

5 Oral Presentation

Water-Isotope Map Austria 2015: Isotope distribution in precipitation, surface water and groundwater.

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Water-Isotopes are a useful tool to elucidate the origin of waters in the water cycle or to identify the origin of food or trading goods. In addition, water-Isotopes are an important tool in climate research and the main key to palaeo-climatology.

The measurements of water-isotopes started in the early 60th of the last century and has steadily increased up to now and has in Austria due to complicated meteorological and hydrological cycles and a well developed monitoring network (ANIP) a relative higher frequency of application than in other countries.

The oxygen-18 and hydrogen-2 (deuterium) values fractionate along precipitation lines and depend mainly on the temperatures and the quantities in the receiving areas as well as on the original evaporation source. In the case of groundwater the seasonal evapo-transpiration before groundwater recharge may play an important role. Most mean values range between delta -15 and -110 ‰ in high altitude snow up to -8 and -60‰ (SMOW) in the low laying areas in the East of Austria. In winter snow delta -22 and -170 ‰ and in evaporating surface waters like the lake Neusiedel values of up to -1 and -10 ‰ (SMOW) can be reached.

Based on an initiative of the Ministry of Agriculture and Forestry and the Environment Agency Austria water-isotope measurements of precipitation (e.g. ANIP), surface water and groundwater (e.g. "Grundwasseralter") of the past 50 years should be collected and presented in a digital(paper)-map of Austria. The present status will be presented and all owners of water isotope data are invited to contribute to this map by full reference to the original publication or the contributor of the data.

BRIELMANN, H. & KRALIK, M. (2013): ANIP: Österreichisches Messnetz für Isotope im Niederschlag und in Oberflächengewässern. 74-75, In: Wassergüte in Österreich: Jahresbericht 2012. 86 S., Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft, Wien. http://www.lebensministerium.at/wasser/wasserqualitaet/wasserguete_jb2012.html

KRALIK, M., WENTER, F., HUMER, F. & GRATH, J. (2011): Grundwasseralter ausgewählter Grundwasserkörper, 2009/2010: Grazer Becken, Jauntal, Leibnitzer Feld, Rheintal, Unteres Salzachtal, Wulkatal. 205 S., Ber. S259, Umweltbundesamt, Wien (<http://www.lebensministerium.at/publikationen/wasser/grundwasser.html>).