Influence of IOD and ENSO on the Discharge of Citarum River, Indonesia

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Variability of climatic conditions in the tropical Indian and Pacific Oceans are dominated by the Indian Ocean Dipole (IOD) and the El Nino Southern Oscillation (ENSO). Hence, the identification of IOD/ENSO events has raised new possibility to make real advance in the predictability of climate variations in those ocean basins. Due to its spatial location, Indonesia is influenced by both modes. It has been shown that western Indonesia is influenced by the Indian Ocean and Eastern Indonesia is influenced by the Pacific Ocean because of their close proximities. A positive IOD event brings drought and a negative IOD event brings wet conditions to the Indonesian region. Likewise, an El Nino causes drought and a La Nina causes floods over the region. Although climate conditions are important for the rainfall variability, the actual river discharge is dependent on several other factors including the characteristic of the river basin. Therefore, in this study a scientific analysis is made to link the discharge variability with the rainfall and SST variations over the Indian and Pacific Oceans on daily times scales. In the analysis, statistical method is used to assess the impact of IOD/ENSO events on rainfall and runoff variabilities across the Upper Citarum river basin. The observed discharge data from 1974-2008 at the Nanjung station, the down most outlet of the upper catchment, shows a strong correlation with the IOD and ENSO events.

Keywords: Positive IOD; Negative IOD; El Nino Southern Oscillation; Runoff; Archipelago; Variability.

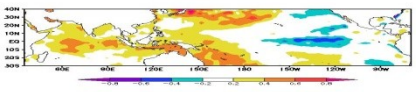

Figure 1. SST Composite Index for dry period

References

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