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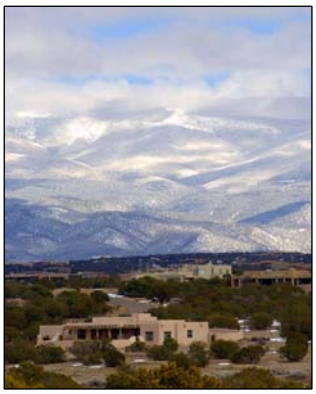
Solar Radiation and Climate Experiment Monthly Newsletter **Sept./Oct. 2007**

SORCE Meeting - Call for Papers

Feb. 5-7, 2008
La Posada de Santa Fe Resort & Spa
Santa Fe, New Mexico



The 2008 SORCE Science Meeting, ***SORCE's Past, Present, and Future Role in Earth Science Research***, is shaping up to be another excellent event!

Call for Abstracts
Due Dec. 4, 2007

People are invited submit abstracts for the SORCE Science Meeting before the **December 4th deadline.** The agenda will consist of invited and contributed oral and poster presentations concerning variations in the Sun's radiation and in the Earth environment. We will discuss the utilization of improved solar irradiance measurements and models, such as being developed by SORCE, to help advance climate and atmospheric models, in conjunction with ongoing Earth Science measurements. The fours sessions are briefly described below. Please submit abstracts on-line by visiting the meeting website – **http://lasp.colorado.edu/sorce/news/2008ScienceMeeting/.**

2008 SORCE Science Meeting Sessions:

1. **Variability of the Solar Irradiance Over the Solar Cycle**
   We will review total and spectral solar irradiance variations over the 11-year solar cycle and discuss potential causes and indicators of this variability.

2. **Atmospheric Models, Processes, and Solar Irradiance**
   We will discuss the influence of solar cycle irradiance variability in atmospheric models and chemical and dynamical processes related to stratospheric ozone variations.

3. **Models of Solar Processes Affecting Climate**
   We will discuss the solar physical processes that cause irradiance variations over time periods of years to centuries.

4. **Climate Models, Processes, and Solar Irradiance**
   We will talk about the influence of solar cycle irradiance variability on climate change and in climate models.

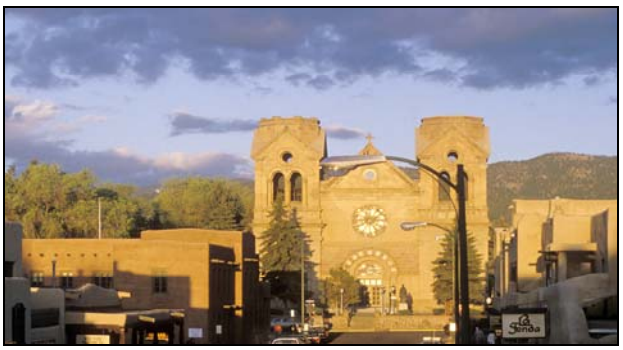
For a complete meeting description, key questions to be addressed, agenda, and tentative speaker listing, please visit:
http://lasp.colorado.edu/sorce/news/2008ScienceMeeting/.

Hotel & Registration
Due Jan. 4, 2008

La Posada de Santa Fe Resort and Spa is ready to take SORCE hotel reservations. Please make your reservation as soon as you know your plans, since we have a limited number of rooms. The room block can be increased if needed, but it is based on availability and how soon we let them know. Please see the SORCE Meeting announcement on-line for details. Reservations must be made no later than **January 4, 2008.**

Registration for the SORCE Science Meeting is also available on the website. We have contracted with the University of Colorado's Conference Services for our credit card processing, so please let us know if you have any concerns. The due date is **January 4, 2008** for the pre-registration fee of $240.

We encourage your participation and hope that you will join us!



SORCE Team Studying Climate Change –

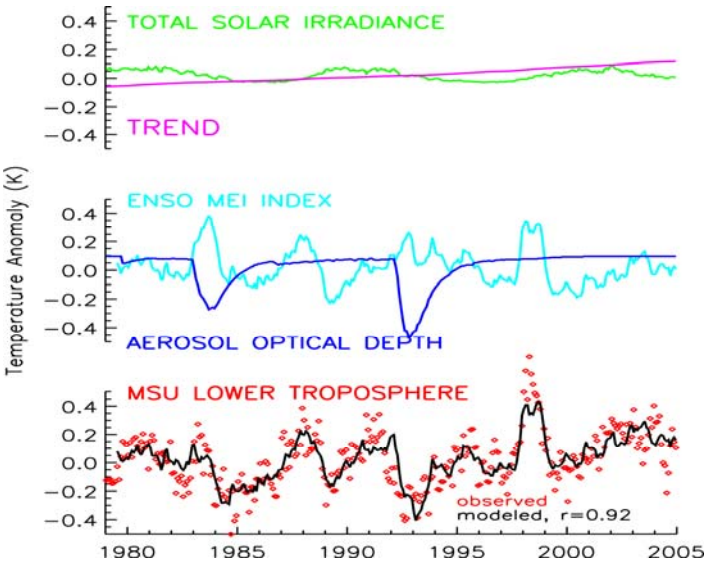
By Tom Woods, LASP, University of Colorado

Climate changes are significantly amplified in certain regions. One might not notice a 0.1 K (0.18 F) increase in temperature in response to the changes in the solar radiation variations during its 11-year cycle. However, the assorted and complex physical pathways responsible for the solar forcing on climate indicate much larger temperature changes in certain regions. The measured temperature increase from 1996 to 2002 related to solar brightness increase during this period is actually the net change from a complex pattern of regional solar-driven warming and cooling, with amplitudes that can exceed the 0.1 K global mean anomaly by a factor of 8. For example, the central United States is warmer by about 0.4 K (0.7 F), but there is a cooler region in the Eastern Pacific ocean near southern California.

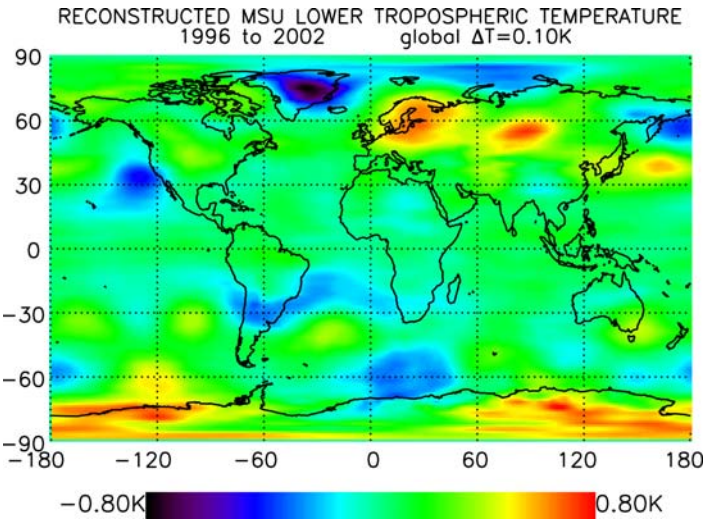
The solar variability competes with other natural processes (such as volcanic eruptions and the El Niño Southern Oscillation) and human activity (such as greenhouse gas production from fossil fuel combustion) in altering global temperatures near Earth's surface. The greenhouse gas production by human activity is of primary concern as the critical driver of future global warming. While there has been about 0.7 K (1.3 F) increase in temperature over the past 100 years (IPCC panel), even larger increases are expected in the future. Furthermore, like the regional amplification for solar forcing on the climate, there are expected to be even larger increases of the temperature in certain regions, far more than the global average of the warming trend.

With mounting concern that human activity is altering our environment, not just at the surface, but also in the extended atmosphere, it becomes increasingly important to improve our knowledge of all natural "forcings" on the Sun-Earth system and to better characterize and understand the wide range of terrestrial variations that result, ranging from space weather to climate change. In combination with improved models for simulating Sun-Earth system processes, this understanding will ensure the proper interpretation of human's environmental impact.

For further information on this topic, please refer an article by Tom Woods and Judith Lean in AGU's *EOS*, volume 88, number 44, 30 October 2007.



This figure shows the monthly mean global MSU temperature anomalies in the lower troposphere (bottom graph) and the four components that explain 80% of the variance in the observed temperatures. Listed in descending order, these components are (1) solar activity cycle (total solar irradiance), (2) the linear trend attributed to increasing greenhouse gases, (3) the El Niño Southern Oscillation (ENSO) fluctuations, and (4) irradiance shielding by volcanic aerosols.



The figure above shows the spatial distribution of monthly mean tropospheric temperature anomalies, extracted from multiple regression analysis of the 2.5°×2.5° latitude-longitude arrays of MSU temperature anomalies. The global average increase is +0.1K.

332,969

Hits to the SORCE Website

(Since 4/21/03, As of 10/24/07)

Upcoming Meetings / Talks –

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

International Space Science Institute (ISSI) Workshop, Nov. 12-14, Bern, Switzerland

AGU Fall Meeting, Dec. 10-14, San Francisco, CA

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

Another fun fact – As of Sept. 7, 2007, SORCE has made 25,000 orbits around the Earth!