



Is the observed 25 day wave in Northern Hemisphere winter an Unstable Periodic Orbit ?

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An analysis of the extra-tropical Northern Hemisphere winter circulation reveals the existence of a large-scale west-ward propagating wave that was particularly strong during the fall and winter of 1979/80. The dominant timescale is about 25 days, strongest amplitudes are found over Canada and zonal wavenumbers one and two dominate its spatial scale. It is sometimes referred to as the Branstator-Kushnir wave.

A similar traveling wave is also identified in simulations from atmospheric models of varying complexity. From these simulations we argue that the underlying dynamics of the wave is adequately described by an Unstable Periodic Orbit. We show results of an analysis of its characteristics in a 17-member ensemble of future scenario simulations (SRESA1) with the ECHAM5/OM coupled climate model to assess its behavior under climate change.