

Effects of a half-a-millennium winter on a large lake

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VORTRAG

W1 Aquashift

The winter 2006/2007 was most likely the warmest winter in Central Europe during the last 500 years. Winter is of special importance for deep lakes, as winter strength influences mixing dynamics which in turn is of fundamental importance for the up-mixing of nutrients and phytoplankton light supply. Here we analyse the hydrodynamical, chemical, ecological, and physiological (C:Chl ratio) response of deep Lake Constance to the extreme winter 2006/2007 and compare it to a decadal time series of winter limnology. Winter limnology 2006/2007 differed strikingly from the limnology of the preceding winter. However, a comparison with the long-term record suggested that at least the ecological response was not as extreme as expected from meteorology. This suggests that a deep lake can at least partially buffer extreme meteorological winters due to its internal multi-annual hydrodynamics. Consequently, the influence of an extreme winter in a specific year will hence depend also on the meteorological conditions during the preceding years in deep lakes. Hence, the half-a-millennium winter probably was only a first small view on the things to come with future climate warming.