
Quasi Decadal to Interdecadal SST Variability in the Benguela Upwelling System.

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Abstract

The Benguela Upwelling System is one of the four most productive fisheries areas in the world, and it is therefore important to understand the mechanisms leading to changes at the decadal scales before developing scenarios or forecasts for the future of the region. In this study we examine, the changing characteristics of the Benguela upwelling system SST at the decadal scale and their links with the large-scale climate signal. We focused on Southern Benguela. Wavelet analysis shows three significant time scales of variability over the twentieth century: interannual (2-8 years), quasi-decadal (9-14 years) and interdecadal (19-26 years). The correlations between Southern Benguela SST and SST over the global ocean are different at both quasi-decadal and interdecadal time scales. At the interdecadal scale, the tropical and subtropical oceans, especially in the Pacific Ocean appear to be strongly linked to Southern Benguela SST fluctuations. The correlation between the tropical Pacific (ENSO-like) and Pacific Decadal Oscillation (PDO) SST and Southern Benguela SST are statistically significant. At the quasi-decadal time scale, the Southern Benguela SST is linked to the whole South Atlantic Ocean. The correlation chart between Southern Benguela SST anomalies filtered at the 9-14 years and the South Atlantic SST anomalies is reminiscent of the South Atlantic Subtropical Dipole mode (SASD), the dominant mode of variability in the South Atlantic Basin.

Keywords: South Atlantic, Benguela Upwelling, SST Variability, Quasi decadal, Interdecadal variability

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