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

First Circular – Workshop of the International Space Science Institute (ISSI)
6 January 2020

Probing the Earth's deep interior using in synergy observations of the Earth's gravity and magnetic fields, and of the Earth's rotation

Date: 1 – 4 September 2020
Location: International Space Science Institute (ISSI), Hallerstrasse 6, 3012 Bern, Switzerland
Workshop website: http://www.issibern.ch/workshops/

Conveners:

Anny Cazenave	(ISSI, Bern, Switzerland & LEGOS, Toulouse, France)
Mioara Mandea	(CNES, Paris, France)
Veronique Dehant	(Royal Observatory, Brussels, Belgium)
Lorena Moreira	(ISSI, Bern, Switzerland)

Local organisation: Alexandra Lehmann (secretary) – Alexandra.Lehmann@issibern.ch
Jennifer Fankhauser (secretary) – Jennifer.Fankhauser@issibern.ch
Saliba Saliba (computer administrator) – Saliba@issibern.ch
Phone: +41 31 631 48 96

Summary and main objectives of the Workshop:

During the past two decades, space missions (e.g., GOCE, GRACE and Swarm) have been developed by space agencies in Europe and the USA to measure the Earth's gravity and magnetic fields, and their spatio-temporal variations. These successful missions have already provided a wealth of groundbreaking results about the permanent and time-variable gravity and geomagnetic fields of the Earth. However, more can be learned about the Earth's structure by combining data of the Earth's gravity and magnetic fields, together with Earth's rotation data routinely measured using space geodesy techniques. Using these data in synergy will represent a unique way to further investigate the physics of the deep Earth's interior. In addition to the well-known correlation between Earth rotation and magnetic field observed at decadal time scale, recent studies have reported unexpected correlation between spatio-temporal changes of the gravity field and of the magnetic field, also at decadal time scale, that may result from processes occurring in the liquid core and at the core-mantle boundary.
This workshop will be the opportunity to investigate emerging science in this field, bringing together scientists from different horizons and broad expertise, including in the domain of gravity and magnetic data analysis, the Earth's rotation, and geophysical modeling and interpretation of the observations in terms of the deep Earth' structure.

Outcomes of the Workshop:

An important outcome of the workshop is a book published in the Space Sciences Series of ISSI by Springer (SSSI, see www.issibern.ch/publications). This volume is not intended to be the proceedings of the Workshop, but a collection of in-depth peer-reviewed papers informed by the contributions and discussions at the Workshop. It should provide a coherent picture of the current state of the subject. The papers are both published in the hardcover book (in the Space Science Series of ISSI) and individually in a special issue of the Surveys in Geophysics journal as soon as they are reviewed and accepted. We aim for submitting the papers within 6-9 months after the workshop. While several oral presentations are allocated to each session, we encourage the production of broad overview papers on a few given topics, co-authored by the speakers who have contributed during the corresponding sessions. But the lead author is free to invite as co-autors a few additional colleagues who did not attend the workshop. The journal issue and the SSSI

volume are expected to appear about 12-15 months after the workshop.

Expectation of the participants:

We expect from you an oral presentation and an active participation during plenary discussions. Participants are also expected to contribute to the writing of the overview/review papers to be published later on after the workshop in Surveys in Geophysics and the SSSI volume.

Attendance: This Workshop is by invitation only with a limited number of participants (maximum 40 to 45).

Early career research scientists

Under its special program for supporting early career research scientists, ISSI invites a few early career scientists, within two years of their PhD, to take full part in the Workshop.

Invitation letter: If you need an official invitation letter, please contact directly Alexandra Lehmann (Alexandra.Lehmann@issibern.ch).

Funding: ISSI provides the subsistence costs (hotel and per diem to cover meals) to all participants while in Bern, and deals with all organizational matters such as reservations, reimbursements (please contact directly Alexandra Lehmann) and computer issues. However, except for conveners, ISSI is not in a position to cover travel expenses. There is also no registration fee for the Workshop.

Schedule:

First Circular:	**6 January 2020**
Second Circular & Final programme:	**1 April 2020**
Registration & Hotel Reservation Deadline:	**15 May 2020**
Workshop Date:	**1 - 4 September 2020**