



THE SEASONAL SPECTRAL GAP OF ATMOSPHERIC MOTION

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Due to the quadratic nonlinearity of hydrodynamics and the limits in experimentation the dynamically relevant scales of atmospheric motion for climate prediction are still unknown. The question is, what are the appropriate space- and timescales, which have to be resolved and what are the appropriate dynamical variables. The identification of stochastic properties and their understanding in terms of physical equilibria and forcings are important aims to answer the question.

As already presented, using amplitudes and phases for the spectral representation of atmospheric variables, the existence of a relative spectral gap and stochastic properties of high wave numbers can be shown. Their dependence on the wavenumber and latitude will be presented as well as some physical understanding of the statistical properties found. Finally the relevance of the seasonal spectral gap for the formulation of atmospheric dynamics in climate prediction models will be discussed.