The 19th International Swiss Climate Summer School focuses on the theme "Vegetation, Land Surfaces and Climate Interactions". The purpose of this summer school is to bring early stage researchers in touch with established scientists from different disciplines to address the question how vegetation and the land surface are affected and altered due to climate change, and how the resulting change feed back to the atmosphere and hydrological processes in the climate system. The carbon cycle, which directly affects the global greenhouse gas budget, and the hydrological cycle, which is strongly influenced by plant transpiration, are the key relations between vegetation and climate that will be addressed from multiple perspectives during the summer school. The main questions that the speakers will address in the keynote lectures and discussed in smaller groups within the planned workshops are:

- How do forests and other ecosystems interact with climate and climate change, and on which temporal and spatial scales?
- How do changes in the atmosphere – the strongest greenhouse gas – depend on vegetation distribution and activity, and how does it relate to anthropogenic emissions of CO₂ and other greenhouse gases?
- How can we measure CO₂ fluxes and greenhouse gas fluxes and their driving climate variables to inform and improve computer models? Is optically driven vegetation change from land use management?
- How exactly are soil and vegetation-atmosphere interactions represented in climate models, and what research needs exist to increase model performance?

This summer school addresses early stage researchers from the climate, agriculture, and forest ecosystems sciences. In addition to keynote lectures from internationally renowned experts and extensive time for discussions and poster sessions, two half days will be scheduled for parallel workshops. All Summer School participants are expected to present a poster of their research to increase their own research with the other participants.

The network of leading Swiss institutions in climate research will be present on the occasion of the 19th Swiss Climate Summer School 2021. Lecturers for keynotes and workshops, and organizers are confirmed for the summer school. The main questions to be addressed in the planned workshops are:

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