



A U-Pb-carbonate-age-constrained  $^{87}\text{Sr}/^{86}\text{Sr}$  trend shows a rapid decline across the Carboniferous-Permian boundary, coincident with multiple lines of evidence for increasing aridity in the Pangean tropics. Permian Basin icehouse-style high-amplitude and high-frequency cycles (cyclothem) are replaced by greenhouse-style low-amplitude cycles at Wichita/Abo (Sakmarian) time, following a 17 km step-back of the shelf deposits on the Central Basin Platform that is interpreted as a major transgression. A model that links these observations is that reduced silicate weathering caused an increase in  $\text{pCO}_2$ , which has been recognized by terrestrial proxy records, and that the increase in this greenhouse gas was responsible for collapse of the long-lived Carboniferous-Permian glaciers.