

## General Information

### Date

Monday 29 May to Friday 2 June, 2017

### Location

Schweizer Jugend- und Bildungszentrum (SJBZ), Hotel Allegro

Lincolnweg 23, CH-8840 Einsiedeln

[www.hotel-allegro.ch](http://www.hotel-allegro.ch)

### Accommodation

Shared rooms (3 to 4 persons) with shared bathrooms. Rooms will be attributed by the organizers. Full board from Monday lunch to Friday with lunch and coffee breaks.

### Credits

2 ECTS



The Sihlsee and the summer school venue in Einsiedeln. Photos: Hotel Allegro

### Eligibility

Preference will be given to students enrolled in one of the following PhD programs: Plant Sciences and Science & Policy.

MSc students, PhD students and PostDocs at University of Zurich, ETH Zurich or University of Basel. Students from national or international universities are welcome if places are available.

### Fee

PhD students: CHF 150; MSc students: CHF 60. Fee covers board, lodging and activities during the summer school study week. Travel expenses are not covered. Students are expected to arrive at the venue on Monday, the 29th of May 2017. For cancellation less than four weeks before the summer school a late cancellation fee of CHF 150 applies.

### Scientific Organisers

Zurich-Basel Plant Science Center, Universities of Zurich and Basel, ETH Zurich, Dr. Melanie Paschke, Dr. Luisa Last

### Funding

The summer school is funded by the Swiss University Conference (SUC), SUC Programme 2013-2016 P-1 «Doctoral programmes».

### Questions about this summer school?

#### Please contact

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Photos title page: Flickr



University of  
Zurich <sup>UZH</sup>

**ETH** zürich



University  
of Basel

## Zurich-Basel Plant Science Center

## Summer School May 29 – June 2, 2017 Einsiedeln



## Understanding Risks and Resilience in Plant Systems

# Understanding Risks and Resilience in Plant Systems

- What are systemic risks in the climate system, ecology, economy or agriculture?
- How can we use modelling to predict and manage risks?
- What are the effects of genetic diversity on food-web stability?
- What role does diversity have in achieving stable systems?

With humankind leaving the planetary boundaries and the safe operating space systemic risks have become frequent: our climate system is approaching a new state, biodiversity losses are endangering ecosystem services, pests are globally spreading and threatening our food security. Complex systems are characterized by inter-connections between species, agents, individuals and multiple stable states whereas regime shifts can be triggered after periods of stability towards non-linear behavior, i.e. path dependance, sustained oscillation, contagion and synchrony.

Systemic risks arise from the potential for unpredictable changes of the system to another state. While we cannot predict when tipping points will arise, we can stabilize the system in the current equilibrium through increasing or restoring resilience and diversity.

We will discuss modeling of variable to be considered in complex systems and their threshold effects as well as some interaction at the socio-ecological interface, the so-called complex adaptive systems. The range of topics spans from plant sciences to economy with a focus on modeling from the mathematical background to complex ecological models. Research and case studies are from climate change, ecosystem research, epidemiology, agriculture and economics with strong links to plant sciences.

Invited speakers will make presentations on the topic of their research, give insight into their research field, conduct interactive workshops and take part in plenary discussions. They will act as mentors in the case studies group work. The outcome of the group work will be available in the proceedings.

## Learning Objectives

By the end of the summer school participants will:

- Understand features of complex systems with non-linear behavior and non-linear feedback
- Understand key features for stabilizing systems: diversity and resilience
- Learn about fast and slow variables and their contribution to the modeling of systemic risks
- Learn about systemic risks arising from socio-ecological interactions: complex adaptive systems

## Organization of Student Work

### Before summer school

- Application includes description of motivation and background
- Preparatory reading: Students will need to read the assigned literature before the summer school

### During summer school

- Sessions are composed as lectures, discussions and case study work
- Group work will be done on case studies, individual working time on this assignment is expected to be of 10h
- Presentation and integration: at the end of each afternoon, 1 group presents their experiences and insights - Open Format
- Case study presentation on day 5

### After summer school

- Groups hand in a finalized version of their case study for inclusion in the proceedings

## Speakers

- Pia-Johanna Schweizer (Institute for Advanced Sustainability Studies, DE)
- Mary Lou Zeeman (Bowdoin College, Brunswick, ME, US)
- Adam Clark (University of Minnesota, US)
- Chris Gilligan (University of Cambridge, UK)
- Christophe Randin (University of Lausanne, CH)
- Robert Finger (ETH Zurich, CH)
- Matthew Barbour (University of Zurich, CH)
- Andrea Downing (Stockholm Resilience Center, SWE)
- Melanie Paschke (University of Zurich, CH)

See the final program on our website (available at the end of March 2017)

[www.plantsciences.uzh.ch/teaching/summerschool.html](http://www.plantsciences.uzh.ch/teaching/summerschool.html)

## Application

Registration is possible via this link:

<https://www.registration.ethz.ch/spsw/>

Please submit in a merged pdf your CV and a letter of motivation (5-10 sentences). Applications will only be accepted via the official registration site. Incomplete applications will be rejected.

**Deadline for applications:** April 15, 2017

Confirmation of participation will be made latest by end of April together with more detailed information.