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## Water quality, environmental isotopes and subsurface temperature of high Cl groundwater area in the northern Kanto plain

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Previous studies point out that there are some areas of groundwater with high Cl<sup>-</sup> concentration (dozens to about 200 mg/l) in the inland part of Kanto plain that is the largest sedimentary plain in Japan (i.e. Ikeda, 1984; METI, 1975). As for the high Cl<sup>-</sup> groundwater area in the central part of the plain, from the view point of isotopic characteristics, residence time of the groundwater is probably longer than the groundwater in the surroundings (i.e. Yasuhara et al., 2008; Hayashi et al., 2003). However, origin of Cl<sup>-</sup> in this area has not been revealed yet. With regard to the high Cl<sup>-</sup> groundwater areas in the northern part and northeastern part of the plain, Miyakoshi et al. (2003) estimates that subsurface temperature in these areas are higher than the surroundings. However, information about groundwater quality, environmental isotopes and relation of distributions between the high Cl<sup>-</sup> groundwater and subsurface temperature are quite limited. Therefore, we collected groundwater samples from these two areas and measured major dissolved ions and environmental isotopes. Also, we measured subsurface temperature profiles to reveal subsurface temperature distribution.

For Cl<sup>-</sup> concentration, the highest value was 538 mg/l in the northern area and was 221 mg/l in the northeastern area. However, in the northeastern area, only one sample showed high Cl<sup>-</sup> concentration higher than 20 mg/l. For delta<sup>13</sup>C, these two areas showed relatively high values than surroundings: -8.5 to 0.3 permil in northern area and -7.3 to 2.0 permil in northeastern area. However, correlations between Cl<sup>-</sup> concentration and delta<sup>13</sup>C were not clear. As for the subsurface temperature distribution, subsurface temperatures of the two areas were higher than the surroundings. Especially, the northern area was one of the highest temperature areas in the Kanto plain. In a larger sense, distribution patterns of Cl<sup>-</sup>, delta<sup>13</sup>C and subsurface temperature were consistent.

Keywords: kanto plain, high Cl groundwater, environmental isotopes, subsurface temperature