



ClimGrass – a multifactor experiment to test for interactive and non-linear effects of warming, drought and elevated CO₂ in managed grassland

Michael Bahn

University of Innsbruck, Institute of Ecology, Innsbruck, Austria (michael.bahn@uibk.ac.at)

Authors: Michael Bahn, Markus Herndl, Erich Pötsch & the ClimGrass Consortium

The ClimGrass experiment analyzes effects of warming, elevated CO₂ and extreme climatic events on the productivity and biogeochemistry of a managed C3 grassland typical for many European mountain regions. The ClimGrass experiment follows a multifactor, multilevel approach combining three levels of warming (ambient, +1.5, + 3°C) and atmospheric CO₂ (ambient, +150, +300 ppm), as well as precipitation manipulations involving automated rain-out shelters. The ClimGrass facility includes 54 plots arranged in a response surface design for warming and elevated CO₂, combined with a factorial design testing effects of extreme droughts under current and future climate conditions. The response surface approach permits an explicit testing of non-linear and interactive effects. As the first three years of experimental data are becoming available, modellers are invited to interact not only for testing and constraining their models, but also for co-designing an iterative hypothesis-based model-experiment framework for the coming years.