

Research Unit Forest Dynamics - colloquium

Date: 05.09.2022

Time: 13:00

Room: Englersaal

Duration: 25 minutes

Author: Dr. Esther Frei, RG Disturbance Ecology and Dr. Stefan Klesse, RG Dendrosciences

Title: **Local and regional variability in crown dieback of European beech after the 2018 drought depends on climatic and edaphic drivers**

Abstract:

Following the exceptional hot drought in 2018 that caused widespread premature leaf senescence in European beech (*Fagus sylvatica* L.) forests in Central Europe, we initiated two big monitoring projects in the Ajoie (JU) and the Swiss Plateau (BL, SH, ZH), where we investigated drought effects on more than a thousand mature beech trees.

We found that climatic differences drive regional-scale damage patterns with higher proportions of crown and tree mortality in beech stands in drier regions of northern Switzerland (BL, SH) than in the region of Zurich. In addition, differences in edaphic conditions led to considerable small-scale variation in damage patterns, which we attributed primarily to plant available soil water storage capacity. Furthermore, tree ring data revealed that the beech trees with higher crown mortality already showed reduced tree vigor in the long term and were more sensitive to climatic variability.