

# Groundwater Flow System Study at Kherlen River Basin in Mongolia by Tritium Concentration

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Project (common name: RAISE) was started from 2001 for elucidation of the interaction of Atmosphere-Hydrosphere-Biosphere at ecotone of vegetation (i.e., forest-grassland-desert from northern part to southern part) in northeast Asia mainly concerned with Kherlen River Basin in Mongolia. This study is tried to clarify the water cycle that is one in it, using tritium as tracer belonged to environmental isotopes. Tritium concentration of rainwater in Mongolia had measured by IAEA from 1990 to 2000. According to it, the values, for example, were 61.5T.U. in Jun 1990, 21.7T.U. in Oct 2000, and were higher than that(5~10T.U.) of rainwater in Japan. Moreover, it tends to decrease with time as well as that of Japan after 60's nuclear test. Such the high concentration is considered to originate in fallout of tritium from stratosphere existed near the center of Siberian continent. From above thing, tritium is very effective for groundwater flow analysis in this basin.

About the technique, author took samples of groundwater, spring water, and river water, and calculated tritium concentration respectively by beta-ray measurement using liquid scintillation counter after electrolysis condensation. In result, it was found the following:

Tritium concentration of each samples is very difference from 0 to more than 50 T.U.. As to groundwater and spring water took at some parts of upper course of the river, slopes, top of hills, these data say high values relatively in this region. While, samples of plains consisted of alluvial deposits near downstream in the area and distanced from mainstream, show low values relatively. In river water, the values are high and similar to that of rainwater. Additionally, the concentration tends to decrease from upstream through down-stream.

We try to grasp the characteristics of extensive groundwater flow mechanism in this area, based on these characteristics of concentration.