



## **A Study on the Optimal Precursor triggering Kuroshio Intrusion in the South China Sea**

Peng Liang

Institute of Oceanology, Chinese Academy of Sciences, Key Laboratory of Circulation and Waves, China  
(463227921@qq.com)

Kuroshio Intrusion (KI) in the South China Sea (SCS) is an important phenomenon which can have great impacts on several kinds of dominant processes in the SCS. Based on the ROMS model, the pattern of the optimal precursor triggering the KI is determined by the means of Conditional Nonlinear Optimal Perturbation (CNOP) approach. The OPRs manifest as strong anticyclonic eddies (AE) in the southern part of Luzon Strait LS, which suggest that AEs from the upstream of Kuroshio may play a conclusive role in the formation of KI. During the transition of the Kuroshio paths, the AEs move northwestward and grow rapidly. With the moving of AEs, the Kuroshio is forced to move westward and forms typical KI at last. Through studying the growing mechanism of the OPRs, we find that the formation of the KI is controlled by both baroclinic and barotropic processes. By composing 46 Kuroshio path transition cases which is detected with the reanalyzed data, we find similar AEs to OPRs in the southern part of LS, and the AEs are the trigger of KI. By capturing signals similar to the OPRs, we may forecast the occurrence of KI.