**Water vapor isotope experiment was conducted at the Mpala Research Center located in Kenya. The isotopic measurement started in Feb 2010 to Dec 2011 at an eddy covariance tower in the Center (0.49° N, 36.87° E, 1619 m a.m.s.l.).**

### 1. Time stamps

Data files are stored in hourly resolutions using start and end time stamps (YYYYMMDDHHmm).

### 2. Data format

Data files are CSV formatted.

### 3. Time zone convention

Time is reported in UTC.

### 4. Missing data

Missing data is replaced with -9999.

### 5. Variable definitions

| Column | Description | Unit | Equipment | Height (m) | Additional description |
|---|---|---|---|---|---|
| Column 1 | Start time | – | – | – | UTC |
| Column 2 | End time | – | – | – | UTC |
| Column 3 | Water mixing ratio | ppmv | LGR DLT-100 | 4 | – |
| Column 4 | Water vapour isotopic ratio (18O) | per mil | LGR DLT-100 | 4 | Normalized to V-SMOW; Humidity dependence correlation: Linear regression |
| Column 5 | Standard deviation of 18O | per mil | LGR DLT-100 | 4 | Hourly |
| Column 6 | Water vapour isotopic ratio (D) | per mil | LGR DLT-100 | 4 | Normalized to V-SMOW; Humidity dependence correlation: Linear regression |
| Column 7 | Standard deviation of D | per mil | LGR DLT-100 | 4 | Hourly |
| Column 8 | Air temperature | Celsius (°C) | – | – | – |

| | | | | | |
|---|---|---|---|---|---|
| Column 9 | Relative humidity | <=1 | – | – | – |
| Column 10 | Air pressure | kPa | – | – | – |
| Column 11 | Precipitation | mm | – | – | – |
| Column 12 | Net radiation | W/m2 | – | – | – |
| Column 13 | Wind speed | m/s | – | – | – |
| Column 14 | Wind direction | degree (°C) | – | – | – |
| Column 15 | Air temperature | Celsius (°C) | – | 2 | ERA5 |
| Column 16 | Relative humidity | <=1 | – | 2 | ERA5 |
| Column 17 | Air pressure | kPa | – | 2 | ERA5 |
| Column 18 | Precipitation | mm | – | – | ERA5 |
| Column 19 | Net radiation | W/m2 | – | – | ERA5 |
| Column 20 | Wind speed | m/s | – | – | ERA5 |
| Column 21 | Wind direction | °C | – | 10 | ERA5 |

## 6. Reference papers

Good SP, Soderberg K, Guan K, King EG, Scanlon TM, Caylor KK. δ2H isotopic flux partitioning of evapotranspiration over a grass field following a water pulse and subsequent dry down. *Water Resources Research* 2014, **50**(2)**:** 1410-1432.

Good SP, Soderberg K, Wang L, Caylor KK. Uncertainties in the assessment of the isotopic composition of surface fluxes: A direct comparison of techniques using laser-based water vapor isotope analyzers. *Journal of Geophysical Research: Atmospheres* 2012, **117**(D15).

## 7. Site contact

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