Barotropic Response of the North Pacific to Various Wind Forcings

Masahisa Kubota* Tetsuhiko Okamoto* Katsuki Hirabayashi* Hidekazu Yokota**

Abstract

We investigated the barotropic response of the North Pacific using various types of wind data sets viz: model analysis data (ECMWF data), ocean observation data (COADS), and satellite wind data (Geosat and SSM/I). The yearly-averaged circulation patterns show similar features for each experiment. However, the quantitative results depend considerably on the temporal resolution, the averaging method, and the type of data. Assuming high-resolution data to be true, a sampling method is recommended to average original observation data. The difference in the results are more remarkable for the instantaneous field than the averaging field. Stream function fields obtained from the present model show quite similar patterns to the ocean surface-current streamlines derived from ship-drift data. This suggests an important contribution of barotropic currents to the ocean surface circulation.