Japan Geoscience Union Meeting 2015
(May 24th - 28th at Makuhari, Chiba, Japan)

ACG05-04 会場:202 時間:5 月 25 日 15:30-15:45

経年変動する海面塩分への緩和が OFES 中の太平洋に及ぼす影響
Impact of relaxation of sea surface salinity towards an interannually variable salinity to the Pacific in the OFES

高玉 孝平 [1*] ; Schneider Niklas[1] ; Furue Ryo[2] ; 佐々木 英治 [3] ; 野中 正見 [2]
TAKATAMA, Kohei[1*] ; SCHNEIDER, Niklas[1] ; FURUE, Ryo[2] ; SASAKI, Hideharu[3] ; NONAKA, Masami[2]

[1] ハワイ大学 国際太平洋研究センター, [2] 海洋研究開発機構 アプリケーションラボ, [3] 海洋研究開発機構 地球シミュレータセンター
[1]International Pacific Research Center, University of Hawaii, [2]Application Laboratory, Japan Agency for Marine-Earth Science and Technology, [3]Earth Simulator Center, Japan Agency for Marine-Earth Science and Technology

To explore the impact of relaxation of sea surface salinity (SSS) towards an observational interannually variable salinity to the Pacific in the OFES, we have conducted a new experiment (ARGO run), in which SSS is strongly relaxed to monthly mean SSS observed by the Argo. We have compared this output with that obtained from an operational experiment (CLIM run), in which SSS is relaxed to monthly mean climatological SSS of the WOA98. The integration period of the ARGO run is 2005-2013, and that of the CLIM run is 1950-2013. Their horizontal resolutions are 0.1x0.1 degrees, and both are driven by monthly mean wind stress of the NCEP reanalysis 1.

The regions where the interannually variable SSS plays significant role are detected by evaluating the ratios of standard deviation of monthly anomalies of salinity around 25 sigma theta isopycnal surface between ARGO run/CLIM run. In the Pacific, the large fluctuations are found in the subtropical mode water (STMW), where the standard deviation is increased three-fold, and in the South Western Tropical Pacific region, where the deviation is increased two-fold. In this presentation, we will describe the features of the salinity response in the STMW.

Relationship between the salinity anomaly in the STMW and the SSS and the salinity anomaly in the isopycnal surface are suggested by time-lag correlation analysis. It is found that there are two main factors for the interannual variability: the one is SSS change in the STMW formation region, and the other is westward propagating isopycnal spiciness signal. Twenty month ago SSS change in the formation region is highly correlated with the salinity variability in the STMW (R=0.83). At this time, the spiciness signal associated with the STMW salinity variability locates at 40 degrees to the east, and their correlation coefficient is also high (R=0.81). Although the integration period of 9 years is perhaps not enough for the lag correlation analysis, we note that these results are consistent with an analysis of tracking of water masses.

キーワード: 海面塩分, モード水, 経年変動, OFES モデル, Argo, スパイシネス
Keywords: Sea surface salinity, Mode water, Interannual variability, OFES model, Argo, Spiciness