Proc. NIPR Symp. Polar Biol., 5, 166–167, 1992

VARIABILITY IN DOWNWARD DIATOM FLUX IN THE NORTHERN BERING SEA IN 1988 SUMMER (EXTENDED ABSTRACT)

Hiroshi SASAKI[1], Sachiko TAGUCHI[2], Hiroshi HATTORI[3], Osamu MATSUDA[4], Atsushi TANIMURA[5] and Mitsuo FUKUCHI[5]

[1]*Department of Biotechnology, Senshu University of Ishinomaki, Ishinomaki 986*
[2]*Sendai Municipal Institute of Public Health, Wakabayashi-ku, Sendai 983*
[3]*Department of Marine Sciences and Technology, Hokkaido Tokai University, Minami-ku, Sapporo 005*
[4]*Department of Applied Biological Science, Hiroshima University, Higashi-Hiroshima 724*
[5]*National Institute of Polar Research, 9–10, Kaga 1-chome, Itabashi-ku, Tokyo 173*

Variability in downward flux of phytoplankton was observed with a time-series sediment trap (36-m depth) at the "Chirikov depocenter" of the northern Bering Sea from 20 June to 24 September, 1988 This study is to find the possible key species of phytoplankton which respond to change of environmental water conditions The phytoplankton collected in the trap was dominated by diatoms There were small numbers of dinoflagellates and chrysophytes in this period.

The diatom flux of the small-sized particle fraction, of which the maximum sinking rate is approximately less than 60 m d^{-1}, ranged from 2.1 to 7.8×10^3 cells m^{-2} d^{-1}. The maximum flux of diatom was observed in early summer (20–28 June) when the ice floe still existed around the station. The diatom flux decreased in midsummer, and after that, it increased again toward the end of the observation period (autumn).

According to the classification by SAITO and TANIGUCHI (1978), the diatoms collected in the traps were classified into four groups; "ice plankton", "spring species", "summer species" and other diatom groups. Dominant diatoms of the "ice plankton" and "spring species" groups through the entire period were *Nitzschia* spp. and *Thalassiosira* spp., respectively, among which *Nitzschia grunowii* was most abundant. In midsummer (14–30 July), however, "summer species", such as *Chaetoceros* spp., markedly increased, and replaced "ice plankton" and "spring species" groups. The "summer species" in the Bering Shelf region was defined as allochthonous components which were transported into this area by the northward current from the south (SAITO and TANIGUCHI, 1978). This suggests the passive transport of particulate materials into the northernmost area of the Bering Sea with the northward current during the midsummer.

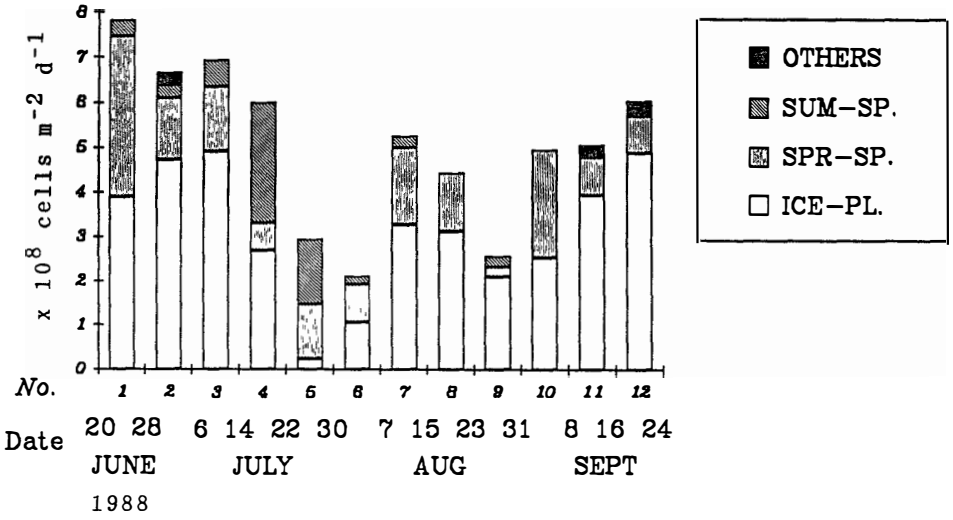

Fig. 1. Variability in flux and composition of four diatom groups, 'ice plankton' (ICE PL.), 'spring species' (SPR-SP.), 'summer species' (SUM-SP.), and other diatoms (OTHERS). Classification is after SAITO *and* TANIGUCHI *(1978).*

References

SAITO, K. and TANIGUCHI, A. (1978): Phytoplankton communities in the Bering Sea and adjacent seas. II. Spring and summer communities in seasonally ice-covered areas. Astarte, **11**, 27–35.

(Received May 2, 1991; Revised munuscript received July 25, 1991)