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

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

Solar dynamics and its effects on heliosphere and Earth

Convenors: Roger M. Bonnet, ISSI, rmbonnet@issi.unibe.ch
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Date: 18–22 April, 2005

Objective: The SOHO and Cluster missions form a single ESA cornerstone. Yet they observe very different regions in our solar system: the solar atmosphere on one hand and the Earth's magnetosphere on the other. At the same time the Ulysses mission provides observations in the third dimension of the heliosphere, and many others add to the picture from the Lagrangian point L1 to the edge of the heliosphere. It is the aim of this ISSI workshop, under the auspices of the International Living With a Star (ILWS) program, to tie these observations together in addressing the topic of *Solar Dynamics and its Effects on the Heliosphere and Earth.* The Workshop will start out with an assessment and description of the reasons for solar dynamics and how it couples into the heliosphere. The three subsequent days will each be devoted to following one chain of events from the Sun all the way to the Earth's magnetosphere and ionosphere: The normal solar wind chain, the chain associated with coronal mass ejections, and the solar energetic particles chain. The final day of the workshop shall be devoted to common physical processes occurring both at the Sun and in the magnetosphere such as reconnection, shock acceleration, dipolarisation of magnetic field, and others.

Structure: First day: Review talks on solar dynamics
Three days to explore the different chains of events:
- Second day: Solar wind chain (incl. CIRs)
- Third day: CME chain
- Fourth Day: Energetic particle chain (half-day)

Fifth day: Commonalities such as reconnection, shock acceleration, dipolarisation of B-field, …

Product: Volume in the *Space Science Series of ISSI* and in *SSRv.*

Attendance: by invitation only, ~45 participants maximum.

Funding: ISSI will provide the subsistence costs (hotel and meals) to all participants, but not the travel costs.

List of Invitees and Topics:

(**bold – session chair;** *italic: co-chair*)

(Talks are ~30 minutes plus 10-15 minutes for discussion)

Day 1 – Solar Dynamics (incl. Atmospheric Dynamics)

Juri Toomre, Univ. of Colorado, Boulder, jtoomre@jila.colorado.edu
Solar dynamo

Arnab Rai Choudhury, Indian Institute of Science, Banaglore, arnab@physics.iisc.ernet.in
Solar dynamo theory and its implications for sun-solar system modeling

Alexander Kosovichev, Stanford University, akosovichev@solar.stanford.edu
Active region dynamics

Nigel Weiss, University of Cambridge, now@damtp.cam.ac.uk
Sunspot structure and dynamics

Karel Schrijver, Lockheed-Martin, Palo Alto, schryver@lmsal.com
Supergranulation

Manfred Schüssler, MPS Lindau, schuessler@linmpi.mpg.de
Magnetism

Åke Nordlund, Theoretical Astronomical Center, Copenhagen, aake@astro.ku.dk
Solar atmosphere dynamics

Bart de Pontieu, Lockheed-Martin, Palo Alto, bdp@lmsal.com
Spicules

Day 2 – Solar Wind Chain (incl. Coronal heating and acceleration)

Eckart Marsch, MPS Lindau, marsch@linmpi.mpg.de
Solar wind sources and their variations over the solar activity cycle

Ruth Esser, Univ. Tromsø, ruth.esser@phys.uit.no
Coronal heating: observations and theory

Jon Linker, SAIC San Diego, linkerj@saic.com
Ejection of solar mass and magnetic flux

Thomas Zurbuchen, Univ. of Michigan, Ann Arbor, thomasz@umich.edu
Structure and evolution of the global heliosphere

Victor Pizzo, NOAA, Boulder, vic.pizzo@noaa.gov
Fluid modelling of the dynamic heliosphere

Hannu Koskinen, Univ. of Helsinki, hannu.koskinen@fmi.fi
Space storms from the solar atmosphere to the near-Earth space

Thierry Dudok de Wit, CNRS, Orleans, ddwit@cnrs-orleans.fr
Impact of solar wind streams and turbulences on the Earth's bow shock and magnetosphere

Rumi Nakamura, Austrian Academy of Sciences, Graz, rumi.nakamura@oeaw.ac.at
Substorms and their solar wind causes

Joachim Birn, LANL, Los Alamos, jbirn@lanl.gov
Modelling of the magnetospheric response to the dynamic solar wind

Mark Lester, Univ. of Leicester, mle@ion.le.ac.uk
Ionospheric response to solar radiation and solar wind particles

Jean-André Sauvaud, CESR, Toulouse, Jean-andre.Sauvaud@cesr.fr
Magnetospheric ions of solar wind origin

Day 3 – CME Chain

Sarah Gibson, HAO, Boulder, sgibson@ucar.edu
Sigmoids / coronal modelling
Nat Gopalswamy, NASA GSFC, Greenbelt, gopals@fugee.gsfc.nasa.gov
ICME properties
Jean-Louis Bougeret, Obs. de Paris, Meudon, jean-louis.bougeret@obspm.fr
Radio mapping / tracing
Terry Onsager, NOAA, Boulder, terry.onsager@noaa.gov
Geoeffectiveness of ICMEs
Gurbax Lakhina, Mumbay Geomagnetic Observatory, lakhina@iig.iigm.res.in
Storm / substorm processes
Ioannis Daglis, National Observatory of Athens, daglis@space.noa.gr
Ring current formation
Jerry Goldstein, Rice Univ., Houston, SWRI, San Antonio, jgoldstein@swri.edu
Plasmasphere response
Y. Kamide, Nagoya Univ., kamide@stelab.nagoya-u.ac.jp
ITM coupling
Mike Wiltberger, NCAR, Boulder, wiltbemj@ucar.edu
End-to-end modelling (numerical)
Dan Baker, Univ. of Colorado, Boulder, daniel.baker@lasp.colorado.edu
End-to-end modelling (empirical)

Day 4 – SEP Chain (half day)

Bob Lin, Univ. of California, Berkeley, rlin@ssl.berkeley.edu
Solar electrons and hard X-rays / gamma-rays
Peter Cargill, Imperial College, London, p.cargill@ic.ac.uk
Coronal acceleration – theory
Joe Giacalone,Univ. of Arizona, Tucson, giacalon@lpl.arizona.edu
Shock acceleration models
Glenn Mason, Univ. of Maryland, College Park, gmmason@umd.edu
Seed particles and ^{3}He
Berndt Klecker, MPE Garching, berndt.klecker@mpe.mpg.de
Solar energetic particles charge states: an overview
Richard Mewaldt, Caltech, Pasadena, rmewaldt@srl.caltech.edu
High-energy SEPs, composition

Day 5 – Commonalities

Gerhard Haerendel, International University Bremen, hae@iu-bremen.de
Chromosphere – ionosphere analogy
Steve Schwartz, Queen Mary, Univ. of London, S.J.Schwartz@qmul.ac.uk
Shocks
Eric Priest, Univ. of St. Andrews, eric@mcs.st-andrews.ac.uk
Reconnection
Claudio Chiuderi, Università di Firenze, chiuderi@arcetri.astro.it
TBD

Jörg Büchner, MPS Lindau, buechner@mps.mpg.de
Theory and simulation
Arnold Benz, ETHZ, benz@astro.phys.ethz.ch
Type I bursts and AKR
Markus Aschwanden, Lockheed-Martin, Palo Alto, aschwanden@lmsal.com
Particle acceleration
K. Shibata, Kyoto Univ., shibata@kwasan.kyoto-u.ac.jp
Similarities of reconnection in corona and Earth's tail

George Siscoe, Boston Univ., siscoe@bu.edu
Workshop Summary

Additional participants

Roger M. Bonnet, ISSI, rmbonnet@issi.unibe.ch
Philippe Escoubet, ESA-ESTEC, Philippe.Escoubet@esa.int
Bernhard Fleck, ESA-ESTEC, bfleck@esa.nascom.nasa.gov
Madhulika Guhathakurta, NASA HQ, mguhatha@hq.nasa.gov
Hermann Opgenoorth, ESA-ESTEC, Hermann.Opgenoorth@rssd.esa.int
Götz Paschmann, ISSI, paschmann@issi.unibe.ch
Dave Sibeck, NASA GSFC, Greenbelt, David.g.Sibeck@nasa.gov
Rudolf von Steiger, ISSI, vsteiger@issi.unibe.ch

Registration – Workshop of the International Space Science Institute (ISSI)

Solar dynamics and its effects on heliosphere and Earth

Bern, Switzerland, 18-22 April 2005

I accept the invitation to this workshop and plan to attend.

Last Name:.....

First Name:.....

Affiliation:.....

Address:.....

City:.....

Country:.....

Tel:.....

Fax:.....

Email:.....

Comments (such as refined presentation title, …):

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Please send this form to:
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or fax it to:
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or send this information by e-mail to:
vsteiger@issi.unibe.ch

Deadline for Registration: 15 January 2005