



Influence of the North Pacific Victoria mode on the Madden-Julian Oscillation

Tao Wen¹, Quanliang Chen¹, Jianping Li², Ruiqiang Ding³, Yu-heng Tseng⁴, and Zhaolu Hou²

¹Plateau Atmosphere and Environment Key Laboratory of Sichuan Province, Chengdu University of Information Technology, Chengdu 610225, China

²Laboratory for Regional Oceanography and Numerical Modeling, Qingdao National Laboratory for Marine Science and Technology, Qingdao 266061, China

³State Key Laboratory of Earth Surface Processes and Resource Ecology, Beijing Normal University, Beijing 100875, China

⁴Institute of Oceanography, National Taiwan University, Taipei 10617, Taiwan

The influence of the North Pacific Victoria mode (VM) on the Madden-Julian Oscillation (MJO) are examined in this analysis. The results show that the February–April (FMA) VM had a significant influence on the development and propagation of the MJO over the equatorial central-western Pacific (ECWP) during spring (March–May) between 1979 and 2017. Specifically, MJO development was favored more by positive VM events than negative VM events. One probably description for these complicated connections is that the SST gradient anomalies associated with positive VM events enhance the convergence of low-level over the ECWP, which, combined with the warm SST anomalies (SSTAs) in the equatorial central Pacific that lead to a boost in the Kelvin wave anomalies, results in the enhanced MJO activity over the ECWP. These conclusions indicate that the VM is an important factor in MJO diversity.