

Isotope Ratios of Rain and Water Vapor observed in Typhoon Shanshan (2006)

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Isotope ratios of rain and water vapor were observed in Ishigaki Island, Japan, on 15-16 September 2006 during the passage of Typhoon Shanshan. High-resolution samples of 1-ml rainfall allow a more quantitative understanding of detail water circulation of typhoon system. Observational results shows that the isotope ratios of rain in rainband accompanying Shanshan decrease radially inward, but appear to be anomalously high in the eye wall. We speculate that the inward decrease is due to the recycling process, diffusive isotope exchange between falling rain and converging vapor in the boundary layer. On the other hand, the anomalously high isotope ratios of the eye-wall rain is a consequence of their local cycling process which is a major source of the precipitating vapor for the typhoon's inner region. These findings indicated that the precipitation system of the typhoon's core is significantly different from that in the outer region.