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Dry days, associated temperature anomalies and inter-annual variations in spring phenology

Pierluigi Calanca

Agroscope, Agroecology & Environment, Zurich, Switzerland (pierluigi.calanca@agroscope.admin.ch)

The imprint of recent climate change on plant phenology has been the subject of several investigations during the last few decades. Results of such studies have repeatedly documented the advances of key phenological stages in spring. More recently, they have also shown that global warming has induced changes in temperature sensitivity and led to more uniform phenology across elevations. While awareness of trends in phenology undoubtedly contributes to inform ecosystem management, the provision of ecosystem services also necessitates knowledge and understanding of how spring phenology varies from year to year. For instance, in view of growing exposure of grassland ecosystems to summer drought, in Alpine countries forage production increasingly relies on exploiting at best spring growth, which in turn requires an accurate timing of field operations, depending on the progress of herbage development.

Employing long-term phenological observations on forest trees and grassland plants and weather records from Switzerland, in this contribution I examine year-to-year variations in spring phenology in light of anomalies in the seasonal mean temperature for the months of February to April, and reflect on how the latter can be related to number of dry days and associated temperature anomalies. Based on these findings and results from other studies, I discuss possible implications of future climate change for the variability of spring phenology.