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## Comparing dissolved oxygen concentration outputs from two generations of the NorESM model

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A comparative study of dissolved oxygen concentration outputs from two generations of the NorESM model, NorESM-ME (CMIP5) and NorESM-LM (CMIP6), has been carried out as part of a general model development evaluation. Model output for dissolved oxygen consist of yearly averaged historical data over the period 1850-2000. The dimensionality of this data set was reduction by computing empirical orthogonal functions (EOFs), which are eigenvectors of the spatially weighted anomaly covariance matrix defined by the spatio-temporal dissolved oxygen field. EOF analysis of the two models show similar patterns of dissolved oxygen in the upper ocean (150m depth), with pronounced anoxic conditions in the western Pacific Ocean, Indian Ocean and southern Atlantic Ocean. At 500m depth the model outputs remain mostly in agreement for the Pacific Ocean, but the EOF patterns diverge significantly for both the Indian Ocean and Atlantic Ocean, and to some extent also for the Southern Ocean. For the Indian Ocean, the EOF shift seem to reflect a general reduction of oxygen levels in NorESM-LM compared to NorESM-ME. In the Atlantic Ocean situation is more complex, with NorESM-LM showing reduced oxygen levels near the equator, and enhanced oxygen levels at higher latitudes when compared to NorESM-ME. Further studies are currently in progress to investigate to what extent the similarities and discrepancies in dissolved oxygen concentration can be attributed to ocean temperature and stratification.