

Hydrogeological features and water quality in Koise river basin, Ibaraki, Japan

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The purpose of this study is to arrange information on hydrogeological features of Koise river basin for the development of the agriculture environmental measures simulator. We studied hydrogeological features and groundwater quality along four geological cross sections in Koise river basin based on investigating 94 wells and past research.

i) Hydrogeological features of the basin were arranged based on the geological features stratigraphy, and basic data such as the space distribution of groundwater table were collected for typical aquifers.

ii) Shallow groundwater was mainly classified into the middle type, and deep groundwater was classified into the heavy calcium carbonate type and the sodium bicarbonate type from inorganic ion composition. The number of wells with water containing high nitrate nitrogen concentration was over 1/3 of studied wells. The land use around such wells was mainly upland field, orchard or livestock farming.

iii) Reduced groundwater was observed with features of low ORP, low dissolved oxygen, low nitrate nitrogen and high pH in the deep part of Tomobe member and Ishizaki member. This suggests that the denitrification was caused under such anaerobic condition.