

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

15 August 2014

Remote Sensing and Water Resources

Date: 6 - 10 October 2014

Conveners

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Objectives of the Workshop

In recent years, remote sensing techniques have demonstrated their capability to monitor components of the water balance of large river basins on time scales ranging from months to decades. For example, satellite altimetry is routinely used for systematic monitoring of water levels of large rivers, lakes and floodplains. If combined with satellite imagery, it provides surface water volume variations. Passive and active microwave sensors offer important information on soil moisture (e.g., the SMOS mission) as well as wetlands and snowpack. Space gravity missions (e.g., the GRACE mission) offer for the first time, the possibility of directly measuring spatio-temporal variations of the total vertically integrated terrestrial water storage. When combined with other space observations (e.g., from satellite altimetry and SMOS) or model estimates of surface waters and soil moisture, space gravity data can measure groundwater storage variations. The purpose of this workshop is to bring together scientists interested in land hydrology, water resources and the global water cycle either from observations or hydrological models –or both-. Two main issues will be addressed: (1) promote the use in combination of space observations for monitoring water storage changes in river basins worldwide, and (2) use the space data in hydrological modeling either through data assimilation or as external constraints.

An important perspective for the latter topic is to account as far as possible for direct anthropogenic forcing on land hydrology (e.g., ground water depletion; dam building on rivers, crop irrigation, change in land use and agricultural practices, etc.) using a variety of remote sensing and other information. Such a new generation of hydrological models will be of great interest for water management objectives. They might also be used for projecting future water resources under different climate and anthropogenic forcing scenarios.

Themes cover by the Workshop

The main goal of the proposed ISSI Workshop is to discuss the state-of-the-art of the research and future prospects. Following discussions by the Conveners, it is proposed that the Workshop will cover the following main themes:

1. The global water cycle: observations and modeling
2. The role of space observations
3. Satellite altimetry and surface waters
4. Soil moisture from remote sensing
5. Total water storage from GRACE space gravimetry
6. Water resources: present and future
7. Water management

Short presentations by the attendees will be structured around the above headings. This list could, subject to discussion and assessment at the Workshop, become the set of chapter headings for the ISSI book. All attendees will be invited to contribute to one or more of the chapters.

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 7 sections and between 20 and 25 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 will be held among the participants during the Workshop. A realistic schedule for the publication of the contributions will be discussed and agreed at the end of the Workshop.

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

Attendance: This workshop will be by invitation only with ~ 40 participants maximum including young scientists. The final version of the Workshop program is attached to this 2nd circular.

Young scientists: Under its special program for supporting young scientists, ISSI will invite (in addition) around few early career scientists, within 2 years of their PhD, to take a full part in the Workshop. As for all participants (see below), ISSI will cover the subsistence costs (hotel and meals) to the invited young scientists (see participants list).

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 fee for the Workshop.

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 <http://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 a 20 minutes shuttle ride from the city center, with direct connections to Munich, Berlin Schönefeld, Hamburg, Amsterdam, London City, Vienna and Paris Orly. 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 <http://www.rail.ch>. Also check out our website <http://www.issibern.ch> for a few more travel tips such as links to city maps of Bern, weather forecasts, tourist information, ...

Hotel reservations

A block booking has been made in city center hotels for the Workshop. All participants at the workshop are requested to contact the workshop secretary, Jennifer Fankhauser (Tel. +41-31-631-4896, Fax: +41-31-631-4897, email: Jennifer.Fankhauser@issibern.ch), to indicate their arrival and departure dates and times, as well as any special requests they may have (e.g. double room) before **September 21, 2014** (a confirmation will be returned within a few days after your request). Please note that all hotel reservations have to be made by the ISSI Secretariat. 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”).