

Loading Processes of Chemical Matters in a Forested River Catchment : Observations and Modeling

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River water is one of the most important natural resource for our live and has much influence for lake and the earth because of fast transport velocity. Especially, outflow of chemical matters in river is related with river ecosystem and make lake eutrophication. We targeted Oikamanai river basin, forested catchment in Hokkaido. In this catchment, landuse is 88.3 % forest and 10.6 % farmland. Geology is the Neogene Miocene mud and sand stone, half of which is composed by marine deposit. We got the data on concentration of chemical matters and time series of discharge, electric conductivity (EC) and MET data. Fresh water's EC monitoring is new technology, so there are few reports. In this study, we calculated time series of concentration of chemical matters and chemical matters load using co-relation of concentration of chemical matters and EC. We analyzed discharge route using Tank-model. Using this result, we calculated chemical matters load at each discharge route. We discuss mechanism of outflow of chemical matters in forested catchment with these data.

In this study, we targeted Mg^{2+} , Ca^{2+} , Na^+ , SO_4^{2-} , HCO_3^- because they have much influence for EC. As a result of Tank-model, baseflow is distinguished, 68.3 % and surfaceflow is distinguished in high discharge events. HCO_3^- analysis intended soil water tend to cultivate to underground. HCO_3^- was more dissolved in river water in high discharge events, this is insisted to be caused by river erosion. SO_4^{2-} analysis showed iron pyrites is oxidized in weathered mantle and upper basin and organic matters is bitten by microbe. Ca^{2+} , Na^+ , Mg^{2+} analysis suggested ionic exchange with H^+ occur in soil.

Keywords: forested river basin, chemical matter, Tank-model, L-Q equation