

Invitation

CLIMMANI/INTERFACE workshop

“After the extreme – measuring and modeling impacts on terrestrial ecosystems when thresholds are exceeded”

Accademia dei Georgofili, Florence 12th-15th April, 2016.

We are hereby inviting you to the upcoming international workshop on “Handling the extreme – experimentation and forecasting of impacts in terrestrial ecosystems when thresholds are exceeded” to be held in Florence, Italy 12-15th April 2016. The workshop is organized by the two international research networks, INTERFACE and CLIMMANI. Your specific role in the workshop is outlined in the attached letter.

INTERFACE is based in US and CLIMMANI in Europe, and both networks aim at bringing together researchers working on climate change effects in terrestrial ecosystems in order to facilitate interaction, syntheses of results and collaboration. In particular, bringing experimentalists and ecosystem and earth system modelers together has a special priority.

The international workshop in Florence 12-15th April 2016 is organized by Claus Beier, Aimee Classen and Klaus S Larsen, University of Copenhagen (DK), Jeff Dukes, Purdue University (US), Anke Jentsch from University of Bayreuth (DE) and Franco Miglietta, Institute for Biometeorology, National Research Council.

Extreme events – the topic

Ecosystem experimentation related to climate change has been carried on for several decades providing valuable information on ecosystem responses to increased atmospheric CO₂ and temperatures and altered precipitation. Experiments have been carried out in a wide range of ecosystems and climatic conditions and for time ranges of years to decades. They include multiple single factor experiments as well as a limited amount of multifactor experiment where interactions among factors have been addressed. These experiments have generated significant knowledge on ecosystem responses to the main climatic stressors, have informed and tested models and have formed backgrounds for major policy advice e.g. in the IPCC assessment reports.

Common to these experiments are that they have in most cases been based on “most likely scenarios” or “average scenarios” and in cases where extreme weather conditions have been addressed, these extremes are mostly “moderately extreme”. This means that our knowledge on more harsh and very extreme conditions with thresholds and tipping points being exceeded are generally limited and mostly lacks experimental backup. Further, this means that ecosystem models also lack that knowledge and/or validation against measurements.

Therefore, the workshop in Florence will focus on “extreme extremes”. What is our current understanding of such events, how do organisms and ecosystems respond and recover when thresholds are exceeded and how have and can we address this experimentally and as well as through modelling.

What is our current understanding of plant and ecosystem responses to very extreme events and how do we close the gaps in knowledge from an experimental and modelling point of view?

Session details

The workshop will consist of 4 sessions that could be seen as a path to identify the gaps and the answers:

1. What is the current conceptual understanding of ecosystem responses to very extreme conditions and ecosystem recovery?
2. Long term ecosystem responses to climate change - what do current models tell us?
3. Interactions between climate change, disturbance regimes and successional stages - evidence from current experiments
4. Impacts of extremes - how do we design future experiments and models to tackle the unknowns?

The meeting will be devoted into a 50:50 division of time between scientific presentations (incl. posters) and group discussions. This means that we specifically designed the workshop with relative much time for discussions and interactions among participants. Talks will have different lengths and in some cases be more “statement-like” rather than long and coherent presentations. For each session we have identified key researchers from the US and Europe that we believe will do an excellent job of organizing and chairing the session. It is the organizers of the session who have contacted you and you should follow their specific advice.

Breakout sessions: The group discussions will be organized in smaller breakout sessions with the goal of outlining a plan or a synthesis paper identifying key messages related to the overall topic. Each breakout group should ideally synthesize and discuss the state of knowledge within the area and identify gaps in knowledge and abilities to model it at a local and global scale. The breakout groups will be given sufficient time to discuss and condense the thoughts and outline a plan for a product after the end of the meeting. All participants have been specifically chosen because of their past and/or ongoing work of relevance to the topic. In order to organize the break out sessions most efficiently and with most relevance to the participants, you will later be prompted for your view on the most urgent science questions and gaps in knowledge.

Model session: Session 2 on modelling differs from a typical model session in the sense that we have asked 2 model groups (Ben Smith (LPJguess) and David Medigvy (ED2) to run a given set of scenarios relevant to the topic and provide the results. Given that models are a conceptualization of our current understanding, these outputs can be considered hypotheses of ecosystem responses. They may be wrong, meaning that there is something wrong with our understanding, which is what we want to get at. The model results will be commented by a panel of modellers and form the basis for discussion with the whole audience.

Poster session: Many of the participants will not be given a slot to present, and some presentations will be short. Therefore, and because all participants have great experiences to bring, we encourage all participants to bring a poster for the poster session at day 1 of the workshop. The poster session will be

initiated with a “pitch-presentation” where each presenter will be given 15 seconds to show one slide and highlight the poster.

Field trip: The workshop will start on the 12th with an excursion in the area around Florence with both scientific and historical/cultural highlights.

Brief session descriptions

	Topic		Contact
Scientific organizing committee		Local organizers Franco Miglietta See also session responsables	Chair of INTEFACE Jeff Dukes jsdukes@purdue.edu Chair of ClimMani Claus Beier cbe@ign.ku.dk
Session 1 resp. Aimee Classen	What is our conceptual understanding of plant and ecosystem responses to extreme events and threshold exceedance?	Key note on ecosystem stability and resiliens. 8 short presentations of conceptual perspectives. Break out discussions	Marten Scheffer Josep Penuelas Josep.Penuelas@uab.cat Melinda Smith Dan Metcalfe Gyogy Kryol Anke Jentsch Christine Hawkes Aimee Austin
Session 2 resp. Jeff Dukes	Long term ecosystem responses to climate change - what do models tell us?	Model predictions by LPJguess and ?? on 10 different scenarios including very extreme conditions. What do the models predict, do we trust this. Panel debate	Ben Smith (LPJguess) David Medigvy (ED2) Panel: Anja Rammig Dave McGuire Rupert Seidl Jeremy Lichstein
Session 3 resp. Claus Beier	Interactions between climate change, disturbance regimes and successional stages - evidence from current experiments	Which experimental evidence do we have with respect to ecosystem responses to climate change?	Nate McDowell Patrick Meir Scott Collins David Wardle
Session 4 resp. Klaus S Larsen	Impacts of extremes - how do we design future experiments and models to tackle the unknowns?	How should we design future experiments in order to gain the necessary information. How should optimize interactions between experimentation and modelling.	Lindsey Rustad rustad@maine.edu Rich Philips Jeff Dukes (Michael Bahn) jsdukes@purdue.edu Juergen Kreyling (Mirco) Yiqi Luo

Workshop outline

	Tuesday 12th April	Wednesday 13th April	Thursday 14th April	Friday 15th April
Morning	Field trip to CO2 springs	Session 1	Session 3 and 4	Breakout groups and conclusion
Afternoon		Session 2 and Poster	Breakout groups	End
Evening	Dinner			

CLIMMANI and INTERFACE networks

More information about the CLIMMANI and INTERFACE networks are found on their respective websites:

www.climmani.org

<http://www.bio.purdue.edu/INTERFACE/index.php>