INTERNATIONAL SPACE SCIENCE INSTITUTE
Hallerstrasse 6 ● CH-3012 Bern ● Switzerland

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

12 June 2014

Solar magnetic fields: from measurements towards understanding

Convenors:

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Date: 12 – 16 January 2015

Context:

- At a Forum on "Solar activity and the solar cycle: future developments and applications" held in November 2012, the International Space Science Institute (ISSI) considered how it can contribute to a better understanding of the physics of the solar activity cycle. Two workshops were recommended for implementation to the Directorate of ISSI. The first, "The solar activity cycle: physical causes and consequences" was held in November 2013. Plans for the second Workshop were presented to the Science Committee of ISSI in November 2013. The Directorate of ISSI agreed to hold this Workshop under the title “Solar magnetic fields: from measurements towards understanding” in early 2015.

Objective of the Workshop:

- Solar activity is driven by the solar magnetic field. The Workshop will focus on the observational and measurement techniques of magnetic fields and the complex processes that control the variability of solar magnetic phenomena. The objective is to review the current status of the field and to identify the links between the observational capabilities and the elaboration of accurate and predictive models of solar variability on all temporal and spatial scales.

The topics covered in the Workshop:

- History of solar magnetic observations from Hale to the present
- Basic physics of solar magnetic field measurements
- Photospheric, chromospheric and coronal magnetic field measurements - techniques, interpretation, capabilities and limitations
- Coronal magnetic field models - Potential Field Source Surface models and beyond and the extension to the heliosphere
- Heliospheric magnetic field measurements
- Magnetoconvection as a mechanism for creating fine scale structure, sunspots, turbulent fields (local dynamo)
- Flux emergence and decay, large-scale flows and magnetic field transport, (meridional circulation), diffusion, active regions evolution, polarity reversals
- Origin and variability of the solar magnetic field, status and perspectives of dynamo theories (global vs local dynamos)
- Requirements and perspectives for solar magnetic field measurements

A draft programme is included with this First 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 to 20 high-quality topical review papers will result, to be submitted to the usual refereeing process and published in the book. The 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.

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.

Schedule:

Formal invitations and First Circular:	15 June 2014
Registration deadline:	31 July 2014
Second Circular and final program:	15 October 2014
Workshop:	12 - 16 January 2015