



Can the initialisation improve the simulated trend in Southern Ocean sea ice extent over past decades?

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The sea ice in the Southern Ocean has been increasing during the last decades while state of the art general circulation models generally simulate a decrease in the Southern Ocean sea ice extent in response to the anthropogenic forcing. Nevertheless, a previous study performed in a perfect model framework has pointed out an improvement of the simulated trend in sea ice extent at multi-decadal timescales when an adequate data assimilation method is used to initialise a simulation. Similar tests are performed here in a realistic framework, i.e. with the use of actual observations for both the initialisation and the verification of the simulation results. It allows quantifying the improvement of the simulated evolution of the sea ice in the Southern Ocean brought by an appropriate initialisation method.