



SORCE Science Working Group Meeting

The Solar Radiation and Climate Experiment (SORCE) Science Working Group (SWG) Meeting was held July 17-19, 2002, in Steamboat Springs, Colorado. Thirty-five people from around the world participated in the two-and-one-half days of oral presentations and poster sessions. Scientists studying the Sun and Earth's atmosphere and climate came together to explore the variable Sun and its influence on the terrestrial environment.

Tom Woods, the science meeting program chair, began with a welcome and introduction to the SWG goals. By focusing on three time domains,



SORCE Science Working Group Meeting attendees

the group worked to define the present understanding of solar and climate variations in three sessions as listed below. Each session combined invited and contributed presentations focusing on the solar phenomena and the climate phenomena. The group wanted to explore the most important time periods for variations in the Sun and Earth systems. A poster session was held on Thursday with eleven posters.

Session 1. Short-term (minutes to 2 years) solar variations and terrestrial variations.

Invited Speakers - Jesper Schou (Stanford University), Jeff Kuhn (University of Hawaii), Lon Hood (University of Arizona).

Contributed Talks - Tom Woods (LASP), Matt DeLand (Science Systems and Applications, Inc. [SSAI]).

Session 2. Medium-term (1-30 years) solar variations and terrestrial variations.

Invited Speakers - Claus Fröhlich (World Radiation Center, Switzerland), Oran White (HAO, NCAR), Robert Cahalan (NASA, GSFC).

Contributed Talks - Rashid Akmaev (CIRES, University of Colorado/NOAA), Matt DeLand (SSAI), Linton Floyd (NRL/Interferometrics Inc.), Judit Pap (GSFC, University of Maryland).

Session 3. Long-term (> 30 years) solar variations and terrestrial variations.

Invited Speakers - Jeffrey Hall (Lowell Observatory), Judith Lean (NRL), David Rind (Goddard Institute of Space Studies), Devendra Lal (Scripps Institute).

Contributed Talks - Matthew (Geoff) McHarg (U.S. Air Force Academy).

Before beginning the sessions, Gary Rottman provided an overview of the SORCE mission and updated everyone on the current status. He emphasized how important this research and data collection is for EOS science objectives. There is much to learn about the Earth's radiation and energy balance through continuous TSI measurements. Global energy balance considerations may not provide the entire story, and how TSI variations are distributed in wavelength is critically important in understanding the Earth's response to solar variations. He stressed that it must be a priority to continue monitoring the total and spectral solar irradiance after the SORCE mission is complete, and that we should now be planning for future measurement programs.



SORCE Science Meeting Summary

A meeting summary, extended abstracts, and select presentations will be available soon at: <http://lasp.colorado.edu/sorce/July02ScienceMeeting.html>.

At the end of the meeting Tom Woods summarized the relevance of the discussions to SORCE. There were three aspects of the discussions that are connected to the SORCE program: validation of the solar irradiance time series, solar irradiance modeling, and atmosphere/climate modeling. A summary of these connections as grouped by the SORCE instruments is below. The EUV region, which is not measured by the SORCE instruments, and thus not listed, will be measured during the SORCE mission by the TIMED Solar EUV Experiment (SEE).

Connections to SORCE Summary

SORCE Instruments	Spectral Range	Validation (Time Series)	Solar Irradiance Models	Atmosphere/Climate Models
TIM	TSI	SOHO ACRIM Picard NIST Area Cal.	Improve Proxy Models New Physical Models Solar Dynamo Models	Atmos.-Ocean Coupling Solar-Climate Effects Indirect Solar Forcing Maunder Minimum
SIM	NUV Visible NIR	SBUV UARS SOHO ATLAS (past) Ground-based Meas.	SunRise Model New Proxy Models	Same as TIM, but with spectral information
SOLSTICE	FUV MUV	UARS SBUV TIMED	SunRise Model New Proxy Models Improve FUV Models	Ozone Models Upper Atmosphere Models
XPS	XUV	TIMED SOHO	NRLEUV Model SOLAR2000 Model Improve XUV-EUV Models	Upper Atmosphere Models Nitric Oxide Models
Outstanding Issues		SORCE Overlap UARS? SIGF Mission? Future FUV Hole?	Improvements Proxies? Physical Models?	Better Coupling Atmos. Layers Atmos.-Ocean Solar-Terrestrial Relations Do we understand them? Solar indirect forcing?



Tom Woods summarizing the SORCE Working Group Meeting.

The SORCE team is planning to have another science meeting shortly after the December launch to discuss initial results and data validation. Next summer the SORCE science working group will meet for more in-depth scientific discussions.

SORCE Mission Status

The month of July has been extremely busy with continuous Environmental Testing to make sure the SORCE spacecraft is prepared to tolerate the actual launch and survive in the mission environment. Tests completed in July include vibration, acoustic, and pyro-shock separation system. In addition the Solar Array Panel Illumination tests were successfully completed, as well as a Flight Software upgrade to version 6.0.

The Thermal Vacuum test is the final major test to be completed. After a final inspection the Vacuum Chamber doors will be closed on August 2, and the pumpdown will begin. The Instrument Module will undergo tests in this special environment for three weeks. Details will be included in the August SNS Newsletter.

Countdown to Launch - December 1 (as of July 30, 2002)

124 DAYS



Orbital's Pegasus XL will launch SORCE into space.



The SORCE Spacecraft with the Solar Arrays deployed.

The last SORCE monthly review was held on June 27 at LASP in informal meetings. As the launch date nears, final integration and testing events are becoming increasingly critical. The mission is currently on schedule and within budget, although the number of contingency days has de-created slightly due to schedule adjustments. There is enough of a cushion remaining to handle any unforeseen delays. The next monthly review is scheduled for Tuesday, July 30, at Orbital Sciences Corporation.

Upcoming Meetings

SORCE scientists plan to present papers or attend the following 2002 meetings:

- COSPAR, October 10-19, Houston, TX
- AMS, November 4-8, San Antonio, TX
- NIST Satellite Instrument Calibration Workshop, Nov. 5-7, Gaithersburg, MD
- 2002 Core Technologies for Space Systems, Nov. 19-21, Colorado Springs, CO
- AGU Fall Meeting, December 6-10, San Francisco, CA

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