

Second Circular – Workshop of the International Space Science Institute (ISSI)

15 March 2016

The scientific foundation of Space Weather

Convenors:

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Date: 27 June – 1 July 2016

Context:

- There has been considerable progress in solar physics, in the physics of space plasmas and in the physics of the Earth's magnetosphere and ionosphere in recent decades. Solar-terrestrial physics evolved as the discipline that covers studies of solar effects on the Earth's space environment. In more recent years, the concept of space weather has developed as both a scientific discipline and, increasingly, a topic that provides a forum to assess the vulnerabilities of the space infrastructure of 21st century human life on Earth from solar disturbances. Therefore space weather research covers more than solar-terrestrial effects as it also includes the physics behind those phenomena that are identified as hazards in space and on the ground. A key requirement of space weather studies is the understanding of causal chains from the Sun to the terrestrial environment and their quantified predictability

Objective of the Workshop:

- The science of space weather is therefore effectively a synthesis of solar and near-Earth space phenomena and the causal links from the Sun to the Earth's neighborhood. The objectives of the Workshop will be to review the elements of the physical processes and to identify the way they link to each other to form the causal chains from the Sun to the Earth and thus to assess and review the scientific foundations of Space Weather.

The topics covered in the Workshop:

- Space weather: what it is, most important causal effects (and what's impacted)
- Solar phenomena driving space weather and their predictability
- Propagation of solar phenomena in the inner heliosphere
- The geoeffectiveness of solar phenomena –
- Anthropogenic space weather effects
- Extreme space weather events
- Space climate - long term variations in space weather effects
- Space weather at other planets in the solar system
- What can we learn from the activity of sun-like stars

Thanks to the prompt acceptances of the invited participants, what is likely to be the final programme is included with this Second Circular. Invited authors are requested to propose more explicit titles for their talks.

Product of the Workshop

Following the Workshop, its output will be published as a volume in the Space Science Series of ISSI by Springer, in parallel with the publication of the papers in Space Science Reviews. It is expected that a total of about 15 substantial review style and quality papers, submitted to the usual refereeing process will be published in the book. Papers will be based on talks presented at the Workshop and will reflect the discussions that are encouraged to be held among the participants during the Workshop, with emphasis on interdisciplinarity. During the Workshop, the Convenors will encourage the participants to formulate proposals for the review papers and to suggest a list of authors. There will be time for informal get-togethers of collaborators. By the conclusion of the Workshop, it is expected that a list of papers, with provisional titles and authors will be agreed by the participants. A realistic schedule for the publication of the contributions will be confirmed at the conclusion of the Workshop, but the deadline is expected to be end of October 2016.

Advice to the speakers

The conveners would like to remind the speakers that ISSI workshops differ in many ways from other, larger gatherings called "workshop". The guiding spirit of the ISSI workshops is interdisciplinarity - contributors are invited from a range of communities to interact during the workshop, so that the broad synthesis of the topics covered can emerge in the published contributions the ISSI volume of the workshop. In your talks we would like you to focus both on the topic we have asked you to speak on (as opposed to the topic it is easiest for you to speak on), and to consider broad implications of your topic for the cyclic nature of solar activity, with special emphasis on the 11- and 22 year cycles. Longer term variability is also of interest, but primarily in shedding light on the cyclic activity. While many of the attendees will not be entirely familiar with your own work, all the attendees are solar physicists and will have views on how your work can relate to other problems. Take a bit of time to outline what we don't know, and how this lack of knowledge may be resolved. Please make sure that your

talk is NO LONGER than 25 minutes, so that at least three or four immediate questions can be asked. The Workshop's environment is suitable for off-line discussions.

Location: The Workshop will be held at the International Space Science Institute, Hallerstrasse 6, 3012 Bern, Switzerland.

Attendance: by invitation only, ~ 40 participants maximum.

Young scientists: Under its special programme of supporting young scientists, ISSI will invite (in addition) 4 to 6 early career scientists, within 2 years of their PhD, to take a full part in the Workshop.

Funding: ISSI will provide the subsistence costs (hotel and a per diem to cover meals) to all participants, but not the travel costs. There will be no registration charge for the Workshop.

Equipment available at ISSI

The ISSI Seminar Room, where the Workshop will be held, is equipped with a computer, a projector for electronic presentations with a big screen, a video/DVD player, an overhead projector and a whiteboard. The seminar room has high-speed wireless connection (either using EDUROAM or ISSI's own credentials) and the standard Ethernet connection using RJ45 cables. The institute provides a heterogeneous workstation environment with several computers available to be used by our visitors (Windows, Macintosh and Linux). A photocopy machine, two scanners, two printers and TV are also available as well as a range of electrical adapters for the Swiss system.

Participants who wish to bring their own notebook computers will be able to connect with the Internet using one of the options mentioned above. You will also be able to connect with the projector from your own notebook. If you have any questions or need help in computer related matters, please contact Saliba F. Saliba saliba@issibern.ch.

Travelling to Bern

Bern can be reached easily from two international airports: [Zurich \(ZRH\)](#) and [Geneva \(GVA\)](#). Direct intercity trains to Bern depart every half hour from inside the airport buildings; see www.rail.ch for detailed departure times. The travel time is ~1.5 hours from Zurich airport and ~2 hours from Geneva airport.

There is also a local airport (Bern, BRN <http://www.flughafenbern.ch/>), located at a 20 minute shuttle ride from the city centre, with (seasonally dependent) direct connections to Munich, Berlin Tegel, Cologne/Bonn, Hamburg, Amsterdam, Paris-Charles-de-Gaulle and Vienna and some others.

Bern is connected to many European cities by fast intercity trains (e.g. TGV Paris-Bern in 4.5 hours, or Frankfurt-Bern 5 hours). Timetable information of trains within and around Switzerland can be found at www.rail.ch. Also check out our website

www.issibern.ch/ for a few more travel tips such as links to city maps of Bern, weather forecasts, tourist information etc...

Hotel reservations

A block booking has been made in city centre hotels for the Workshop. All participants at the workshop are requested to contact the workshop secretary, Alexandra Lehmann (Tel. +41-31-631-4896, Fax: +41-31-631-4897, email: alexandra.lehmann@issibern.ch), to indicate their arrival and departure dates and times, as well as any special requests they may have (e.g. double room). Please note that all hotel reservations have to be done by the ISSI Secretariat.

A confirmation will be returned within a few days. Block bookings have been made in nearby hotels; please see <http://www.issibern.ch/localguide/location.html> for maps that indicate the location of ISSI and of the hotels (go to “hotels”, and near the bottom of the page “map of hotels”).

Schedule:

Formal invitations and First Circular:	25 October 2015
Registration deadline:	31 October 2015
Second Circular and final program:	15 March 2016
Workshop:	27 June – 1 July 2016