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FRESHWATER DIATOM ASSEMBLAGES FROM YAKUTIA, EASTERN SIBERIA: PATTERN, DIVERSITY, AND RELATIONSHIP TO ENVIRONMENTAL PARAMETERS

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The Relationship between diatom composition, distribution, diversity and environmental variables in Yakutian Lakes were explored. Samples originate from all over Yakutia, Siberia (N 56.35–72.83; W 110.16–160.96) spanning typical taiga to arctic tundra vegetation. Surface-sediment diatom assemblages and 34 limnological, physical and chemical variables from 188 lakes were determined. Ordination techniques (PCA, DCA, CCA) and associated Monte Carlo permutation tests were used to identify the main environmental factors controlling the composition of diatoms in Yakutian lakes. Relationship between individual diatom species and selected environmental parameter (conductivity, T_{July}) were assessed by estimating species optima and tolerances using weighted averaging (WA) regression. Diversity indices and cluster analysis were used to infer changes of diatom diversity along the conductivity and T_{July} gradient. A total of 496 diatom taxa representing 55 genera were recorded with the data set. Conductivity and T_{July} were identified as the most important environmental variables explaining the diatom pattern. Species optima for conductivity and T_{July} correspond to estimations from other diatom data set. Diatom diversity was highest in the middle range of conductivity. No relationship between diatom diversity and T_{July} has been found. Diatom composition, single diatom abundances and diversity from Yakutia show a significant relationship with environmental factors especially with conductivity and T_{July} . Diatom information can be used as environmental tracer in palaeolimnological and ecological investigations applying both indicator approaches and/or assemblage approaches.