Stable water isotopes in precipitation in the Mekong Delta, Vietnam
(http://doi.org/10.5880/GFZ.4.1.2016.008)

Description of Data

Duy, Nguyen Le; Meyer, Hanno; Heidbüchel, Ingo; Merz, Bruno; Apel, Heiko (2017): Stable water isotopes in precipitation in the Mekong Delta, Vietnam. V. 1.0. GFZ Data Services. http://doi.org/10.5880/GFZ.5.4.2017.002

The data is supplement to

Duy, Nguyen Le; Meyer, Hanno; Heidbüchel, Ingo; Merz, Bruno; Apel, Heiko (2017): What controls the stable isotope composition of precipitation in the Asian monsoon region? HESS – TO DO: DOI, Vollständiges Zitat des Discussion Papers…

Abstract

The dataset contains 74 weekly/bi-weekly precipitation sum samples recorded at An Long, in the northern part of the Mekong Delta (Plain of Reeds, Dong Thap province, Vietnam). The data were collected within the frame of a study analyzing the influence of local and regional climatic factors on the stable isotopic composition of rainfall in the Mekong delta as part of the Asian monsoon region.

Samples were taken on a weekly basis between June 2014 and May 2015 and twice a week between June 2015 and December 2015. The rain collector was a dip-in sampler type as described in the guidelines of the IAEA technical procedure for precipitation sampling (IAEA, 2014). It consists of a 5 liter accumulation glass bottle fitted with a vertical 14 cm diameter plastic funnel that reaches almost to the bottom to prevent evaporative losses, and a pressure equilibration plastic tube (2 mm in diameter and 15 m in length) to minimize evaporation out of the collection device. All collected samples were stored in 30 mL plastic sample bottles with tight screw caps to avoid evaporation effects. Between collection and laboratory analysis, the samples were stored in the dark.

All stable isotope samples were analyzed at the laboratory of the Alfred-Wegener-Institute (AWI) in Potsdam, Germany. The measurements were performed with a Finnigan MAT Delta-S mass spectrometer using equilibration techniques to determine the ratio of stable oxygen ($^{18}O/^{16}O$) and hydrogen ($^{2}H/^{1}H$) isotopes. Analytical results were reported as $\delta^{2}H$ and $\delta^{18}O$ (‰, relative to Vienna Standard Mean Ocean Water - VSMOW). The deuterium excess (d-excess) was calculated with the equation of Dansgaard (1964):

d-excess = δ2H - 8*δ18O

References:

Dansgaard, W. (1964). Stable isotopes in precipitation. Tellus, 16(4), 436–468. http://doi.org/10.1111/j.2153-3490.1964.tb00181.x

IAEA: IAEA/GNIP precipitation sampling guide, International Atomic Energy Agency, 2014, URL: http://www-naweb.iaea.org/napc/ih/documents/other/gnip_manual_v2.02_en_hq.pdf

List of parameters included in the data file

Column name	**comment**	**unit**
No	Sequential number sorting the data according to sampling date	
Name of site		text
Country		text
Latitude [decimal degree WGS84]	decimal degree WGS84	DD.ddd
Longitude [decimal degree WGS84]	decimal degree WGS84	DD.ddd
Altitude [m a.s.l.]	Altitude in meter above sea level	integer
Type of Site	Measurement setup/ Instrument	text
Laboratory	Institute	text
Date	Sampling date	dd/mm/yyyy
d18O (‰) vs. VSMOW	Deviation of ^{18}O content of the sample from ^{18}O of Vienna Standard Mean Ocean Water (VSMOW)	‰
d2H (‰) vs. VSMOW	Deviation of ^{2}H content of the sample from ^{2}H of Vienna Standard Mean Ocean Water (VSMOW)	‰
d-excess (‰) vs. VSMOW @ 15-20°C	Deuterium excess: relation of $\delta^{2}H$ and $\delta^{18}O$ calculated using the slope of the average linear relation of ^{2}H and ^{18}O defined by the Global Meteoric Water Line ($\delta^{2}H = 8.0 * \delta^{18}O + 10‰$)	‰
Precipitation [mm]	precipitation sum since the last collection date	mm
Sampling frequency	weekly/semiweekly (please refer to the date for absolute time stamp); time gaps longer than 7 and 4 days respectively indicate that no rainfall occurred in the preceding weeks.	