

Salinity and water cycle: Variability of ocean salinity maxima and its related ocean dynamics in a Global GCM

Tangdong Qu[†]; Shan Gao; Ichiro Fukumori

[†] University of Hawaii, USA

Leading author: tangdong@hawaii.edu

Ocean salinity determines ocean circulation and mixing as a state variable. Changes in ocean salinity are linked to global water cycle, and play a potentially important role in the world's climate. Of particular importance of these changes are related to subtropical salinity maxima because of their short residence time and high formation rate. A comprehensive study of subtropical salinity maxima has not been possible due to the lack of observations. Taking advantage of the rapid advance in ocean modeling, we investigate the variability of subtropical salinity maxima and its related ocean dynamics, with particular attention paid to the North Atlantic, using results from a global GCM. Though the model is not perfect, such analysis helps understand how different ocean processes work in maintaining and modulating the subtropical salinity maxima. We hope the model results will provide useful information for further analyzing Aquarius measurements, as well as for the design and interpretation of future in-situ observations (e.g., SPURS).