II. Water Quality

5. Methane * Currently this item is not measured.

(by Yukihiro Nojiri)

1. Sampling and pretreatment

In the earlier period, the measurements were conducted at Sts. 1, 3, 7, 9, and 12. In the later period, two Sts. 4 and 8 were added. The sampled depths were from the surface at Sts. 4, and 8, two depths from the surface to the bottom at Sts. 7 and 12, and three depths from the surface to the bottom at Sts. 3 and 9. The definition of the surface water is 0.5 m depth. Water samples for the measurement of dissolved methane were collected in a Go-Flo sampler (General Oceanic Co., Florida, USA) of sizes from 1.7 l to 10 l, because the samplers were airtight enough to keep the dissolved gases. For sampling bottles, we used 50 ml glass serum bottles. The samples were immediately poisoned with $HgCl_2$ solution so as that concentration of Hg was 100 mg/l. Each bottle was capped with polyisoprene rubber stopper, had been pierced with a hypodermic needle to ensure that entrapped air bubbles were displaced. After the needle was removed, the bottles were further sealed with an aluminum crimp seal. The samples can be kept more than a month under 5 ^{o}C, however we conducted analysis within two days after sampling.

2. Analysis

Equipments for methane measurements were shown in Nakamura et al (1994). The measurement of methane concentrations was conducted using an automated analyzer consisting of a purge and trap system and a gas chromatograph equipped with a flame ionization detector (FID). About 35 mins was needed to analyze 10 ml samples from each serum bottle. The precision of analysis was within ±1 % at 100nM, a typical concentration for the lake water.

References

Nakamura, T., Y. Nojiri, A. Otsuki, and N. Hashimoto (1994): The concentration of methane in the sea water of Tokyo Bay and its variation. Geochemistry, 28: 47-57. (in Japanese)