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High frequency wind forcings and interior oxygen levels

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The near-surface atmosphere layer, and in particular the wind intensity, controls the ocean properties. The Ekman circulation depends of the wind stress, which strength also determines the amount of diffusion in the upper layer. The intensity of the latent and sensible fluxes at surface depend linearly of the wind speed. The wind also directly impacts the biogeochemical cycles as it modulates the kinetic of gases equilibrium such as oxygen. Using an ocean general circulation model we assess here the importance of the high frequency forcing in setting the ocean properties. We remove specifically the “weather frequencies” (<10 days) of the wind component in the forcing of the 1-momentum equation, 2-mixing length scale and 3-surface fluxes. These experiments are based on the normal year of the CORE forcing dataset (COREv2-NYF). We emphasize the importance of the “weather frequencies” in the modulation of the biogeochemical cycles and the oxygen concentration at centennial time scale.

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