

Geological, anthropogenic and tidal effects for stream water chemistry of the Yoshinogawa river systems in the Shikoku region

*Yoriko Yokoo¹, Saki Nagayama¹, Tomohiro Yoshida¹, Ryo Anma²

1. Faculty of Science and Engineering, Doshisha University, 2. Graduate School of Technology, Industrial and Social Sciences, Tokushima University

We determined the elemental compositions of stream water of the Yoshinogawa river systems in the Shikoku region. The main stream water, except for samples around the mouth, were enriched in Ca^{2+} and HCO_3^- . The tributaries on the right side of the Yoshinogawa river were enriched in Ca^{2+} and HCO_3^- and Ca^{2+} , Mg^{2+} and HCO_3^- . The river water were rich in Mg^{2+} and Si in Sonosegawa, indicating that these ionic compositions are derived mainly from geological inputs from the weathering of green schist in Sanbagawa Belt. On the other hand, the tributaries on the left side of the Yoshinogawa river were rich in Ca^{2+} , HCO_3^- and SO_4^{2-} . The rates of SO_4^{2-} and NO_3^- in anions and the concentrations of Al, P, and Si were higher in Imagirigawa and Kyuyoshinogawa than those of the other tributaries. This ionic composition is largely attributable to anthropogenic effect.

The main stream and tributaries around the mouth were enrich in Na^+ and Cl^- . Tidal effect was shown in this area. Na^+ and Cl^- concentrations of tributaries in the center of Tokushima city were higher than those of main stream of the Yoshinogawa river. This result shows that tributaries in the center of Tokushima city are more influenced by tide than main stream. Tamiyagawa, located at the farthest site from the mouth in the center of Tokushima city, had high EC and P, SO_4^{2-} and NO_3^- concentrations. This result is largely attributable to anthropogenic effect due to sewage treatment system.

Keywords: Yoshinogawa river, ionic composition, tidal effect