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Low-frequency sea surface height variability from long control runs of coupled models

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Estimates of the low-frequency internal variability in long control runs of coupled model simulations of sea surface height (SSH) are explored in terms of time scale and spatial pattern. The coupled models examined include the ECHAM/MPI-OM data from the Millennium project, and various climate models from the latest Climate Model Intercomparison Project (CMIP5). In these control runs, SSH varies substantially on timescales ranging from interannual to centennial. Noting the strength and location of centennial-scale SSH variability allows for one form of error bars to bracket the CMIP5 projections of future SSH increases. The sensitivity of climate models to forcing, as well as underlying causes of internal variability, is discussed. The high-latitude ocean regions are most susceptible to large changes due to various forcings and intermodel differences, as has been noted before for CMIP3 models.