Supplementary materials

The following Supporting Information is available for this article:

Fig. 1S VPD as a function of leaf temperature for three tree species.

Fig. 2S The optimum temperature of photosynthesis and the slopes of the linear relationship of photosynthesis vs temperature vs VPD.

Fig. 3S Photosynthesis as a function of the C_i/C_a ratio.

Fig. 4S Stomatal conductance as a function of leaf temperature and for all species for which leaf-level temperature responses were measured.
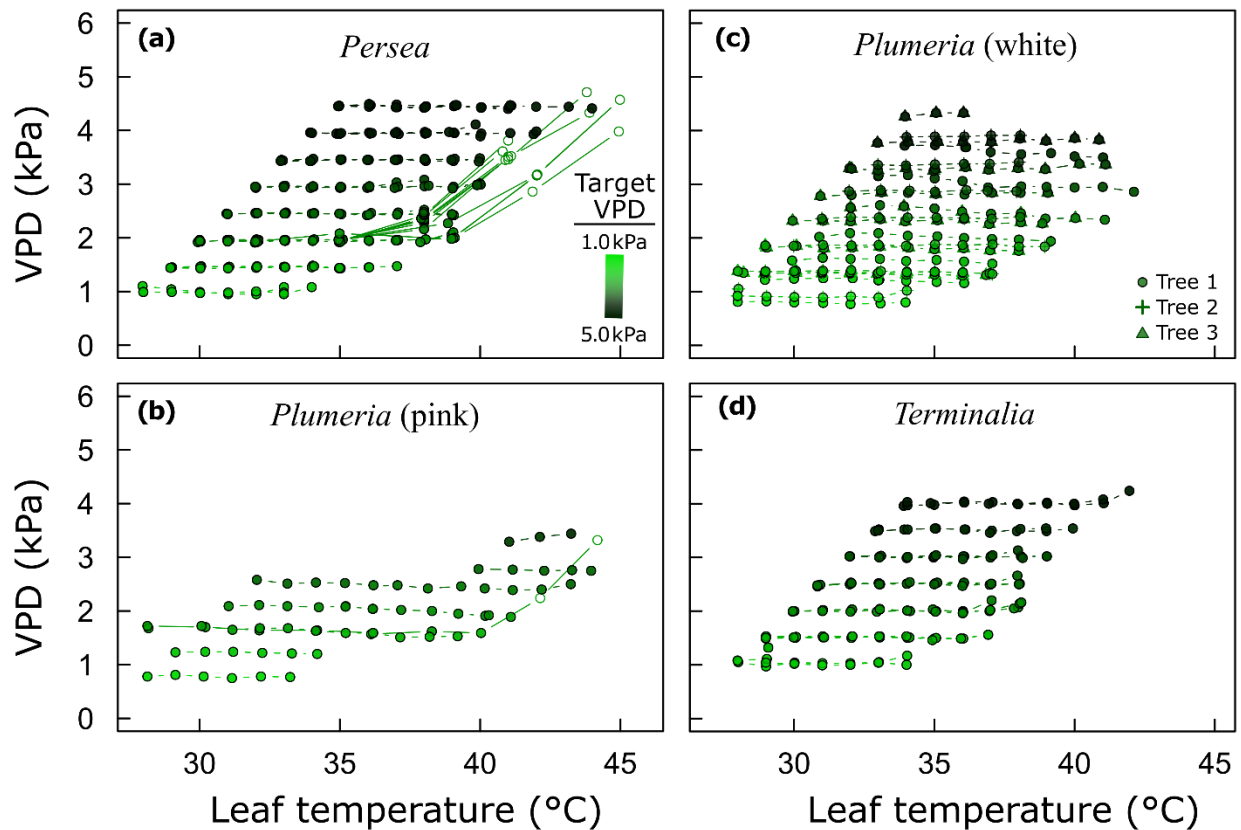

Fig. 1S. VPD as a function of leaf temperature for three tree species (and two varieties of *Plumeria*), illustrating where humidity control successfully maintained VPD within 0.5 kPa from the target value

(closed symbols—fill colors correspond to target VPD). Open symbols indicate where VPD could not be maintained with increasing temperature—these data were excluded from further analyses.
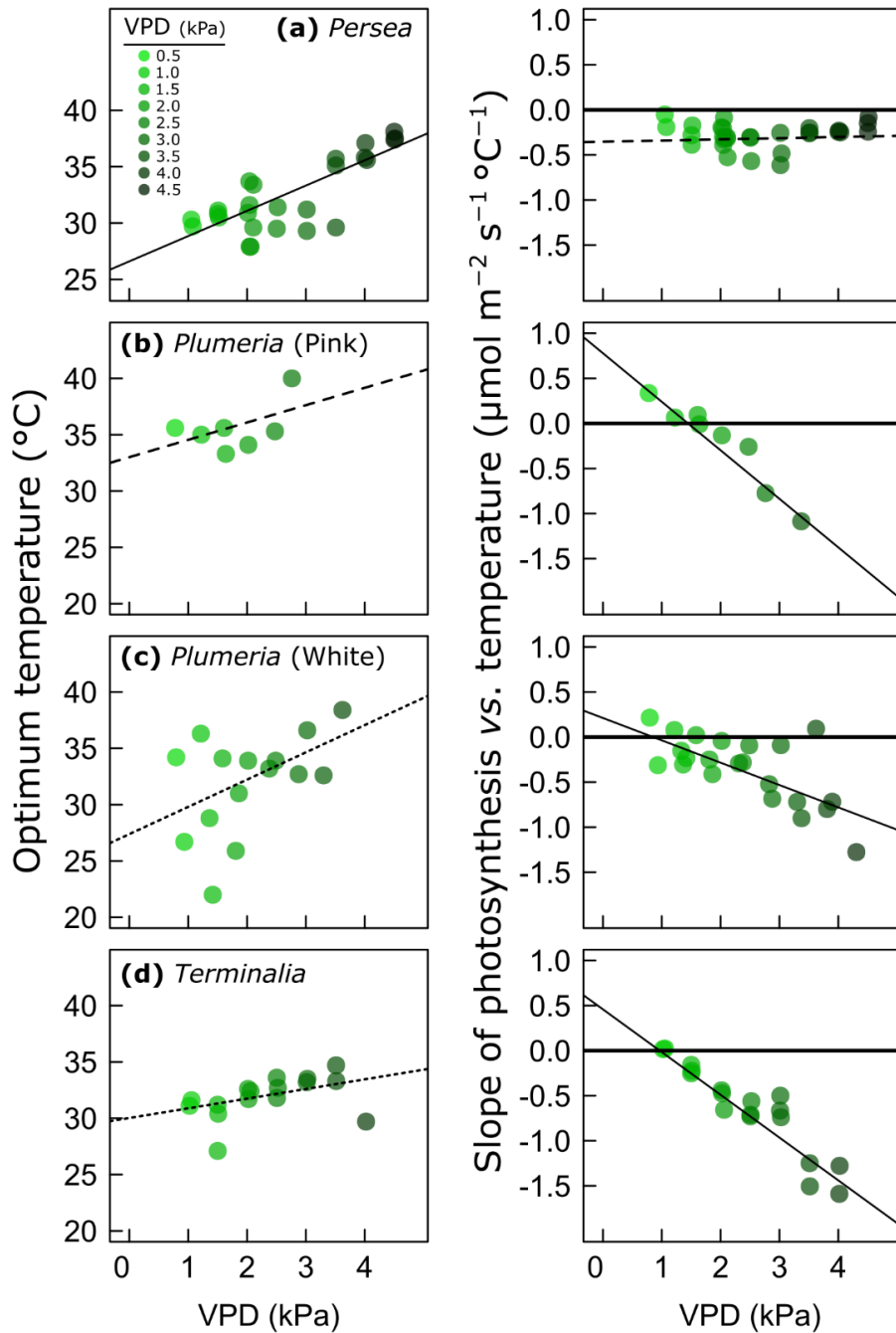

Fig. 2S. The optimum temperature of photosynthesis (left hand panels) and the slopes of the linear relationship of photosynthesis vs temperature (right hand panels), plotted against the vapor pressure deficit (VPD) at which the parameters were determined, for three species, including two varieties of *Plumeria rubra*, for which leaf-level temperature response curves were measured.

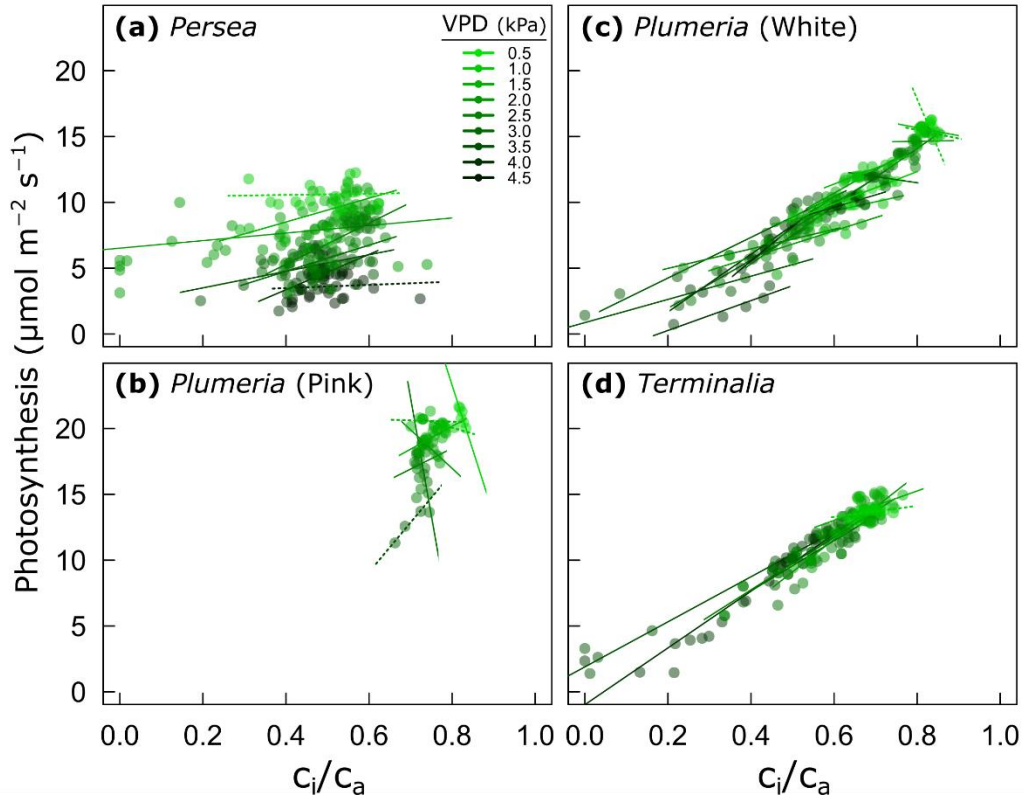Solid, dotted, and dashed lines indicate linear regressions with P<0.05, 0.05<P<0.1, and P>0.1, respectively.

Fig. 3S. Photosynthesis as a function of the ratio of substomatal to ambient CO_2 (C_i/C_a) at different VPD levels for three species, including two varieties of *Plumeria rubra*. Solid and dotted lines indicate linear regressions at within a VPD category with P<0.05 and P>0.1, respectively.
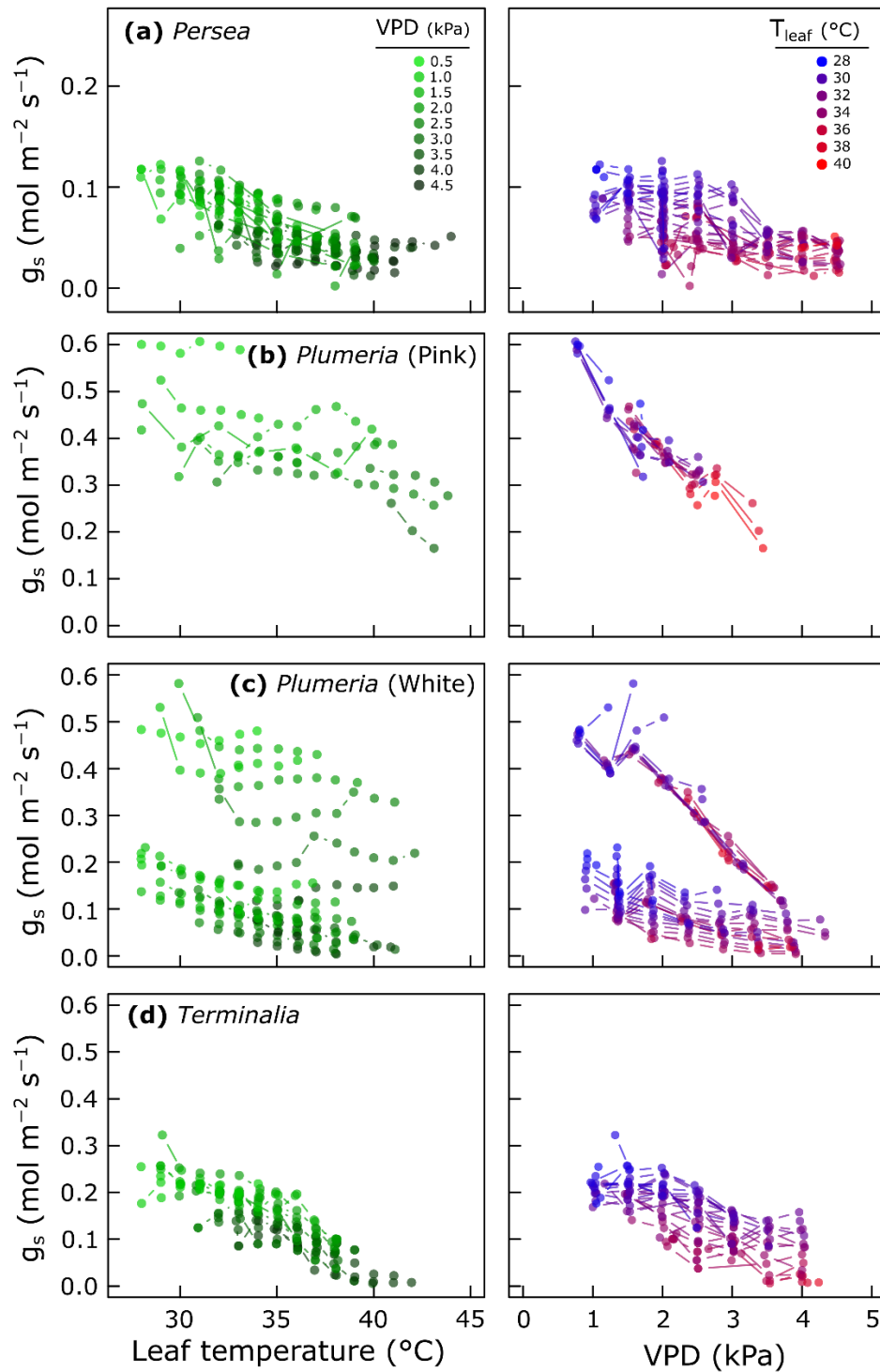
Fig. 4S. Response of stomatal conductance (g_s) to leaf temperature at controlled VPD (left hand panels) and to VPD across different temperature ranges (right hand panels) for all species for which leaf-level temperature responses were measured.