Geophysical Research Abstracts, Vol. 9, 08221, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-08221

Reconstructing the past 500 years of river runoff to the Baltic Sea.

C. Eriksson, D. Hansson, A. Omstedt and D. Chen
Earth Sciences Centre, Göteborg University, Sweden
(chpe@oce.gu.se /Fax: +46-31-7861986)

The inflow of freshwater is important for maintaining the Baltic Sea as a brackish sea. Freshwater inflow to the Baltic Sea is restricted to river runoff from the catchment area and rainfall over the sea. Variability of the atmospheric circulation gives rise to an annual river runoff of about 15 000 m^3s^{-1} to the Baltic Sea. During the year, there are large seasonal differences ranging from a maximal freshwater discharge during snowmelt in late spring and early summer to a minimum discharge of freshwater during the winter; when most of the precipitation comes in the form of snow. Ongoing freshwater budget modelling efforts are in need of reasonable estimates of annual river runoff as well as seasonal distributions of freshwater discharge. River runoff estimates on a monthly basis are available for the 20^{th} century through earlier studies. By using century long time series of river runoff in combination with seasonally resolved atmospheric circulation indices for the past half millennium a statistical relationship was established. This relationship is used to reconstruct the seasonal variation of the river runoff covering the past 500 years. The statistical relationships reveal important physical mechanisms regarding the seasonal signal of the river runoff. The reconstructed river runoff can be used as forcing when modelling the salinity of the past 500 years of the Baltic Sea.