



Stochastic Resonance along Major Large Scale Ocean Currents by Atmospheric Forcing Patterns

T. Simon, D. Dommenget, and M. Latif

ifm-geomar, meteorology, kiel, Germany (ddommenget@ifm-geomar.de)

The study analysis the strength of observed atmospherically forced stochastic resonance along the major large scale ocean currents in the North Atlantic, the southern ocean and in the North Pacific. Atmospheric patterns with temporally with noise and distinct spatial multi pole structure overlaying a mayor ocean current, such as the North Atlantic Oscillation and the Gulf Stream extension, can cause decadal oscillations in sea surface temperatures (SST) along persistent ocean currents.

The study will discuss the characteristics of the stochastic resonance depending on the forcing patterns. It is found that in some regions in the North Atlantic, the southern ocean and in the North Pacific stochastic resonance along the main ocean currents can occur and can have a significant impact on the decadal time scale SST variability, but for most regions and in for most time periods the stochastic resonance will not lead to decadal oscillation, because the spatial structure of the atmospheric forcing and the path way of the major ocean currents does not support the build-up of stochastic resonance.