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Towards quantifying uncertainty of anthropogenic change of the Atlantic meridional overturning circulation

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Projections of 21st century change in the meridional overturning circulation ('MOC') are subject to uncertainty, the sources of which are various. Here a preliminary, quantitative assessment is presented of uncertainty associated with poorly constrained parameter values in the atmospheric component of the climate general circulation model HadCM3. We have run two 'perturbed physics' ensembles of 22 different members, intended to span a range of values of climate and hydrological sensitivity. No flux adjustment was applied to any of the members. The first ensemble uses a constant (pre-industrial) atmospheric CO2 concentration, in the second ensemble CO2 rises at 1% p/a, up to 4xCO2. The range of anthropogenic MOC response to the CO2 increase is discussed, as well as a more general assessment of the usefulness and pitfalls of our approach.