

Influence of River Discharge on the Spatial and Temporal Variability of Chlorophyll-a in the Toyama Bay

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Toyama Bay, located in the Japan Sea, is a very dynamic bay, generally with depths greater than 200 m confined in a narrow shelf, and with many rivers flowing into the sea. The outflow from rivers plays an important role in the physical and biological dynamics of coastal waters. Thus, it is important to understand the spatial and temporal variations of the river discharge influence on material cycle and productivity in nearshore waters. In the Toyama Bay, the Jinzu River is one of the major in discharge amount, averaging to $> 500 \text{ m}^3 \text{ s}^{-1}$ during the peak months. Previous research based on satellite observations of chlorophyll-a concentration investigated the phytoplankton seasonality and reported the typical annual cycle of temperate regions dominated by spring and autumn blooms. In the shelf regions where the influence of river discharge is high, the seasonality of phytoplankton was reported to be dominated by a long summer peak that correlated well with river discharge. Although the river discharge can also be high in seasons other than summer, it is not yet clear what is the influence of that river discharge on spatial and temporal variations of phytoplankton during non-summer periods. To understand the seasonal and interannual variability of phytoplankton in relation to river discharge, *in situ* observations of temperature, salinity, chlorophyll-a, dissolved inorganic nitrogen and phosphate have been conducted by the NPEC since 2004 for the four main seasons, namely, Spring, Summer, Autumn and Winter. In this study, we employ *in situ* observations to discuss the influence of river discharge on spatial and temporal variations of phytoplankton in the Toyama Bay.

Keywords: Phytoplankton, River Discharge, Toyama Bay