Supplement of

Iron “ore” nothing: benthic iron fluxes from the oxygen-deficient Santa Barbara Basin enhance phytoplankton productivity in surface waters

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Figure S1. Development of dissolved Fe(II) concentration in the supernatant water of benthic flux chambers (BFC) deployed at the studied stations in the Santa Barbara Basin during the AT42-19 expedition (see also data in Table 1). The increase (slope) in Fe(II) over time was used for the calculation of benthic Fe(II) fluxes.
Figure S1. Continued.
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**Figure S2.** Scatter plot for the dissolved iron concentrations in the upper 100 m of the ocean from field measurements along the US West Coast (y-axis) and from the ROMS-BEC model, where we have field measurements (x-axis). Model data are sampled seasonally according to field measurements. $R = 0.5$
**Figure S3.** Modeled oxygen concentration throughout the domain where 80 percent of the oxygen concentration is between 20 to 100 µM.
**Figure S4.** Dissolved iron (dFe) concentrations averaged between 100-200 m: (a) measured data (see manuscript section 2.4), (b) model results.
Figure S5. Atmospheric dFe deposition into the surface ocean of the CCS (32-48°N). Higher atmospheric dFe deposition is observed north of 42°N.
Figure S6. (a) Surface dFe anomalies, (b) Surface NO$_3^-$ anomalies, and (c) vertically integrated net primary production (NPP) in the full domain from the Hypoxia-off model run relative to the High flux model run.