

## Distribution of subsurface temperature and groundwater flow system in the Kanto Plain

# Akinobu Miyakoshi[1], Youhei Uchida[2], Yasuo Sakura[3], Takeshi Hayashi[1]

[1] Sci and Tech, Chiba Univ, [2] Hydrogeology, G.S.J., [3] Dept. Earth Sci., Chiba Univ.

Kanto Plain is the largest plain in Japan, and that have some major cities such as Tokyo Metropolis.

Distribution of Subsurface temperature is affected by thermal advection due to groundwater flow and surface warming. The purpose of this study is to clarify the groundwater flow system in Kanto Plain from the distribution of subsurface temperature and hydraulic head.

Temperature-depth profiles and hydraulic head were measured on 126 observation wells in the Kanto Plain. From observation results, subsurface temperature distribution in the Kanto Plain is assumed to be strongly affected by thermal advection due to groundwater flow, which has regional difference between high temperature area and low temperature area. The high temperature area is located in a low land around the Kinu, Tone Rivers and central part of the Kanto Plain, The Tokyo Bay shore area. The low temperature area, on the other hand, is located in a high land and/or a mountain area around the Kanto Plain. Considering from observed distribution of subsurface temperatures and hydraulic head, it is suggest that the low temperature area is recharge area and the high temperature area is discharge area. Therefore, two local groundwater flow systems which discharge to the Tone River in Gunma Prefecture and to the Kinu River in Tochigi Prefecture are estimated. In addition to that, more regional groundwater flow systems which recharged in the peripheral area in the plain and discharges to central part of the plain and the Tokyo Bay shore area are estimated.

Moreover, there are subsurface temperature inversions in shallow layer due to the effect of surface warming. The distribution of inversion in the Kanto Plain has tendency that the depth of inversion in the recharge area is deeper than that in the discharge area, and this tendency suggests the existence of the regional groundwater flow system in the Kanto Plain.