



Local Finite-Amplitude Wave Activity: a Blocking Index

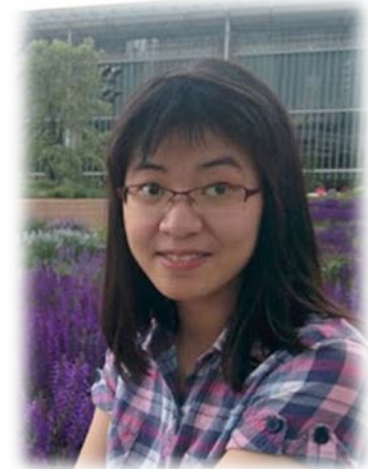
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Date: 11 September 2015 (Friday)

Time: 3:00 pm

Venue: Conference Room, 3/F, Mong Man Wai Building



Abstract

An atmospheric blocking event is characterized by a persistent geopotential height anomaly and local reversal of zonal wind at the upper tropospheric levels. The Finite-amplitude Local Wave Activity (LWA) is a suitable candidate for blocking index for two reasons. Firstly, it measures the degree of deviation from its zonal symmetry of the quasi-geostrophic potential vorticity (QGPV) field contours and thus highlights the location of blocking episodes on a 2D map. Secondly, a large value of LWA directly implies an instantaneous local deceleration of zonal wind in the conservative limit.

In my presentation, I will first introduce the theoretical framework of LWA and its conservation law. In particular, LWA obeys the local non-acceleration relation, i.e. the local zonal wind decelerates as LWA grows. Next, I will demonstrate with ERA-Interim data how LWA identifies an upper-level block that steered Hurricane Sandy in October 2012. A strong negative correlation is observed between the phase-averaged LWA and zonal wind. Lastly, I will show a preliminary comparison between the climatology of LWA and that of other existing blocking indices during 1979-2014.

~ All are Welcome! ~