

Summer School 2019



# Forest Resilience

Resilience of Forest Ecosystems under Global Change

August 18 to 24, 2019

Davos Switzerland



## Background

Following the definition of the Stockholm Resilience Center, “Resilience is the capacity of a system (...) to deal with change and continue to develop. It is about the capacity to use shocks and disturbances like a financial crisis or climate change to spur renewal and innovative thinking. Resilience thinking embraces learning, diversity and above all the belief that humans and nature are strongly coupled to the point that they should be conceived as one social ecological system”.

As forests cover around one third of the global land area and provide a vast array of ecosystem services crucial for humanity, from global to local scales their survival is also crucial for the survival of mankind. Global Change affects forest ecosystems in many different ways. Drought periods like in the year 2018 and large scale disturbances such as forest fire and bark beetle outbreaks all over Europe strongly reduce tree growth and are increasingly causing tree mortality and collapsing stands are not able to provide various ecosystem services including C sequestration.

As a consequence, the impact of global change on forest ecosystems and their resilience to deal with shocks and disturbances and changing societal conditions needs to be addressed from complementary angles:

- On the scientific level, forest functioning and forest dynamics, including the many interactions within forests as well as between forest ecosystems and their (changing) environment, as well as with the development of societies need to be taken into account.
- On the applied level, sustainable forest management practices have to be developed to improve the resilience in order to safeguard the multitude of ecosystem services they provide.
- The economic, societal and political framework is also central to warrant the sustainable and efficient use of forests.

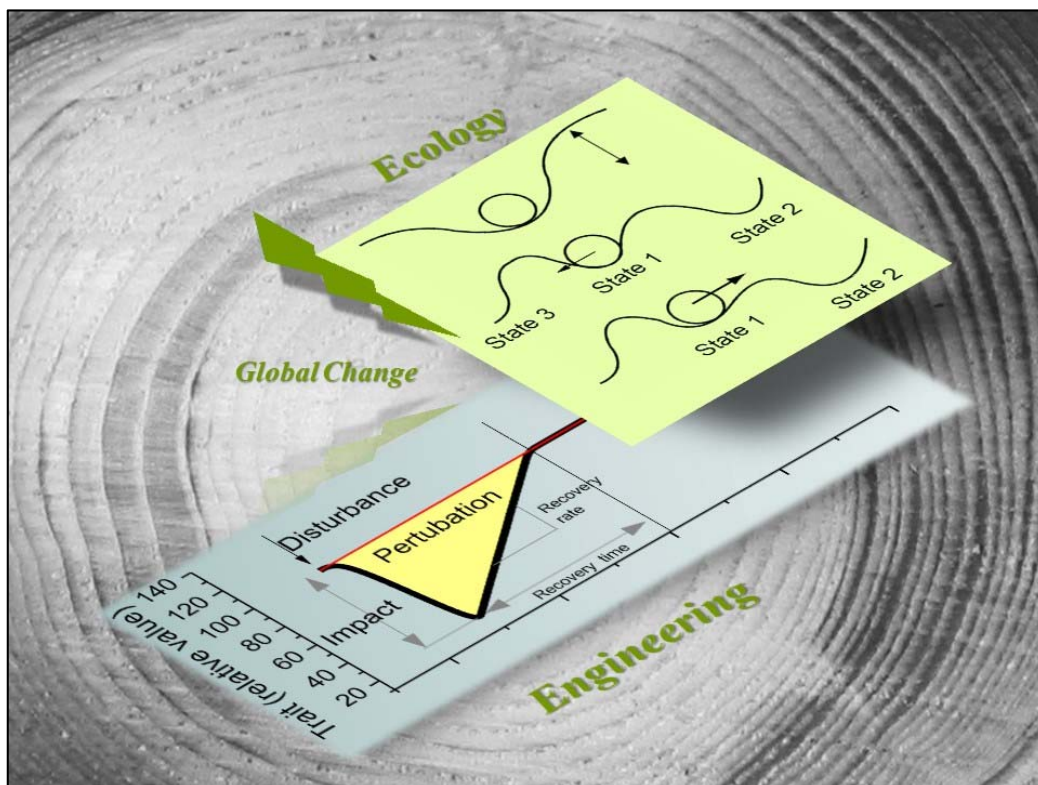


Figure 1: Interdisciplinary approaches of forest resilience in forest research and management

## Goal of the Summer School 2019

The goal of the SwissForestLab/NFZ Summer School 2019 is to provide an in-depth understanding of the resilience of forest ecosystems under the impact of global change and the management of forests to improve their resilience taking into account not only the natural science background but also the socio-economic and political boundary conditions.

The participants will reflect their own work with respect to other disciplines and discuss possible benefits of interdisciplinary approaches in their field.

Ultimately, the participants will get to know the interfaces of their own research with other methods and approaches. This will increase the impact and the relevance of their work.

## Organization

The Summer School is organized around four major topics, which address different aspects of forests and their role for their resilience:

1. The scientific basis: physiological basics and impact of climate;
2. Cross-scale: Resilience in space and time;
3. Economic, political and management perspectives;
4. Interdisciplinary methods and approaches addressed with project examples, as well as following up scientific impact by a political keynote (Swiss federal Office for the Environment FOEN) on resilience.

In each topic, experienced and internationally recognized researchers and speakers are responsible for the scientific content and the discussions (see Table 1).

Major topic	Methods	Keynotes
Resilience of ecosystems: Basics and impact of climate	From leaf to stand level	Prof. Arthur Gessler (WSL) Dr. Damien Bonal (INRA) Prof. Ansgar Kahmen (Uni Basel)
Cross-scale: Resilience in space and time	Long-term, biodiversity, imbalance, soil/hydrology	Dr. Georg von Arx (WSL) Dr. Martin Gossner (WSL) Dr. Heike Puhlmann (FVA) Prof. Alexandra-Maria Klein (Uni Freiburg)
Economic, political and management perspectives	Socio-economic analysis, risk assessment, forest modelling	Dr. Georg Winkel (EFI Bonn) Dr. Marielle Brunette (INRA) Prof. Marc Hanewinkel (Uni Freiburg) Prof. Harald Bugmann (ETH Zurich) Prof. Roland Olschewski (WSL)
Interdisciplinary methods and scientific impact	Interdisciplinary methods and approaches Following up scientific impact	Prof. Erwin Dreyer (INRA) Dr. Claude Garcia (ETH Zurich) Dr. Peter Bebi (WSL/SLF) Thomas Bettler (FOEN) Ben Turner (Forestry Albul/Alvra)

Table 1: Major topics, methods and keynote speakers

In addition to the active participation in the Summer School, PhD students are expected to contribute with a poster that addresses disciplinary and interdisciplinary interfaces of their own work to the major topics of the Summer School: natural science basics, cross-scale effects, economic-, political- or management perspectives. The poster will be presented during poster sessions (see Table 2). In addition, participants are expected to read the most important articles of the major topics of the Summer School. These articles will be appointed in advance by the respective keynote speakers.

The organizing committee consists of Prof. Marc Hanewinkel (Uni Freiburg), Prof. Arthur Gessler (WSL), Dr. Stefan Hunziker (WSL) and Dr. Julia Born (WSL).

### Preliminary program

The Summer School will start with an introductory lecture on Sunday evening. The following five days will comprise input lectures and discussions with various experts, assigned group work and two excursions: a) to the Dischma-Tal (Stillberg alpine tree line afforestation experiment; changes in forest cover and forest structure caused by natural disturbances, forest management), b) Davos area (forest ecosystem services; socio-economic effects). As enrichment of the scientific scope of the Summer School and to foster interdisciplinary thinking we will have a special science-art presentation and a workshop on stakeholder dialogue guided by Dr. Claude Garcia (ETHZ). On the last day, the final product of the group work will be discussed, followed up by a synthesis workshop and feedback round.

	Sunday 18.8.	Monday 19.8.	Tuesday 20.8.	Wednesday 21.8.	Thursday 22.8.	Friday 23.8.	Saturday 24.8.
Morning		Poster session  <b>Economy, politics &amp; management</b> lectures & discussions	Poster session  Special science-art event	Poster session  <b>Physiological basics</b> lectures & discussions	<b>Cross-scale</b> lectures & discussions	<b>Excursion</b> Davos area	<b>Departure</b> from Davos
Lunch							
Afternoon	<b>Arrival</b> at Davos	<b>Economy, politics &amp; management</b> lectures & discussions  Group assignment	<b>Excursion</b> Dischmatal	<b>Workshop</b> stakeholder dialogue	<b>Cross-scale</b> lectures & discussions	<b>Interdiscipl. &amp; impact</b> lectures & discussions  Presentation group work  Synthesis Feedback	
Dinner	Social event						
Evening	Introduction Summer School  Ice-breaker	Group work		Group work	Group work		

Table 2: Preliminary program

### Application

The Summer School is open to PhD students (but also MSc in their last year and PostDocs) from any country in the world. Applications will be evaluated according to their fitting and interest to the research topic, their evidence of academic quality, and their expected benefits from this Summer School. The SwissForestLab and the NFZ network can welcome around 20 highly motivated students in the 2019 Summer School. The language of the Summer School will be English.

### Costs

Fees: 700 Swiss Francs (exclusive of VAT). This includes accommodation (shared rooms) at the Hotel Shima (<https://www.shima-davos.ch/>) and meals from dinner on Aug. 18 to breakfast on Aug. 24, course material and excursions. Accepted participants are expected to bear travel costs to Davos.

### APPLICATION FORM SUMMER SCHOOL RESILIENCE

Please register here: <https://www.wsl.ch/swissforestlab/summer-school/>

**Extended application deadline is May 19<sup>th</sup>.** If you have any questions, please contact the organizing committee via: [swissforestlab\\_summerschool@wsl.ch](mailto:swissforestlab_summerschool@wsl.ch).