

SCIENCE HIGHLIGHTS FROM C2SM

C2SM research groups assess the forest response to climate extremes and climate change.

SWISS CLIMATE SUMMER SCHOOL 2021: «VEGETATION, LAND SURFACE AND CLIMATE INTERACTIONS»

The 19th Swiss Climate Summer School will take place from 29 August to 3 September 2021 in Monte Verità in Ascona, Switzerland, organised by C2SM. 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 land surface are affected and altered due to climate change, and how the resulting changes feed back to the atmosphere and hydrological processes in the climate system. Registration opened in November 2020. ■

 MORE INFORMATION
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ASSESSING THE RESPONSE OF FOREST PRODUCTIVITY TO CLIMATE EXTREMES IN SWITZERLAND USING MODEL-DATA FUSION

The sequence of extremely dry years (2003, 2018, 2019) left visible traces on Swiss forests, especially those dominated by beech. Research groups from ETH and WSL therefore developed a new methodology, similar to meteorological data assimilation, in order to determine the forest response to such climate anomalies and climate change. Growth and productivity data of spruce and beech measured since 1980 at 271 Swiss forest sites were analysed to inform the mechanistic model. Besides the influence of extreme years, the difference between the climatological reference period 1961-1990 and the more recent, warmer period 1991-2018 was investigated. The results showed that beech forests remove more than five tonnes of carbon per hectare from the atmosphere

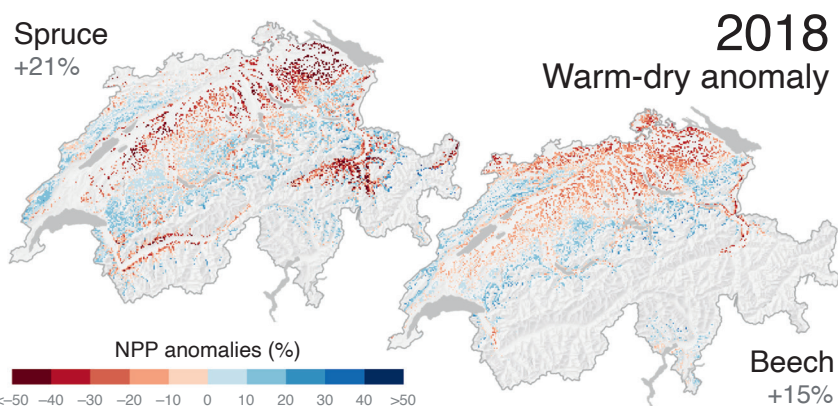
each year and store it in wood, irrespective of elevation. Contrastingly, spruce showed a strong decrease of productivity with increasing elevation, and its productivity has increased by almost 10 percent in comparison with the reference period 1961-1990. ■

REFERENCE:

Trotsiuk V et al. (2020) Assessing the response of forest productivity to climate extremes in Switzerland using model-data fusion. *Glob Change Biol.* 2020;26:2463-2476. doi.org/10.1111/gcb.15011.

 MORE INFORMATION
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Spatial variation of simulated net primary productivity (NPP) anomalies (percent deviation) in selected extreme years relative to the 1961-1990 reference period for *Picea abies* (left) and *Fagus sylvatica* (right). Numbers indicate the percentage of grid cells across the potential species habitat that showed a strong negative response (> -25%). Source: Volodymyr Trotsiuk, C2SM.

ABOUT C2SM

C2SM aims to improve the understanding of the climate system and strengthen the predictive skill of climate and weather models. It is a joint initiative of ETHZ, MeteoSwiss, Empa, WSL, and Agroscope.