Composition: Theory and observations

Ken Tapping, Natl. Research Council, D.R.A.O., BC, Canada
The Continuing Deviation between the Sunspot Number and F10.7 Activity Indices

Tamas Varnai, NASA GSFC, Univ. of MD, Baltimore County
Advances in Understanding 3D Interactions between Sunlight and the Atmosphere during the SORCE Mission

Anatoliy Vuiets, LPC2E, CNRS University of Orléans, France
What Can We Learn from SORCE about the Contribution of Different Magnetic Structures to the SSI?

6. Legacy of SORCE & Future Directions after SORCE

Pål Brekke, Norwegian Space Centre, Oslo, Norway
NORSAT-1: Total Solar Irradiance, Space Weather, and Ship Detection

Peter Pilewskie, ATOC and LASP, Univ. of Colorado-Boulder
TSIS Status

Steve Platnick, NASA GSFC, Greenbelt, MD
Title coming soon…

Mark Rast, APS and LASP, University of Colorado-Boulder
The Case for a Radiometric Imager, and How to Build One

Gary Rottman, LASP, University of Colorado-Boulder
The Historical Development of SORCE

Brian Soden, RSMAS, University of Miami, Florida
Climate Feedbacks

Graeme Stephens, JPL and California Inst. of Technology
Maintaining the Continuation of Long-Term Satellite TSI Observation – thoughts from an NRC review

Yukihiro Takahashi, Hokkaido University, Sapporo, Japan
Micro-Satellite as an Alternative Vehicle

SORCE 11-Year Anniversary Celebration
http://lasp.colorado.edu/home/sorce/news-events/meetings/
Please join us at the 2014 SORCE Meeting!

Poster Session

Stéphane Beland , LASP, University of Colorado-Boulder
SORCE SIM Data Version 19

Gary Chapman, San Fernando Observatory, CSU, Northridge
The Declining Strength of Recent Sunspot Cycles

Angela Cookson, San Fernando Observatory, CSU, Northridge
Using Ground-Based Ca II K Images as a Proxy for Shorter UV

Thierry Dudok de Wit, LPC2E, CNRS Univ. of Orléans
How to Make Composites out of Multiple Observations

Thierry Dudok de Wit, LPC2E, CNRS Univ. of Orléans
The Impulse Response of the Solar Spectral Irradiance: What does it tell us about the solar spectral variability?

Wolfgang Finsterle, PMOD/WRC, Switzerland
CLARA – A Compact and Light-Weight Absolute Radiometer

Claus Fröhlich, PMOD/WRC, Switzerland
Understanding Long-term Changes of the VIRGO Radiometer and Sunphotometer in Space

Claus Fröhlich, PMOD/WRC, Switzerland
New and Improved Version of the VIRGO SPM Data

Linda A. Hunt, SSAI, Hampton, VA
Solar Cycle Dependence of Odd-Oxygen, Odd-Hydrogen, and Ozone in the Mesopause Region Observed by SABER

Doug Lindholm, LASP, University of Colorado-Boulder
SORCE Solar Irradiance Data Products and the LASP Interactive Solar Irradiance Data Center (LISIRD)

Courtney Peck, Dept. of Physics and LASP, University of Colorado-Boulder
The Role of the Solar Center-to-Limb Variation in Deduced Photometric Trends

Erik Richard, LASP, University of Colorado-Boulder
A Compact Solar Spectral Irradiance Monitor for Future Small Satellite and CubeSat Science Opportunities

Nicola Scafetta, ACRIM team
Empirical Evidences for a Planetary Gravitational/Electromagnetic Modulation of Total Solar Irradiance Satellite Measurements

Nicola Scafetta, ACRIM team
Discussion on Climate Oscillations: CMIP5 general circulation models versus vs. a semi-empirical harmonic model based on astronomical cycles

Martin Snow, LASP, University of Colorado-Boulder
SORCE Undergraduate Research Program

Tom Sparn, LASP, University of Colorado-Boulder
The Early History of SORCE

Katherine Suess, LASP, University of Colorado-Boulder
Developing a Proxy Model for Solar EUV Irradiance using SORCE and GOES

Science Dinner – Tribute to Robert Cahalan

Wednesday, Jan. 29
5:45 p.m. Reception, 6 pm Sunset, 6:30 pm Dinner
Eau Gallie Yacht Club, Indian Harbour Beach

Robert (Bob) Cahalan is the Chief of NASA GSFC's Climate and Radiation Laboratory for Atmospheres in the Earth Sciences Division. Bob has served as Project Scientist for SORCE from the initial mission concept to launch, and through a decade of successful measurements. The role of Project Scientist has been complex requiring an individual who is both knowledgeable and interested in the science objectives, but also an individual who effectively advocates the science and aggressively engages in the political battles to keep the mission on track.

In addition to SORCE Project Scientist, Bob is also the Project Scientist for the joint NASA-NOAA Total and Spectral Solar Irradiance Sensor (TSIS). He is Emeritus President of the International Radiation Commission (IRC), a group of 40 commissioners representing 20 countries. Dr. Cahalan has been recognized with prestigious national and international awards, including Outstanding Leadership and Service of the U.S. Climate Change Science Program, and the NASA Exceptional Service Medal. He is a Fellow of the American Meteorological Society.

SORCE has been very fortunate to have Bob onboard, advancing our understanding modeling, instrumentation, and solar radiation. He is recognized for his pioneering theoretical and experimental advances in understanding the role of cloud structure in climate; and his leadership in three-dimensional atmospheric radiative transfer. He has researched global warming and climate change at NASA Goddard since 1979.

Don't miss this special evening!
SORCE Dinner RSVP on the Registration Form.
Entrée selection requested.

SORCE Meeting Venue

The SORCE Science Meeting will be in Cocoa Beach, Florida, Tuesday-Friday, January 28-31, 2014, at the ***Cocoa Beach Courtyard Marriott.*** This hotel is a full service hotel offering state-of-the-art conference facilities. In addition to the Courtyard Marriott sleeping rooms, we have blocked rooms at the Hampton Inn, which is just across the parking lot. They are both very nice and offer all SORCE Meeting attendees the govt. rate. You can choose – be at the meeting hotel (Courtyard) or a free breakfast (Hampton). Hotel reservations can be made online on the SORCE Meeting website.

Beautiful Cocoa Beach, Florida.

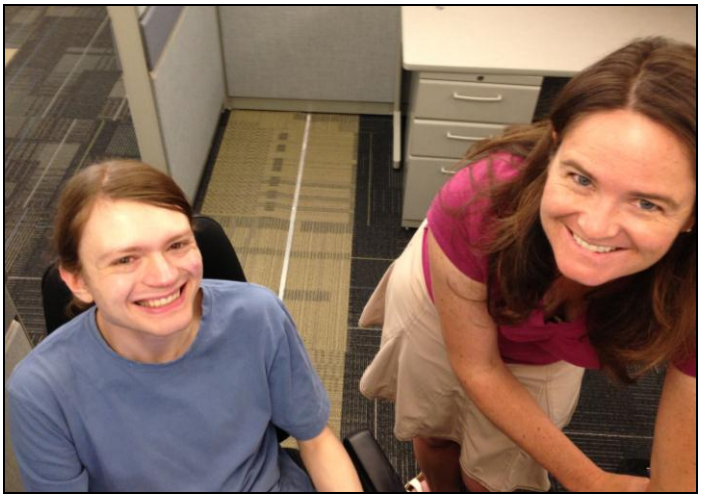
SORCE is Looking for Summer Undergraduate Research Students –

By Marty Snow, LASP, Univ. of Colorado

Each summer, the SORCE mission funds student research projects in concert with the University of Colorado's Research Experience for Undergraduates (REU) program. For eight weeks, the students come to Boulder, Colorado to work with SORCE scientists on a research project involving measurements from SORCE. The program pays for the students' travel costs and housing, plus a $500/week stipend.

They begin their time at LASP with a lecture series on Solar and Space Physics from experts in the field, and end with a student symposium where the students present their findings. Last year, three students worked on a diverse set of projects using SORCE data. This included studying the response of the Earth's atmosphere to solar variability, developing a proxy model for solar EUV irradiance, and studying climate change on Mercury.

This year's projects will be just as interesting! Applications for the 2014 program are now being accepted, and we invite students from around the country to apply for a position to work on SORCE and other missions. We depend on professional scientists interested in SORCE science to recommend well qualified students to our program. Full program details are available at http://lasp.colorado.edu/reu, including all deadlines (application deadline is Feb. 3). For further information, feel free to contact the REU Program Organizer, Marty Snow (snow@lasp.colorado.edu or 303-735-2143).



SORCE scientist Aimee Merkel worked with Alex Lanzano from the University of Chicago during the summer of 2013.

SIM Version 19 Released –

By Jerry Harder, LASP, Univ. of Colorado

Version 19 of SIM data has been released. This version in the LASP Interactive Solar IRradiance Datacenter (LISIRD; http://lasp.colorado.edu/lisird/sorce/) covers the wavelength range 310.25 to 2412.34 over the extended time span of 14 April 2003 to 10 May 2011. This includes the first year of the mission up to the time when full-time power cycling of SIM began. SIM data on the SORCE website (http://lasp.colorado.edu/home/sorce/data/) now include the wavelength range extended in the ultraviolet to 240.02 to partially overlap with the SOLSTICE data product and give the user the option to use either dataset. An IDL reader for the ASCII format is available at: http://lasp.colorado.edu/home/sorce/data/lasp.colorado.edu/sorce/file_readers/read_lasp_ascii_file.pro.

Release notes for version 19 are available on both the SORCE and the LISIRD web sites. Additional refinements on SIM data corrections are still needed, and planning and preparation for version 20 is currently underway. Plans for SIM Version 20 processing include:

- Version 19 stops on Mission day 3028 (10 May 2011). After this date, every-orbit power cycling occurs. Version 20 will implement a dynamical wavelength shifter to continuously account for the thermal/mechanical stresses induced by power cycling. This dynamical shifter will be particularly important for the visible and infrared channels and will improve

wavelength registration after September 2011 and potentially for the entire mission.

- Additional refinements in the temperature coefficient of radiant sensitivity are needed for the photodiodes where the temperature swings are significantly larger after the onset of power cycling.
- These steps are projected to improve:
  - the ability to perform AB comparisons,
  - the determination of the raypath through the prism,
  - the determination of the photodiodes degradation (not well represented in V19 processing), and
  - the agreement between the ESR and photodiodes throughout the entire mission.
- Release of Version 20 processing is tentatively planned for spring of 2014.

Discussion of Version 19 processing and a preview of the expected improvements in Version 20 will be presented at this January's SORCE Science Meeting in Cocoa Beach, Florida.

Upcoming Meetings / Talks –

SORCE scientists plan to present papers or attend the following 2013-2014 meetings/workshops:

SOLID (1st European SOLar Irradiance Data Exploitation), Oct. 14-18, Orleans, France
ISSI Working Group: The Solar Activity Cycle, Nov. 11-15, Bern, Switzerland
Intl. CAWSES Symposium, Nov. 18-22, Nagoya, Japan
AGU Fall Meeting, Dec. 9-13, San Francisco, CA
SORCE Science Meeting, Jan. 28-31, Cocoa Beach, FL