



How well do state-of-the-art AOGCMS reproduce atmospheric low-frequency variability?

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This paper presents an analysis of the low-frequency variability simulated by state-of-the-art AOGCMS in terms of teleconnection patterns and atmospheric flow regimes. By analysing several present day simulations performed for IPCC AR4 and comparison with corresponding analyses of observations we aim to assess the ability of state-of-the-art AOGCMS to reproduce atmospheric low-frequency variability.

Teleconnection patterns have been determined by two different methods, correlation analysis and empirical orthogonal function analysis. Flow regimes have been determined by analysing the structure of a spherical probability density function in a low-dimensional state space spanned by the three leading empirical orthogonal functions.

The comparison with observations reveals that state-of-the-art AOGCMS are able to describe the low-frequency variability in terms of teleconnections and flow regimes realistically. However, there are differences between different models concerning the strength of the centers of action, concerning the number of regimes and concerning the structure of the regime flow patterns. Possible dynamical causes for these differences will be discussed.