

Japan Geoscience Union Meeting 2011

(May 22-27 2011 at Makuhari, Chiba, Japan)

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AHW027-13

Room:202

Time:May 23 11:45-12:00

Long-term observation of stable isotopes in precipitation over Indonesia

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Daily rainfall and rain water stable isotopes (Oxygen-18 and Deuterium) were observed from 2001 at six stations over maritime continent. There are Kotatabang, Jambi, Denpasar, Makasar, and Manado in Indonesia, and Peleliu Island in Palau. The daily rainfall amount and stable isotopes shows temporal characteristics with larges differences. Rainy season is almost occurred in December to February while dry season is July to August in each station except over Palau with occurred during May to June. The range of isotopic content is about -15 permil to 7 permil for daily Oxygen-18 over these local stations. The correlation coefficient between daily rainfall amount and isotopic content is not significant. However, there are three stations where have significant correlations in monthly rainfall and stable isotopic content (Kotatabang, Denpasar, and Makasar). Furthermore, we found clearly negative trend in relationships between monthly precipitation amount and isotopic content. It is suggested that seasonality rainfall is more related than individual rainfall. Seasonal variation of stable isotopes in precipitation as a response to Australian monsoon also is considered. The significant correlation between monthly stable isotopic content and Australian monsoon index is found on Denpasar, Makasar, and Palau, where Denpasar and Makasar have negative correlation and Palau positive correlation. It is suggested that these three stations have a relation with easterly and westerly wind over Australian monsoon region.