



Temporal and spatial variation of groundwater in quantity and quality in sand dune at coastal region, Kamisu city, central Japan.

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The role of groundwater in integrated water management has become important in recent 10 years, though the surface water is the major source of drinking water in Japan. Especially, it is remarked that groundwater recharge changed due to land cover change under the anthropogenic and climatic condition factors. Therefore, we need to investigate temporal and spatial variation of groundwater in quantity and quality focusing on the change during recent 10-20 years in specific region. We performed research on groundwater level and quality in sand dune at coastal region facing Pacific Ocean, Kamisu city, Ibaraki Prefecture, which have been facing environmental issues, such as land cover change due to soil mining for construction and urbanization. We compared the present situation of groundwater with that in 2000 using existed data to clarify the change of groundwater from 2000 to 2015.

The quality of water is dominantly characterized by $\text{Ca}^{2+}\text{-HCO}_3^-$ in both 2000 and 2015, and nitrate was not observed in 2015, though it was detected in some locations in 2000. This may be caused by improvement of the domestic wastewater treatment. The topography of groundwater table was in parallel with that of ground surface in 2015, same as that in 2000. However, a depletion of groundwater table was observed in higher elevation area in 2015 as compared with that in 2000, and this area corresponds to the locations where the land cover has changed due to soil mining and urbanization between 2015 and 2000. In the region of soil mining, the original soil is generally replaced by impermeable soil after mining, and this may cause a decrease of percolation and net groundwater recharge, thus the depletion of groundwater table occurred after the soil mining.