



Multi-isotope composition of precipitation in Northern Germany during winter time

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We investigated the multi-isotope (H-1, H-2, O-16, O-17, O-18) composition of precipitation (rain, snow) at locations in Northern Germany (Warnemünde, Oldenburg, Lüneburg) and the Netherlands (Texel Island) to derive local meteoric water lines. A particular focus was set on the impact of recent events Xaver and Dirk on stable isotope variations in high time-resolution. Sampling was carried out using a Hellmann-type rain gauge or, in the case of high-resolution sampling open sampling devices. At the Lüneburg site, the amount of fallen rain (volume per area of soil surface) was additionally quantified on a regular daily base.

Isotope measurements were conducted by means of a new Picarro CRDS system (L2140-i) giving results in the usual delta-notation versus V-SMOW, and informations about H-2 and O-17 excess. Results are compared to continuous measurements at the GNIP station in Cuxhaven (NW-Germany) and the GMWL. As an example, during storm Xaver, respective variations in delta-18O and delta-2H values in snow and rain samples of up to 5 and 42 per mil were observed. Results for the German stations in the time period around storm Xaver are positioned close to the local meteoric water line proposed for Cuxhaven. Deviations from the GMWL are discussed.