**The file ‘DRIface\_parameters\_plotmeans.csv’** contains data from CO2 response curves, or A/Ci curves, presented in the following columns:

A: Year

B: Date

C: DOY (Julian date, or day of year)

D: ring (experimental plot)

E: CO2 (CO2 treatment plot; 385=ambient CO2; 585=elevated CO2)

F: plot (C=control precipitation; d=reduced precipitation)

G: block (experimental replicate)

H: Vcmax25 (Maximum carboxylation capacity of rubisco, measured at 25°C)

I: Jmax25 (Maximum potential linear electron flux through photosystem II, measured at 25°C)

J: VJ25 (Ratio of Vc,max/Jmax)

**The file ‘ExtendedDataFig10\_Aci\_curve\_analysis.sas’** uses the mixed procedure to run ANOVAs for each year on Vc,max, Jmax, and Vc,max/Jmax. In these ANOVAs, CO2, precipitation treatment, and DOY as well as their interactions are considered fixed effects, while block, CO2 nested within block, and CO2\*precipitation nested within block are considered random effects. Model-corrected means (lsmeans) are presented in Extended Data Figure 10, and ANOVA results are presented in Table S13.