**Supplementary Figures**

**Supplementary Figure 1** - Maps of changes in carbon export and 200-600m average oxygen after 100 years of 2nM concentration-based ocean iron fertilisation

**Graphical user interface, application

Description automatically generated**

**Supplementary Figure 2** - Evolution of mean ocean dissolved Fe (DFe) concentrations (nM) and their change under a range of concentration and flux-based OIF strategies.

**Chart

Description automatically generated**

**Supplementary Figure 3** - Maps of the additionality due to OIF in a changing climate for 200-600m oxygen and 0-100m nitrate inventory (both in mmol m-2).

**Graphical user interface

Description automatically generated with medium confidence**

**Supplementary figure 4.** Histograms of the (a) change in animal biomass in EEZs due to climate change (b) climate change+OIF and (c) the OIF effect-climate change effect (isolating the effect of OIF in a changing climate (all in tons m-2).

**Chart, bar chart, histogram

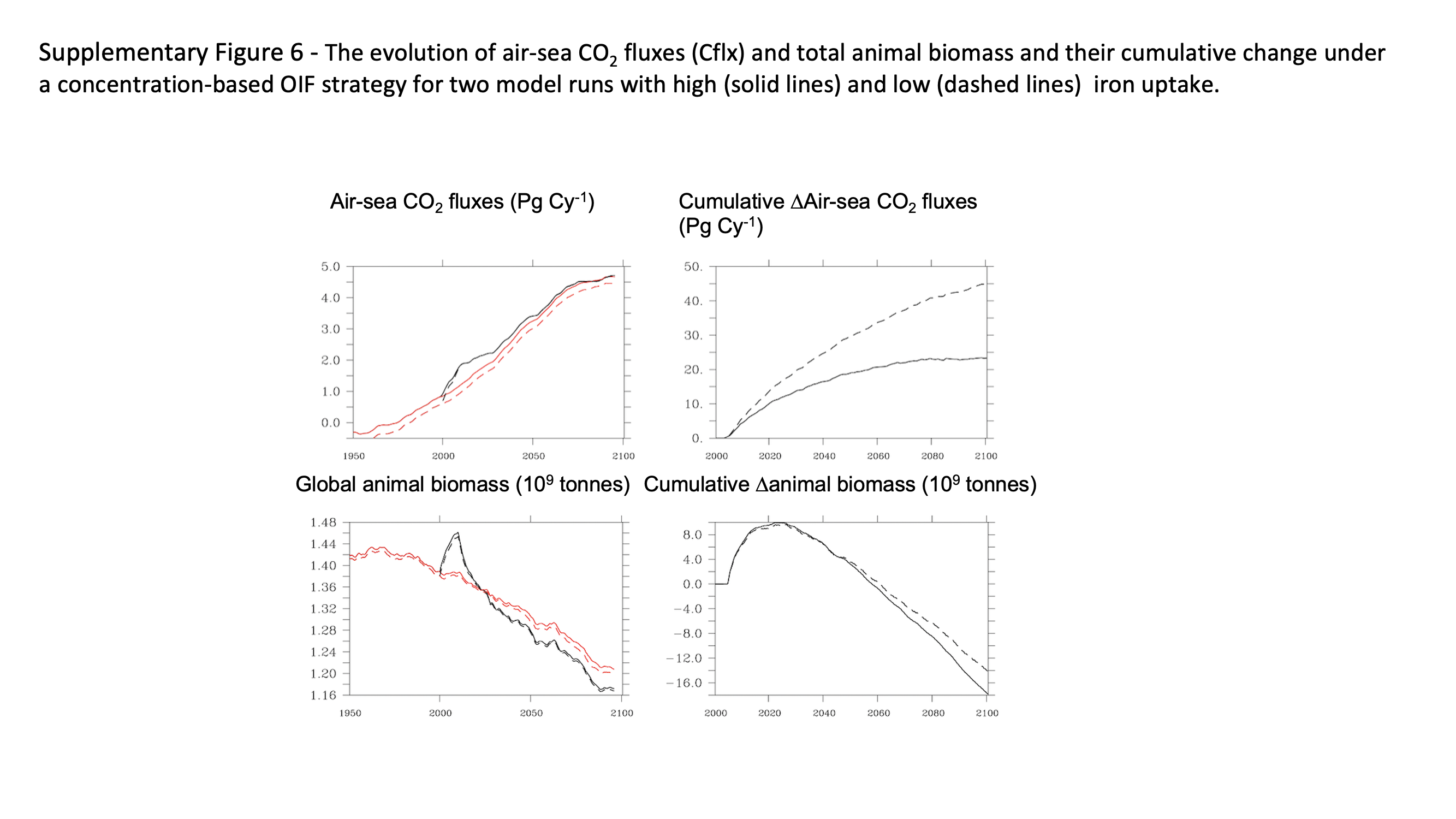
Description automatically generated**

**Supplementary Figure 5** - Evolution of carbon export (PgC) and its cumulative change (PgC) under a range of concentration OIF strategies applied globally and south of both 60oS and 70oS. as well as the additionality in mean upper ocean NO3 (mmol m-3) in response to OIF strategies applied (c) globally and south of both (d) 60oS and (e) 70oS.

**Chart

Description automatically generated with medium confidence**

**Supplementary Figure 6** - The evolution of air-sea CO2 fluxes, total animal biomass and their cumulative change due to climate change (red) and a concentration-based OIF strategy in a changing climate (black) for two model scenarios with high (solid lines) and low (dashed lines) iron uptake.

****