Geophysical Research Abstracts
Vol. 16, EGU2014-1423, 2014
EGU General Assembly 2014

Degradation processes of hydrological resources by human and climate – example of small lakes in Northern Kazakhstan and Southern Siberia.

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The presentation discusses (on the basis of an actual application in the development of a curriculum for Integrated Water Cycle Management in Kazakhstan; TEMPUS I-WEB project) the diverse scientific approaches to explain the degradation of hydrological resources in West-Siberia and Nord-Kazakhstan by focussing on natural and anthropogenic causes by the example of the dry out of small lakes. Since Pleistocene in the region a diverse mosaic of large and small lakes of at total shrinking surface area was formed. On natural causes it includes (1) climatic cycling, (2) lake developments since the Pleistocene originate by the Northern glaciations by ice dammed lakes (without tectonics). The man made causes are (1) the sediment accumulation in lakes, (2) the (problematic) water management and water usage and (3) the land use changes in the watersheds. Climate change includes finally both natural and climatic causes of the change. The latter is explained using actual reports of (1) IPCC on extreme events and (2) gives a note about radiative forcing components as proxy to integrate.