



**Supplementary Figure 1. The mean ( $\pm$  S.E.) non-baseline ( $F_b$ ) corrected photochemical efficiency of PSII in the dark-acclimated state ( $F_v/F_m$ ) (A,B) and absorption cross section of PSII photochemistry ( $\sigma_{LHII} = \sigma_{PII} / F_v/F_m$ ) for *T. erythraeum* IMS101. Left-hand panels (A,C) are low light treatments while right-hand panels (B,D) are high light treatments. Cultures were acclimated to three targeted CO<sub>2</sub> concentrations (Low = 180  $\mu$ atm (green circles), Mid = 380  $\mu$ atm (blue circles) and High = 720  $\mu$ atm (orange circles)), two light intensities (LL = 40  $\mu$ mol photons m<sup>-2</sup> s<sup>-1</sup>, HL = 400  $\mu$ mol photons m<sup>-2</sup> s<sup>-1</sup>), across a range of Fe' concentrations ( $\sim$  20 - 9600 pM) and at optimal temperature (26  $^{\circ}$ C).**