LONG-TERM PREDICTION OF THE BIOLOGICAL AND PRIMARY PRODUCTION IN THE SULU SEA FROM SATELLITE OBSERVATION

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Abstract: Sulu Sea is a deep ocean in Southeast Asia with remarkable features which has complex geometry and multi-scale dynamics deduced by the large-scale open-ocean and atmospheric forcing. Sulu Sea extended from 6°N to 12°N and from 117°E to 123°E is bounded by multiple islands and passages and this area holds higher productivity level than other ocean in South China Sea. Despite of the fact that Sulu Sea is high with primary production, this area is restricted to access due to the fact of political and security issues. Therefore, it limits the in-situ acquisition for scientific study. This is not the issue for satellite remote sensing observation as this method allows exploration on this inaccessible region at promising accuracy in space and time. The aim of this study is to forecast and predict the primary production in Sulu Sea for the next decade using the Box-Jenkins forecasting procedures regardless of the need of synoptic in-situ data. In order to predict the primary production of Sulu Sea for the next ten years, Sea-viewing Wide Field-of-view Sensor (SeaWIFs) data is used to acquire ocean color information. SeaWiFS Data Analysis System (SeaDAS version 6 under Linux OS) was used for satellite image processing and analysis. This study determines spatial and long-term variations as well as the 10-year prediction on the biological and primary production. The prediction method proved as an alternative to retrieve sea productivity level at the area that lack of in-situ data. Besides, the results are useful to local fisheries department to monitor the fishing ground in Sulu Sea region.

Keywords: Sulu Sea, Chlorophyll a, Prediction, Oceanography, Remote Sensing