# Silicoflagellate flux responses to environmental changes and paleoenvironmental reconstruction in the northwestern North Pacific

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Siliceous microfossils (diatoms, silicoflagellates, and radiolarians) serve as useful tools for reconstructing paleoenvironments. In particular, they are significantly important when deep-sea sediments below calcium carbonate compensation depth are to be analyzed. Diatoms are well known as the useful environmental proxies whereas silicoflagellates are under utilized siliceous microfossils. In this study, silicoflagellate skeletal fluxes were studied by the sediment trap experiments in the northwestern North Pacific in order to interpret the geographical differences and the responses to temporal environmental variations. Further, sediment core samples from the same sites of the sediment trap stations were also analyzed by applying the results from the skeletal flux study in order to decipher the paleoenvironmental changes.

Time-series sediment trap samples used here were collected at approximately 3000 m depth at three stations in the northwestern North Pacific during 1997-2000 as follows: 1) Station 50N (50degree N , 165degree E), which is located near the center of the Western Subarctic Gyre (WSG); 2) Station KNOT (44degree N, 155degree E), which is located in the southwestern edge of the WSG; and 3) Station 40N (40degree N, 165degree E), which is located in the Subarctic Front. At Station 50N, cold-water taxa Distephanus speculum and Distephanus boliviensis dominated in the sinking flora. At Station KNOT, D. speculum dominated throughout the sampled duration. At this station, Dictyocha mandrai increased from the second half of year 1998 to the first half of year 1999, and then Dictyocha messanensis also increased after the maximum period of D. mandrai flux. At Station 40N, both the subtropical and the subarctic taxa occurred seasonally. On the other hand, the subtropical and tropical taxa were more significant in 1999 than those in 1998. The temporal assemblage variations at Stations 40N and KNOT significantly reflected the influence of different water masses. In addition, the relative abundance of D. messanensis showed a significant correlation coefficient with SST anomaly. The temporal successions of silicoflagellate assemblages at Station 40N were the most remarkable among the three stations. This is due to the variable environments in the transitional area between the subarctic and subtropical water masses. Therefore, it is suggested that the silicoflagellate assemblages at Station 40N are controlled by the water masses of either or both of subarctic and subtropical origin.

Piston core samples were obtained at Station 5 (40degree00'N, 165degree03'E at 5498 m water depth). The location is approximately the same as Station 40N. Applying the silicoflagellate flux results, we will present the paleoenvironmental changes based on silicoflagellate fossil assemblages.