

Construction of modern silicoflagellate assemblage dataset in the North Pacific for paleo sea-surface temperature and its application for sediment cores

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Silicoflagellate is a marine phytoplankton with biogenic opal skeletons. Most of the modern silicoflagellates are belonging to two genera: *Dictyocha* mainly distributing tropical to temperate regions and *Stephanocha* mainly distributing polar to subpolar regions. Here we construct modern silicoflagellate assemblage dataset in the North Pacific for modern analog technique to reconstruct paleo sea-surface temperature (SST). The modern silicoflagellate assemblage dataset is composed of seven species in surface sediment samples from (1) wide-area of North Pacific by Poelchau (1976) and (2) newly obtained western North Pacific near Japan. A total of 174 surface sediment samples were compiled as the modern silicoflagellate assemblage dataset. Each sample site is linked with 0.25-degree grid data of annual mean SST data by World Ocean Atlas 2013. Modern analog technique analysis was performed by using Polygon 2.4.4. and applied to sediment cores from the Japan and East China Seas. Reconstructed SST of the Japan Sea off Wakasa was ~6-degree C during LGM whereas ~15-degree C during Holocene. Deglacial warming was observed between 12 and 14.5 ka. For the East China Sea core from the Danjo Basin, reconstructed SST was ranging from 10-15 degree C during LGM to 20-25 degree C during late Holocene. The reconstructed silicoflagellate based SST (10 to 25-degree C) were in between planktic foraminiferal Mg/Ca based one (20 to 25-degree C) and TEX 86 based one (7 to 20-degree C). However, deglacial rapid SST changes based on silicoflagellate was not observed in both planktic foraminiferal Mg/Ca and TEX 86 based ones.

Keywords: Silicoflagellate, Modern analog technique, paleo temperature, Last glaciation, Japan Sea, East China Sea