

Study of the increase of transparency on the midstream of the Shibakawa River, Saitama Prefecture

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I have studied the Shibakawa River in Saitama Prefecture continuously since 1988. From these data, I found that transparency in the Shibakawa River increases in the midstream and conducted studies focused on the transparency. In this study, I used digital transparency measure in order to reduce errors and conducted various studies. At first, I measured the transparency at each bridge between the most upper and midstream on the Shibakawa River (Research①). As a result of Research①, the transparency increased in midstream, then it decreased. In this research, however, not only places but also time was changed. So I cannot have researched pure change by places. Given this research, for the purpose of researching pure change by time, I conducted “half-day research” for three times which I measured water quality of the Shibakawa River for each hour for half a day (Research②). As a result of Research②, transparency in the Shibakawa River is higher in the morning than in the afternoon. Also there is a strong negative correlation between transparency and water temperature. There is a strong positive correlation between transparency and sea level in Tokyo Bay. However, the salt concentration at the Sunaôhashi Bridge is very low (0.04%), so it is assumed that there is no relationship between transparency and sea level in Tokyo Bay. Also, for the purpose of researching pure change by place, I measure the transparency in the same time on the midstream in the Shibakawa River (Research③). As a result of Research③, the transparency in the Shibakawa River changed by place. Given these results of the research ①, ② and ③, I guess that the change of the transparency seen in the research① was caused by two factors of place and time. Furthermore, I studied the relationship between transparency and SS (Suspended Solid), plankton, COD (Chemical Oxygen Demand) and so on. In addition to this, I studied the reason why there is a strong negative correlation between transparency and water temperature and studied the detailed conditions where transparency increases. Result of these researches, there is a strong negative correlation between transparency and SS. Also I raised water temperature of the Shibakawa River in the laboratory, there is no relationship between transparency and water temperature. So I guess that there is not direct but indirect relationship between transparency and water temperature. Also I guess that there is something connecting transparency and water temperature. Summarizing these results, first, transparency is changed by time and place. In particular, transparency is changed regularly by time to some degree. Second, there is a strong negative correlation between transparency and water temperature. However, I guess relationship between transparency and water temperature is not direct but indirect. In the future, I want to research something connecting transparency and water temperature.

Keywords: Shibakawa River, Water quality, Transparency

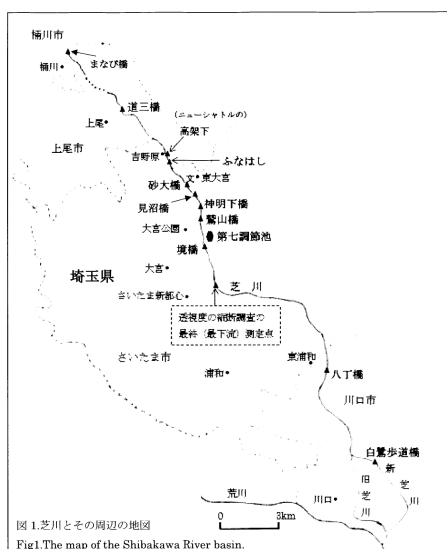


Fig1. The map of the Shibakawa River basin.

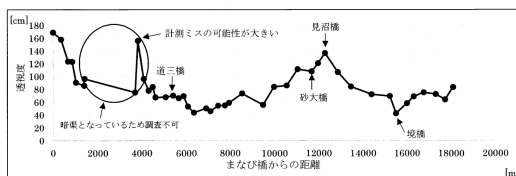


図 2. 最上流部から中流部の透視度調査結果 (2017/8/5・2017/8/13 実施)

Fig2.The result of the research at each bridge between the most upper stream and midstream on the Shibakawa River. (2017/8/5, 2017/8/13)

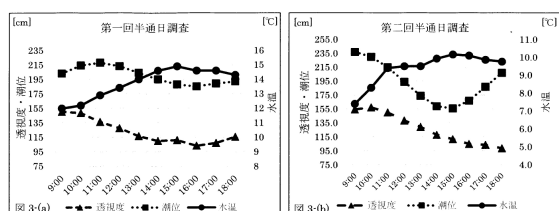
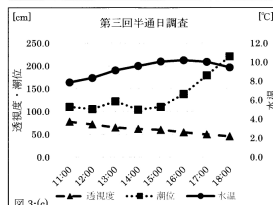


图 3-(b) —▲— 透視度

※潮位は東京湾のもの



☒ 3·(c)

図3.砂大橋における半通日調査の結果（第一回：2017/11/26 第二回：2018/1/7 第三回：2018/2/18 実施）

Fig3. The result of the half day research on the Sunaohashi Bridge on the Shibakawa River.

(1st:2017/11/26, 2nd:2018/1/7, 3rd:2018/2/18)

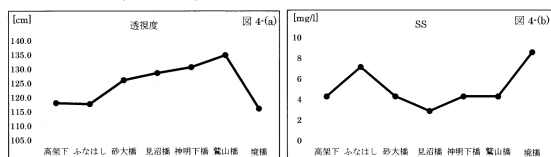


図 4.芝川中流域の水質調査結果 (2017/12/16 実施)

Fig4.The result of the research on the midstream of the Shibakawa River. (2017/12/16)