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Solar Radiation and Climate Experiment Monthly Newsletter

February 2005

SORCE Operations Team Receives NASA GSFC Recognition –

NASA GSFC managers came to LASP on February 9 to present a *Certificate of Appreciation* to individuals who have contributed to the success of SORCE mission operations and SORCE science data processing. LASP Operations personnel were responsible for launch opera-

tions and commissioning of two satellites, ICESat and SORCE, within a two-week period in January 2003. SORCE data processing is going extremely well, and the science community is responding favorably. Both NASA and LASP recognize the on-going dedication necessary to insure the success of this important NASA mission.



SORCE Administrators, left to right: Paul Ondrus, NASA Earth Science Mission Operations Project Manager; Randy Davis, LASP Mission and Science Operations Manager; Ed Chang, NASA Project Manager for both SORCE and ICESat, Gary Rottman, SORCE Principal Investigator; and Tom Sparn, SORCE Program Manager.



SIM scientists, Juan Fontenla and Jerry Harder (left to right), display their individual awards following the presentation.



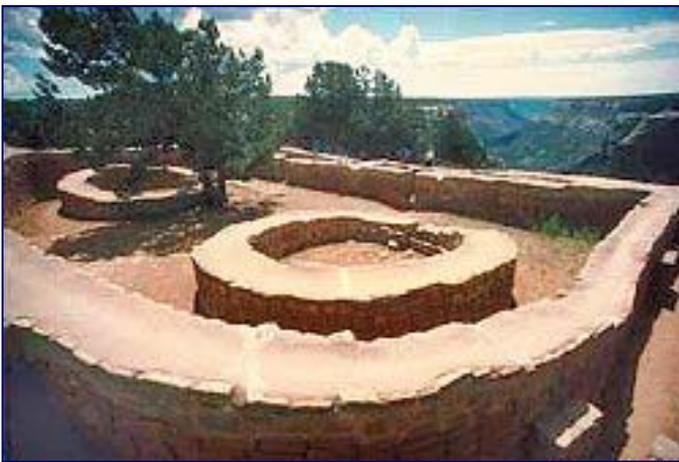
SORCE Operations and Data Processing team members present at the recognition. Front row, left to right: Vanessa George, Lillian Connelly, Michelle Kelley, Nicole Ramos, Alain Jouchoux, Robin Gordon, John Donnelly, David Gathright, Jerry Harder, Ed Chang, Tom Woods. Center row, left to right: Paul Ondrus, Barry Knapp, Chris Pankratz, Jerel Moffatt, Jack Faber, Deb McCabe, Brian Boyle, Ann Windnagel, Ben Marsh, Gary Rottman, Randy Davis. Back row, left to right: Tom Sparn, Torsten Zorn, Pat Ringrose, Sean Ryan, Pat Brown, Jeremy Carnahan, Darren Osborn, Ken Griest, Juan Fontenla.

Paleo Connections Between the Sun, Climate, and Culture –

**2005 *SORCE* Science Meeting
September 14-16
Durango, Colorado**

Solar activity, the Earth's climate and human culture, all undergo change. An increasing number of paleoclimate records, for example in ice-cores, ocean sediments, lake levels and tree-rings, suggest a solar contribution to past climate change because many records correlate strongly with the ^{10}Be and ^{14}C cosmogenic isotopes. The cosmogenic isotopes are considered to be proxies of solar activity, because solar modulation of the heliosphere alters the flux of incoming galactic cosmic rays which produce the isotopes. Furthermore, comparisons of paleoclimate records with archeological evidence of past human cultures suggests that solar-driven climate change may have contributed to the prosperity and demise of various civilizations, for example in the Yucatan and East Africa.

The 3rd Annual *SORCE* Science Meeting will concentrate on both the empirical evidence and physical processes that link the sun, climate and culture in the past. This includes understanding the relationship between solar irradiance and cosmogenic isotopes, which are typically assumed to reflect changes in solar brightness since this energy modulation is a million times larger than that of cosmic rays themselves. The lack of global climate records makes it difficult to discern the spatial pattern of the apparent climate response to past solar variability, which can provide clues about possible mechanisms. Nevertheless, from assorted



Although never completed, Sun Temple in Mesa Verde National Park reflects a great construction effort by the people who once lived there. In the SW corner is an eroded stone with three small indentations that may have served as a sun dial to mark the change of seasons.

paleo evidence at equatorial, mid- and high-latitudes, sometimes in combination with more recent datasets, a number of processes have been suggested. These include changes in the location of the intertropical convergence zone and in various dynamical modes including the North Atlantic Oscillation, the El Niño Southern Oscillation, and in the Hadley and Walker Circulations. Civilizations most susceptible to solar-driven climate change appear to be those located in regions where rainfall and drought are especially vulnerable to changes in these climate variability modes and circulation patterns. This emphasizes the need to understand the role of the hydrological cycle in the sun, climate, culture connection.

Proposed Sessions:

- Evidence for long-term solar activity and reconstructions of past solar irradiance.
- Interpreting the solar and climate sources of cosmogenic isotope variations, and their relationship to solar irradiance.
- Empirical evidence for climate responses to solar variability, and cultural impacts.
- Physical processes linking climate and cultural responses to solar variability.



The San Juan Mountains in the fall outside of Durango.

Everyone is welcome to the 2005 meeting as we vastly extend the time domain to paleoclimate and the very longest-term changes in the solar output. The meeting will be held at the Doubletree Durango Hotel. The changing aspen leaves should be spectacular at this time of year! Additional information will be posted on the *SORCE* Meeting website very soon – <http://lasp.colorado.edu/sorce/meetings.html>. Mark your calendar today!

A summary article of the 2004 *SORCE* Science Meeting in New Hampshire appears in the November/December issue of *EOS's* The Earth Observer. This article is also on-line at: http://lasp.colorado.edu/sorce/2004ScienceMeeting/Earth_Observer_Nov-Dec04_SORCE.pdf

SORCE Presentations Scheduled –

Members of the SORCE Science Team have recently been invited to present papers at several upcoming conferences.

Gary Rottman will attend the ISSI Workshop on Solar Variability and Planetary Climates and present an invited paper titled, “Measurement of Total and Spectral Solar Irradiance.” This workshop will be in Switzerland in June.

Jerry Harder and **Juan Fontenla** will attend the Solar Variability and Earth Climate Symposium in Italy, where they have both been invited to present a paper. Jerry’s paper will be “Solar Spectral Irradiance Variability Comparisons of the Spectral Irradiance Monitor (SIM) with Spectral Synthesis” and Juan’s paper is “Modelling of Spectral Irradiance Variations”.

SORCE co-investigator, **Peter Fox** will be presenting a SORCE talk at the IAMAS 2005 Meeting in Beijing, China in August. **Jerry Harder** will be co-chairing a session at the Characterization and Radiometric Calibration for Remote Sensing Conference.



Upcoming Meetings / Talks –

SORCE scientists plan to present papers or attend the following 2005 meetings:

Space Weather Week, April 5-8,
Broomfield, Colorado

AGU Spring Meeting / AAS Solar Physics Division,
May 23-27, New Orleans, Louisiana

ISSI Workshop on Solar Variability and Planetary
Climates, June 6-10, Bern, Switzerland

Solar Variability and Earth Climate Symposium,
June 27 - July 1, Monte Porzio Catone (Rome), Italy

SPIE, July 31 - August 3, San Diego, California

IAMAS 9th Scientific Assembly, August 2-11,
Beijing, China

Characterization and Radiometric Calibration for
Remote Sensing, August 23-25, Logan, Utah

SORCE Science Meeting, September 14-16,
Durango, Colorado

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