Supplement

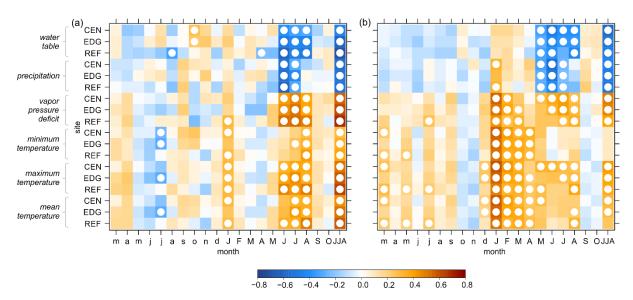**Figure S1: Pearson correlation coefficients between the detrended (a) δ¹³C and (b) δ¹⁸O site chronologies (CEN = center, EDG = edge, REF = reference) and hydroclimate variables. These variables include raw instrumental (water table) and raw gridded (precipitation, vapor pressure deficit, minimum, maximum, and mean temperatures) data. The correlations were computed for the period from March of the year preceding xylem cell formation to October of the current year and combined June-August (JJA). White circles indicate significant correlation at p < 0.05.**
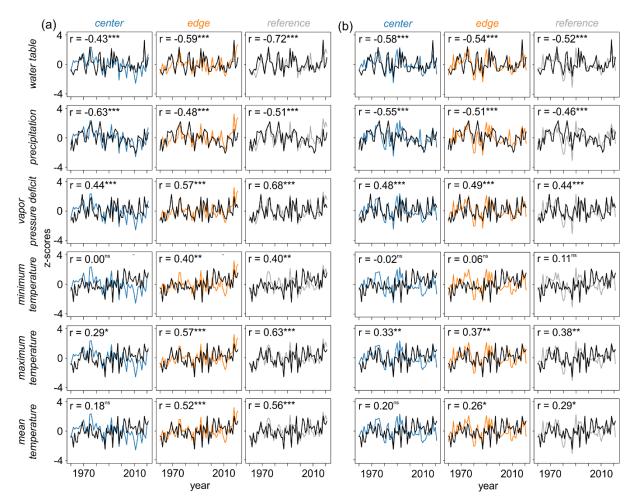
Figure S2: Relationship between raw (a) $\delta^{13}C$ and (b) $\delta^{18}O$ site chronologies and June-August instrumental (water table) and gridded (precipitation, vapor pressure deficit, minimum, maximum, and mean temperatures data) hydroclimate data (* p < 0.001, ** p < 0.001, * p < 0.05, ns = non-significant). Water table and precipitation data are presented with reversed y-axes for better clarity in interpreting the correlations.**
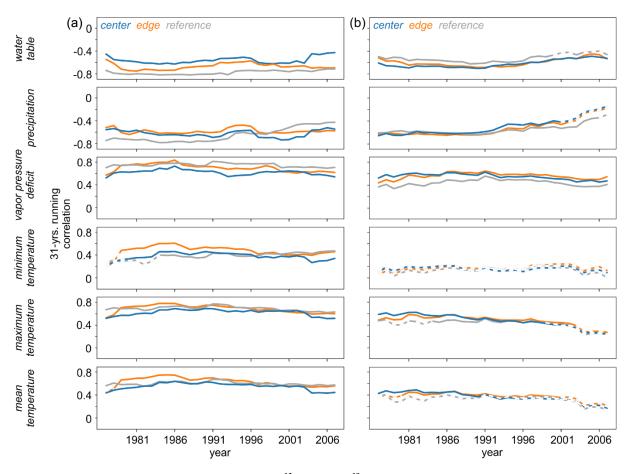
Figure S3: Temporal stability of the detrended (a) δ¹³C and (b) δ¹⁸O site chronologies and hydroclimate data (water table, precipitation, vapor pressure deficit, minimum, maximum, and mean temperatures), calculated using a 31-year moving correlation. Solid lines indicate statistically significant correlations at p < 0.05.