

Surface hydrological investigation at Horonobe area, Hokkaido Japan-Measurement methodology for recharge rate at snowy cold region

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To know the recharge rate is necessary for setting boundary condition of groundwater flow analysis which in turn is important to evaluate the safety of geological disposal. Recharge rate is estimated by use of the above water balance of precipitation, runoff and evapotranspiration because it is difficult to measure directly. There are not many cases which are confirmed the validity of the methodologies and the results.

In the Horonobe Underground Research Laboratory Project, we are carrying out surface hydrological investigations which consist of meteorological observation, observation of river flux and so on at Horonobe area, Hokkaido, northern part of Japan. These investigations aim to aid in developing the methodology to understand water balance and groundwater flow properties, applied the series of research techniques used for these observations specifically to the estimation of recharge rate. From the current investigations, it is thought that it is necessary to consider snowy influence in an estimate of the recharge rate at snowy cold region.

In order to evaluate the validity of these methodologies and the results of these investigations, we have installed a weighing lysimeter which aims to observe precisely water balance including precipitation and evapotranspiration taking account of snow accumulation.