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

AHW26-P10 Room:Convention Hall Time:May 24 17:15-18:30

Temporal variation of stable isotope ratio in precipitation on Chubu-mountainous areas: case study of Mt. Ontake in cent

ASAI, Kazuyoshi[1*], Fantong Wilson Yetoh[2], TSUJIMURA, Maki[3]

[1]Geo-science Laboratory Inc, [2]Institute of Mining and Geological Research, Cameroon, [3]Graduate School of Life and Environmental Sciences, University of Tsukuba

In order to clarify the temporal variation of the stable isotope ratio in precipitation on the mountainous area in Japan, monthly precipitation was collected at 11 sites on Mt.Ontake from Jan 2003 to Dec 2005, and determined their delta-values. d-excess values ranged from 5 to 34 per mil, and showed clear seasonal variations in which values are low in rainy season from spring to fall and high in snow season (winter), reflecting the change of monsoon. The isotope ratios showed high delta-values in spring, low delta-values in winter and intermediate delta-values in summer to fall throughout the observation period, and these seasonal variations can not be accounted for the amount effect and the temperature effect. Rain-bearing weather condition and spatial variation of rainfall amount around Mt. Ontake were investigated, and discussed a factor controlling the seasonal variation of delta-values. In the warm rainy season, the low delta-value in precipitation were observed in the period at which the rainfall amount of windward (south-east) area of Mt. Ontake was high, suggesting that delta-values variation on Mt. Ontake during the warm rainy season depend on the rainfall amount during the vapor mass transpiration from Pacific coast to Mt. Ontake. Moreover, it is indicated that the low delta-values of snow cover in winter was caused by the inland effect, considering the existence of heavy snowfall area in windward. These variations of delta-value associated with the rainfall amount on surrounding area is considered to be reflect the geographical location of Chubu-mountainous area which is away from the ocean generating a vapor mass.

Keywords: Chubu-mountains areas, Mt. Ontake, precipitation, stable isotope, vapor mass transpiration,, inland effect