

## Auxiliary material for

### **Transformation of ENSO-related rainwater to dripwater $\delta^{18}\text{O}$ variability by vadose water mixing**

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#### **Introduction**

This README file describes auxiliary material for the above listed manuscript. Auxiliary material includes one (1) PDF file, titled “text01.pdf,” and one (1) dataset file, titled ‘ds01.xlsx’. The PDF file “text01.pdf” contains a description of rainfall and dripwater meteoric water lines, the statistical stalagmite forward model, and attribution analysis for mean  $\delta^{18}\text{O}$  offsets between pseudo-stalagmites as well as seven (7) supporting figures. The dataset file ‘ds01.xlsx’ contains all observational data used in the manuscript.

1. text01.pdf: Text and figures supporting the primary manuscript.

1.1 Section “Meteoric water lines”

1.2 Section “Stalagmite forward model development”

1.3 Section “Attribution analysis for mean  $\delta^{18}\text{O}$  offsets between pseudo-stalagmites”

1.4 Figure S1: Photos of three timeseries drip sites

1.5 Figure S2: Plots of  $\delta^{18}\text{O}$  versus  $\delta\text{D}$  for local Mulu rainfall and dripwater

1.6 Figure S3: Plots of modeled dripwater  $\delta^{18}\text{O}$  timeseries

1.7 Figure S4: Correlation between observed and modeled Mulu dripwater  $\delta^{18}\text{O}$  plotted against model averaging interval

1.8 Figure S5: Plot of observed and modeled ENSO-related dripwater  $\delta^{18}\text{O}$  anomalies regressed on to maximum sea surface temperature anomalies (SSTa) in the NINO3.4 index region

1.9 Figure S6: Plots of pseudo-stalagmites generated from modeled dripwater  $\delta^{18}\text{O}$

1.10 Figure S7: Plots of amount-weighted and non-amount-weighted modeled dripwater  $\delta^{18}\text{O}$

2. ds01.xlsx: Dataset of observed Mulu rainfall and dripwater isotopes

2.1 Tab 1: Rainfall timeseries

2.2 Tab 2: WS timeseries

2.3 Tab 3: WF timeseries

2.4 Tab 4: L2 timeseries

2.5 Tab 5: 2008 dripwater survey

2.6 Tab 6: 2010 dripwater survey

2.7 Tab 7: 2012 dripwater survey