**IMPACT OF OCEAN CIRCULATION TOWARDS THE BIOLOGICAL PRODUCTION IN SOUTH CHINA SEA**

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**ABSTRACT**

The impact of global warming towards the ocean ecosystem is one of the major challenge faced in modern oceanography. The influence of global warming towards variations of ocean biological properties can be seen in all seas and oceans throughout the world including the South China Sea (SCS). One of the most important marine life supporting SCS’s ecosystem and biodiversity is phytoplankton biomass (hereafter chlorophyll-a concentration [Chl-a]). Sunlight, temperature, nutrients, and wind all influence the phytoplankton therefore Chl-a concentration. In SCS, monsoon wind systems (Northeast /Southwest monsoon) and El Nino-Southern Oscillation (ENSO) are major factors that the variations of the seasonal SCS circulation and the Chl-a. Few studies had been done on the SCS circulation but it focused on selective part of the SCS where models are used to simulate the ocean circulation patterns. While some research studies had used satellite altimeter data, short study period, small/specific study area and focused only on monsoon season are the constraints of their research. This is because the variation on the ocean circulation is known often to be influenced by one or more climatic modes such as ENSO. In addition, these research did not incorporate the variation of ocean circulation due to ENSO towards the variations of the biological properties especially Chl-a concentration. This study therefore aims to determine the influence of climatic modes (ENSO) towards the ocean circulation using satellite observation and the effect is has towards the biological productivity in the SCS. This study anticipates that El-Nino causes the weakening of wind speed which decreases upwelling resulting in the increase of sea surface temperature thus reducing the current strength. The upwelling reduction also causes the decrease of nutrient in the surface which leads to the decrease of the Chl-a concentration in the SCS and the effect is vice versa during La-Nina. This study utilizes satellite altimetry data are from Jason-2 satellite and Chl-a data from MODIS AQUA satellite. The Jason-2 sea surface height anomaly data are processed using Basic Radar Altimetry Toolbox (BRAT) software to acquire the ocean circulation patterns. The ocean circulation is determine by geostrophic velocity components which is calculated using the conventional geostrophic relation. From this study, physical and biological processes in the ocean can be understood and the changes of the relationship is crucial in order to understand the physical climate system and its coupling to life on planet Earth.