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More extreme El Niño events reduce ocean carbon uptake in the future

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El Niño events weaken the strong natural oceanic source of CO_2 in the Tropical Pacific Ocean, partly offsetting the simultaneous release of CO_2 from the terrestrial biosphere during these events. Yet, uncertainties in the magnitude of this ocean response and how it will respond to the projected increase in extreme El Niño in the future (Cai et al., 2014) limit our understanding of the global carbon cycle and its sensitivity to climate. Here, we examine the mechanisms controlling the air-sea CO_2 flux response to El Niño events and how it will evolve in the future, using multidecadal ocean pCO_2 observations in conjunction with CMIP6 Earth system models (ESMs) and a state-of-the-art ocean biogeochemical model. We show that the magnitude, spatial extent, and duration of the anomalous ocean CO_2 drawdown increased with El Niño intensity in the historical period. However, this relationship reverses in the CMIP6 projections under the high emission scenario. ESMs project more intense El Niño events, but weaker CO_2 flux anomalies in the future. This unexpected response is controlled by two factors: a stronger compensation between thermally-driven outgassing and non-thermal drawdown (56% of the signal); and less pronounced wind anomalies limiting the impact of El Niño on air-sea CO_2 exchanges (26% of the signal). El Niños should no longer reinforce the net global oceanic sink in the future, but have a near-neutral effect or even release CO_2 to the atmosphere, reinforcing the concurrent release of CO_2 from the terrestrial biosphere.