

21 Poster Presentation

Analysis of isotopic signals in Danube River water at Tulln (Austria) based on daily grab samples 2012Katharina Schott¹, S. Wyhlidal¹, D. Rank², G. Heiss¹¹ Austrian Institute of Technology – AIT, 3430 Tulln, Austria² Center for Earth Sciences, University of Vienna, 1090 Wien, Austria

Results of stable isotope measurements ($\delta^2\text{H}$, $\delta^{18}\text{O}$) of daily grab samples, taken from the Danube at Tulln (river km 1963) during 2012, show seasonal and short term variations depending on the climatic/hydrological conditions and changes in the catchment area (temperature changes, heavy rains, snowmelt processes). Isotope ratios of river water clearly reflect the isotopic composition of precipitation water in the catchment area since evaporation influences play a minor role. Average $\delta^2\text{H}$ and $\delta^{18}\text{O}$ values 2012 are -78 ‰ and -11.0 ‰, respectively, deuterium-excess averages 10 ‰. The entire variation amounts to 1.8 ‰ in $\delta^{18}\text{O}$ (Fig. 1) and 15 ‰ in $\delta^2\text{H}$. Quick changes of the isotopic composition within a few days emphasise the necessity of daily sampling for the investigation of hydrological events, while monthly grab sampling seems to be sufficient for the investigation of long-term hydro-climatic trends. ^3H results show peaks (half-width 1-2 days, up to about 150 TU) exceeding the regional environmental level of about 9 TU, probably due to releases of nuclear power plants.

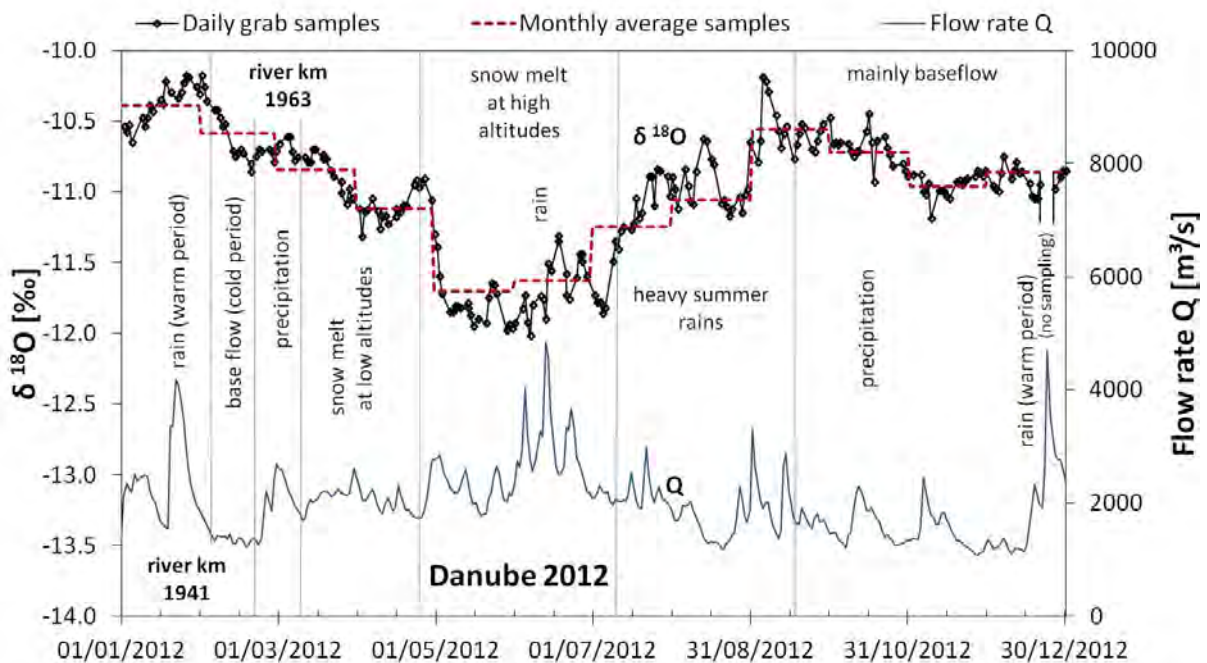


Fig. 1: $\delta^{18}\text{O}$ variations of daily Danube river samples at river km 1963 (dashed line: monthly means) during 2012 based on flow rates.