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Supplement of

The seasonal origins and ages of water provisioning streams and trees in a tropical montane cloud forest

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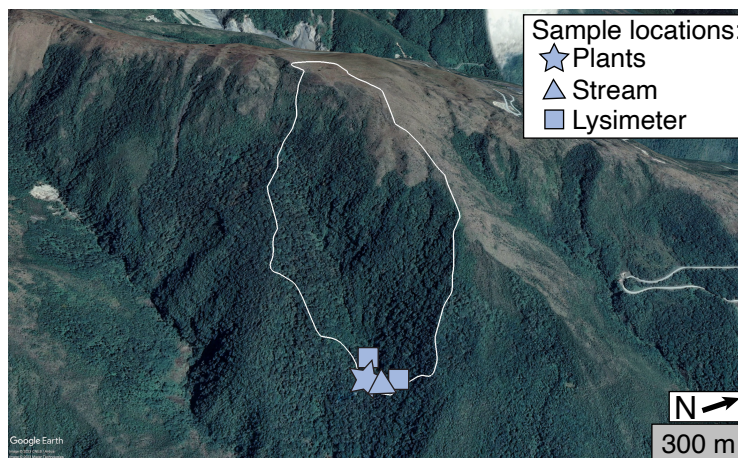*Correspondence to:* Emily I. Burt (emburt@chapman.edu)

Figure S1. Top: A view of the sampling site in a tropical montane cloud forested watershed in the southeastern Peruvian Andes mountains from the middle of the canopy bridge, looking down towards the valley bottom with the stream. Bottom: Google Earth imagery of the study watershed, which is outlined in white.
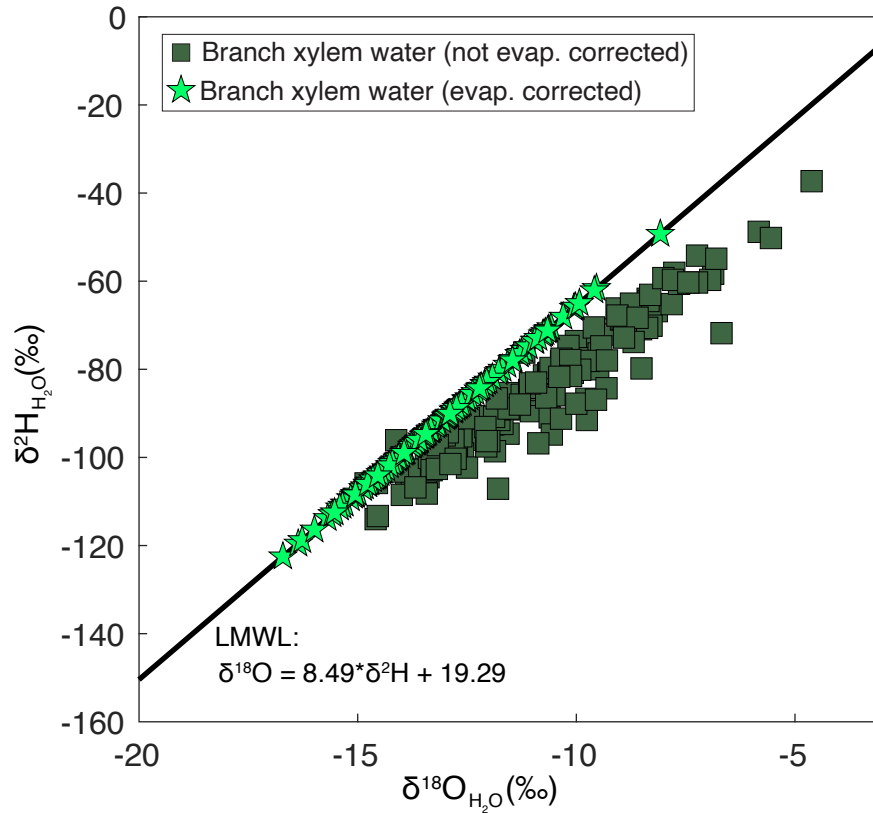
Figure S2. Hydrogen and oxygen isotope ratios of tree branch xylem water observed in a tropical montane cloud forested watershed in the southeastern Peruvian Andes mountains. The observed isotopic ratios are represented by dark green squares, while evaporation-corrected ratios (following Benettin et al., 2018) are represented by light green stars. LMWL indicates the local meteoric water line.
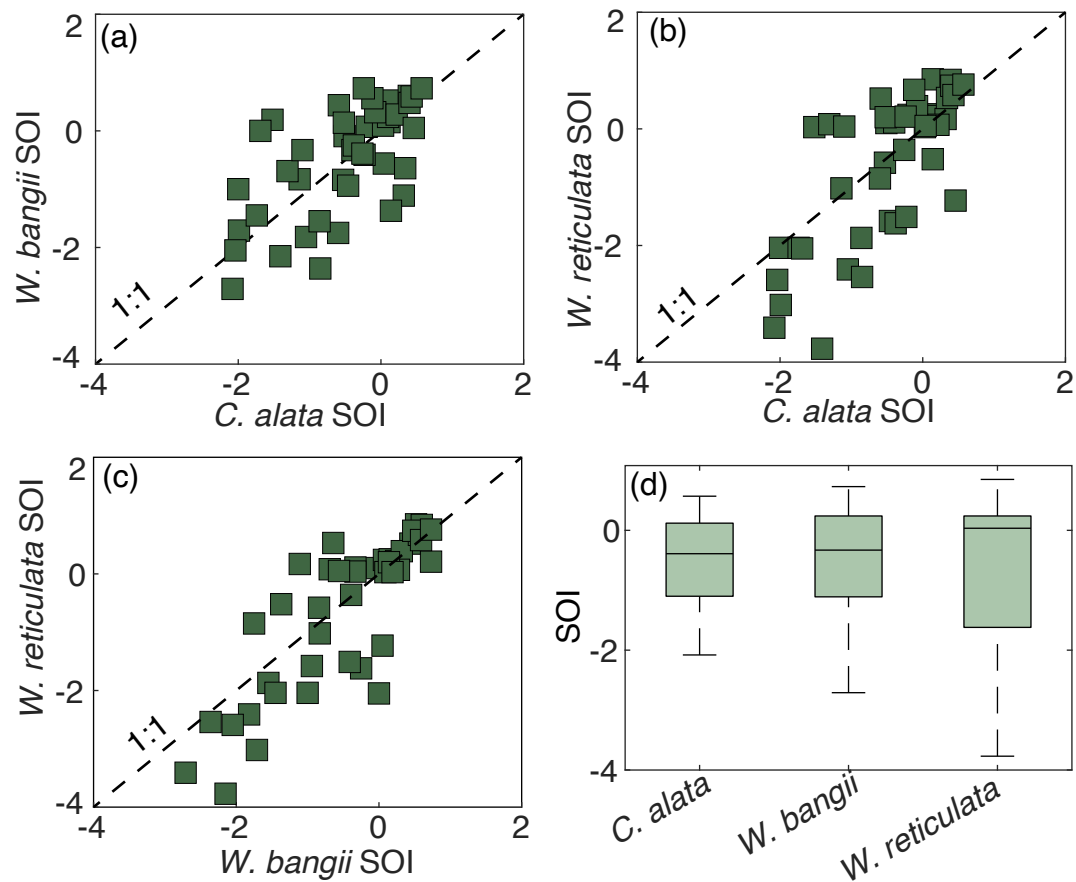
Figure S3. (a-c) Seasonal origin indices (SOI) for tree species sampled on the same date; each point represents a single sampling date from a tropical montane cloud forested watershed in the southeastern Peruvian Andes mountains. The dashed reference line shows a 1:1 relationship between the SOI of different species. (d) Distributions of seasonal origin indices for the 3 sampled tree species.
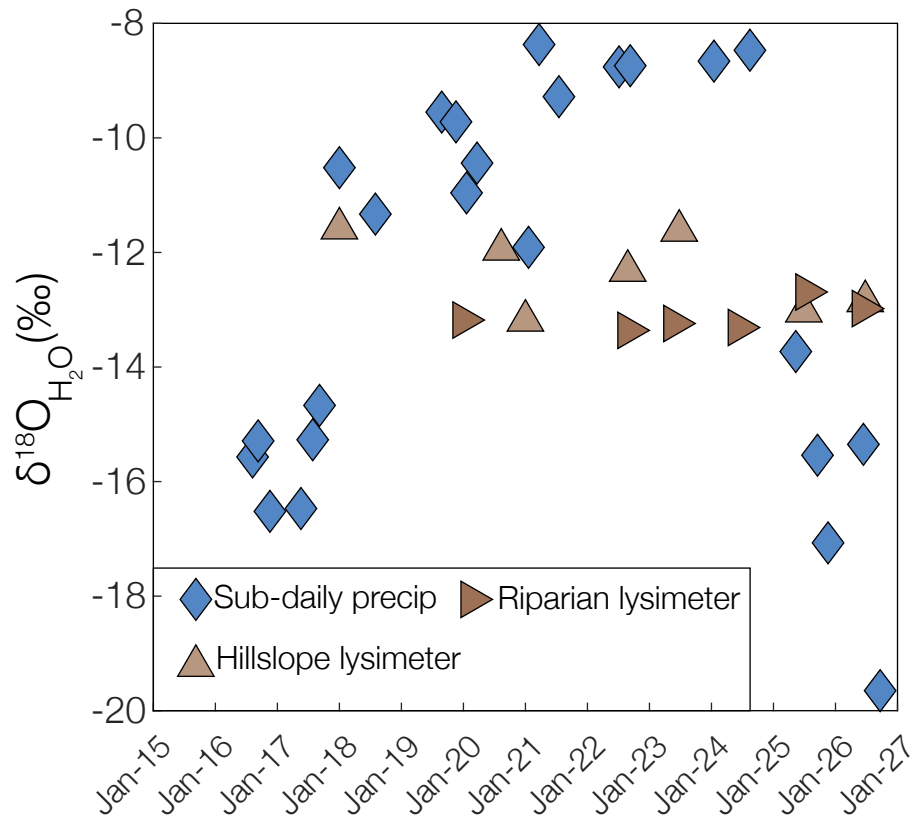
Figure S4. Precipitation and soil lysimeter water isotope ratios collected between 15 January 2017 and 27 January 2017 from a tropical montane cloud forested watershed in the southeastern Peruvian Andes mountains. Precipitation was collected in a bucket and sampled at least every 4 hours. Lysimeters were sampled daily or every few days.
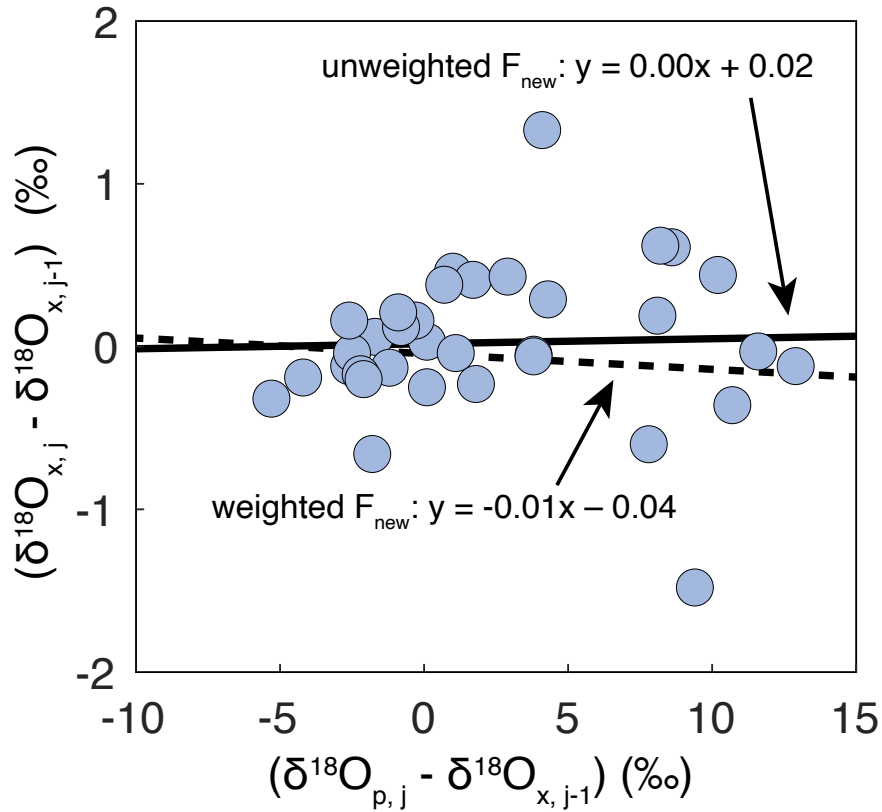
Figure S5. The fraction of new streamwater ($F_{new, stream}$), as determined by the slope of the linear regression with (dashed line) and without (solid line) weighting for discharge. Without accounting for discharge, the unweighted F_{new} is 0.0 %. When accounting for discharge, the weighted F_{new} is -1.0 %. Linear regression indicates that neither slope significantly differs from zero ($p > 0.05$).