P108. FROM AMAGASAKI TO THE SETO INLAND SEA AND THE WORLD: HIGH SCHOOL STUDENT ENVIRONMENT NETWORK

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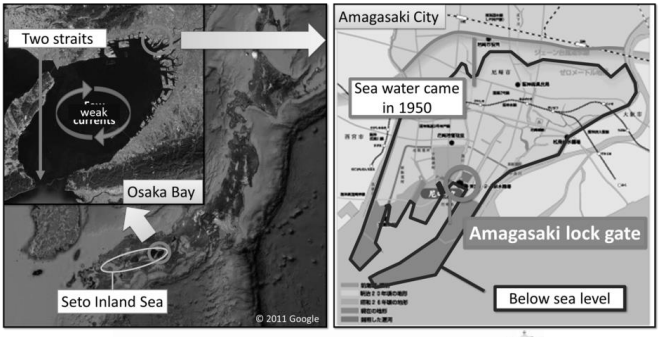
Purpose

The sea around Amagasaki is in the deep part of Osaka Bay and the Seto Inland Sea. The water quality and environment here is especially bad, compared to that of the rest of Japan. We have been researching the water quality and studying ways of water quality improvement to reconstitute the beautiful sea of Amagasaki. However these environmental problems are not only happening in this one place but also in many other seas. So we have to solve the environmental problems of the sea with the cooperation of everyone. Therefore we have built a network of high school students living on the coast of the Seto Inland Sea of Japan. And now we are considering the environment of the local sea and are working actively to help it.

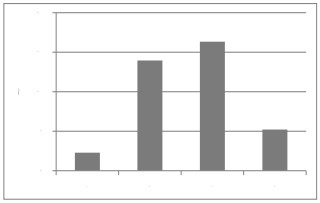


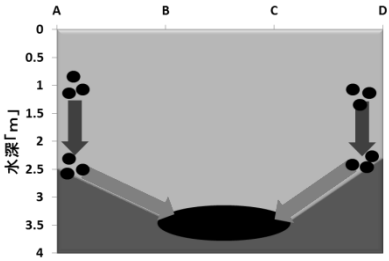
Researching the water quality improvement

The Amagasaki Canal is partitioned off by a lock gate. So its water quality is especially bad compared to that of the rest of the sea around Amagasaki. Creatures are largely damaged by eutrophication in the Amagasaki Canal. Creatures die due to blue tide pollution, and their carcasses become sludge. The sludge makes the water become oxygen deficient. This is a vicious cycle happening in Amagasaki Canal.

We examined the poor oxygenation there to seek a measure for water purification. In particular, we are focusing on the low layer sludge, which causes water problems. We examined the present state, distribution, and the relationship between the sludge and the water. Based on the results, we considered the creation process of the sludge and how to improve the present situation.

We found the causes of biological death by researching the water quality. The case is that oxygen deficient water, which occurs in the low layer during summer, comes up to the surface due to a change in the density current, and then all layers of the Amagasaki Canal become poor in oxygen in the autumn.





The shape of the bottom of the Amagasaki Canal has a central trough. And the amount of sulfide in the center sludge was large. From this fact, we have concluded that dead shellfish at the end of the Amagasaki Canal remain there and become sludge, after that it would collect in the center of the canal.

We found the sulfide of the sludge reached its maximum levels in autumn, and that from summer to autumn the sludge was created, in winter it would settle down again. We examined the relationship between dissolved oxygen and sulfide, whereupon we found a negative correlation (correlation coefficient －0.72). If we can reduce the

amount of sludge, we can also reduce the blue tide. We think dissolved oxygen is the key to the reduction of the sludge.

From Amagasaki to the Seto Inland Sea ~working on a high school student forum~

Environmental problems of the sea are not only local but also global. So cooperation with other areas can help solve this problem. We thought that cooperation with students living in other areas and working together on environmental improvement, such as in the sea around Amagasaki, could extend the approaches of researching the Amagasaki Canal. So we organized the high school student network named "High school Student Forum for the purpose of thinking about the environment of the Seto Inland Sea".

High School Student Forum

We are managing this organization, researching the water quality or living things, and thinking about the environment comprehensively together. Moreover we organized the student executive committee of seven high schools. It made a plan and manages a high school student forum. We'd like to do something for the environment of the Seto Inland Sea together and conduct joint research. In addition we held a study meeting named "science work shop" to promote joint research, and we discussed problems based on the result of our joint research.

Joint research

In the last fiscal year we examined marine litter where we learned about micro-plastic waste. So the theme of this year was "micro-plastic waste". Micro-plastics are the plastics which are weather-eroded to a size of less than 5 millimeters. At first we did not notice them because they are so small. But we have noticed that they have some risks. Micro-plastic waste is likely to become attached to living things. Then, these living things might swallow the micro-plastic by accident.

We found there were lots of them away from the water's edge. This kind of plastic varies according to the area. For example there was a lot of polyethylene or styrofoam and so on. We think they have something to do with location. In our discussion someone said that we should make more people aware of this problem. We'd like to continue researching the micro-plastics and to conduct educational activities.

Fig.4 High school forum activities

Summary

If we can solve environmental problems of the local sea, we may be able to solve environmental problems of the world's seas. We hope that our actions in the sea around Amagasaki will spread as a network of high school students living on the coast of the Seto Inland Sea. Moreover I am eager to develop this network as the world high school students' network, where we can study about closed water areas and to solve environmental problems of the world's seas.