

Benthic biomass size spectra in response to climate changes

Rozkłady wielkości makrozoobentosu w odpowiedzi na zmiany klimatu

Body size is a fundamental biological unit that is closely coupled to key ecological properties and processes. Decline in organisms' body-size has been predicted to be "the third universal response to global warming" (alongside changes in phenology and distribution of species). In the study the assessment of large scale latitudinal patterns in benthic biomass size spectra is presented. The study area covers boreal and Arctic locations and the results are related to gradients in environmental regimes, that provides the baseline for predicting possible future effects of global warming on size structures. We hypothesize that decreasing temperature along the latitudinal gradient is reflected in changes in organism size, here analyzed at the community level. At each location we collected macrobenthic samples acquired hydrological settings, and collected sediments for geochemical analyses. All macrobenthic organisms were identified taxonomically and measured. Applying volumetric formulas we calculated the biovolume and biomass of each organism. For each location we plotted the normalized biomass size spectra and abundance size spectra. The variability in size structures and functioning (production) of the studied communities were related to the environmental settings. Based on the results of the study we conclude that primary production changes, which are related to climate change, will have greater impact on benthic size structure than the temperature.