



Temporal and spatial distribution of isotopes in river water in Austria

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The Austrian network of isotopes in rivers comprises about 15 sampling locations and has been operated since 1976. The Danube isotope time series goes back to 1963. The isotopic composition of river water in Central Europe is mainly governed by the isotopic composition of precipitation in the catchment area, evaporation effects play only a minor role. Short-term and long-term isotope signals in precipitation are thus transmitted through the whole catchment. The influence of climatic changes has become observable in the long-term stable-isotope time series of precipitation and surface waters. Environmental ^3H values were around 8 TU in 2015, short-term ^3H pulses up to about 80 TU in the rivers Danube and March were due to releases from nuclear installations in the catchment. The river water isotope time series will serve as a basic data set for hydrological investigations as well as for assessing future impacts within the catchment areas. This includes climatic/hydrological changes (e.g. temperature changes, change of precipitation distribution) as well as anthropogenic impacts on the hydrological regime (e.g. reservoirs, change in land use). All these changes will more or less be reflected in the isotopic composition of river water. The complete isotope data series of this network is included in the Global Network of Isotopes in Rivers (GNIR) data base of the International Atomic Energy Agency (IAEA).

References:

D. Rank, S. Wyhlidal, K. Schott, S. Weigand, A. Oblin, (2017): Temporal and spatial distribution of isotopes in river water in Central Europe: 50 years experience with the Austrian network of isotopes in rivers: Isotopes in Environmental and Health Studies; <http://dx.doi.org/10.1080/10256016.2017.1383906>