



SORCE Wants REU Students –

By Marty Snow, LASP, Univ. of Colorado

Application deadline: Feb. 1, 2017

Full details: <http://lasp.colorado.edu/reu>

Each summer, the SORCE mission funds student research projects as part of the University of Colorado's Research Experience for Undergraduates (REU) program. For ten 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 one-week lecture series on Solar and Space Physics from experts in the field, and end with a student symposium where the REU students present their findings. Last year, two students worked on projects using SORCE data. One student analyzed the SOLSTICE Lyman alpha data to create a model of the exosphere. Hydrogen in the exosphere scatters Lyman alpha photons, and using measurements from different view angles throughout the orbit can constrain the exospheric density profile. Another student focused on validating models of solar soft x-ray irradiance by correlating their predictions with photoelectron measurements at Mars. Both of these students presented their results at the 2016 AGU Meeting.

This year's projects will be just as interesting! Applications for the 2017 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.

For details, please contact the REU Program Organizer, Marty Snow (snow@lasp.colorado.edu or 303-885-8689).



REU class of 2016 enjoying the sunshine in Boulder.

2016 AGU Meeting Summary –

It was a busy week for SORCE scientists at the 2016 Fall AGU Meeting in San Francisco, CA, Dec. 12-16. They contributed in several different sessions focusing on solar irradiance measurements and modeling.

SORCE PI Tom Woods presented the prestigious Parker Lecture on Tuesday, Dec. 13. The Eugene Parker Lecture honors the life and work of solar astrophysicist, Professor Eugene Parker. Tom spoke on "*Spectroscopic Exploration of Solar Flares*" to a full crowd.



Tom Woods accepted a plaque following his Parker Lecture from Dave Sibeck, NASA/GSFC.

SORCE-related AGU oral presentations included:

- *The New Climate Data Record of Solar Irradiance: Comparisons with Observations and Solar Irradiance Models Over a Range of Solar Activity Time Scales*
Presenting author: Odele Coddington
- *Impacts of spectral solar irradiance on inter-sensor radiometric calibrations*
Presenting author: Dong Wu
- *Total Solar Irradiance changes between 2010 and 2014 from the PREcision MONitor Sensor absolute radiometer (PREMOS/PICARD)*
Presenting author: Gaël Cessateur (Lead: W. Schmutz)



Marty Snow gave a talk on professional development for students who participate in the LASP REU program (ED34A-03 “Career options after an REU: not just grad school.”)

SORCE-related AGU poster presentations included:

- *Continuing the Solar Irradiance Data Record with TSIS*
Presenting author: Erik Richard (Lead: P. Pilewskie)
- *The SORCE Solar Spectral Irradiance Data and Degradation Models*
Presenting author: Stephane Béland
- *Improving Solar Soft X-Ray (SXR) Irradiance Results from Broadband Photometers with New SXR Spectral Measurements from a CubeSat*
Presenting author: Tom Woods
- *Modeling the Soft X-Ray During Solar Flares*
Presenting author: Caroline Leaman
- *8 years of Solar Spectral Irradiance Observations from the ISS with the SOLAR/SOLSPEC Instrument*
Presenting author: Luc Damé
- *Solar Total and Spectral Irradiance Reconstruction over Last 9000 Years*
Presenting author: Chi Ju Wu
- *The Response of High Energy Photoelectrons in the Mars Atmosphere to Variable Solar Input*
Presenting author: Isabel Mills
- *Estimating Exospheric Hydrogen Density Using Lyman- α Solar Irradiance Measurements from SOLSTICE*
Presenting author: Zoe Pierrat
- *Dancing to the MUSSIC: Steps towards creating a Multisatellite Ultraviolet Solar Spectral Irradiance Composite*
Presenting author: Marty Snow

Tom Woods co-chaired an oral and poster session called *New Observations and Recent Results for Solar X-Ray Spectral Measurements and Their Applications for Earth's Atmosphere*.



SORCE Extended Mission –

Once again the SORCE team is busy writing a Senior Review Proposal for another extended mission (2018-2020). All NASA Earth Science Missions submit proposals for senior review every two years. SORCE successfully completed its 5-year core mission (Jan. 2003-Jan. 2008) and is currently in its tenth year of its extended mission. The proposal is due March 3.



It has achieved its primary mission goal of measuring total solar irradiance (TSI) and solar spectral irradiance (SSI) in the 0.1-27 nm and 115-2400 nm wavelength ranges with unprecedented accuracy and precision. The main objectives of the SORCE extended mission are very much aligned with the original SORCE mission objectives, but have new focus with the current state of NASA missions and solar activity in solar cycle 24.

The spacecraft battery is the most likely life-limiting factor for the SORCE Mission, so all efforts have been made to ensure that it stays as healthy as possible. Mission Ops recently revived SORCE one more time – successfully devising methods on how to run the satellite without batteries. With proper management of spacecraft resources, we are confident that making good quality solar irradiance measurements will continue throughout the extended mission timeframe. Obtaining overlapping irradiance measurements with upcoming missions (such as TSIS) is critical, so SORCE’s extension is essential. As a follow-up to the written proposal, a few of the SORCE scientists will meet with the Sr. Review Panel at NASA the week of May 8th to respond to questions and items needing further clarification. The review panel is expected to make a decision on the next SORCE Extended Mission by late June.

Post-Doc Positions at CU/LASP –

The Solar Influences Group at the Laboratory for Atmospheric and Space Physics (LASP) at the University of Colorado – Boulder invites applications for postdoctoral research positions in the areas of solar physics and planetary atmospheric science. The successful candidates will work on data from NASA satellite programs (including SORCE, SDO, MAVEN, and MinXSS) to study solar irradiance variability and its sources on the Sun, to study the influence of this variability on planetary atmospheres (including Earth and Mars), to support mission operations and data processing for those solar

instruments. The candidates will have access to excellent engineering and data system facilities at LASP and for teaching opportunities in some of the university departments if desired. The initial appointment is for one year plus an additional year based on individual performance and funding, with an option for promotion to research scientist position contingent upon performance and funding. We will accept applications until the two positions are filled.

For more information and application instructions: <https://cu.taleo.net/careersection/2/jobdetail.ftl?job=07856>. Frank Eparvier (frank.eparvier@lasp.colorado.edu) is also available for additional details.

SOLSPEC Team Visits LASP –

By Marty Snow – LASP, University of Colorado

SOLAR/SOLSPEC team members David Bolsée (PI), Luc Damé, Mustapha Meftah, Nuno Periera, and Dominique Sluse visited CU/LASP for a week in mid-January. Marty Snow and Luc led the week's agenda to explore comparisons between newly-processed SOLSPEC SSI observations and measurements from SIM and SOLSTICE from the far ultraviolet to the infrared (166 nm to 3088 nm). Although the results are still preliminary, the agreement appears to be extremely good. The hope is that these independent datasets can provide validation for the degradation corrections used by each team.

Luc and Mustapha are both from Laboratoire Atmosphères, Milieux, Observations Spatiales (LATMOS) in Guyancourt, France. David, Nuno, and Dominique are from the Royal Belgian Institute for Space Aeronomy (BIRA-IASB) in Brussels, Belgium.

SOLSPEC began taking measurements in April 2008 with Gérard Thuillier as PI. ESA has decided to decommission it, and its mission will end in Feb. 2017.



SOLSPEC and SORCE team members taking a break (clockwise around the table): Marty Snow (CU/LASP), Dominique Sluse (BIRA), Stephane Béland (CU/LASP), Mustapha Meftah (LATMOS), David Bolsée (BIRA), Nuno Pereira (BIRA), and Luc Damé (LATMOS).

2017 EGU General Assembly –

The abstract deadline has passed (Jan. 11), but if you are attending the 2017 EGU General Assembly, April 23-28, in Vienna, Austria, please make a note of the following sessions within the Solar Terrestrial Sciences. The website is: <http://www.egu2017.eu/>. We look forward to seeing you in Vienna!



ST1 – Sun and Heliosphere

<http://meetingorganizer.copernicus.org/EGU2017/sessionprogramme#ST1>

ST3 – Ionosphere and Thermosphere

<http://meetingorganizer.copernicus.org/EGU2017/sessionprogramme#ST3>

ST4 – Space Weather and Space Climate

<http://meetingorganizer.copernicus.org/EGU2017/sessionprogramme#ST4>

The entire science program is available at:

<http://meetingorganizer.copernicus.org/EGU2017/sessionprogramme>.

Upcoming Meetings / Talks –

SORCE scientists will present papers or attend the following 2017 meetings/workshops:

AMS Annual Meeting, Jan. 22-26, Seattle, WA

<https://annual.ametsoc.org/2017/>

ISSI Team Meeting: Towards a Unified Solar Forcing

Input to Climate Studies. Feb. 20-24, Bern, Switzerland

SOLAR/SOLSPEC Team Meeting, March 16-17,

ESA/Estec Noordwijk, The Netherlands

European Geosciences Union (EGU), General Assembly,

April 23-28, Vienna, Austria, <http://www.egu2017.eu/>