



Constraining the range of climate sensitivity through the diagnosis of cloud regimes

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The radiative feedback from clouds remains the largest source of variation in climate sensitivity between general circulation models (GCMs). This study aims to understand and evaluate the climate change response in an ensemble of contemporary GCMs in the context of cloud regimes. It is found that the present-day characteristics of the cloud regimes contribute to the spread of the anthropogenic climate change response. By evaluating the simulated regimes against observational data, the variance of the global cloud radiative response, and hence the range of climate sensitivity, can be reduced. Therefore, the method provides an observational metric with which to assess a climate model, which is demonstrated to be relevant for the model climate sensitivity.