

The Pattern of South Equatorial Current and Primary Productivity in South Java Seas

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Abstract. South Equatorial Current flows throughout the year and be in the strongest condition in easterly monsoon at 10°LS–20°LS for latitude, focus of this study lies in the changing patterns of SEC associated with water mass around it. The aim of this research is to knowing the correlation between SEC and the primary productivity in these waters. The observation was conducted by during 2014 using the data from INDESO. Result from this observation showed that the correlation between SEC and primary productivity known to be exist although in weak correlation. Other than that, SEC is known have some spatial and temporal variations in every season as well, which is located in the northern latitude during Eastern Monsoon with 5°S-15°S for latitude and 90°E-113°E for longitude, and SEC will be located in the southern latitude during Transitional I Season with 8°S-18°S for latitude and 90°E-115°E for longitude.

Keywords: SEC, primary productivity, phytoplankton, velocity.

1. Introduction

Eastern Indian Ocean Waters has typical characteristic influenced by the movement of monsoon and trade wind systems (Harsono *et al.* 2014) with the maximum velocity occurred during the Eastern Monsoon (Meyers *et al.* 1995; Potemra 1999), the fluctuation of South Java Current (SJC) (Sprintall *et al.* 1999; Purba 2007) with the salinity ranges 33.8 PSU (Sprintall *et al.* 1999), Indonesian Throughflow (ITF) with salinity and temperature ranges 34.4 PSU and 29°C (Gordon *et al.* 1997; Atmadipoera 2013) and eddies system (Aulia *et al.* 2013). One of the streams that centralized in Eastern Indian Ocean is SEC. SEC be the one that linked Indian Ocean and Atlantic Ocean and directly associated with world system current by Ocean Conveyor Belt (OCB) (Reppin *et al.* 1999; Purba dan Pranowo 2015). The study about water masses in Eastern Indian Ocean have been done either by the observation as well as the models by Wyrтки (1961); Quadfasel dan Swallow (1986); Bray *et al.* (1997); Reppin *et al.* (1999); Feng dan Wijffels (2002). Focus of this study is in the changing patterns of SEC associated with the water masses around it. It is highly influenced by the dominance of ITF, SJC, and the stress wind prevailing seasonally and resulting the changes of nutrient distribution around Indonesian and Australia Waters.

South Equatorial Current flows throughout the year (Wyrтки (1961) and be in the strongest condition in Easterly Monsoon (Feng dan Wijffels 2002) at 10°LS–20°LS for latitude and directly related to heat flux, salt transfer, and nutrient trap. SEC is one of shallow current that have velocity about 0.15 m s⁻¹ (Quadfasel and Swallow 1986) and the depth is less than 200 m. The strong incoming westward of SEC due to strengthening of ITF and the backflow in south Java (Domingues *et al.* 2007 in Wardani 2013). SEC has its own-characteristic which is has lower salinity than other water masses surrounded due to overflow of ITF flowing to Indonesia (Bray *et al.* 1997). This current has temporal variations influenced by the season and spatial variations causing a shift of latitude as well. The study of dynamic in Eastern Indian Ocean and the

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