Kurzfassungen der Meteorologentagung DACH
Berlin, Deutschland, 14.–18. März 2016
DACH2016-76

Sensitivity of upland grasslands to management and climate forcing

M. J. Zeeman, M. Mauder, R. Steinbrecher, K. Heidbach, E. Eckart, and H. P. Schmid

Karlsruhe Institute of Technology (KIT), Institute of Meteorology and Climate Research, Atmospheric Environmental Research (IMK-IFU), Garmisch-Partenkirchen, Germany

Grassland pasture and meadows farming are the most common form of agriculture in prealpine region. These areas actively contribute to the natural cycling of carbon, water and heat between ecosystem and the atmosphere. Land management and climate significantly influence these processes. Understanding the magnitude of these effects will help to assess the impact of climate change to grasslands and in consequence evaluate the feedbacks to the climate system.

In this study, we compare an extensively and two intensively managed grassland sites that are at the same time exposed to different climate drivers. The sites are located at different elevations in the in the Ammer catchment in Southern Germany, and represent areas in the upland range north of the Alpes with a different level of topographic complexity. Of particular interest were the timing and duration of snow cover. In the prealpine region, precipitation as snow is common. But the amount and persistence of the snow cover varies, which influences the dynamics in vegetation re-growth after winter.

Four years of continuous measurements of the atmospheric exchange of carbon dioxide, water vapor and heat were assessed. We found that meteorological variation leading to shifts in the start and end of a season are not always accounted for in the timing of management, and we quantified that effect.