O72. FOOD WEB CHARACTERIZATION USING CARBON AND NITROGEN ISOTOPE ANALYSIS IN THE TOYAMA BAY AND THE SEA OF JAPAN

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Toyama Bay receives huge amounts of fresh water from river runoff and groundwater, and water deeper than 200m is filled with the Japan Sea Proper Water. The Sea of Japan is regarded as a miniature ocean sensitive to global climate change. In this study, Toyama Bay is an ideal natural laboratory to understand material cycles and food web structures from land to open ocean under such dynamic climate variability. The supply and transport of terrestrial nutrients to coastal-offshore food webs were investigated using carbon and nitrogen isotope ratios. Low 15N in food web was observed in the coastal water caused by uptake from land. Phytoplankton existing in the surface water is the food source both in the shallow and deep waters, and the 15N values of deep water fish are higher than those of shallow water fish, suggesting former one is under a higher trophic level relative to the latter. However, 13C indicates the benthic microalgae contributing to the coastal consumers about 30-60 % in addition to phytoplankton. The growth rate of phytoplankton in Toyama Bay is estimated to be greater than that in the Sea of Japan based on the 13C values of zooplankton and chlorophyll-a concentration. Moreover, Japanese glass shrimp and firefly squid have their distinctive and invariable 13C and 15N values, integrate the temporal and seasonal changes in research area. We suggest these two species can accomplish as useful indicators to monitor the effect of environmental changes on the food web.