Behaviors of nutrients and organic carbon discharged from large scale sewage treatment plants in Tokyo Metropolitan channels network

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Metropolis Tokyo has a huge network comprised of complex channels in its coastal area facing Tokyo Bay with approximately 60 km of total length. Some large-scale sewage treatment plants (STPs) are located beside channels and are discharging enormous amount of treated sewages into them. Consequently, very high concentrations of nitrogen and phosphorus have been chronically detected in channels, and finally reaching Tokyo Bay and a principal cause for the eutrophication at it. Complex network of the channels with several paths leading to the bay and/or some rivers is making behaviors and occurrences of the pollutants released from these STPs very tricky, i.e., great fluctuations of nitrogen and phosphorus concentrations have been observed by stationary measurements. We conducted a rigorous field survey in some major channels located in the west side of Tokyo Port to grasp spatial and temporal distributions of the pollutants along tidal action, e.g., a great plume of ammonium or nitrate discharged from STPs alternated twice everyday at some stationary points in the channel. This finding indicates that the discharges from STPs containing pollutants are not intensively mixed and diluted with the seawater in channels, and plumes of nitrogen and phosphorus the seawater in channels, and plumes of nitrogen and diluted with the seawater in channels, and plumes of nitrogen and phosphorus mixed and diluted with the seawater in channels, and plumes of nitrogen and phosphorus with high density are fluctuating in channels and reaching Tokyo Bay.