



Synchronization between the Kuroshio-Oyashio Extension decadal bimodality and the NPO: a model study

Stefano Pierini

Universita' di Napoli Parthenope, Dipartimento di Scienze e Tecnologie, Napoli, Italy (stefano.pierini@uniparthenope.it)

In this communication the observed synchronization between the Kuroshio-Oyashio Extension (KOE) decadal bimodality and the Pacific Decadal Oscillation-North Pacific Oscillation (PDO-NPO) is investigated through a process study (Pierini, *J. Climate*, 27, 448-454, 2014). A circulation model of the North Pacific Ocean is forced by a wind field composed of a climatological component and of a schematic NPO, representing here the atmospheric decadal time-scale mode of variability (NPO and PDO are virtually linearly correlated in the period of interest).

During 1990-2012 the NPO forcing is found to efficiently excite the KOE oscillations, whose timing and teleconnection with the NPO are in good agreement with altimeter observations (e.g., Qiu and Chen, *Deep-Sea Res. II*, 57, 1098-1110, 2010). The analysis is developed in the framework of nonlinear dynamical systems theory: several sensitivity experiments are therefore carried out. The emerged dynamical mechanism is explained as a case of excitable dynamical system in which an intrinsic mode of variability is paced by an external forcing (a behavior likely to be fairly common in climate dynamics).