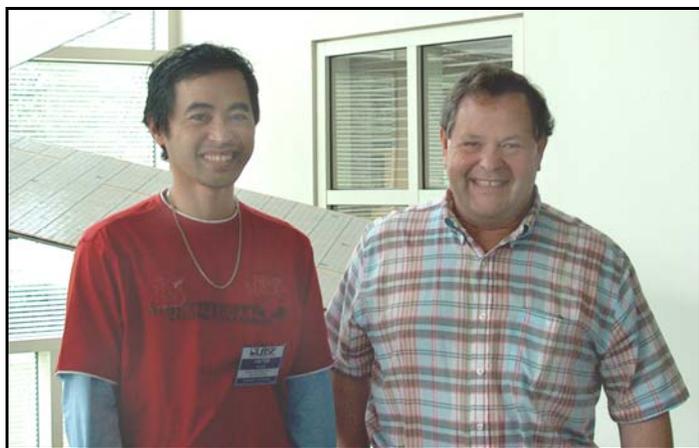




SIM & SCIAMACHY Comparison –

By Jerry Harder, LASP, University of Colorado

Joseph Paganan, a graduate student at the University of Bremen in Germany, visited LASP in late July to work with Jerry Harder on a paper comparing the ESA SCIAMACHY (European Space Agency, SCanning Imaging Absorption SpectroMeter for Atmospheric CHartography) instrument with the SORCE SIM instrument.



SCIAMACHY is an imaging spectrometer whose primary mission objective is to perform global measurements of trace gases in the troposphere and in the stratosphere. The solar radiation transmitted, backscattered and reflected from the atmosphere is recorded at relatively high resolution (0.2 nm to 0.5 nm) over the range 240 nm to 1700 nm, and in selected regions between 2000 nm and 2400 nm. The high resolution and the wide wavelength range make it possible to detect many different trace gases despite low concentrations. The large wavelength range is also ideally suited for the detection of clouds and aerosols. SCIAMACHY has three different viewing geometries: nadir, limb, and sun/moon occultations which yield total column values as well as distribution profiles in the stratosphere and (in some cases) the troposphere for trace gases and aerosols.

As part of his PhD dissertation, Joseph is comparing solar spectral variability for the SORCE SIM instrument with the SCIAMACHY instrument. He plans to publish his findings through the International Space Science Institute (ISSI), an international collaborative institute that brings expert scientists into focus groups to study key problems in space physics. LASP SIM scientists, Juan Fontenla and Jerry Harder, are a part of the same ISSI focus group that Joseph and his graduate advisor, Mark Weber, are a part of. The face-to-face interaction between the scientists working these issues is extremely valuable.

SCIAMACHY and SIM are the only two instruments that are making daily measurements of solar variability from space, so comparisons of these two instruments is a scientifically important activity to the solar irradiance community. The comparisons between SIM and SCIAMACHY demonstrate that the radiometric calibration between the two instruments is within about 4% with the places where the differences are larger giving insight into the experimental design.

One important difference between the two instruments is that degradation corrections for SCIAMACHY are much more difficult to make since the instrument was not really intended for spectral variability measurements. Thus comparisons with SIM provide a basis for making these corrections. SCIAMACHY has the advantage of having higher spectral resolution than the SIM instrument, so rotational time scale comparison with the SRPM model, particularly in the Ca II k region, shows the success of the SRPM model in calculating the radiant output of the Sun in this complex spectral region. All of these studies are still ongoing and a number of issues in the comparisons are yet to be worked out.



Artist's impression of ENVISAT in orbit. SCIAMACHY is located at the upper right corner of the payload front panel. (photo: ESA)



Upcoming Meetings / Talks –

SORCE scientists plan to present papers or attend the following 2009 meetings:

- XXVII General Assembly of the Intl. Astronomical Union (IAU) Meeting, August 3-14, Rio de Janeiro, Brazil
- SPIE Optics & Photonics Meeting, August 2-6, San Diego, California
- CALCON Technical Conference, Aug. 24-27, Logan, Utah
- 25th NSO Workshop, Aug. 31-Sept. 4, Sacramento Peak Observatory, Sunspot, New Mexico
- Solar Analogs II Workshop, Sept. 21-23, Flagstaff, Arizona
- SOHO-23: Understanding a Peculiar Solar Minimum, Sept. 21-25, Northeast Harbor, Maine
- ISSI Working Group – Tools for UV Calibration, Sept., Bern Switzerland
- WHI (Whole Heliosphere Interval) Workshop, Nov. 10-13, Boulder, Colorado
- AGU Fall Meeting, December 14-18, San Francisco, California

~~ Tentative ~~
2010 SORCE Meeting

Keystone, Colorado

May 19-21, 2010



1,161,231

Hits to the SORCE Website

(Since 4/21/03, As of 8/21/09)

To submit information to this newsletter, please contact:
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