

Applying Isotope Techniques for Identifying Groundwater Dynamic in Phrae Basin

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Phrae Basin is located in the north of Thailand by descending manner Basin along the north to south. A total catchment area of the basin is about 18,000 km². During rainy season, it has been some problem about flooding almost every year. Moreover, drought problem has been suffered in dry season. The groundwater resources were used for supporting agriculture activities such as growing rice during dry period and local water supply. This area is located in the middle Yom river basin and very important to manage water resources for reducing the impact of both problems. Groundwater dynamic is clearly to plan groundwater used for agriculture use and domestic use as well as impact from flooding and drought areas in the lower Yom river basin. Groundwater and surface water were collected for stable isotopes and chemical analysis in dry season and wet season. Stable isotopes were analysed by Laser Water Isotope Analyzer and chemical composition analysed by Ion Chromatography. From the results, the origin of groundwater samples is from local rainfall and groundwater samples in some area showed mixing with surface water from river or reservoir. The groundwater samples from different aquifers demonstrated the interconnection between shallow and deep aquifers. The most groundwater samples in the Phrae River basin were calcium bicarbonate and sodium bicarbonate type by cationic exchange along the flow path.

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