



## ***ISSI Working Group on In-flight Calibration of FUV Instruments –***

*By Marty Snow, LASP, University of Colorado*

SOLSTICE scientist Marty Snow took part in a working group on In-flight Calibration of FUV Instruments at the International Space Studies Institute (ISSI) in Bern, Switzerland, November 23-25. This working group, headed by Eric Quémerais, is charged with cross-calibration of a wide range of past, present, and future space-based FUV instruments. These include Voyager, Pioneer, Cassini, Galileo, Mars-Express, and Venus-Express planetary missions, as well as SOHO and HST. As one of the few absolutely-calibrated UV instruments, SORCE SOLSTICE's measurements of the Sun, Moon, and stars are essential to this task.

One of the goals of this group is to assemble a database of models and measurements of stars, comets, the interplanetary background, etc. In addition, the group plans to intercompare the measurement datasets and attempt to resolve inconsistencies between them. We have begun that work with the simultaneous observations of comet Holmes with SORCE/SOLSTICE and SOHO/SWAN. The SOLSTICE stellar measurements of stars will also be compared to the UV spectrometers SPICAM and SPICAV on the Mars Express and Venus Express missions.



Working group members: (standing, left to right) Olga Katushkina, Marty Snow, Mea Wedlund, Maciej Bzowski, Eric Quémerais, Aurelie Reberac, Wayne Pryor, Vlad Izmodenov, (front row) Roger-Maurice Bonnet, and Alain Sarkissian.

Accurate measurements of the solar Lyman alpha irradiance will also be used as one of the inputs to a model of the interplanetary medium. There was some interesting discussion of the long-term trends in the LASP Lyman alpha composite measurements relative to the Solar 2000

(S2K) model produced by Kent Tobiska of Space Environment Technologies. The LASP measurements show a secular decrease at Lyman alpha between the solar minima of 1997 and 2008, while S2K says the two minima are at the same level. Measurements of the solar wind over this same time interval show a decrease in density.

We plan to have these datasets online by Spring 2009 and will have another meeting in Bern to work on the intercomparisons. Eventually, we plan to have a Fully ON-line Datacenter for Ultraviolet Emissions (FONDUE). The URL for the preliminary web page is <http://www.aerov.jussieu.fr/projet/FONDUE/> and we welcome early visitors.



One of many beautiful art pieces in Bern, Switzerland. Photo by Marty Snow.

## ***2009 SORCE Science Meeting –*** ***The Impact of Solar Variability on Earth*** ***July 19-29 ☀ Montreal, Canada***

***Abstract Deadline:***  
***Jan. 23, 2009***

The 2009 SORCE Science Meeting will be held in conjunction with the IAMAS 2009 Meeting in Montreal, Canada, July 19-29. There will be a special SORCE-related session (M03) called "***The Impact of Solar Variability on Earth***".

The session will address all aspects of the impact of solar variations on the Earth's atmosphere and oceans. These include:

- Variability of the solar irradiance (TSI and SSI measurements and modelling)
- Variability of energetic particle precipitation
- Solar signal in the thermosphere, mesosphere, and stratosphere (observations, modelling, mechanisms)
- Solar signal in the troposphere (observations and modelling, processes, climate relevance)



- Solar signal in the oceans and the role of atmosphere-ocean coupling
- Solar impact on centennial to millennial timescales

The symposium invites contributions on identifying the solar signal from ground-based and satellite observational datasets ranging from the upper atmosphere (thermosphere, mesosphere) to the troposphere, the Earth's surface and the oceans. Papers on the solar irradiance and particle flux on Earth are welcome as well as contributions on physical and chemical processes and mechanisms leading to the observed solar signal. Simulations with mechanistic, general circulation and chemistry climate models are especially encouraged. Studies may include solar variations on different time scales ranging from the 27-day rotation period over the 11-year solar cycle to centennial and millennial variations including the Maunder Minimum.



Currently, the invited speakers who have accepted are (alphabetically):

- Ulrich Cubasch, Freie Universität Berlin, Germany, *Modelling*
- Wolfgang Finsterle, PMOD/World Radiation Center, Davos, Switzerland, *TSI data SOVIM*
- Bernd Funke, Instituto de Astrofísica de Andalucía, Granada, Spain, *MPIPAS data*
- Lesley Gray, Reading University, UK, *T, v in stratosphere and mesosphere; ability of CCMs to reproduce observations*
- Kunihiko Kodera, Meteorological Research Inst., Tsukuba, Japan, *Solar influence on climate variability modes*
- Greg Kopp, LASP, Univ. of Colorado, Boulder, *SORCE TSI measurements and NASA Glory TIM*
- Katja Matthes, Freie Universität Berlin, Germany, *Solar signal and QBO*

- David Rind, NASA GISS, New York, NY, *Impact of SSTs on atmospheric solar signal in NASA GISS model*
- Hauke Schmidt, Max Planck Inst. for Meteorology, Hamburg, Germany, *Solar signal in the thermosphere*
- Kirill Semeniuk, York Univ., Toronto, Canada, *CMAM modeling of particle variations*
- Gerard Thuillier, Service d'Aéronomie du CNRS, France, *SSI measurements*
- Yvonne Unruh, Imperial College, London, UK, *SSI modeling*
- Warren White, Univ. of California at San Diego, Scripps Inst. of Oceanography, La Jolla, *Solar signal in SST data*

Session conveners are Ulrike Langematz (Freie Universität Berlin, Germany), Victor Fomichev (York University, Toronto, Ontario, Canada), Joanna Haigh (Imperial College, London, UK), Lon Hood (Univ. of Arizona, Tucson), Alexei Krivolutsky, Werner Schmutz (PMOD/World Radiation Center, Davos, Switzerland), and Tom Woods (LASP, Univ. of Colorado, Boulder).

For general IAMAS 2009 Meeting information and science program, visit:

<http://iamas-iapso-iacs-2009-montreal.ca/index.asp>.

The SORCE-related session is IAMAS session M03.

*We hope that you will join us!*

## ***Busy AGU Meeting for SORCE –***

*Photos by Marty Snow, LASP, University of Colorado*

SORCE scientists were very busy during the Fall AGU Meeting, Dec. 15-19, in San Francisco. Presentations included:

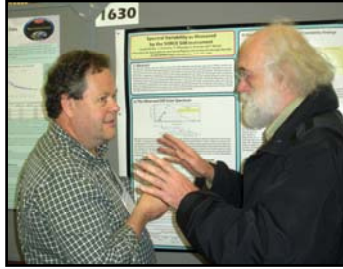


- Greg Kopp – *TSI Benchmark Measurement Requirements*
- Greg Kopp – *SI-Traceable Climate Measurements From Space: Requirements, Methods, and Accuracies*
- Margit Haberleiter – *Understanding and forecasting solar EUV and UV irradiance variations AU*
- Doug Lindholm – *SORCE Solar Irradiance Data Products*
- Marty Snow – *Changes in the Solar Minimum Irradiance in the Middle and Far UV on Solar Cycle Timescales*
- Peter Pilewskie – *Establishing a Climate Benchmark Data Record from the Earth-Reflected Solar Spectral Radiance*





- Erik Richard – *SI-Traceable Solar Spectral Irradiance Measurements: The NPOESS TSIS Spectral Irradiance Monitor*
- Jerry Harder – *Solar Spectral Variability as Measured by SORCE SIM*
- Anne Wilson – *LISIRD: Where to go for Solar Irradiance Data*
- Tom Woods – *Session Chair for “The Quiet Sun: Results from the Current Solar Cycle Minimum*
- Tom Woods – *Solar Irradiance Reference Spectra (SIRS) for IHY2007 Whole Heliosphere Interval (WHI)*



**“Solar Irradiance Reference Spectra (SIRS) for the 2008 Whole Heliosphere Interval (WHI)”** published in *Geophysical Research Letters*, 1/1/09.

**Free GRL Online Access for this paper:**  
<http://www.agu.org/journals/gl/g10901/2008GL036373/2008GL036373.pdf>.

**Citation:** Woods, T.N., P.C. Chamberlin, J.W. Harder, R.A. Hock, M. Snow, F.G. Eparvier, J. Fontenla, W.E. McClintock, and E.C. Richard (2009), Solar Irradiance Reference Spectra (SIRS) for the 2008 Whole Heliosphere Interval (WHI), *Geophys. Res. Lett.*, 36, L01101, doi: 101029/2008GL036373.

**879,382**

**Hits to the SORCE Website**

*(Since 4/21/03, As of 1/2/09)*

## Talk of a Solar Cycle Minimum –

By Tom Woods, LASP, University of Colorado

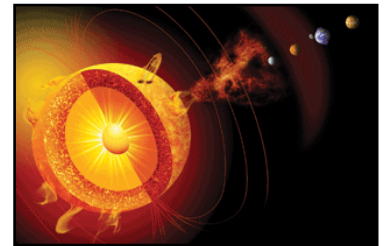
The solar cycle has been at its minimum level for most of this year, and the recent sunspots may indicate that the solar activity cycle 24 is now starting to spin up. The new solar cycle activity is highly anticipated as it is expected to bring new information on the accuracy of instrument degradation corrections, and thus provide validation for the SORCE results which support new and interesting results concerning a lower total solar irradiance (TSI) level for this solar cycle minimum than the last minimum and concerning out-of-phase solar cycle variations in the visible and near infrared wavelengths.

## Heliophysics Summer School –

The third of a 3-year LWS NASA-sponsored Heliophysics Summer School will be hosted by the UCAR Visiting Scientist Programs in Boulder, CO, 22-29 July 2009. For details please visit their website at: <http://www.vsp.ucar.edu/HeliophysicsSummerSchool/2009announcement.html>.

Drs. Karel Schrijver and George Siscoe are the Deans of the summer school, and the complete class schedule is available on the UCAR website.

The deadline for application submission by students is **1 April 2009**. Application information and forms can be found on their website.



## Upcoming Meetings / Talks –

*SORCE* scientists plan to present papers or attend the following 2009 meetings:

- ESA Solar EUV-IR Validation Workshop, April 15-17, Freiberg, Germany
- EGU General Assembly, April 19-24, Vienna, Austria
- Space Weather Workshop, April 28-May 1, Boulder, Colorado
- AAS/Solar Physics Division Meeting, June 14-18, Boulder, Colorado
- IAMAS/APSO – SORCE Meeting, July 19-29, Montreal, Canada

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