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

First Circular – Workshop of the International Space Science Institute (ISSI) – 25 July 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:

Anny 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.

Schedule:

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