Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

AHW26-02 Room:201B Time:May 24 09:15-09:30

Spatial distribution and seasonal variation of stable isotopes in precipitation over Japan

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This study revealed spatial-temporal variations of stable isotopes in precipitation over Japan from previous observed data. Also, the d-excess in winter precipitation was used to estimate the origin of water vapor over Japan. Observed stations were divided into 3 regions (Pacific Ocean side, Japan Sea side and Southern Japan) from precipitation patterns. The d18O in precipitation were high in April, October and November, but low in June over Japan. Distribution of annual d18O was recognized latitude effect over Japan, and also altitude effect only in Pacific Ocean side. The d-excess in precipitation were lower than 10 permil from May to August and higher than 15 permil from November to March over Japan. The d-excess in winter precipitation in Pacific Ocean side were about 20permil, however that of Japan Sea side was higher than 25 permil. It cannot estimate the origin of water vapor to be Japan Sea even d-excess in winter precipitation is more than 20permil.

Keywords: stable isotopes in precipitation, origin of water vapor, d-excess, Japan Sea