



Forests and Extremes

Crisis or Transition?

Summer School Davos, Switzerland
August 18-25, 2024

Background

Is early browning in European forests a harbinger of tree death or simply a sign of temporary stress? In 2018, science could not answer this question. But one thing was clear: the frequency of extreme events, including droughts, had increased after the hot summer of 2003. Even though droughts also occurred during the last century, they were not accompanied by such high temperatures as today. And on top of climate warming, various manifestations of global change trigger a multitude of cascading processes in and around forests. It's complicated...

Goal of the Summer School

The goal of the Summer School Forests and Extremes – jointly organized by the WSL Research Program Extremes, the SwissForestLab and NFZ.forestnet – is to face up to the complexity of compound and cascading events. Alongside national and international experts from multiple disciplines, participants will expose themselves to the unknown: the future of terrestrial ecosystems, with a focus on forests! Through field excursions, input lectures, group assignments, and ample opportunities to interact with peers and practitioners, participants will acquire practical and theoretical knowledge on future extremes. This includes understanding their expected impacts on the functioning and services of forests and other ecosystems, the consequences for society and economy, and possible response options.

Participants will obtain first-hand information and food for thought from well-known experts in the field of ecology, socio-economic and political research. With selected methods for efficient knowledge sharing, they will contribute, reflect, and discuss their own work with respect to other disciplines, and with respect to the experience and perspectives of practitioners.

Ultimately, participants will situate their own research within a larger systemic context, expanding and consolidating their personal network. This will increase the impact, relevance, and visibility of their future work.

Structure and Format

The Summer School Forests and Extremes is organized around a framework that includes **drivers, impacts, and responses** to look at relationships between different factors, e.g., climate change leading to a higher frequency of drought events, which in turn affect tree health and mortality. This cascade can then be extended, for instance, to bark-beetle outbreaks, susceptibility to windfall, and ultimately the risk of forest fires, not only in the present but also over time. The focus lies on future extreme events, including their prediction, probabilities, anticipated impacts both on the environment and society, and possible response options (e.g., climate adaptation and forest management strategies).

To address the inter- and transdisciplinary research topic of future extreme events and their impacts on forests and ecosystems, participants will be introduced to relevant theories and useful **concepts and tools** to simplify and organize complex systems and to foster dialogue with various stakeholders.

For each topic – i.e., drivers, impacts, responses, and concepts and tools – nationally and internationally recognized experts from science and practice will contribute to a joint system understanding. This also includes a discourse on the limitations of current research and a critical reflection on potential response options, their feasibility, and impact (see Table 1).

In addition to active participation in the Summer School, participants are expected to contribute with a poster and a graphical abstract addressing the disciplinary and interdisciplinary

interfaces of their own work with the topic of the Summer School. Tools for knowledge exchange and for the co-production of knowledge in inter- and transdisciplinary (ITD) projects will be introduced and tested throughout the week. To fully tune in to the Summer School and to help create a common understanding on the topic of future extremes, participants are expected to read relevant articles assigned by the lecturers (a reading list will be provided to participants ahead of the Summer School).

Main topics	Inputs	Lecturers
Drivers	Processes leading to heatwaves, cold extremes, and storms	Prof. Daniela Domeisen (Uni Lausanne, ETHZ) more tbd
Impacts	Extremes and cascading effects Forest disturbances	Dr. Nadine Salzmann (SLF Davos, CERC) Dr. Peter Bebi (SLF Davos) Dr. Frank Krumm (SLF Davos) Prof. Charlotte Grossiord (EPFL) Dr. Marco Conedera (WSL) Dr. Alessandra Bottero (SLF Davos)
Response	Bark-beetle outbreak in South Tyrol; Climate adaptation strategies in forest management from the perspective of social science and governance	Prof. Camilla Wellstein (Uni Bozen) Prof. Marc Hanewinkel (Uni Freiburg, NFZ) Dr. Michael Reinhard (FOEN, Dept. Forest)
Concepts for Extremes Tools for ITD research	Concepts and definitions of extreme events; Tools for stakeholder dialogue	Prof. Niklaus Zimmermann (WSL, Extremes) Dr. Astrid Bjørnsen (WSL, Extremes) Prof. Claude Garcia (HAFL, ETHZ)

Table 1. Main topics, inputs, and lecturers

Preliminary program

The Summer School Forests and Extremes will start with an introductory lecture on Sunday evening (see Table 2). The following six days will comprise input lectures and discussions with various experts, assigned group work, and several excursions. As an enrichment of the scientific scope and to foster transdisciplinary thinking, a workshop on stakeholder dialogue will be facilitated by Prof. Claude Garcia (HAFL, ETHZ). On the last day, the final product of the group work will be discussed, followed by a wrap-up and feedback round.

Organizing committee and contacts

The organizing committee consists of Dr. Astrid Bjørnsen (WSL, Extremes), Prof. Niklaus Zimmermann (WSL, Extremes), Dr. Peter Bebi (SLF), Prof. Arthur Gessler (WSL, SwissForestLab, NFZ), Dr. Stefan Hunziker (WSL), Dr. Frank Krumm (WSL), Prof. Charlotte Grossiord (EPFL, SwissForestLab), Dr. Julia Born (SwissForestLab), and Susanne Senn (WSL).

Costs

Fees: 1'000 Swiss Francs (excluding VAT). This includes accommodation (**shared rooms**) at the Hotel Shima (<https://www.shima-davos.ch/>) and vegetarian meals from dinner on August 18,

2024 to breakfast on August 25, 2024, course materials, and excursions. Accepted participants are expected to cover their travel costs.

	Sunday 18.8.	Monday 19.8.	Tuesday 20.8.	Wednesday 21.8.	Thursday 22.8.	Friday 23.8.	Saturday 24.8.	Sunday 25.8.
MORNING		Graph. Abstract Session	Graph. Abstract Session	Keynote 5	Stakeholder Dialogue	Keynote 9	Keynote 11	DEPARTURE
		Keynote 1	Keynote 3		Keynote 7	Keynote 10		Hotel Shima
		Graph. Abstract Session	Graph. Abstract Session	Keynote 6	Poster Award		Keynote 12	
		Keynote 2	Keynote 4		Keynote 8			
AFTERNOON		ITD Session	Excursion	Networking afternoon	Stakeholder Dialogue	Excursion	ITD Session	
	ARRIVAL Hotel Shima	Group Work			ITD Session			Presentation Group work Synthesis Feedback
EVENING	Introduction		Networking		Group work			
	Icebreaker		Dinner					

Table 2. Preliminary program of the Summer School Forests and Extremes.

Application for the Summer School

The Summer School Forests and Extremes can accommodate around 20 students. It is open to motivated PhD students, MSc students in their final year, and Postdocs from any country. Applications will be evaluated according to their fitting and interest in the research topic, their evidence of academic quality, and their expected benefits from this Summer School. The language will be English, and the application documents should also be submitted in English.

For your application, you need to have the following documents ready for upload:

- your CV (one page)
- an abstract of your PhD/MSc thesis or your current project (max. half page)
- a letter of motivation explaining what you expect to learn in terms of content, methods, and social skills (one page)

Application deadline: March 15, 2024.

The Summer School web page:

<https://swissforestlab.wsl.ch/en/events-and-outreach/summer-school/2024/>

If you have any questions, please contact the organizing committee:

swissforestlab_summerschool@wsl.ch

Front page: Together, the participants of the Summer School Forests and Extremes will explore factors influencing forest health and the related functions and services we rely on (Illustration: A. Björnsen, WSL).