



## **Investigation of the role of large-scale circulation patterns on Central European streamflow**

Eva Steirou, Heiko Apel, and Bruno Merz

Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences, Potsdam, Germany (esteirou@gfz-potsdam.de)

Large scale oscillations-phenomena such as El Niño-Southern Oscillation (ENSO) and North Atlantic Oscillation (NAO) influence the climate and hydrological variables (temperature, precipitation, streamflow) in many areas around the globe.

Here we review previous studies examining links between such phenomena and streamflow in Central Europe. The selected area under examination is the region covered by 9 countries: Germany, Poland, Switzerland, Lichtenstein, Austria, the Czech Republic, Slovakia, Hungary and Slovenia. The study takes into consideration only measured and not proxy data. Mean, low and high flows are examined separately in order to improve the understanding on the possible different influences of the climatic phenomena on different streamflow characteristics.

Previous results form a consistent pattern that suggests causal relationships but only for certain indices and seasons. Most promising results concern the winter NAO index which seems to affect winter and spring streamflow in Central Europe and synoptic circulation patterns that have been linked to streamflow in the area throughout the year.

Based on the findings of the review, we examine further the relations between NAO, synoptic circulation patterns and streamflow in the winter and spring season. In our analysis we examine 68 streamflow stations in Germany all covering the period 1932 to 2005. The investigation focuses on the interplay between NAO and synoptic patterns and on the effects of the climatic indices on the amplitude, spatial coherence and distributions of streamflow data. The preliminary results suggest that NAO weakly influences streamflow in both seasons and that a combined analysis with other climatic parameters may clarify possible existing links.