

This workshop is part of a workshop series in preparation for the 2014 Resilience Conference to be held in Montpellier, France. The objective of the workshop series is to bring together French and international scientific communities for an in-depth exploration of the multiple dimensions of resilience following the theme of the 2014 Resilience Conference: *"Adaptation, Transformation and Development"*.

This specific workshop focuses on the different trends of research on mathematical formalizations of resilience and on their practical use. Indeed, the mathematics of resilience generally relates resilience with the attractors of the system's dynamics and proposes different means for qualifying the tendency of the system to return to a desired attractor after a perturbation. This approach is hence based on a study of the system's attractors and attractor basins, with the tipping points corresponding to the boundaries between attractor basins. Recently, Viability Theory has been proposed as a conceptual and practical tool for formalizing resilience. The proponents of this approach claim that it generalizes the attractor based ones and that it can include more explicitly the search for efficient action policies and express rigorously the adaptability of a system.

The workshop will propose scientific presentations which will introduce and criticize these concepts and methods, in order to identify the next research challenges. It will also propose examples of applications of these approaches. The audience and the speakers will be invited to participate to discussions about the utility of formalizing resilience in different contexts and about the research challenges that need to be prioritized.

Invited speakers:

- Marty Anderies, the School of Sustainability, Arizona State University.
- Luc Doyen, CNRS, Paris.
- Steven Lade, Stockholm Resilience Center.
- Olivier Barreteau, Irstea Montpellier.

Contributors

- Daniel Shertzer, Ecole des Ponts Paris Tech
- Charles Rougé, Irstea Clermont-Ferrand.
- Sophie Martin, Irstea Clermont-Ferrand (to be confirmed).
- Bruno Bonté, Irstea Montpellier.

Practical information:

The workshop will be held

On October 8, 2013, from 9:00 to 18:00,

in **hotel Oceania,**

3 rue du Clos René,
34 000 Montpellier

A lunch buffet will be offered to the participants.

The participation is free but the participants **should register before September 15** by sending an email to: Catherine.calvayrac@irstea.fr announcing their participation and a few words about their interest.

