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Stable isotopes in precipitation over Indonesia Maritime Continent

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The Indonesia Maritime Continent (IMC) is a unique location in the tropics that consists of many land masses and seas. The stable isotopes in precipitation is a useful tool to understand weather and climate processes in this region. Previous studies that use data from only six observation stations found three types of seasonal variation in stable isotopes in the IMC, namely annual, semi-annual and anti-monsoonal type. This study used weekly isotope precipitation data from 33 observation stations belong to Indonesia Agency for Meteorological, Climatological and Geophysical (BMKG) during October 2010 to March 2013. The Cluster analysis was used to distinguish the spatial grouping of seasonal variability of monthly mean δ18O in precipitation from BMKG dataset. Clusters 1 and 2 had similar seasonal patterns with the highest in the dry season (June–November) and the lowest in the wet season (December–May). Cluster 3 had a semi-annual pattern with two peaks in January-February and May-July. Cluster 4 had an anti monsoonal pattern with the lightest δ18O in May–July. This study found that the amount effect was the main factor controlling seasonal variability of δ18O in cluster one and two regions. Meanwhile, amount effect was observed only in transition months (MAM and JJA) and was not seen over cluster three and four regions, respectively.