The internal variability in the marginal seas

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Abstract:
The variability in the climate systems is composed of two portions: a response to the external forcing and inherently generated variations (namely, internal variability). In this study, we try to understand the internal variability generation from two aspects (system-oriented and process-oriented methods) by two cases (tidal forcing case and seasonality case) in the marginal seas, Bohai and Yellow Sea. The results show that in the view of system-oriented view, the memory of the climate system, quantified by the auto-correlation function, plays a significant role in the internal variability intensity. The internal variability level is high when the system's memory is strong, and vice versa. Such an explanation is in the light of Klaus Hasselmann's Stochastic Climate Model. From the process-oriented view, the baroclinic instability may be a driver for the internal variability. Our interpretation is that a stronger baroclinic instability causes more potential energy to be transformed into kinetic energy, allowing the unforced disturbances to grow. Additionally, the Stochastic Climate Model may also apply to the morphodynamic numerical simulation and we have some initial results of morphodynamic showing that it may be affected by the internal variability.

Biography:

Dr. Lin Lin obtained her BSc (Marine Science) from the Ocean University of China and her PhD (Physical Oceanology) from the Ocean University of China. She is currently worked for the Max Planck Institute for Meteorology in Germany as a Nobel Laureate Fellowship postdoc of Klaus Hasselmann. Her PhD research was based on the ocean internal variability analysis in the Bohai and Yellow Sea. Her area of interest is ocean internal variability research, ocean numerical modeling, ocean hydrodynamic analysis. She has published various papers in peer reviewed journals.

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