

## Characteristics and fluctuation factors of groundwater quality on Ryukyu limestone region in southern part of Okinawa

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Characteristics and fluctuation factors of groundwater quality(the four major cations (Na<sup>+</sup>, K<sup>+</sup>, Mg<sup>2+</sup>, Ca<sup>2+</sup>) and four major anions (Cl<sup>-</sup>, HCO<sub>3</sub><sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, NO<sub>3</sub><sup>-</sup>) is investigated using observed data on groundwater at springs and observation wells in the southern part of Okinawa Main Island, Japan, where Ryukyu limestone is extensively distributed. In this study, FS6 survey was conducted to examine the residence time of groundwater in limestone aquifer. The distribution of Ca<sup>2+</sup>and HCO<sub>3</sub><sup>-</sup>were similar trend because the CO<sub>2</sub> charged water first encounters a calcite layer below the groundwater table. It was found that the residence time obtained from FS6 were related with the concentrations of Ca<sup>2+</sup> and HCO<sub>3</sub><sup>-</sup>.The composition of groundwater was dominated by Na<sup>+</sup> and Cl<sup>-</sup> reflecting salt water in coastal area. It was considered that NO<sub>3</sub>-N and SO<sub>4</sub><sup>2-</sup> concentrations were influenced by the rainfall, geological structure and agricultural land use.

Keywords: Groundwater, Water quality, Ryukyu limestone, Characteristics and fluctuation