Supplementary material

Figure S1: Detrended *R. ferrugineum* ring width (RWI) chronologies from CN2400 (a), SAL2000 (b), SAL1800 (c), CHAR (d), QGL (e), QN (f), QW (g) and LORIAZ (h) and their confidence intervals (± 1 SD; grey areas).
Figure S2: Sample depth of RWI chronologies (black bars) showing the number of individuals included in each chronology. Red squares correspond to the period of analysis (1960-2017). The number of section used for building chronologies is indicated above each panel.
Figure S3: Trends of June-July-August mean temperature (TJJA), snow melt-out, snow-free growing degree days (SFGDD) and June-July-August precipitation sums (PJJA) at each site.
Figure S4: Bivariate correlations functions (BCFs) computed for the different sites between *R. ferrugineum* chronologies and mean temperatures (Temp.), monthly precipitation sums (Prec.), snow melt-out date (MO Date), Snow-Free Growing Degree Days (SFGDD), summer temperature (TJJA) and July-August Standardized Precipitation-Evapotranspiration Index (SPEI J+A) for the time periods 1960–1988 and 1989–2017. Months of the year preceding (N-1) ring formation (N) are written with lowercase letters; months of the current (N) year are written with capital letters. Gray-filled bars denote significant correlation at p ≤ 0.05.)
Figure S5: Relationship between snow-free growing degree days (SFGDD) and log-transformed scaled raw ring-width (RW) at each site for the 1960–1988 (a), 1989–2017 (b) and 1960–2017 periods. Regression lines with their 0.95 confidence intervals are arranged by color according to site elevation. Site names are indicated at the right or left of the regression lines.