



CMIP5 models and the main modes of climate variability

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This study has the purpose to quantitatively assess how six of the CMIP5 models represent the main modes of climate variability . The Southern Oscillation Index (SOI) , NINO_{3.4}, Interhemispheric sea surface temperature gradient (also referred to as Atlantic Dipole), Pacific Decadal Oscillation (PDO) , North Atlantic Oscillation (NAO) and Southern Annular Mode (SAM) index are calculated from six different models results for the historical scenario. The results analysed are from the following models: CCSM4, CSIRO-Mk3-6-0, HadCM3, IPSL-CM5A-MR, GFDL-ESM2M and MIROC4h. Models are validated against the reference data from the NCEP/NCAR Reanalysis I, from 1948 to 1979, and NCEP/NCAR Reanalysis II, 1980 to 2005, for atmosphere variables and the SODA2.2.4 reanalysis for ocean variables. Initial validation is obtained by correlating the time series of the CMIP5 model, relative to the climate indices examined and the reference (reanalysis) data. Results show, as expected, that the models ability to represent climate indices relative to the reference data varies.