

Water quality changes in a hydrologic cycle in a forest catchment -An example of the Kanamaru area, Yamagata-

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To study uranium bearing groundwater flow system, quasi-monthly measurements for water quality on observation wells installed with whole bore screen and seasonal measurements for water quality and pore water pressure on a reference well installed with a multi-packer system were done in the Kanamaru area, Yamagata, northeastern Japan, where uranium anomaly up to several hundreds ppm in Neogene sedimentary rocks was known. On this study, 1) Change of geochemical parameters was recognized for a 45 m deep observation well installed with a multi-packer system; lower pH and EC and higher DO and Eh in shallower part and higher pH and EC and lower DO and Eh in deeper part; 2) Change of chemical components was recognized for the same observation well; acid Na-Cl type with smaller TDS in shallower part and alkaline Ca-HCO₃ type with larger TDS in deeper part; 3) Uranium concentrations in groundwater seem to be concordant to those of bedrocks; and 4) Distribution of hydraulic head shows stepwise downward decrease with a largest hydraulic gap at around 23 m deep, where the uppermost portion of fracture-developed granite is plugged by hematite. Based on these facts, it seems that the groundwater flow system in the area is strongly controlled by the low permeable zone of the basement granite, and that the most of the high uranium existing in a part of groundwater is likely to be derived from high uranium rocks observed in the Tertiary sedimentary formation.