

Effects of annual variation in river flows and water quality in Lake Inawashiro

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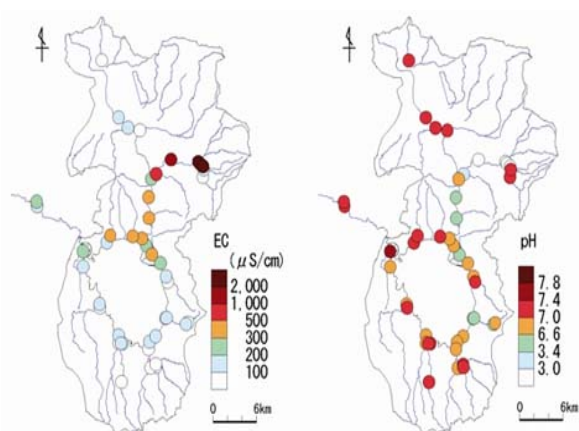


fig.1 distribution of EC (Jan.2010)

fig.2 distribution of pH (Jan.2010)

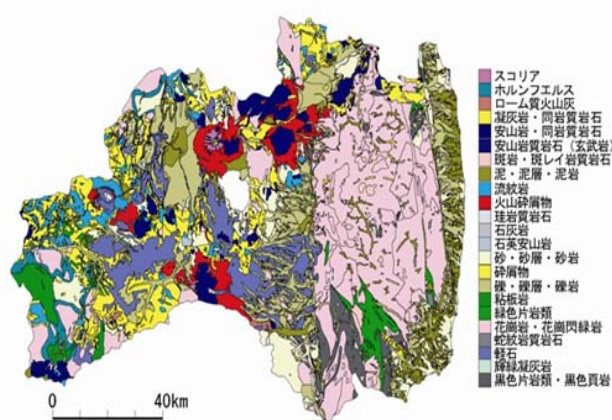


fig.3 surface geology(Fukushima Pref.)

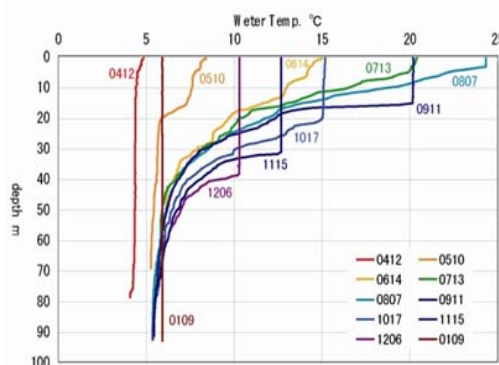


fig.4 profile of water temp. in Lake Inawashiro (Apr.2009~Jan.2010)

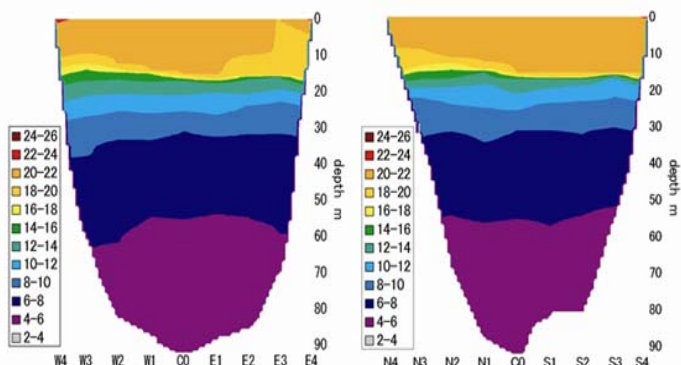


fig.5 profile of water temp. in sectional in Sep.2009 (left:north and south section, right: east and west section)

1. Introduction

Lake Inawashiro is located in Fukushima Prefecture. This lake is large-scale lake that known high transparency and good water environment. However, such lake, exceeding the standards of coliform bacteria, which is the deterioration of water quality problems. Also, originally, the lake was acid nutrition, though this have seen significant neutralization, the lake has been attracting attention with the water environment of Lake Inawashiro. So, as the Lake Inawashiro study, to organize information and various water environment by continuing to monitor water quality in recently to examine the long-term changes in water quality and water environment and catchment Lake Inawashiro.

2. Brief overview of study region

Lake Inawashiro is located center of Fukushima prefecture, which is faced Inawashiro Town,

Koriyama City and Aizu-Wakamatsu City. There are one part of Agano basin. The major origin is dislocation. The area is 103.9km², altitude above sea level, 514m, 100 million total storage capacity 54 tons, 10 tons, 100 million total annual inflow, residence time is 5.4 years. Lake Inawashiro have about 30 influx river, and Nagasegawa river is maximum flow rate of about 50% in the proportion of the total inflow, and Funazu river is second bigger river. Natural outflow river is Nippashi river, which flow to the Aizu Basin. The other, there are three major hydrophobic Canal Azumi, which is also in Japan as artificial, which led to the east, has been used as water for agricultural and industrial water supply Koriyama City.

3.Method

First, like many have been released to organize information and water environment from the perspective of geography, hydrology, and to clarify the characteristics and natural characteristics of the river basin and catchment Lake Inawashiro, clarify the status of long-term changes in water environment. From April 2009 to April 2010 continue to conduct the observation, a total of 13 times from local observation, environmental monitoring and water were seasonal variations in water quality in Lake Inawashiro.

The hydrological observations were done at 35 points at lake and 46 points at river. Matters for investigation are air temperature, water temperature, pH-RpH, electrical conductivity, TURB, DO, TDS, ORP, COD, flow. Alkalinity determination, and the analysis of cations, anions, DOC were performed at the laboratory.

4.Result

From survey data of vertical temperature of Lake Inawashiro, shown to be different vertical temperature, even within the same Lake Inawashiro. The profile of temperature is also different depending on the season and has been suggested that the effects of painful effects of soil temperature and groundwater inflow. Total circulation visit between December 5 to January 9. northeast coast have high COD and EC. In other words, that area is high load and effect. In Nagase river, this is the water quality differs greatly by the observation period. It had been treated in a previous study, the intake of water and agricultural water and power, because there are different from the mainstream and tributaries flow.

5.Conclusion

On result, the lake water temperature is changed what water temperature profile by the time, to understand that there are seasonal changes, it becomes clear what the annual fluctuation of water Lake Inawashiro. Nagase river is as previous studies showed very different results depending on the time. For pollution and load of Lake Inawashiro, north coast and northeast coast have a heavy load.

Ongoing research continues in the future, strive to understand the hydrological characteristics of catchment area and Lake Inawashiro.

6.Reference

Kodera,K., Tsuzuki,T., 2009: A geographical study on the water environment of Lake Inawashiro and catchment area -Long-term changes of water quality and observations of the warm season in 2009-, abstracts of the study meeting AJG autumn 2009

Keywords: Lake Inawashiro, Annual variation, watershed characteristics, water environment, acidic lake, neutralization