

## Transition of water origins in the northern part of Borneo Island from 2001 to 2002 using colored moisture analysis

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Water origins in the northern part of Borneo Island were estimated from 2001 to 2002 using colored moisture analysis (Yoshimura et al., 2004). Colored moisture analysis is the two-dimensional atmospheric global circulation model that maintains atmospheric water balance (Oki et al., 1995) with a tagged-water transport scheme. The meteorological forcing was provided through NCEP/NCAR reanalysis. Ichiyangi et al. (2005) considered the transition of the water origins over Indochina and proposed a new definition of the withdrawal date of the Asian monsoon. The same concept of estimating water origins was applied to the northern part of Borneo Island in the present study.

Time series of zonal wind at 850hPa, precipitation, and vertically accumulated precipitable water evaporated from the Pacific Ocean (PFO) and the Indian Ocean and the Java Sea (IDO+JVS) throughout 2001 is shown in Figure 1. Since the areas were dominated by the westerly winds almost throughout the entire period, monsoons were not detected when there was a change in wind directions. Furthermore, since the daily precipitation was constantly high throughout the year, the rainy season was not clear. The previous definition in identifying monsoon season in the northern part of Borneo Island using zonal wind or precipitation (Matsumoto, 1997; Wang and Ho, 2002) is difficult.

As shown in Figure 1, when comparing the transition of water origin for IDO+JVS and PFO, the IDO+JVS origin was higher than PFO origin in early May but the situation reversed in late November. The period where the IDO+JVS origin exceeds the PFO origin is used as the new definition of the Asian monsoon period. From June to September, however, the IDO+JVS origin sometimes was less than the PFO origin. The water origin concept helps to describe the air mass movement even in places where zonal wind or precipitation does not corresponded to the monsoon or rainy season.

Ichiyangi et al. (2005) also considered the temporal variability of precipitation isotopes simulated by the same model with colored moisture analysis. To validate the water origins estimated by the colored moisture analysis, we would like to perform isotopic observation over Borneo Island for the validation of estimated water origins.

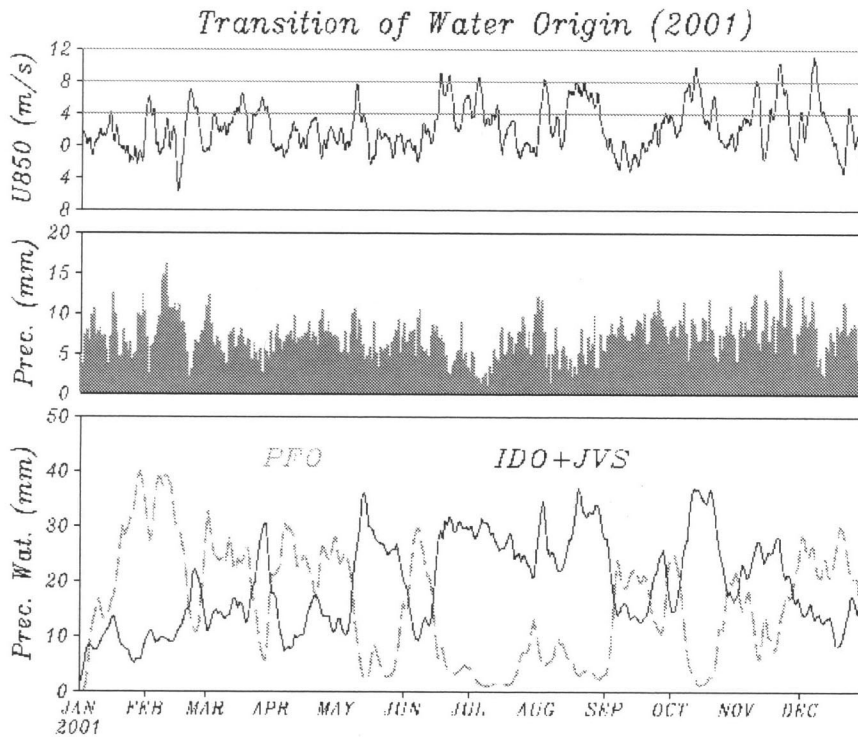


Fig. 1 Time series of zonal wind at 850hPa, precipitation, and precipitable water evaporated from Pacific Ocean (PFO) and Indian Ocean and Java Sea (IDO+JVS) throughout 2001. These values were averaged in the northern part of Borneo Island using NCEP/NCAR reanalysis data.

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