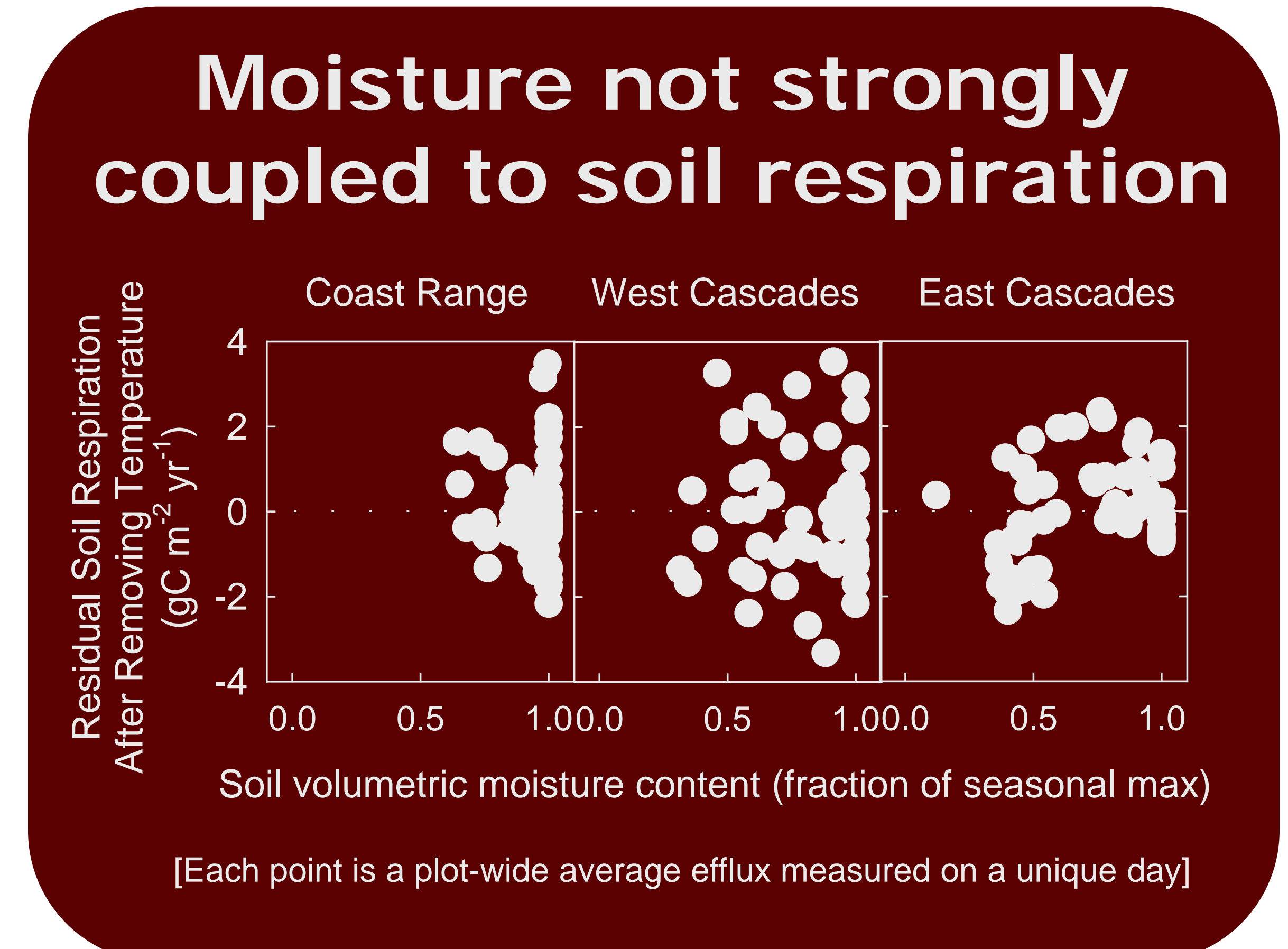
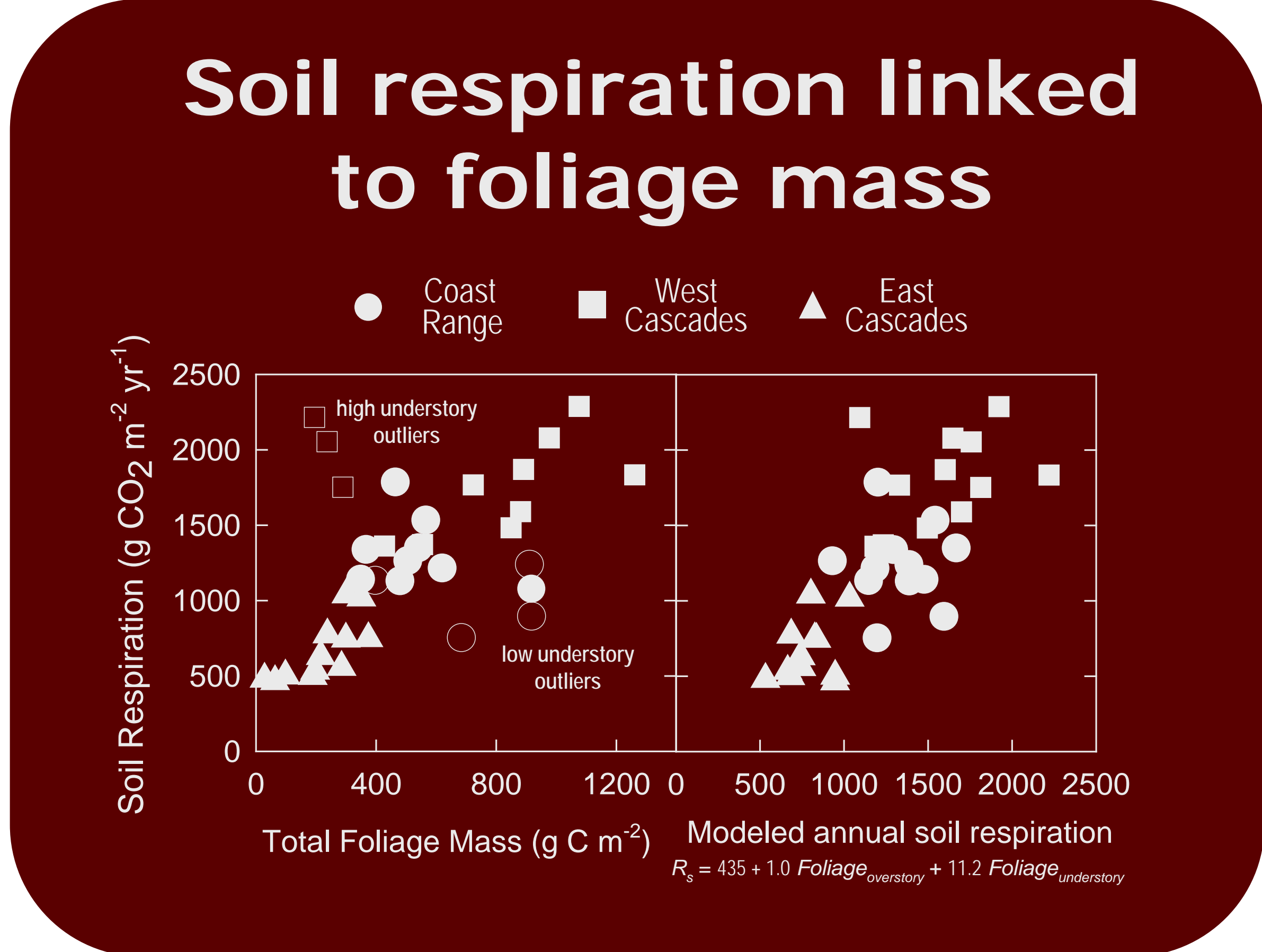
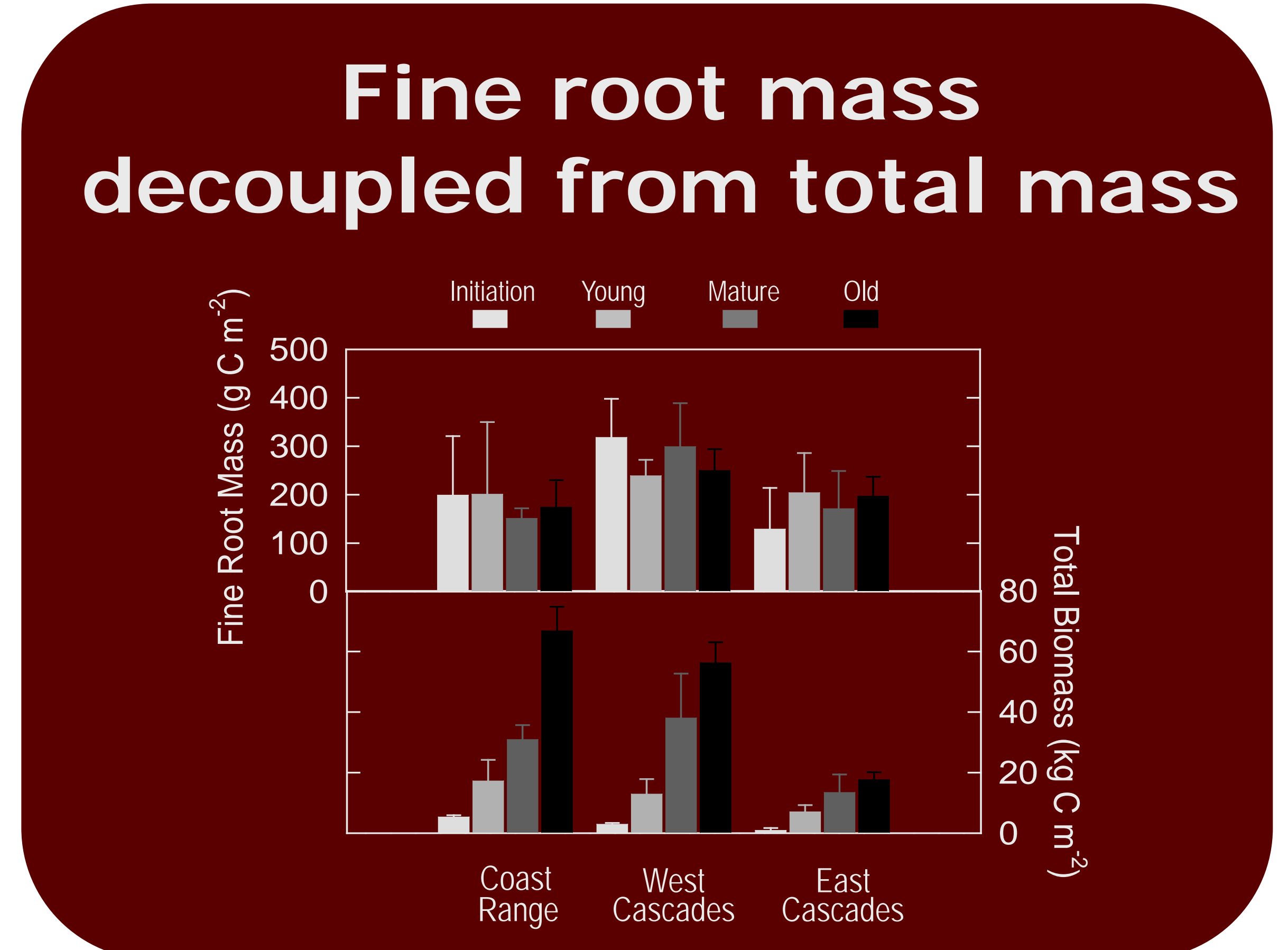
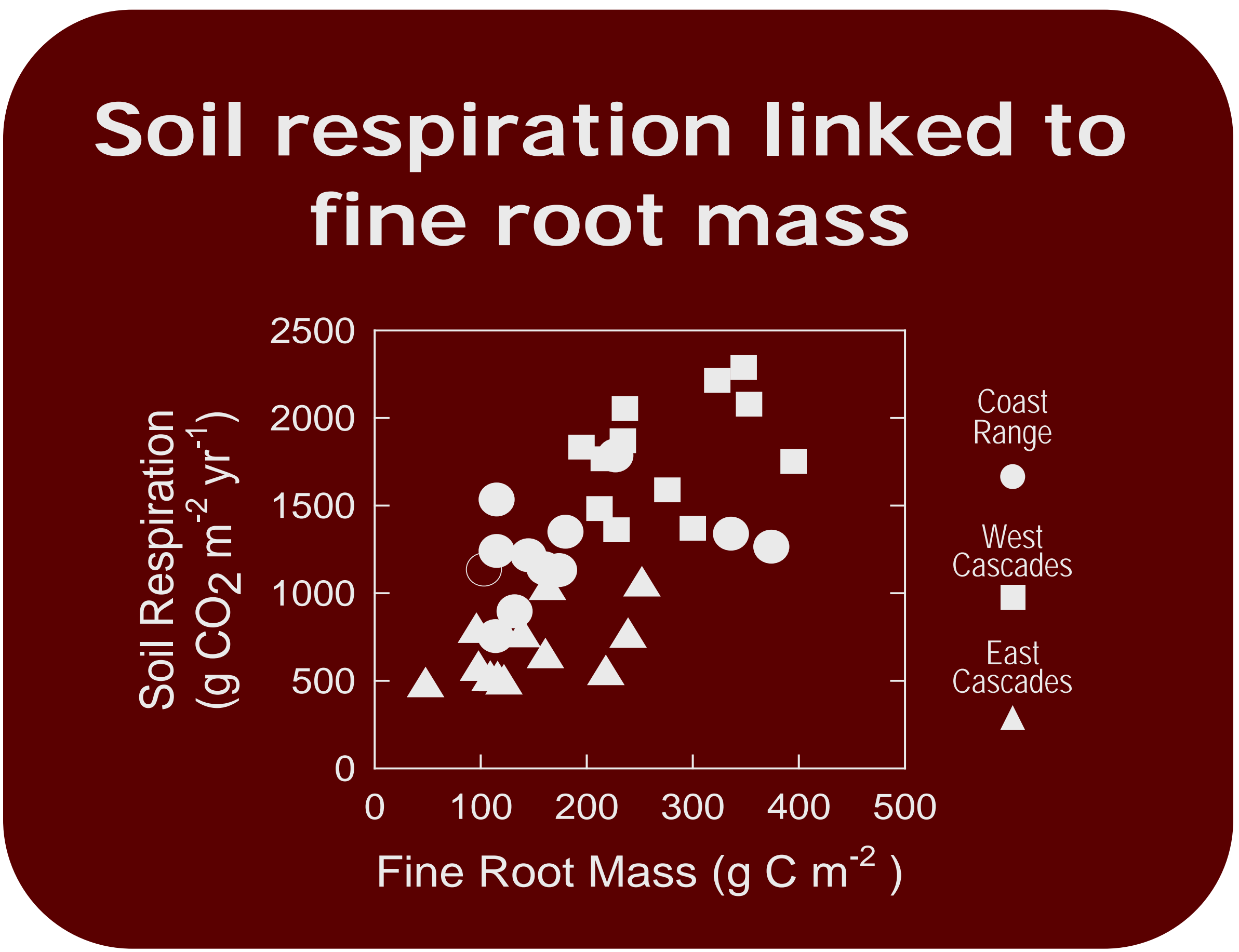
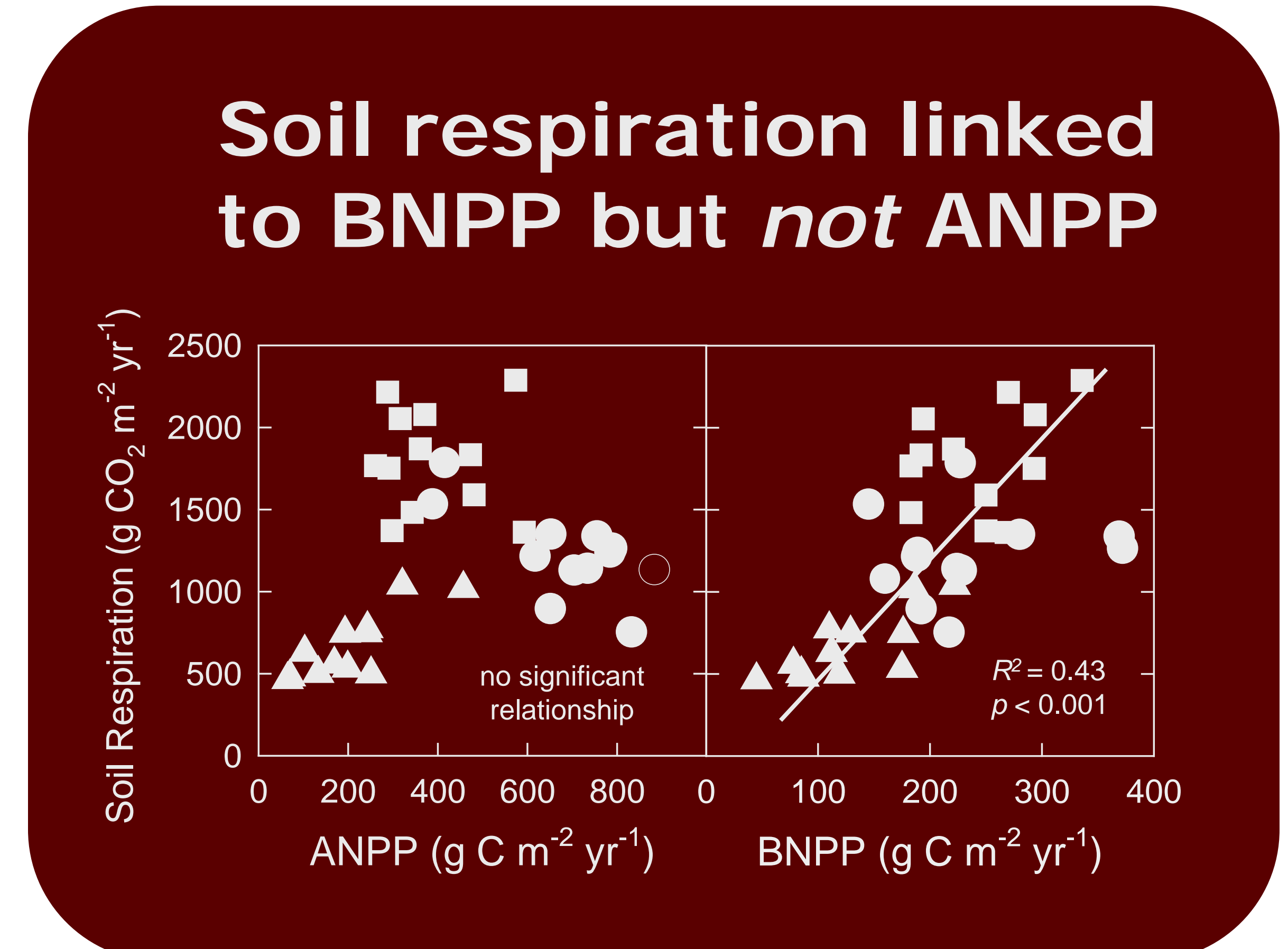
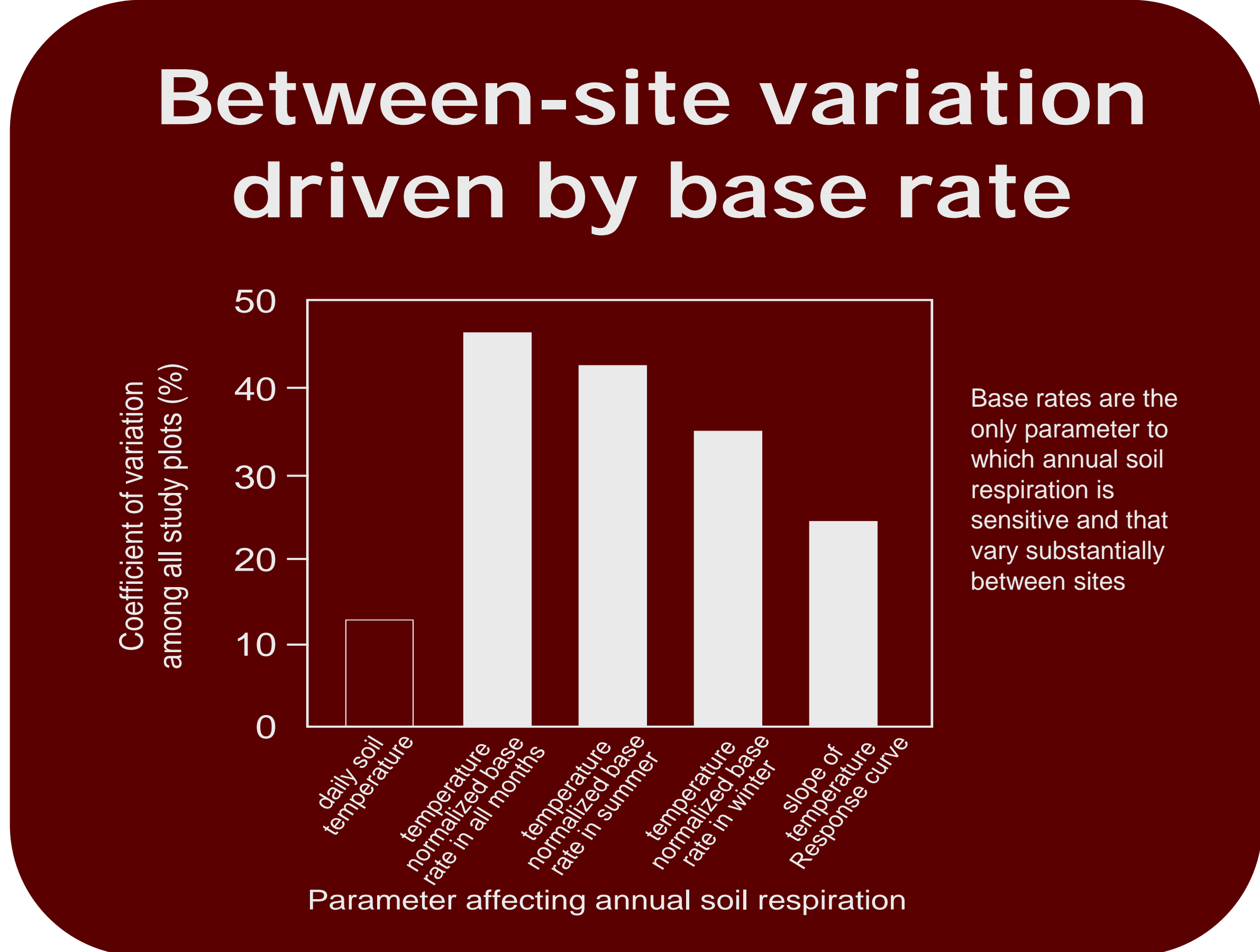
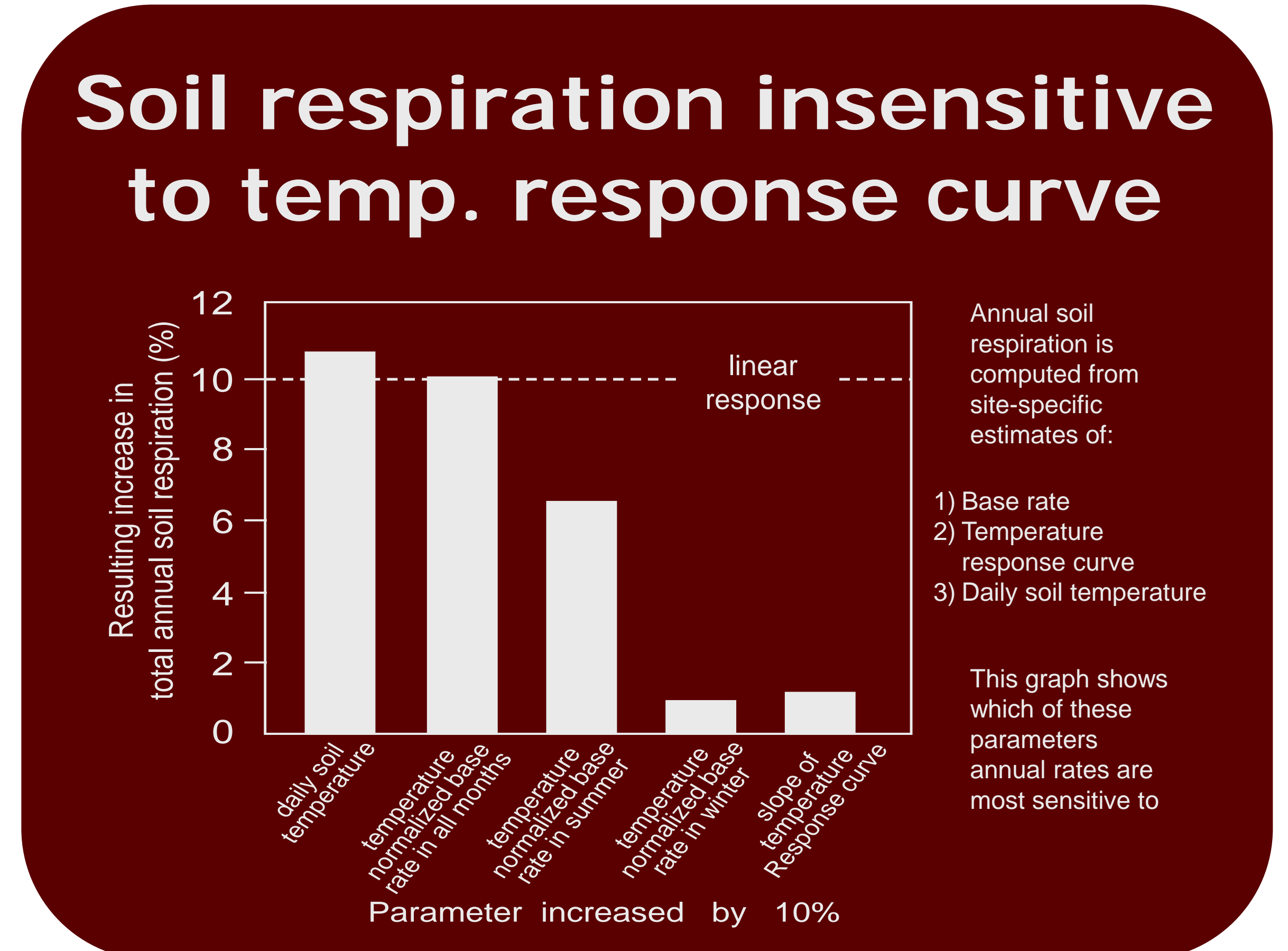
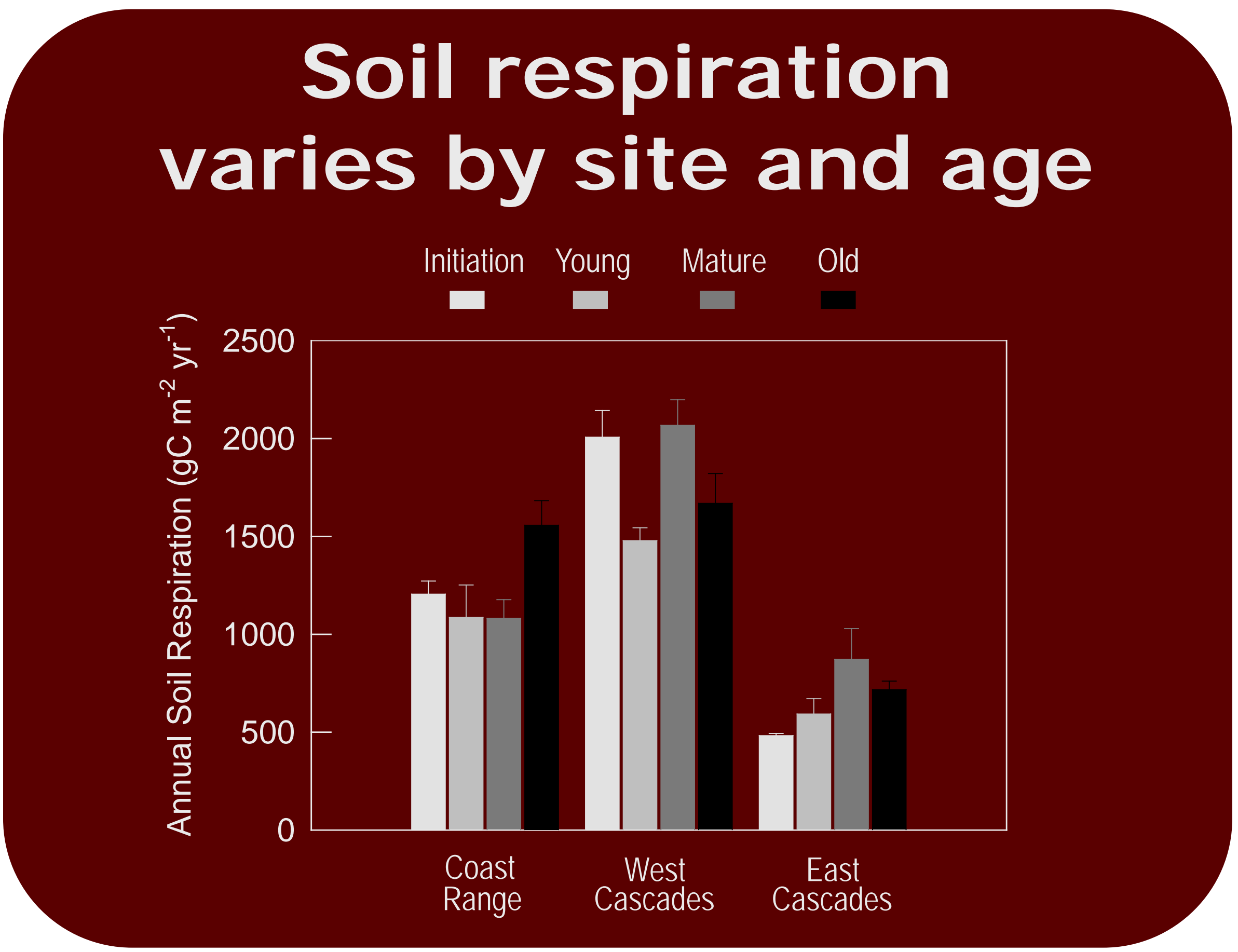


Soil Respiration Across Three Climatically-distinct Chronosequences in Oregon

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To assess soil respiration over the full range of western Oregon's forest conditions, annual soil respiration, along with soil temperature and moisture was measured at 36 study plots arranged as three independent replicates of four age classes in each of three climatically-distinct cover types. Forest ages range from 10 to 300 years. The three cover types spanned a 200 km transect and included 1) wet coastal hemlock-Sitka spruce 2) montane Douglas fir, and 3) rain shadow ponderosa pine. Annual soil respiration for the year 2001 was computed by combining periodic chamber measurements with continuous soil temperature measurements, which were used along with site-specific temperature response curves to interpolate daily soil C-efflux between dates of direct measurement.

Methods



Our results demonstrate that both the disturbance regimes that result in a diversity of forest age and the edaphoclimatic forces that result in a diversity of forest type are acting to shape soil respiration on across Oregon. Moreover, our results suggest that temperature and moisture are of minimal importance in defining between-site differences in annual soil respiration. Correlations between annual soil respiration and leaf mass, root mass, and root production are consistent with a growing appreciation that soil respiration is controlled largely by the short-term supply of carbohydrates to the rhizosphere, and that regional assessment of soil respiration may be better improved by understanding belowground carbon allocation than by further regression of respiration with parameters of the soil environment, which at regional scales are often confounded with plant production.