平成 28 年度　環境科学院　修士論門内容の要旨

Study on the relationship between water quality and the land use around the Sorachi River

(空知川流域の土地利用と水質との関係に関する研究)

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Non-point sources of various methods occurring in the agricultural land are an important issue in order to protect the water quality in the watershed. The Sorachi River is one of the tributaries in the middle of the Ishikari River watershed, Hokkaido, with a relatively large flow rate among the tributaries. The urban areas and agricultural lands exist separately in the watershed. The Sorachi River is often muddy and it seems to be affected by non-point sources. Therefore, this study aimed to investigate the relationship between the land use, geographical conditions around the watershed and water quality in the Sorachi River.

The area about 50 km from the Takisato Dam to the junction point with the Ishikari River was selected as a research area. The river water was sampled in April, a snow melting season and after in December, a season with little fluctuation in flow rate. In the field, water temperature, pH, electric conductivity and dissolved oxygen were measured. In the laboratory, T-N, T-P, SS and COD were analyzed. These water qualities are compared with the land use, soil type, elevation and slope of the watershed by using the GIS.

According to the data of December 2015, the tributary concentration was higher than those of the main stream in T-N, SS and COD. It is thought to have been influenced by the rain falled a day ago. In particular, the Bankehoronai River which is a tributary of sampling point 6 was high concentration in T-N, SS and COD. The high concentration of T-P was observed in the upstream of the Sorachi River, but it became lower when going downstream. According to the data of the April 2016, the concentrations of TN and SS in the mainstream were higher than those of the tributaries. On the other hand, the concentrations of T-N and SS in the Bankehoronai River were higher in the upstream than those in the downstream. It is thought to be because there are many fields in the upstream in the Bankehoronai River and the river is close to the mountain area. COD and T-P concentrations of all the samples in April 2016 were lower compared with those in December 2015. In the geographical survey, the data were summarized by using the Landsat image, soil type, land use, elevation and slope. After that, this study describes the relationship between land use and water quality.