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Sorting out possible scenarious about the future of oxygen minimum zones

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Biogeochemical ocean circulation models have been used to predict the potential evolution of the marine oxygen distribution for given CO_2 emission scenarios. To better assess the quality of such predictions, results of different model configurations are compared to observational estimates of oxygen changes over the past decades. A particularly strong sensitivity of the model results is found with respect to wind forcing during and prior to the observation period, which has implications for the robustness of oxygen predictions into the future. Other uncertainties investigated are associated with poorly constrained parameterisations of transport and biogeochemical processes. It is shown that we cannot rule out scenarios that may seem surprising, such as a decrease in 21st century marine suboxia or a warmer future ocean with an oxygen inventory that exceeds the pre-industrial one.