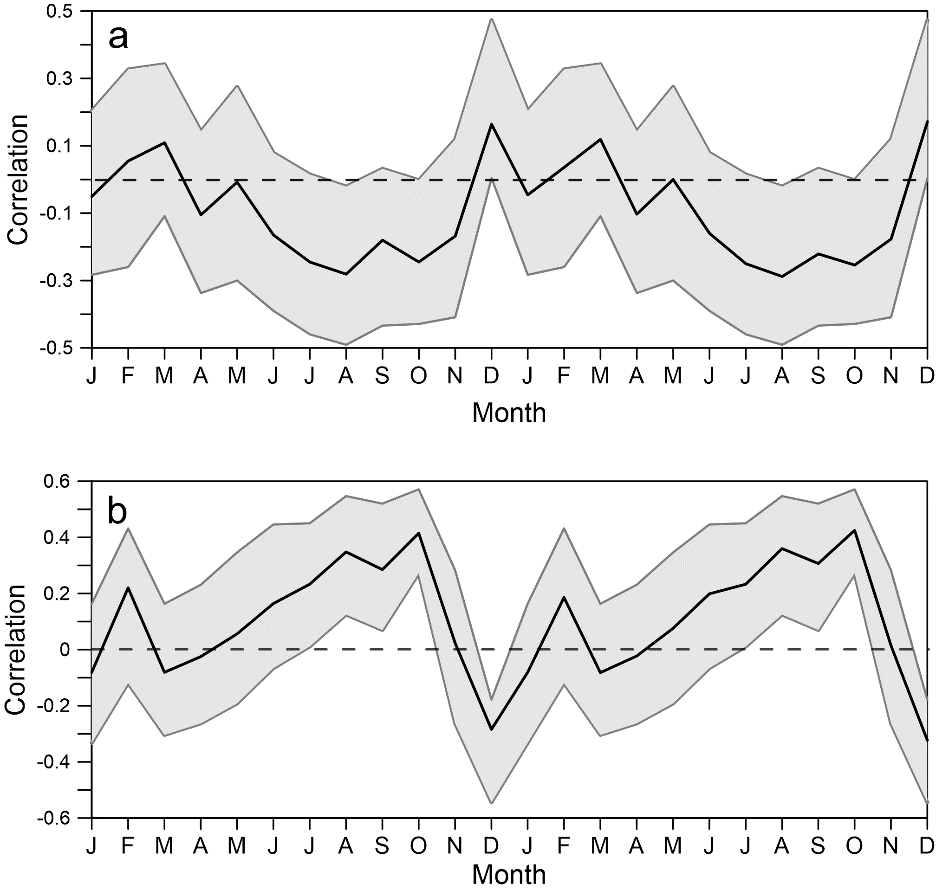
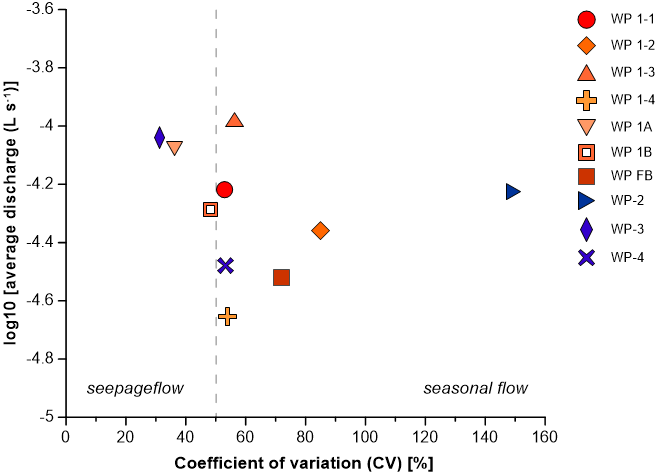
*Supplement of*

**Pacific climate reflected in Waipuna Cave dripwater hydrochemistry**

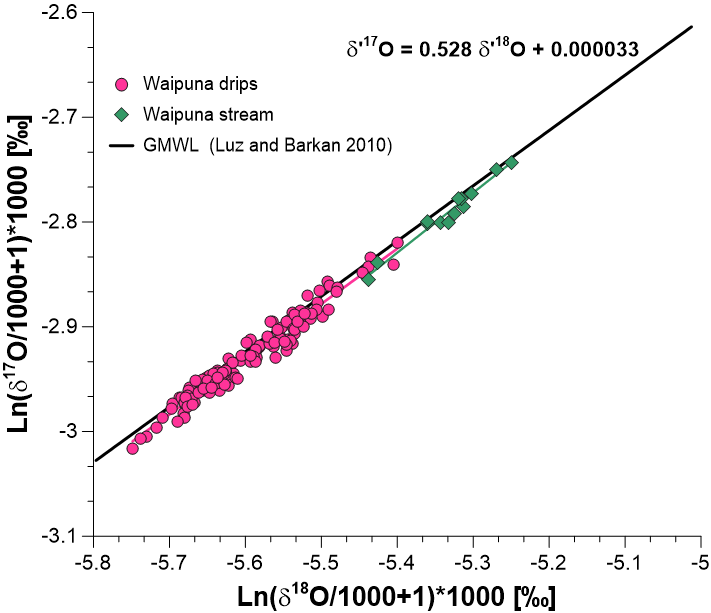
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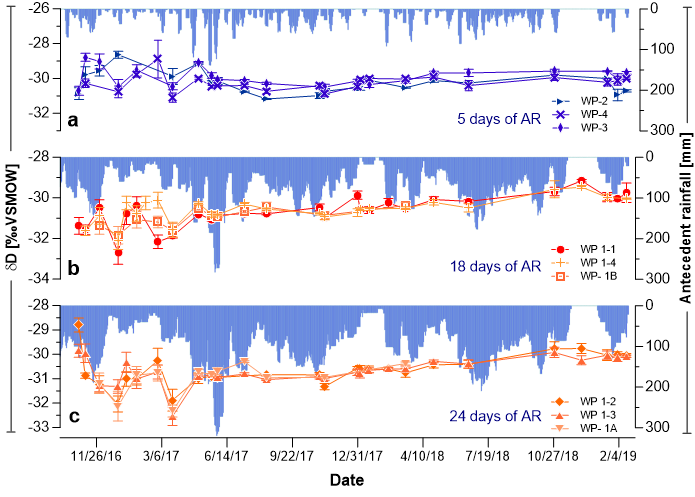
**S1.** Time series correlations of a) New Plymouth rainfall anomalies vs Nino3.4 1951-2004 and b) New Plymouth rainfall anomalies vs SOI 1951- 2004 (<https://climexp.knmi.nl/start.cgi>).

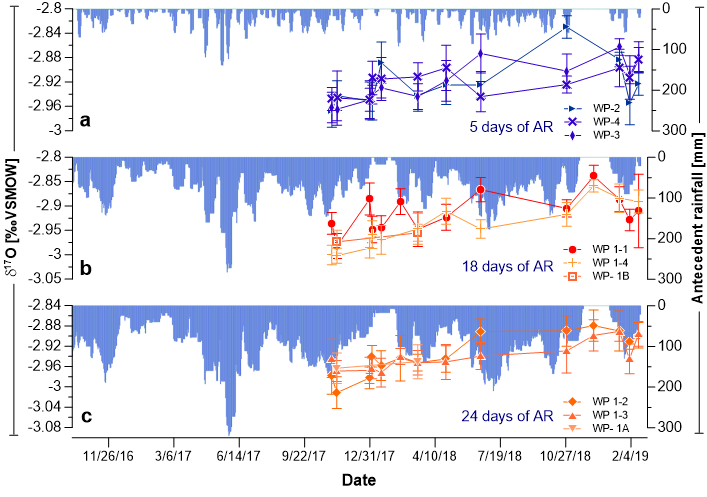
**S2.** Waipuna Cave drip sites organized by their discharge variability according to the classification of Smart and Friederich 1987.

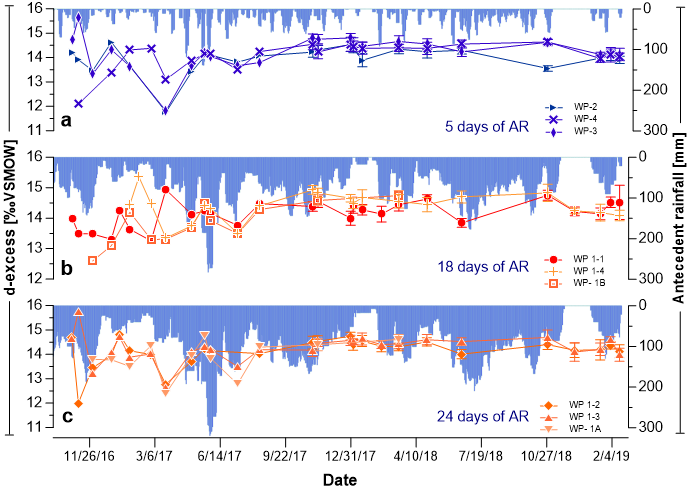
**S3.**17O versus 18O values of Waipuna Cave dripwaters (pink circles) and Waipuna stream (green diamonds).

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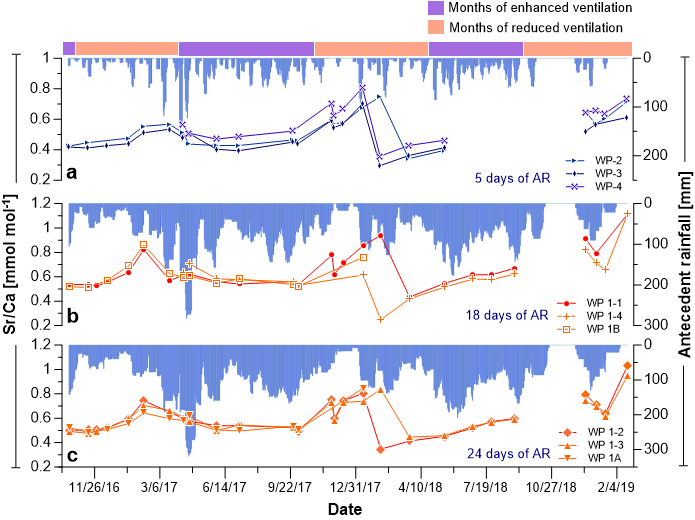
**S4.** Dripwater D time series of all drips grouped according to the three main response lags (5, 18, and 24 days) to antecedent rainfall (AR) at Otorohanga Glenbrook station (blue vertical bars).



**S5.** Dripwater 17O time series of all drips grouped according to the three main response lags (5, 18, and 24 days) to antecedent rainfall (AR) at Otorohanga Glenbrook station (blue vertical bars).

**S6.** Dripwater d-excess of all drips grouped according to the three main response lags (5, 18, and 24 days) to antecedent rainfall (AR) at Otorohanga Glenbrook station (blue vertical bars).

**S7.** Dripwater Sr/Ca ratios of all drips grouped according to the three main response lags (5, 18, and 24 days) to antecedent rainfall (AR) at Otorohanga Glenbrook station (blue vertical bars).



**S8.** Mg/Ca and Sr/Ca ratios sorted by the period of reduced ventilation November-March (orange circles) and enhanced ventilation April-October (blue diamonds), showing the importance of water supply on elemental dynamics, and minimal influence of ventilation regime on PCP strength. The secondary group of blue samples following a lower slope are related to post-La Niña samples that received above-normal water supply and indicate reduced PCP above the cave.

