

Second Circular – Workshop of the International Space Science Institute (ISSI) – 2 October 2017

Space-Based Measurement of Forest Properties for Carbon Cycle Research

Date: 6 – 10 November 2017

Location: International Space Science Institute (ISSI), Hallerstrasse 6, 3012 Bern, Switzerland

Workshop website: <http://www.issibern.ch/workshops/biomass/>

Conveners:

Ann Cazenave	(ISSI, Switzerland & LEGOS, Toulouse, France)
Ralph Dubayah	(University of Maryland, USA)
Teodolina Lopez	(ISSI, Switzerland)
Shaun Quegan	(University of Sheffield, UK)
Klaus Scipal	(European Space Agency – ESTEC, Netherlands)
Thuy le Toan	(Centre d'Etudes Spatiales de la Biosphère, France)

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Summary:

Forests are crucial elements of the Earth system and one of Earth's most precious resource. Forests sustain a myriad of ecosystems that provide habitats for many flora and fauna, yielding rich resources for human development and providing an important sink in the global carbon cycle. In response to the need to monitor these ecosystems, ESA, NASA and DLR are developing the BIOMASS, GEDI, NISAR and Tandem-L missions. These missions will use innovative SAR and Lidar technologies to measure forest structure parameters (such as forest height and forest biomass) and their change with time on a global scale with much more precision than possible today. They are expected to be in orbit within the next five years, providing a unique and powerful combination of techniques to monitor Earth's forests.

These missions will serve the expectations of a large and diverse scientific community and will meet a pressing need for information in the forests globally. Analysis of the global carbon cycle shows that the annual emissions of carbon from fossil fuels and land-use change are larger than the annual accumulations of carbon in the atmosphere and oceans. This suggests a largely unknown terrestrial sink for carbon. This terrestrial sink has never been measured. Measurements of the BIOMASS, GEDI, NISAR and Tandem-L missions offer a unique opportunity to reduce the uncertainties in both the global net emissions of carbon from forest cover change and global changes in aboveground forest biomass. This will significantly improve our understanding of the global carbon cycle, which will be of essential value for climate modelling and policy adaptation actions.

Main objectives of this workshop:

1. Review the latest status of forest biophysical parameter retrieval from space-based SAR and Lidar data.
2. Identify synergies and complementarities between the different mission concepts.
3. Identify key actions leading up to launch and beyond to get the best science and societal return from this unique nexus of space-based instruments devoted to measuring forest properties.

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 *Surveys in Geophysics* journal as soon as they are reviewed. We aim for submitting the papers within 3-6 months after the workshop. While several oral presentations are allocated to each session, we would like to encourage you to aim at overview papers for each topic co-authored by the scientists that contribute to each one of the sessions rather than going for several individual papers on similar topics covered within the same session. The journal issue and the SSSI volume are expected to appear about 12 months after the workshop.

Expectation of the participants:

The time length of the oral presentations depends on for which session your presentation is scheduled (including 1 or 2 clarifying questions). We expect an active participation during plenary discussions, plus contribution to overview/review papers to be published later on after the workshop into the SSSI volume.

Attendance: This Workshop is by invitation only with a limited number of participants.

Invitation letter: If you need an official invitation letter, please contact directly Alexandra Lehmann.

Fundings: 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, we are not in a position to cover your travel costs. There is also 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 and Vienna. 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 at the hotels Ador, Ibis Style Bern City and Kreuz in city center for the Workshop. All participants at the workshop are requested to contact the workshop secretary, Alexandra Lehmann (Tel. +41-31-631-4896, Fax: +41-31-631-4897, email: alexandra.lehmann@issibern.ch), to indicate their arrival and departure dates and times, as well as any special requests they may have (e.g. double room). 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. 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”).

Schedule:

First Circular:	25 July 2017
Second Circular:	2 October 2017
Registration & Hotel Reservation Deadline:	15 October 2017
Workshop Date:	6 - 10 November 2017