

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

11 February 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.

The Workshop will cover the following main themes

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.

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.

Young scientists: Under its special programme for supporting young scientists, ISSI will invite (in addition) around five 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 fee for the Workshop.

Schedule:

Formal invitations and First Circular:	11 February 2014
Registration deadline:	1 May 2014
Second Circular and final program:	1 June 2014
Hotel deadline:	1 July 2014
Workshop:	6 - 10 October 2014