



Interactions and feedbacks of a temperate lake ecosystem in NE Germany

Sonia Simard (1), Theresa Blume (2), Ingo Heidbüchel (2), Ingo Heinrich (1), Janek Dreibrodt (2), Andreas Güntner (2), and Gerhard Helle (1)

(1) GFZ Potsdam, 5.2 Climate Dynamics and Landscape Evolution, Potsdam, Germany, (2) GFZ Potsdam, 5.4 Hydrology, Potsdam, Germany

Soil water availability is a major driver of plant productivity and a limiting factor in several environments. As much as water has a foremost influence on plant growth, the vegetation itself has an important influence on the landscape hydrology leading to feedbacks between ecological processes and the hydrological cycle. A natural experimental design was set up in NE Germany in a temperate lake ecosystem where major shifts in groundwater and lake levels have been observed in the last decades. The location is characterized by a precipitation regime below 600 mm annually. Soil moisture profiles, matrix potential, piezometers, dendrometers and sapflow sensors, as well as standard climate stations providing high temporal resolution information were installed in sites with different soil water content.

Several sites in the surroundings of lake Hinnensee, NE Germany, are currently closely monitored to gain a better understanding of the dynamics of water use of three main European tree species (*Pinus sylvestris*, *Quercus petraea* and *Fagus sylvatica*), its impact on forest productivity and the influence on the landscape hydrology. We discuss how the dynamics varies in time and under different environmental conditions, as well as possible processes that might govern these variations.