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Inner Water Characteristics of Anambas Island, Riau Province-Indonesia

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Abstract: *Anambas archipelago which consists of 255 islands located in the southern South China Sea (sSCS) and parts of Riau province. This study aims to provide an initial overview of the Anambas's water characteristics on East Monsoon (EM). Data was obtained from two primary surveys that conducted in 2012 and 2013. First survey collected a number of 20 stations which focused to the northeast region of Anambas that consists of Mengkian Island, Mandariau Island, and Penjalin Island. Second survey collected 16 stations which represented the whole inner water of Anambas. The depiction was done with primary data collection, calibration and data processing, visualization, and analysis. The results show that the Anambas water is the shallow one with the average depth of 40 meters. The tidal ranges approximately 1.35 meters and the dominant ocean current is southward current that moves to Karimata Strait and Malacca Strait. The ocean current condition of Anambas also affected by the water mass that originates from the South China Sea (SCS), Java Sea, and Malacca Strait. The other water properties were like ocean surface temperature (28-32.5°C), absolute salinity (29-35 PSU), brightness (10-16 meters), pH (6.8-8.8 units), and dissolve oxygen (4.4-6.8 mg/L). The biological property such as the abundance of plankton varies and dominates by *Thalassionema* and shows significant correlation with the ocean current pattern.*

Keywords: Anambas Archipelago, East Monsoon, Water Mass, Inner Water, Oceanographic Condition.

1. Introduction

The existence of islands in Indonesia will determine the characteristics of oceanographic conditions around it. The island and basin will act as the secondary force that changed the direction of bulk water mass. Geographically, the islands are located in the southern South China Sea (sSCS) which is adjacent to the Natuna and Tanjung Pinang and part of the Riau Province (02°10'0"-03°40'0" N and 105°15'0"-106°45'0" E). Anambas has 255 islands and vast waters reach 70% of the total area is believed to have a unique and complex ocean characteristics. These island will give much information about water mass because the linking to Indonesia waters and South Cina Seas. However, there is limited primary ocean data that has been done in this inner area. This area becomes one of Fisheries Management Regional of Indonesia Republic (WPP-RI 711) and Indonesia Archipelago Sea Channel (ALKI 1). Moreover, as geopolitics area, these islands also have five outer islands that bordered with Malaysia, Singapore, Cambodia, and Vietnam [1]. In the north of these islands, there is a mining zone which is currently in the exploration stage. This area is also a migration route of some marine biota such as sea turtles and Napoleon fish.

Based on the geographical location and the condition of the islands, this region has a huge potential to be developed. In 2012 and 2013 spatial zoning management study has been conducted by the Ministry of Marine and Fisheries (KKP-KP3K) which appoint Anambas as a priority area for fishery

and tourism by enclosing the conservation area as a measure of the diversity of flora and fauna [2]. However, with the region consist of 70% water is a challenge in establishing sustainable management [3]. In connection with both of those which are related to each other gives an overview of the importance of oceanographic conditions in the waters around Anambas Islands. In addition, oceanographic conditions in Indonesia are very much influenced by local factors.

Characteristics of the waters in Anambas region are very unique and complex because of the basin and land that stretches from north to south, the input and output of water masses, wind pattern, and nutrients concentration. The topography and basins act as a secondary force which affects the movement of water mass [1]. Generally, the condition of the waters in the Anambas is influenced by the South China Sea (SCS), the water masses from Java Sea and Malacca Strait. The dominance of the three water masses will be influenced by the ebb and flow that comes from the Pacific Ocean. Due to this area, then it is likely to undergo changes in the oceanographic dynamics. Force of water masses will bring nutrients to dynamically operate the food chain in the water column. This region (SCS) is a large marine ecosystem with a specific and unique oceanographic characteristics, biogeography and ecology. Most of the southern part of SCS is at Sunda Shelf and has shallow water characteristic (depth < 200 m). It is also influenced by the oceans and land through the input from rivers that flow from the surrounding islands. The southern part of SCS is a sea region which belonging to