Modelled estimates of spatial variability of iron stress in the Atlantic sector of the Southern Ocean

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Supplementary Information
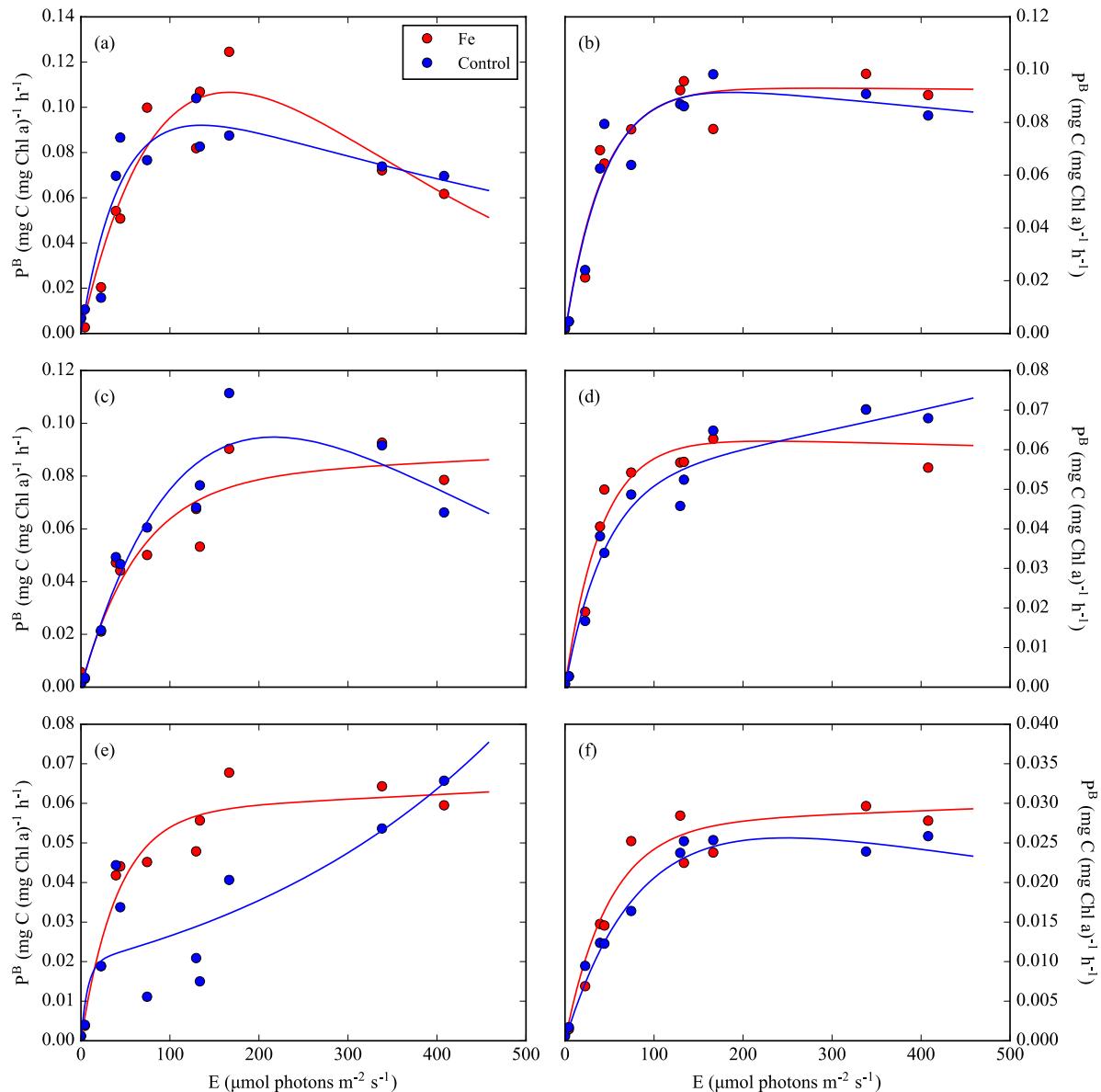
Figure S1: PE curves of productivity (mg C (mg Chl a)[-1] h^{-1}) with (Fe, red dots) and without (Control, blue dots) the addition of iron for experiments (a) 1, (b) 2, (c) 3, (d) 4, (e) 5 and (f) 6; lines represent a non-linear least squares fit to the equation of Platt et al. (1980).

Figure S2
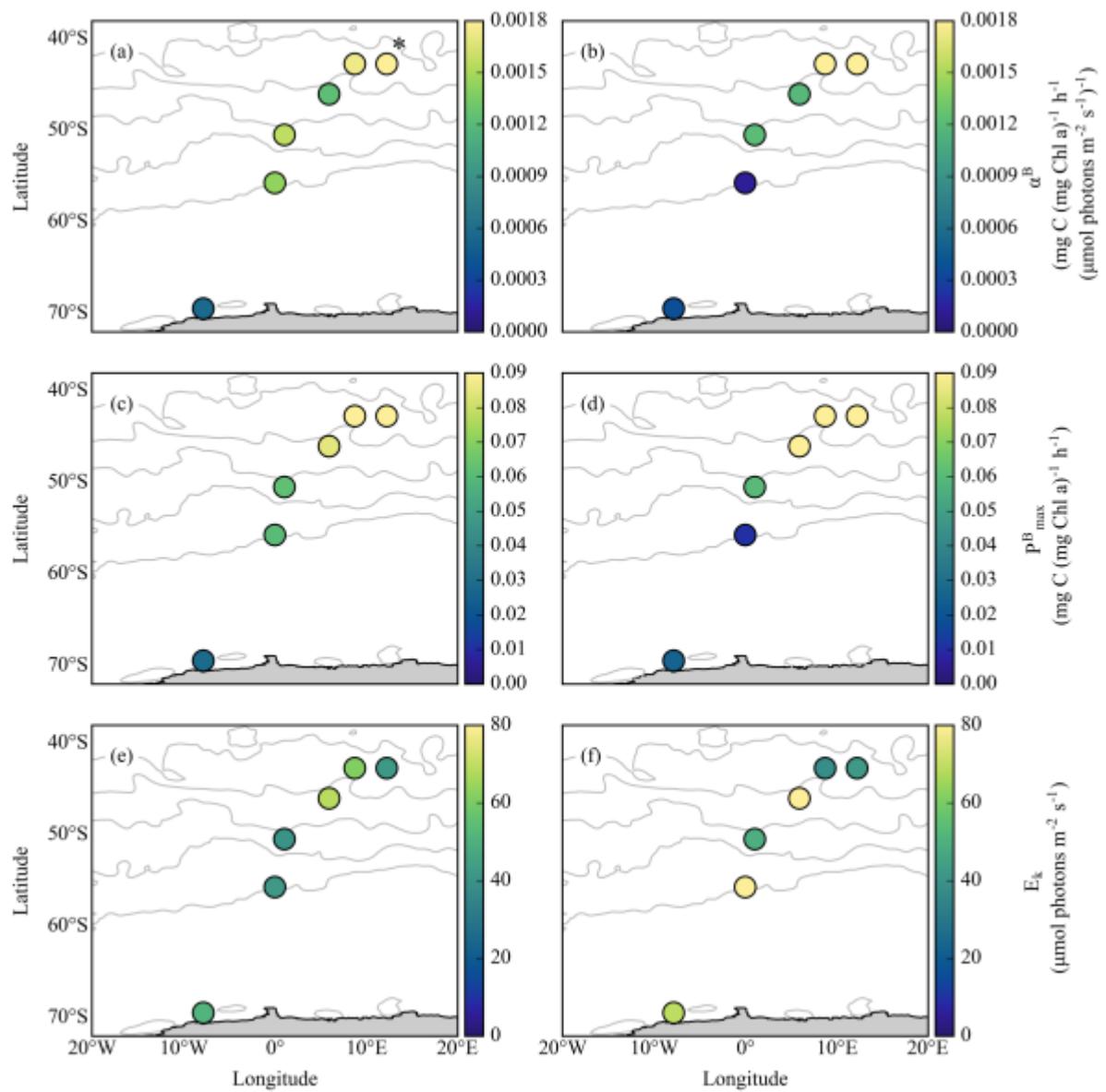
Figure S2: PE parameters (a) α^B (mg C (mg Chl a)$^{-1}$ h^{-1} (µmol photons m^{-2} s^{-1})$^{-1}$), (b) P$^B_{max}$ (mg C (mg Chl a)$^{-1}$ h^{-1}) and (c) E$_k$ (µmol photons m^{-2} s^{-1}) for the iron addition and control treatments of experiments set up in the Atlantic sector of the Southern Ocean.
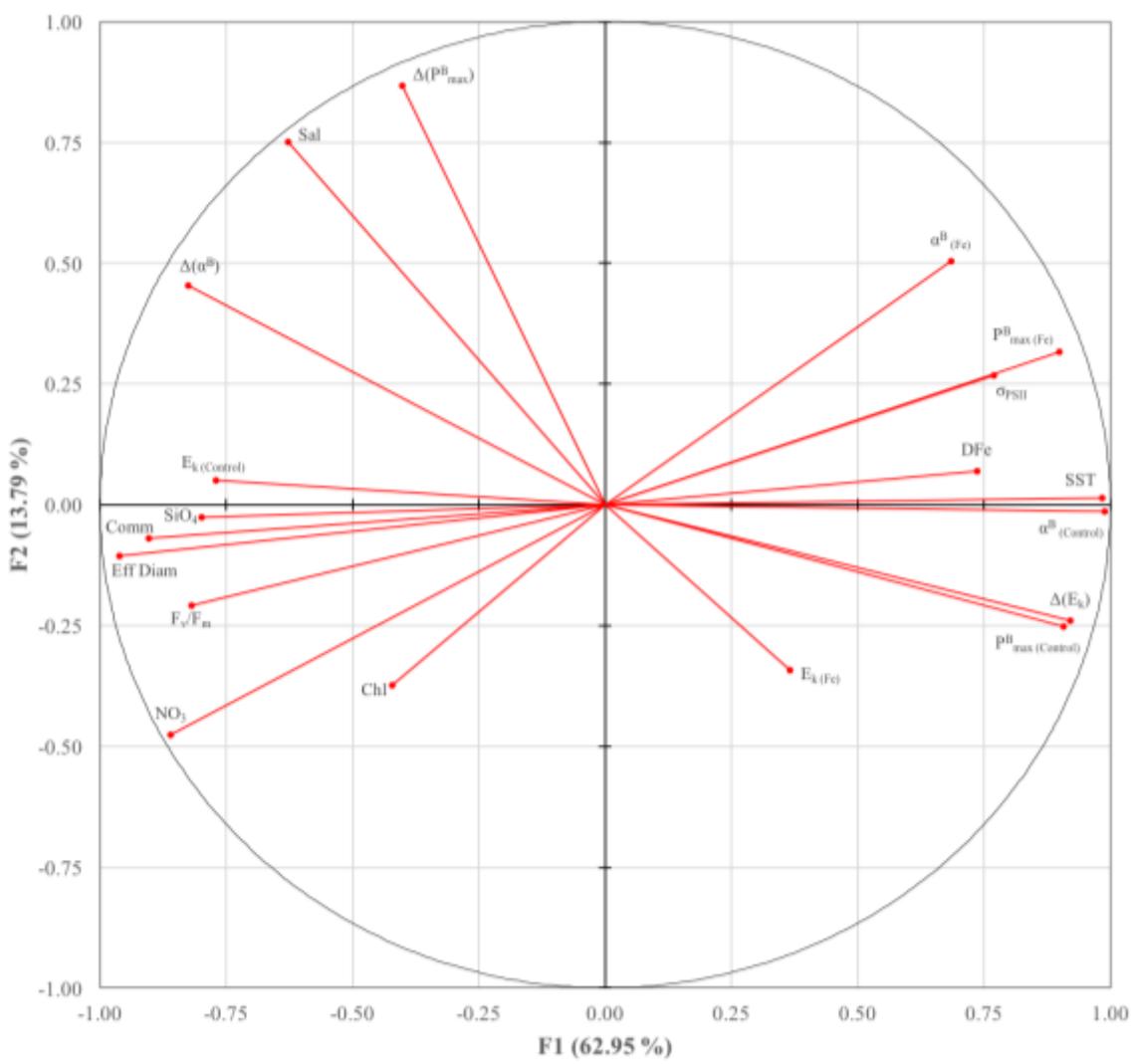
Figure S3: PCA: projection of the photosynthetic parameters determined experimentally and *in situ* variables measured, including: α^B, P^B_{max} and E_k from the both Fe and control treatments, the relative differences, sea surface temperature (SST), Salinity, Nitrate, Silicate and dissolved Iron concentration, Chl concentration, Effective Diameter, F_v/F_m, σ_{PSII} and Community composition (ratio of Diatoms to Haptophytes).
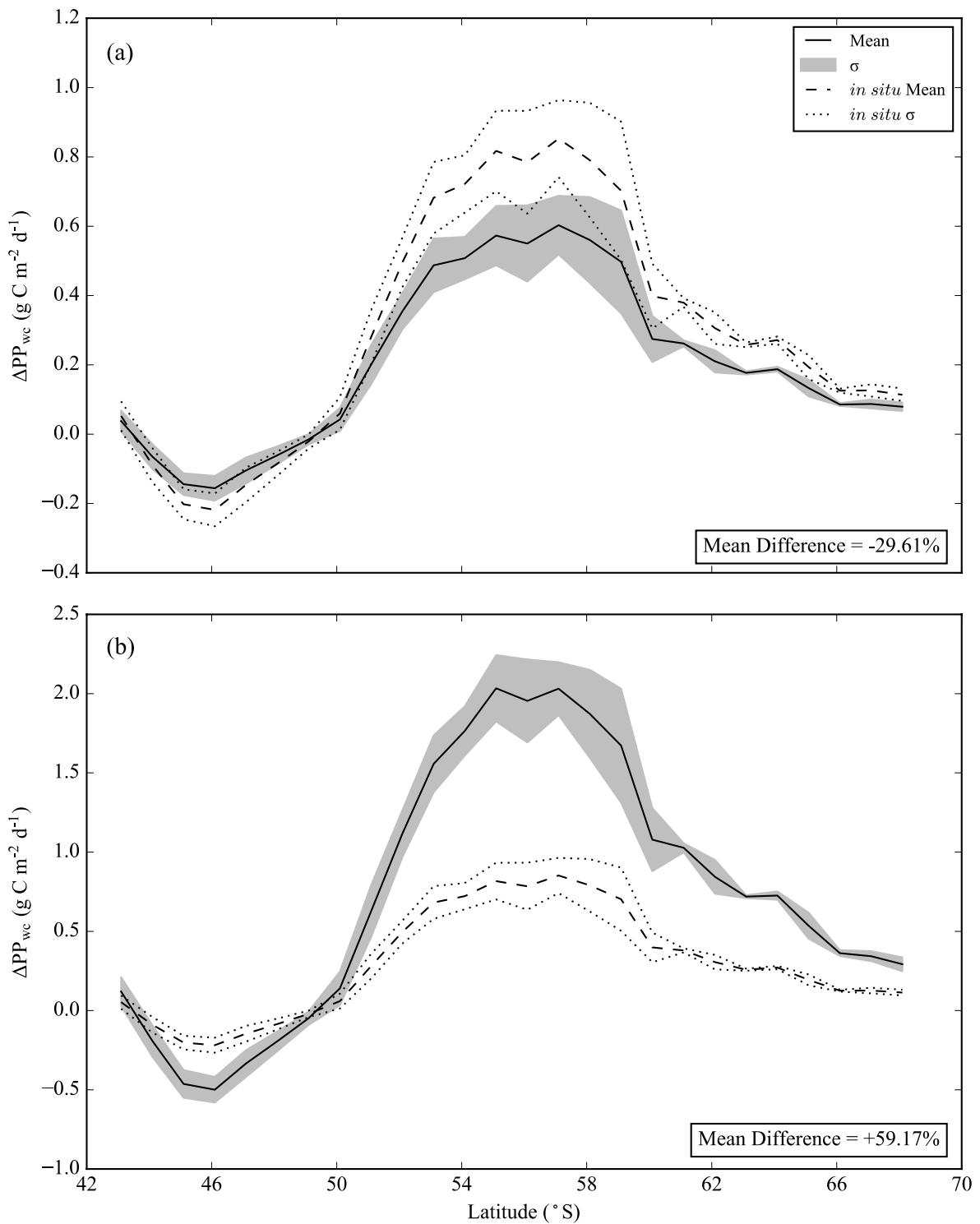
Figure S4: The absolute mean differences in depth integrated primary production (ΔPP$_{wc}$) with ± standard deviation (σ) interpolated along the transect line utilizing the (a) increased K$_d$ values and (b) decreased K$_d$ values; also displayed is PP$_{wc}$ derived utilizing *in situ* K$_d$.
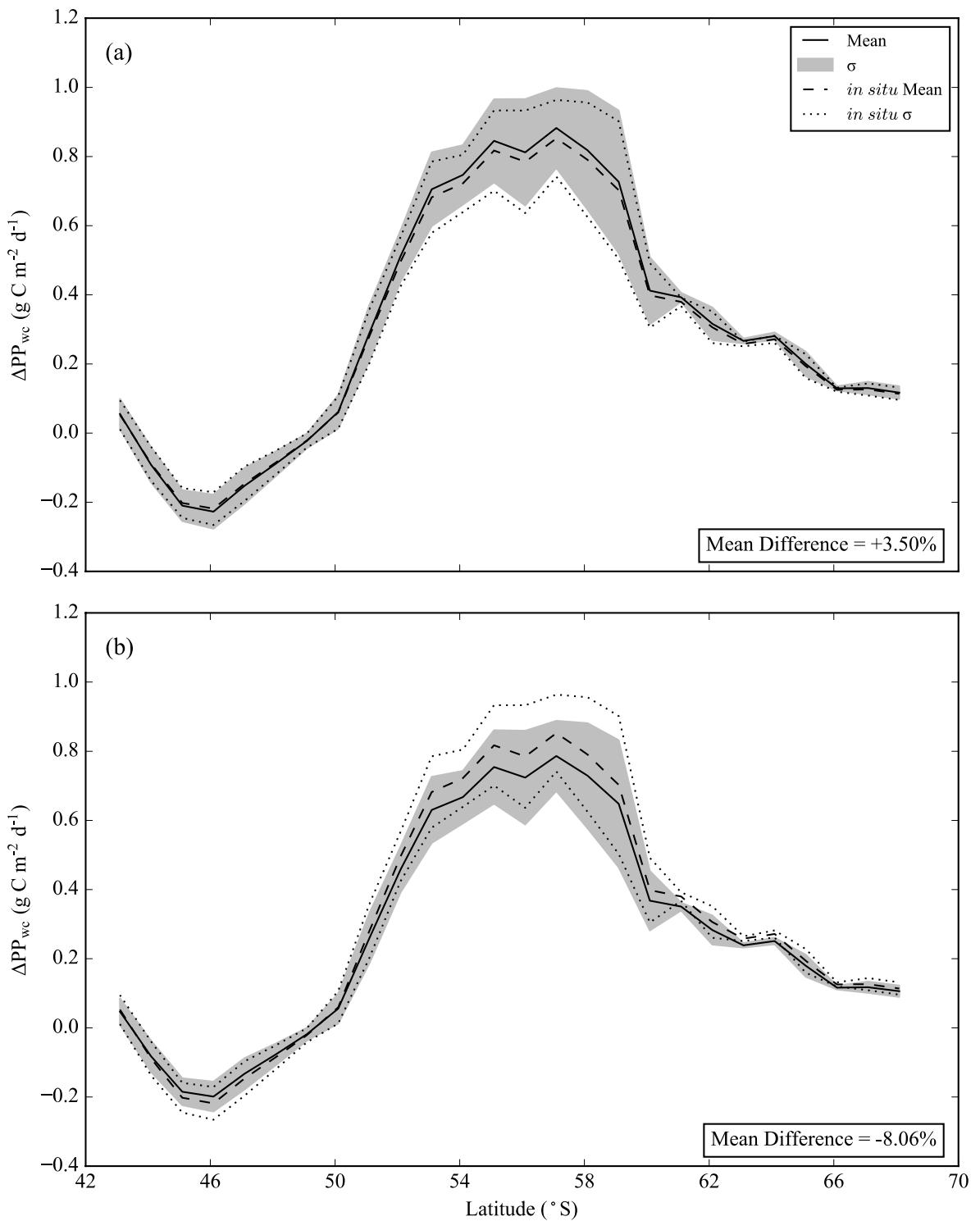
Figure S5: The absolute mean differences in depth integrated primary production (ΔPP$_{wc}$) with ± standard deviation (σ) interpolated along the transect line utilizing the (a) increased PAR values and (b) decreased PAR values; also displayed is PP$_{wc}$ derived utilizing *in situ* PAR.
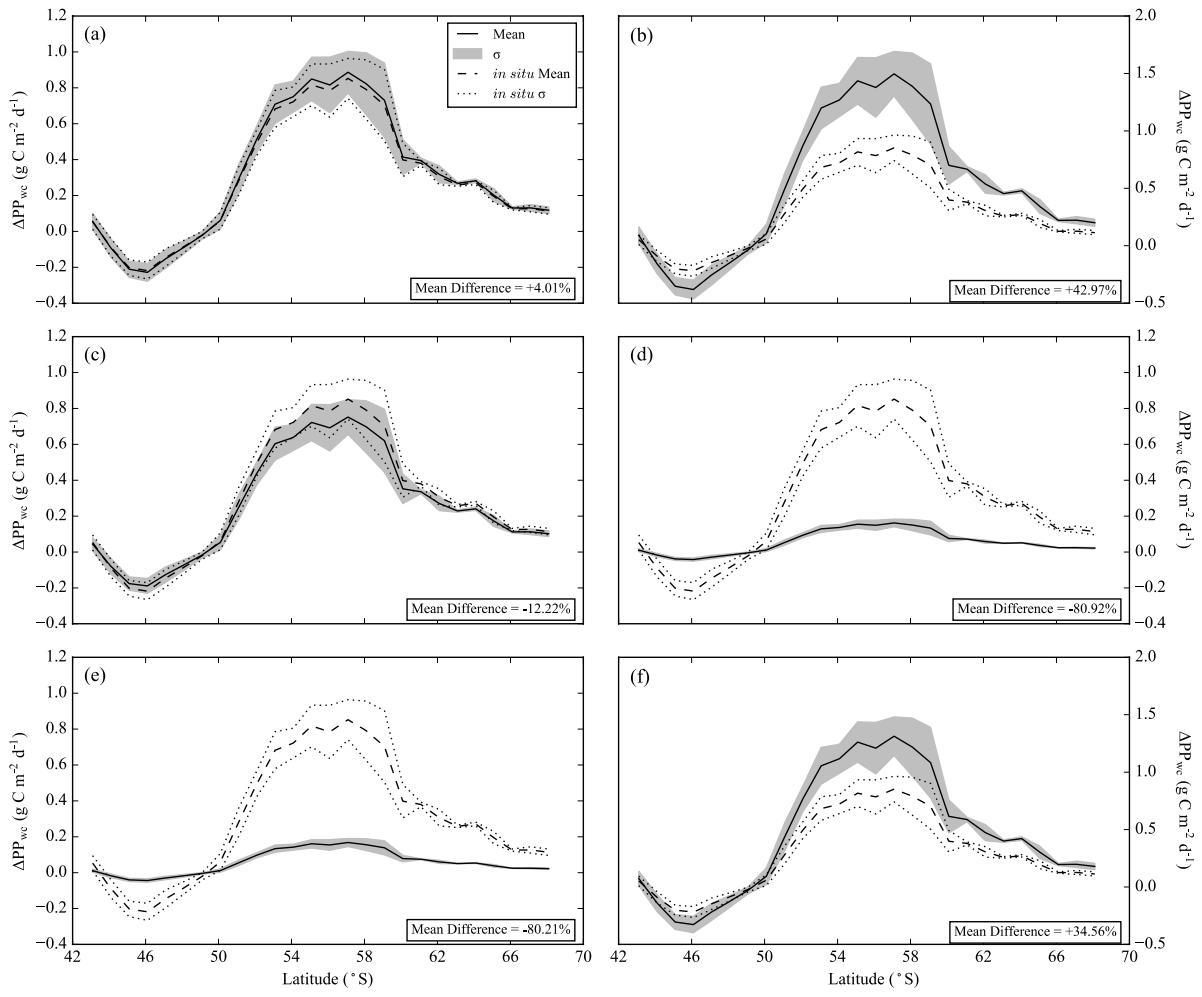
Figure S6: The absolute mean differences in depth integrated primary production (ΔPP$_{wc}$) with ± standard deviation (σ) interpolated along the transect line utilizing increased (a) α values and (b) P$_{max}$ values, decreased (c) α values and (d) P$_{max}$ values, (e) increase α and decreased P$_{max}$ values and (f) decreased α and increased P$_{max}$ values. Displayed on all plots is the PP$_{wc}$ derived utilizing the *in situ* α and P$_{max}$ values. (Please note the different scales in subplots b & f).