

Responses in plant communities to extreme precipitation events

Christensen, Andrea Oddershede^{1,2} and Damgaard, Christian Frølund¹

¹*Department of Terrestrial Ecology, National Environmental Research Institute, Aarhus University, Silkeborg, Denmark.*

²*Ecoinformatics & Biodiversity Group, Department of Bioscience, Aarhus University, Aarhus, Denmark*

Global climate change is expected to increase both the frequency and the intensity of climate extremes and there is a need to understand the ecological consequences of such changes. This study aims to assess the effects of heavy precipitation events on terrestrial plant ecosystems.

Responses to variation in precipitation patterns are described by analyzing vegetation data recovered from grassland sites that undergo cycles of experimental flooding to imitate heavy rainfall events. To describe the plant community dynamics during the growing season, pin point data (measures of plant species cover and vertical density) are recorded in May and August. A state-space model quantifies the competition effect of species (or groupings of species) on each other along the hydrological gradient. Groups are defined by life span and traits such as specific leaf area, seed size and height, which are all likely to reflect adaptation to the hydrological regime. Eventually results from the above can be applied to other sites around Denmark that have vegetation, topography and flooding regimes similar to those of the study sites. The vegetation data from these sites can be obtained from the National Monitoring and Assessment Programme for the Aquatic and Terrestrial Environments (NOVANA), and this will enable us to assess the effects of variation in precipitation in a larger part of Denmark.