

Solar Physics Division of the American Astronomical Society

Annual Report: 2009-2010

Shadia Rifai Habbal, SPD Chair

April 23, 2010

The Solar Physics Division of the American Astronomical Society works to advance the study of the Sun and to promote the coordination of solar research with other branches of science.

In late 2008, the Sun emerged from one of the deepest minima of sunspot activity in this last century, characterized by the greatest number of spotless days. Solar cycle 23 lasted a year longer than average and much longer than recent cycles.

The discipline continues to be dynamic and productive with major progress in understanding the solar interior, the mechanisms of solar activity and variability, solar flares, the dynamic corona and the heliosphere. The Solar Physics community is particularly proud of a number of recent accomplishments that are bound to provide scientific breakthroughs in the field.

NASA's Solar Dynamics Observatory (SDO), which will study our daytime star at high spatial and temporal resolution in the visible and the ultraviolet, was launched on February 11, 2010 from Cape Canaveral. It spent two months moving into a geosynchronous orbit and activating its instruments, before delivering its first stunning images of the Sun in early April.

The Interface Region Imaging Spectrograph, or IRIS, was one of NASA's Small Explorer Missions to be selected. IRIS will use a solar telescope and spectrograph to explore the solar chromosphere. The mission will greatly extend the scientific output of existing spacecraft that follow the effects of energy release processes from the Sun to Earth.

The SUNRISE balloon Antarctica project, with partnership between HAO/NCAR and international collaborators, was successfully launched from Esrange Space Center in Kiruna, Sweden, on June 8, 2009. Its goal is to investigate the structure and dynamics of the Sun's magnetic fields at the critical scale of 100 km in the solar photosphere, or about one photon mean free path. By flying at about 37 km above Earth during the summer over the North Pole, data were collected without interruption for about 15 days.

NSF awarded a \$298 million cooperative support agreement to NSO through AURA inc. on 1 January 2010 to build the 4 meter Advanced Technology Solar Telescope (ATST) atop Haleakala, Maui, Hawai'i. As the largest and most capable solar telescope to date, ATST will be the world's flagship facility for the study of magnetic phenomena in the solar atmosphere. It will be the first large, ground-based, open-access solar telescope in the United States in more than 40 years.

NASA's Heliophysics Guest Investigator Program will not be competed as part of ROSES2010. All currently existing grants will be funded at their expected levels. The current intention is to include new awards for the Heliophysics Guest Investigator

Program as part of ROSES2011. As always, future programs are subject to Congressional budget changes.

The current 550+ SPD members span the full range of solar physics research. The stand-alone SPD meeting in Boulder in June 2009 attracted 320 attendees, far exceeding the 200 expected. In May 2010, SPD will meet with the AAS in Miami, Florida. To showcase the impact of solar physics on astrophysics, a special session is dedicated to the science and new results from SDO. Other highlights include the Division's annual prize lectures. The Hale prize, which is awarded to a scientist for outstanding contributions to the field of solar astronomy, will go to Marcia Neugebauer (U. Arizona) for "her seminal contributions to the discovery of the solar wind and her extensive and ongoing contributions to solar-heliospheric physics." The Karen Harvey prize, which recognizes a significant contribution to the study of the Sun early in a person's professional career, will be awarded to Brian Welsch (Space Sciences Lab, UC Berkeley) for "his role in the development of correlation techniques to measure velocities at the solar surface."

The SPD was led in 2009-2010 by Shadia Rifai Habbal, chair, and vice-chair J. Todd Hoeksema. The other officers were Yuhong Fan, secretary, and Joan Schmelz, treasurer. The SPD committee members included Bill Abbett, Holly Gilbert, James Klimchuk, Scott McIntosh and Alex Pevtsov. The committee met in person at the SPD meeting in Boulder in June 2009, and conducted business via email throughout the year. Most of the work of the division is accomplished by committees. The SPD is grateful for their efforts. More detailed information about committees, activities, and history of the division can be found at the SPD's website: <http://spd.aas.org>.

The Nominating Committee submits nominations to the SPD Secretary for vacancies in the positions of Officers and Committee-persons. The Nominating Committee ascertains the willingness of its nominees to serve if elected. It is currently chaired by Joe Gurman, with members Lyndsay Fletcher and Dave Webb.

The Prize committee selects the recipients of the Hale and Harvey Prizes. Members of the committee were led by John Raymond (Chair), and included Gary Chapman, Holly Gilbert, Judy Karpen and Dana Longcope.

Popular writing awards are presented to authors of popular or semi-popular articles on the Sun or the effects of the Sun on the Earth's environment. One award is made to a scientist author and the other is made to a science writer/journalist. The Popular Writing Awards Committee were Brian Welsch (Chair), Ashley Crouch, C. Renee James, Manolis Georgoulis and Noé Lougaz.

The SPD Student Committee serves as an advocate for student-related issues and provides advice to the SPD community with the goal of fostering a healthy growth in student participation in Solar Physics and the development of these students into solar scientists. In 2009 the SPD Student Committee selected four students to receive stipends to attend the annual SPD meeting in Boulder. The inaugural "SPD Best Student Poster of the Year" award went to Silvina Guidoni for her paper entitled: "Plasma Heating by Gas-Dynamic Shocks in Thin Post-reconnection Flux Tubes" which she co-authored with D. Longcope. The SPD Student Committee members were Gordon Emslie (Chair), K. S. Balasubramaniam and Jiong Qiu.

The Thomas Metcalf SPD Travel Fund was established in 2007 to help support travel costs of recent PhDs and advanced graduate students in order to enable them to participate in a meeting relevant to solar physics. Awardees will be selected based on their potential for future contributions to the field of solar physics. Recipients will be expected to present results relevant to their thesis or current work in solar physics. A method for administering the awards through selected meeting organizers has been established, and the first awards (totaling approximately \$7000 annually) will be made in the coming year.

The Summer School Steering Committee represents the SPD in helping to promote and coordinate graduate student summer schools and will provide assistance and advice to local organizers. There are several SPD-science related summer schools planned for 2010. The committee members are Terry Forbes (Chair), David Alexander, Sarbani Basu, John Leibacher, Haimin Wang, Amy Winebarger, Ilia Roussev and Jiong Qiu.

The Education and Public Outreach (EPO) committee develops and implements education and outreach efforts on behalf of the SPD. The committee works closely with the AAS' Astronomy Education Board (AEB). The SPD, in partnership with the Space Physics and Aeronomy (SPA) section of the AGU and with strong support from the AGU education office sponsors an outreach program for the local community at SPD and AGU meetings; the Exploration Station is based on the NASA/RIT and AAS program AstroZone. Begun in fall 2007, this endeavor is increasingly successful. The committee continues to enhance the education section of the SPD website. The committee, which has sponsored well-attended student receptions at meetings, is working to find additional ways to enhance undergraduate and graduate student experiences at professional meetings. They are also engaging the SPD community and have supported its involvement in IYA in 2009. Emilie Drobnes who chaired the committee for the 2009 Boulder meeting is Vice Chair through Spring 2010. Zoe Frank is the current chair. Other members include Dave Dooling, Spiros Patsourakos, Ignacio Ugarte-Urro, Trae Winter, Rich Wolfson, David McKenzie and Cristina Rabello-Soares. A number of activities are planned for the joint SPD/AAS meeting in Miami. The SPD/EPO committee will have a display at the AstroZone family Science event on Saturday, May 22. They will also be holding a joint student reception with the AAS on Sunday, May 23. The committee will also have a double booth at the meeting with a number of monitors and displays with a strong focus on data from SDO.

The SPD's electronic newsletter, SolarNews, is distributed semimonthly to the worldwide solar physics community. It provides the disciplines' premier global means for communicating news and information. Archives are available at <http://solarnews.nso.edu>. In late 2009, SolarNews established a direct news exchange with the UK Solar Physics newsletter. SolarNews is prepared and edited by the SPD secretary, who is currently Yuhong Fan.

Members who serve as liaisons with other scientific communities are Tom Ayres (Stellar Astrophysics), Jim Chen (Plasma Physics), Merav Opher (AGU and Solar-Terrestrial Physics) and Vahe Petrosian (High Energy Astrophysics). The SPD press officer was Craig DeForest, and the committee responsible for the SPD website was chaired by Joe Gurman with assistance from Rick Bogart, Steven Cranmer, David McKenzie and Angelos Vourlidas.

The SPD chair participated in the AAS executive committee meeting in October, 2009. Productive discussions were held with the committee and with the chairs of other AAS

Divisions. The SPD appreciates the support provided by the Society and Executive Officer. One common theme was the need to develop closer ties between members of the divisions and the society as a whole, and to manage meetings without incurring losses.