

PLANT PHENOLOGICAL OBSERVATIONS IN SWITZERLAND AND THEIR POTENTIAL FOR CLIMATE RECONSTRUCTION

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Plant phenological observations record the date of the annual development of plants such as bud burst, first flowering, full bloom and leaf fall. Recent phenological changes have been attributed to climate change processes. In spring, many plant species have responded with a shift of phases towards earlier dates to observed warming trends. Due to its close relation to climate parameters such as temperature and precipitation, historical plant phenological observations have been used to reconstruct seasonal temperature values and are recognized as an important subgroup of documentary proxy data. Observations have been included in index-series (e.g. Pfister 1984 for Switzerland). Starting in the Early Instrumental Period (EIP) around 1750 continuous records are known from central Europe and the UK. The analysis of phenological time series with regard to single years and extreme events also opens the possibility to use phenological data as climate indicators for preceding times such as the Medieval Warm Period (MWP).

Here we present interdisciplinary methodological approaches for the analysis of plant phenological observations. Methods of historical source analysis and statistical climate reconstruction are applied to plant phenological observations from Switzerland starting in 1721. Our results suggest that there is a need to collect, preserve and analyse historical documents of plant phenological records not only for climate reconstruction but also for the assessment of climate impacts on past, present and future ecosystems.