

## Influence of difference in river shape on heat supply to coastal area by hot spring drainage river

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In Beppu City, Oita Prefecture, it is clear that hot spring drainage flows into the river and affects the river ecosystem. On the mouth of the river where hot spring drainage flow into, there are many tropical fish due to the influence of the heat of hot spring drainage. However, even in rivers where hot spring drainage flow into, there are rivers where many of the native fish inhabits, and the influence of heat on the estuary is various. The river in Beppu city is flowing down a volcanic fan, and the length of the river is relatively short, but the shape differs for each river. Depending on the river, river stream is lined entirely with concrete, and the condition of the river is very different. In Beppu, hot spring drainage flows into mainly by the middle part of the river, so it is expected that the degree of heat supplied to the estuary will be different due to the difference in river conditions while reaching the estuary area. Therefore, in this study, in order to clarify the reason for the difference in the amount of heat supply to the coastal area, we compared the two rivers where the hot spring drainage remarkably flows into.

On both rivers, hot spring drainage flows into the river at the area of about 200 m in elevation, flows down about 3 km and reaches the mouth of the estuary. However, the river water temperature at the estuary is lower by 5 deg. C or more in the Haruki-river throughout the year. Compared to the Haruki River where some of the natural river remains, nearly all of the Hirata River is covered with concrete. In the presentation, in addition to these differences, topographical differences such as inclination and linearity, differences in flow rate etc. are compared and the reason why the difference in thermal influence of hot spring drainage at the mouth of the estuary occurs is considered.

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