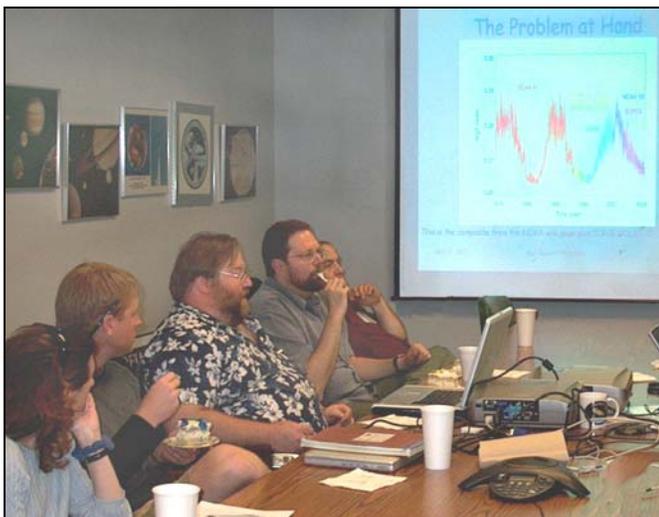




LASP Hosts MgII Composite Builders' Workshop on April 20 –

By Marty Snow, LASP, University of Colorado

After a social cookout lunch to get attendees warmed up, the Boulder Solar Variability Group (SVG) met for an afternoon-long workshop on building composite MgII time series. The lunch included a general discussion of the issues in creating a composite time series, which was of interest to the broader SVG community. The SVG group meets monthly at various locations in Boulder and is open to anyone interested in solar variability.



Marty Snow began the afternoon with a short introduction called "The Problem at Hand". Left to right: Giuliana deToma (NCAR); Phil Chamberlin, Marty Snow, Frank Eparvier (LASP); and Larry Puga (NOAA).

The long-term MgII index data record consists of measurements from a variety of instruments (see Figure 1). The observations from each individual dataset are typically scaled to the previous dataset by linear correlation during a period of overlap.

The first issue discussed was the length of this overlap, and when it occurs in the solar cycle. Using a small overlap interval can match the short-term variability, but may not be the right choice for the long-term variability. The critical dataset in the current ensemble is NOAA16. There was only a few months of overlap with the previous NOAA data, and it happened to be at a time of peak solar activity.

In the time before the UARS mission, there was generally only one instrument making MgII measurements, so there was nothing to compare it to. But starting

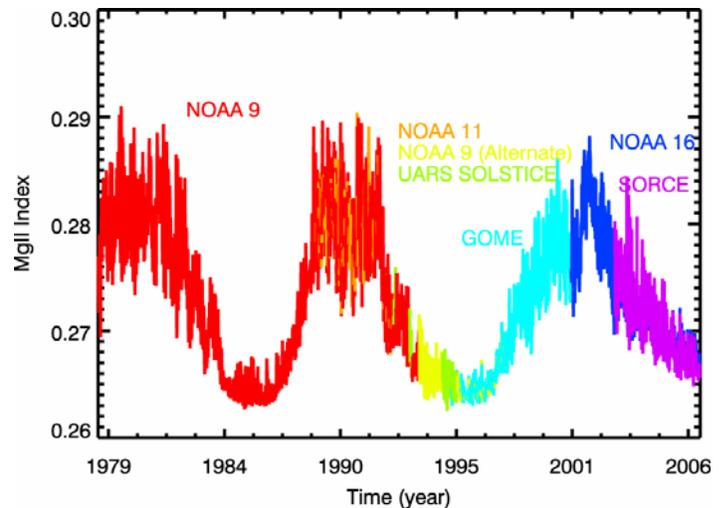


Figure 1. Composite MgII Index time series. Almost three solar cycles have been observed with a variety of instruments. Constructing a single best composite from these datasets was the topic of discussion at the monthly Solar Variability Group discussion in April.

in the descending phase of cycle 22, there have always been at least three measurements, and sometimes as many as eight. There's an old saying that a person with one watch always knows what time it is, while a person with two is never sure. The trends in each MgII dataset are unique, so there is no quantitative way to tell which instrument(s) are producing the best data on any given day. Rodney Viereck of NOAA described his efforts to find a pair of datasets that did not have a trend relative to each other and reported a lack of success.

After a few hours of productive discussion, the group decided to exchange data files so that people could try out different ideas on their own. We'll likely have a follow-up meeting in another few months to explore the results.

SORCE Team Presents Extended Mission Proposal –

The SORCE team visited NASA in Washington DC on April 25 for a 1-hour meeting with the Sr. Review Panel on the SORCE Extended Mission Proposal. The primary purpose for the face-to-face presentation was to provide an opportunity for questions and answers between the panelists and the mission team. With a strong supporting cast, Principal Investigator Tom Woods presented an overview of the written proposal submitted in March. Also attending and fielding questions from the panel were Tom Sparn,

LASP Program Manager; Ed Chang, NASA Mission Manager; Bob Cahalan, NASA SORCE Project Scientist; the SORCE instrument scientists, Jerry Harder – SIM, Greg Kopp – TIM, and Bill McClintock – SOLSTICE; and co-investigator Judith Lean from NRL.

The SORCE team took advantage of this time in the area to also visit our NIST collaborators in the Optical Technology division at their facility in Gaithersburg, MD. They met with Steve Brown to discuss the results of last January's SIM ESR/SIRCUS comparison campaign and to plan for additional measurements in the infrared this summer. Joe Rice also showed the group his progress on the HIP facility (Hyperspectral Image Projector) that could be useful for future calibration activities.

UV Irradiance Forecast Project –

By Jerry Harder and Juan Fontenla, LASP, Univ. of Colorado



SORCE scientist Juan Fontenla from LASP and Eric Quémerais of Service d'Aéronomie du CNRS (Centre National de la Recherche Scientifique, France) are working together on UV irradiance forecasting.

Juan Fontenla is collaborating with Eric Quémerais of CNRS (France), Charles Lindsey of NorthWest Research Associates, and Irene Gonzales-Hernandez of the National Solar Observatory to study the sources of total and spectral irradiance variability and develop space weather forecasting tools. This research effort is jointly sponsored by the NASA Living with a Star (LWS) Project and MURI AF organizations. This project combines the SORCE-sponsored SRPM model with far side helioseismic identification of active regions using GONG and SOHO/MDI data and backscattered Ly-alpha from SOHO/SWAN to infer the radiated spectrum emitted in any direction and forecast the solar irradiance based on the knowledge of the distribution and the radiative characteristics of active regions before they become visible on the solar disk. This approach uses high quality solar images at key wavelengths together with the SRPM semi-empirical models; this same methodology has produced very good agreement in reproducing observed

SIM variations for wavelengths greater than 400 nm. However, for the UV part of the spectrum NLTE radiative transfer is needed to match the observations, and this model enhancement is already in progress.

2008 SORCE Science Meeting –

Feb. 5-7, 2008

***La Posada de Santa Fe Resort & Spa
Santa Fe, New Mexico***



Acknowledging SORCE's 5th Anniversary, the meeting's theme and title is ***SORCE's Past and Future Role in Earth Science Research***. The meeting will focus on the new results of solar irradiance variability and its influence on Earth's atmosphere and climate change. There will be a special emphasis on solar cycle changes and application to modeling the key processes in our atmosphere and for climate change.

Several of the key questions to be addressed include:

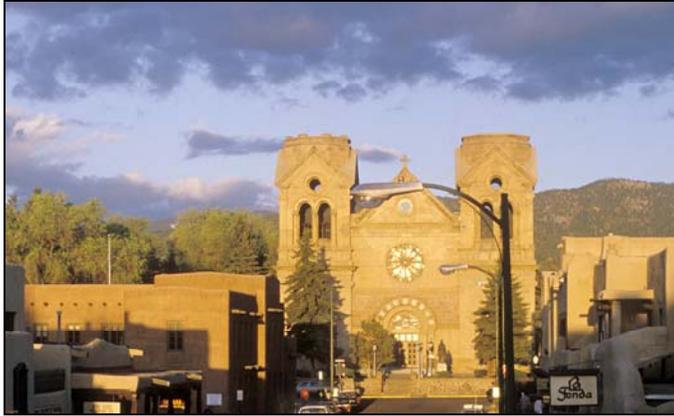
- *What is the present state of knowledge of the solar cycle variations of the total solar irradiance (TSI) and solar spectral irradiance (SSI) in the ultraviolet, visible, and near infrared ranges?*
- *What are the key magnetic and other drivers in the Sun causing solar cycle variations, and can these be quantified better to estimate past and future solar irradiance changes?*
- *How have the key photochemical processes affecting Earth's atmosphere, such as ozone, changed over the past few decades?*
- *How much of the stratospheric heating by the solar ultraviolet radiation is coupled to the lower atmosphere and surface?*
- *What is the magnitude of the solar forcing on the water cycle and cloud coverage, and how do these changes affect the long-term climate?*
- *What are the possible feedback mechanisms that are apparently amplifying the solar variations during times like the Maunder Minimum?*

The agenda consists of invited and contributed oral and poster presentations. Four sessions are currently planned:

- Variability of the Solar Irradiance Over the Solar Cycle

- Atmospheric Models, Processes, and Solar Irradiance
- Models of Solar Processes Causing Variability Affecting Climate
- Climate Models, Processes, and Solar Irradiance

Watch this newsletter and the *SORCE* website for additional information. Registration materials will be coming in the fall, but mark your calendar today! We hope you can join us.



Cathedral Basilica of St. Francis of Assisi, Santa Fe, NM.

SORCE Passes the 1-Billion km Mark –

Per Barry Knapp, *SORCE* Data Processor, *SORCE* passed the 1-billion km mark early April 5, 2007, GMT at 05:44:06 plus or minus a half second. This was April 4 at 11:44:06 MDT.

317,801

Hits to the *SORCE* Website

(Since 4/21/03, As of 4/20/07)

Greg Kopp Gives TSI Talk –

Greg Kopp, the Total Irradiance Monitor (TIM) scientist, participated in the Space Environment Center’s weekly seminar program at NOAA with a talk entitled “*Total Solar Irradiance: Relevance, Needs, Progress, and Future*”.

He explained that total solar irradiance (TSI), a measure of the radiant solar energy at the Earth, is the dominant driver of the Earth’s climate and a contributor to climate change. The TIM instrument makes very accurate spaceborne measurements of the TSI, and these measurements correlated with terrestrial temperature records give the climate sensitivity to solar forcing.

Greg discussed how our current TSI data record addresses the needs of determining this sensitivity to both short- and long-term solar variability, and what current and future progress will improve the TSI climate data record.

Upcoming Meetings / Talks –

SORCE scientists plan to present papers or attend the following 2007 meetings:

IUGG – July 2-13, Perugia, Italy

SPIE – Optical and Photonics, August 28-30, San Diego, CA

CALCON, Conference on Characterization and Radiometric Calibration for Remote Sensing, Sept. 10-13, Logan, UT

To submit information to this newsletter, please contact: vanessa.george@lasp.colorado.edu.

