

Northward and Eastward WISHE Modes in Mean Westerlies

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Abstract

Evidence from observations, general circulation models, and idealized models supports the notion that wind-evaporation feedback, also known as wind-induced surface heat exchange (WISHE) plays a significant role in the energetics of intraseasonal variability of both the northward- and eastward-propagating (MJO) varieties. However, the first WISHE theories - proposed in 1987 and still thought of as the standard representatives of the idea - were inconsistent with observations in that they treated the MJO as a Kelvin wave and required mean easterlies for the destabilization of the wave. While the MJO as simulated by some GCMs unambiguously (and the observed MJO perhaps slightly more ambiguously) involves WISHE in regions of mean westerlies, we lack simple model prototypes for these WISHE modes in mean westerlies and thus do not fully understand how they work. I will describe our work with idealized models which aims to capture the essential dynamics of these modes. The northward-propagating modes appear to be easier to model than the eastward-propagating MJO; I will focus on some subtleties involved in the latter.