International Scientific Conference

ABSTRACT BOOK

7-10 July 2015 • Paris, France

This Abstract book is based on a compilation of all abstracts selected for oral and poster presentations, as of 15 May 2015.

Due to the inability of some authors to attend, some of those works will therefore not be presented during the conference.

OUR UNDER
COMMON CLIMATE
FUTURE CHANGE

Welcome to the Conference

Welcome to Paris, welcome to 'Our Common Future under Climate Change'!

On behalf of the High Level Board, the Organizing Committee and the Scientific Committee, it is our pleasure to welcome you to Paris to the largest forum for the scientific community to come together ahead of COP21, hosted by France in December 2015 ("Paris Climat 2015").

Building on the results of the IPCC 5th Assessment Report (AR5), this four-day conference will address key issues concerning climate change in the broader context of global change. It will offer an opportunity to discuss solutions for both mitigation and adaptation issues. The Conference also aims to contribute to a science-society dialogue, notably thanks to specific sessions with stakeholders during the event and through nearly 80 accredited side events taking place all around the world from June 1st to July 15th.

When putting together this event over the past months, we were greatly encouraged by the huge interest from the global scientific community, with more than 400 parallel sessions and 2200 abstracts submitted, eventually leading to the organization of 140 parallel sessions.

Strong support was also received from many public French, European and international institutions and organizations, allowing us to invite many keynote speakers and fund the participation of more than 120 young researchers from developing countries. Let us warmly thank all those who made this possible.

The International Scientific Committee deserves warm thanks for designing plenary and large parallel sessions as well as supervising the call for contributions and the call for sessions, as well as the merging process of more than 400 parallel sessions into 140 parallel sessions. The Organizing Committee did its best to ensure that the overall organization for the conference was relevant to the objectives and scope. The High Level Board raised the funds, engaged the scientific community to contribute and accredited side events. The Conference Secretariat worked hard to make this event happening. The Communication Advisory Board was instrumental in launching and framing our communication activities on different media. We are very grateful to all.

We very much hope that you will enjoy your stay in Paris and benefit from exciting scientific

interactions, contributing to the future scientific agenda. We also hope that the conference will facilitate, encourage and develop connections between scientists and stakeholders, allowing to draw new avenues in the research agenda engaging the scientific community to elaborate, asses and monitor solutions to tackle climate change together with other major global challenges, including sustainable development goals.

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Pleiades, ALOS-2). The increased amount of observations will facilitate the use of time series analysis methods for the monitoring of tropical forests. Such methods are still at the R&D stage however some studies have started to show their potential capabilities to detect deforestation, forest degradation, but also forest regrowth. Challenges still remain to make such methods operational such as data set accessibility, data source interoperability (optical and radar), increase of the robustness, use of recommended practices, and standards. Such R&D efforts can serve other international policy discussions and agreements beyond those from the UNFCCC. The monitoring of habitats and their fragmentation for instance are listed among the Biodiversity Aichi Targets proposed by the United Nations Convention on Biological Diversity (UNCBD).

This presentation will present some foreseeable forest monitoring methods including degradation to become operational in tropical regions within the next decade, in the context of an increasing availability of Earth Observation data. We will present also international efforts to coordinate research, promote robust forest monitoring methods and standards. Finally we will discuss the current knowledge gaps and R&D needs to be met to achieve the objectives of some international policy negotiations and agreements.

K-2215-03

Tropical forests, Earth Observation and REDD+: requirements, research and progress in supporting developing countries

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Tropical forests represent about 45 % of the world forests, are home to over 2/3 of terrestrial living species and play a major role in climate regulation. In 2005, official discussions initiated at the United Framework Convention on Climate Change (UNFCCC) established a process to analyze how reducing greenhouse gas emissions from deforestation and degradation (REDD) in developing countries could contribute to the ultimate goal of the Convention. A basic underpinning requirement is the systematic long-term observation of forests and other land cover characteristics and changes on national and global levels. The European Copernicus programme will guarantee these long term observations by the Sentinel satellites for the next decades. In response to this need several international activities have been established like the REDD working group within the "Global Observation of Forest and Land Cover Dynamics" (GOFC-GOLD) and the "Global Forest Observation Initiative" (GFOI) of GEO. Both initiatives foster a continuous interaction mechanism with the UNFCCC to provide technical contributions to the negotiations and for national-level capacity development for monitoring emphasizing the important role of satellite remote sensing in this context.

The presentation will elaborate the state of play of REDD+ in the political context and discuss the approach and experiences of the Earth Observation and carbon monitoring community with the REDD political discussions. It addresses the research community with open scientific questions to improve methodologies to support REDD early actions and readiness mechanisms for building national REDD monitoring systems. Critical issues on monitoring forest degradation, accuracy assessments, biomass burning and the role of evolving technologies will be discussed.

O-2215-01

Assessment of forest degradation in the Amazon using multi-sensors techniques: the case of Paragominas (Brazil)

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The Amazonian pioneer front region is a mosaic of different forests types and agricultural landscapes resulting from the colonization of the region through forest conversion into pasture and agricultural lands. Fearnside and Guimaraes (1996) showed that 47% of the deforested area is rapidly abandoned. It also appears that logged forests surface is equivalent to deforested areas (Asner et al., 2005).

Consequently a degradation gradient exists from low-impacted logged forests (depending of the logging intensity) to young secondary (regrowth) forests. To obtain more accurate estimation of carbon stocks, it is important today to take into account the degraded forest gradient including all degraded forest stages between mature intact forests and non-forest areas. The first main challenge is to identify and to characterize the various stages.

The identification of forest degradation is still a complex and expansive problem even if it has been focused until now only on logged tropical rainforest (Asner, 2009; Gond and Guitet, 2009; Desclées et al., 2006; Asner et al., 2005; Souza et al., 2003). In parallel estimation of biomass loss in the degraded forest is little-studied. Within temperate and boreal forests some estimation are made by Solberg et al., (2013). The combination of optical remotely sensed data (Landsat-8), radar (Terra-Sar-X) and Lidar (IceSat) have to be studied to analyze the potential of the multi-sensors techniques to characterize the tropical rainforest degradation (Betbeder et al., 2014).

The study presents the first results obtained during the field work at Paragominas (Pará, Brazil) on different forest degradation intensities (Bérenguer et al., 2014). This field database is then compared with multi-sensors remote sensing to better understand multiple interactions and to establish a forest degradation typology.

O-2215-02

The Challenges of Monitoring Forest Degradation: A Case Study from Central India

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Forest degradation, as distinct from deforestation, results in loss of forest biomass within forested ecosystems. Implications for climate include reductions in carbon storage and the reduced ability of forests to provide hydrological services that buffer against climate change. Many factors contribute to anthropogenically-driven forest degradation, including local dependence on forest resources for fodder, fuelwood and other products as well as fire and commercial timber extraction. Monitoring forest degradation with remote sensing is more complex than monitoring deforestation and calls for the use of data from non-optical sensors. An example from central India, where local livelihoods are highly dependent on forests, illustrates the use of optical and radar data to monitor changes in forest biomass associated with human use. Loss of biomass is associated with human use surrounding villages. Reductions in degradation in this context depend on providing livelihood options that reduce dependence on forest resources. The utility of operational systems for monitoring progress towards that goal depends on the involvement of NGOs and other institutions working with local communities. Expanding degradation monitoring over large areas needs to account for the heterogeneity of forest types and varying pressures on forests in different settings.

O-2215-03

Development of EO based national forest cover monitoring systems in the Congo Basin

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Deforestation is currently known to account for up to 20% of global greenhouse gas (GHG) emissions. Therefore, a significant decrease in deforestation can have a direct positive impact on reducing GHG emissions. Initiatives such as the Reduction of Emissions from Deforestation and Degradation (REDD), Low Emission Development Strategies (LEDS) or Zero Deforestation (ZD) aim to provide incentives to reduce deforestation. The Congo Basin represents the