

# AMAZALERT Newsletter



A research project on impacts of climate change and land-use change in Amazonia

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## Editorial

AMAZALERT slowly matures: Well-coordinated project sub-teams have produced first scientific results - "fruits". The months to come will challenge us by the need for data consolidation, synthesis of results and merging them with stakeholders' scenarios for the future.

As for now: Happy reading!

## AMAZALERT Workshop on Amazon Thresholds, Tipping Points and an Early Warning System

*Gillian Kay*

AMAZALERT researchers gathered at the **Met Office, Exeter UK**, on 7<sup>th</sup> June 2013 to discuss progress, plans and challenges in developing a blueprint for an Early Warning System in the region. They were joined by international experts on tipping points, thresholds and climate risk management from the Met Office and the University of Exeter. The range of experience of workshop participants produced lively and constructive discussion.



This issue's highlights:

- Editorial
- AMAZALERT Workshop on Amazon Thresholds, Tipping Points and an Early Warning System
- Results from the LBA Data Model Intercomparison project
- The new IPCC-guided scenarios linked to AMAZALERT
- First Brazilian AMAZALERT scenario workshop
- Elevated CO<sub>2</sub> experiment in the making
- News from the field
- Just published
- Stakeholder's viewpoint



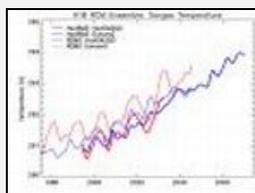
## First Brazilian AMAZALERT scenario workshop

### *Mateus Batistella*

During the 1<sup>st</sup> AMAZALERT Workshop with Stakeholders, representatives from Brazilian civil society gathered in Belem, state of Para, on June 24 and 25, to discuss possible future scenarios for the Amazon region. The event was organized by **Embrapa Satellite Monitoring** and by the **National Institute for Space Research**. The workshop focused on natural resources and social/economic development in Amazonian rural and urban areas, taking into consideration the current regional institutional and political context.

The discussions were organized in three phases: the current situation, the future and the way the changes may occur. In other words, stakeholders talked about the current situation and tendencies, their vision of what is desirable in the future (2050) and what to be avoided. In addition, participants discussed how the possible changes can lead to the desirable or undesirable scenarios.

A detailed report with all the results obtained in the workshop is now being prepared and it will combine qualitative information about different scenarios. Quantitative information will be generated by computational models for land use, representing alternative scenarios. A summary of all actions discussed by stakeholders during the workshop and the proposed alternatives to achieve the goal will also be included in the report. In October 2013, the 2<sup>nd</sup> AMAZALERT Workshop with Stakeholders will be held in Brasilia, with the presence of several research and governmental organizations.



## Elevated CO<sub>2</sub> experiment in the making

*Bart Krujit*

Studies with global dynamic vegetation models, such as used within AMAZALERT clearly show that the resilience of tropical rain forests to climate change depends critically on their ability to use the increased atmospheric CO<sub>2</sub> concentration for enhanced growth. Although CO<sub>2</sub> itself does enhance growth we know, however, very little how enhanced growth may, in turn, affect nutrient limitations and life time (turnover) of trees: the forests may effectively not respond at all or very little to CO<sub>2</sub>. Several experimental studies exist for the temperate region, but none for the tropics.

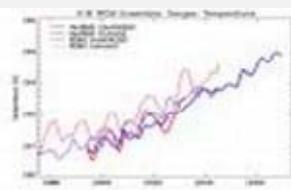
AMAZALERT scientists are, together with several others, now planning a pilot to set up a real-size Free Air CO<sub>2</sub> Experiment (**FACE**) in Amazonia. Such a huge experiment would consist of number of patches in the forest where air with high CO<sub>2</sub> concentrations is released into the canopy for several years, while ecologists, soil scientists and modellers study the response of the ecosystem. This big challenge is likely to start some time in 2014, running into the coming decade....



## News from the field

*Wilma Jans*

In May we travelled to Caxiuana reserve again, to continue with our experiments on the temperature response of photosynthesis and photosynthetic capacity. In September 2012 we installed heaters to heat up leaves over a longer period. We were very glad to find most of the heaters in a good condition and still working. During this campaign we re-measured light and CO<sub>2</sub> response curves at different temperatures at these heated leaves to see whether the temperature response has acclimated to higher temperature. Currently we are analysing the data and hope to show some results in the next newsletter.



## Just published ...

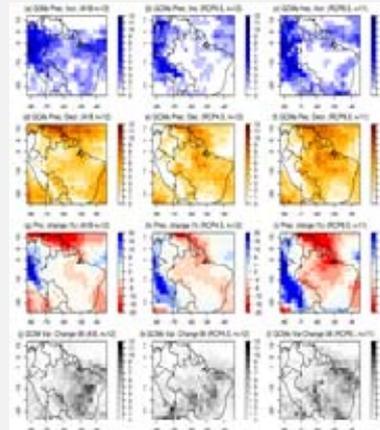
### "Framing Sustainability in a Telecoupled World"

In this recent publication, **Mateus Batistella** and co-authors propose an integrated framework based on telecoupling, an umbrella concept that refers to socioeconomic and environmental interactions over distances. The concept of telecoupling is a logical extension of research on coupled human and natural systems, in which interactions occur within particular geographic locations. The telecoupling framework contains five major interrelated components that are being presented in the article. [Read more](#)



### "Likely Ranges of Climate Change in Bolivia"

In this paper **Christian Seiler and co-authors** evaluated historic and future climate simulations from 35 different global circulation models (GCMs), covering 5 climate change scenarios (SRES A1B, B1, A2 and RCP4.5, RCP8.5). They focused mainly on Bolivia, but also compared projections among the older CMIP3 and the more recent CMIP5 models for the entire Amazon basin. GCMs revealed an overall cold, wet, and positive-SW-radiation bias, and showed no substantial improvement from the CMIP3 to the CMIP5 ensemble for the Bolivian case. Models projected an increase in temperature (2.5° to 5.9°C) and SW radiation (1% to 5%), with seasonal and regional differences. In the lowlands, changes in annual rainfall remained uncertain for CMIP3 whereas CMIP5 GCMs were more inclined to project decreases (-9%). This pattern also applied to most of the Amazon basin, suggesting a higher risk of partial biomass loss for the CMIP5 ensemble. Both ensembles agreed on less rainfall (-19%) during drier months (June–August and September–November), with significant changes in interannual rainfall variability. [Read more](#)



## Stakeholders's viewpoint

"It is important to strengthen the family farm in Amazon the region, but it is not enough just to present to the families a detailed study about which kind of crop is going to be more efficient on that particular type of soil. It doesn't work to just come with a ultra modern technique saying that the local producers should plant this or that kind of crop.



We need to make the technology and correct planting know-how to effectively be taught to the farmer. Also, diversify the production not to depend only on one product and take into consideration the specificities of the region and local culture."

*Mr Diego Luiz Nascimento, Agronomy Engineer, works at Fundação Viver, Produzir e Preservar, a nonprofit organization situated at the Transamazonica Region, in Altamira, PA.*

### Contact Address

Alterra,  
Wageningen UR  
PO Box 47  
6708 PB Wageningen  
the Netherlands

E-Mail  
gudrun.lettmayr  
@joanneum.at  
fokke.dejong@wur.nl

Website  
[www.eu-amazalert.org](http://www.eu-amazalert.org)

Next Newsletter

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