

An Observation on the Relationship between IOD/ENSO and River Discharges in the Citarum River Basin, Indonesia

Netrananda Sahu^{1*}, Kaoru Takara¹, Yosuke Yamashiki¹, Swadhin Behera²

¹Disaster Prevention Research Institute, ²Climate Variation Predictability and App

Indian Ocean Dipole (IOD) and El Nino Southern Oscillation (ENSO) are two dominant modes of climate variations in the tropical Indian and Pacific Oceans. Hence, the identification of IOD events has raised new possibility to make real advance in the predictability of climate variations. Due to spatial location of Indonesia both modes have influenced the climatic conditions of this largest archipelago of the world. It can be understood that western Indonesia is influenced by the Indian Ocean and Eastern Indonesia is influenced by the Pacific Ocean because of their close proximity. Spatial variation of rainfall over Indonesia is also divided more than one pattern. A Positive IOD event brings drought and a Negative IOD event brings wet to the Indonesian region. The focus on this paper is to understand the ocean-atmosphere to the runoff analysis. The main purpose of this research is to apply a conceptual hydrological model to predict discharges of the Citarum River basin of the Java Island of Indonesia for the year of IOD and ENSO events. Statistical analysis has been used to assess the impact of IOD/ENSO events on rainfall and runoff variables across the upper Citarum river basin. The observed discharge data from 1973-2008 at the Nanjung station, the down most Outlet of the upper catchment, shows the established correlation with the Positive and Negative IOD events and discharge volume. The seasonal river discharge responds in a complicated manner to Positive and Negative events; however, there are some seasonal ENSO effects. This paper discusses a broad picture of potential impacts of IOD and ENSO including the scale of variability.

Keywords: Positive IOD, Negative IOD, El Nino Southern Oscillation, Archipelago, Predictability