



## **Regional variability in reconstructed sea level and climate model hindcasts over 1950-2000**

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Future sea level projections for 2100 from IPCC AR4 indicate significant regional variability around the global mean rise. Important regional variability in rates of sea level rise has been observed by satellite altimetry for the past 15 years, highly correlated with non uniform thermal expansion. Sea level reconstructions for the past 50 years also report non uniform spatial trend patterns. While IPCC projections focus on the long-term global warming signal, observed regional variability in sea level and thermal expansion for the few past decades appears dominated by interannual/decadal fluctuations of the coupled ocean-atmosphere system. In this study we analyse climate model runs since 1870 using outputs of the CNRM climate model, and focus on steric sea level grids over the 1950-2000 period. This allows us to conduct a series of comparisons with reconstructed sea level grids based tide gauge data and gridded dynamic heights from a general ocean circulation model with data assimilation. In particular, we compare spatial trend patterns in steric sea level computed by the climate model and 'observed' (i.e., reconstructed) sea level. We also perform Empirical Orthogonal Function decompositions of both data sets and compare their dominant modes of variability.