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Interactive comment on "Atmospheric gas-phase composition over the Indian Ocean" *by* Susann Tegtmeier et al.

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It is a very interesting and timely review of Atmospheric gas-phase composition over the Indian Ocean by Susann Tegtmeier et al in ACP. In page 25 lines 16-27 and Page 26 lines 1-14 is dedicated to discuss the surface ocean pCO2 and sea-air CO2 flux variability and trends. There are other direct studies which address these, and are added below.

Valsala and Maksyutov (2013) noted the variability of western Arabian Sea sea-to-air fluxes are driven by a complementary action of ENSO in the Pacific and IOD in the Indian Ocean while the southern Bay of Bengal sea-to-air CO2 flux variability predominantly controlled by ENSO induced variability.

Valsala and Murtugudde (2015) noted the meso-scale sea-air CO2 flux variability in the western Arabian Sea and noted the intraseasonal oscillations of fluxes in tandem with Great Whirl and Southern Gyre eddies of the regions which has implications in the atmospheric CO2 concentrations at the same time scales. (Please see Figure 2a in your manuscript in Page 9 and the abbreviations of GW and SG therein)

Valsala et al., (2012) reported that the south subtropical Indian Ocean CO2 fluxes are controlled by solubility pumps and while south Indian Ocean fluxes are controlled by both solubility and biological pumps. Besides the study noted a decadal variability in the sea-air CO2 fluxes of south sub-tropical Indian Ocean driven by ENSO induced forcing, which has implications in atmospheric CO2 concentrations in the decadal time scale.

Valsala et al. (2020) identified that the atmospheric CO2 over southeastern tropical Indian Ocean is controlled by Indian Ocean Dipole Mode as identified from 1960-2019 (60 years) of analysis.

Sreeush et al., (2019) noted that the warming of the Indian Ocean exacerbate the ocean acidification of western Arabian sea. A 16% of the total acidification in last 50 years in this region is contributed by the ocean warming alone.

Chakraborty et al., (2018) noticed a dominance of biological control over mixing in the south Bay of Bengal ocean pCO2 with implications in sea-to-air CO2 fluxes there.

And last, but not the least, Sarma et al., (2013) has reported the RECCAPv1 synthesis of Indian ocean sea-to-air CO2 fluxes.

As a review paper kindly include these papers in the discussions too. References are as follows.

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