Geophysical Research Abstracts
Vol. 15, EGU2013-334, 2013
EGU General Assembly 2013
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Planktonic foraminifera as proxies of Upper Quaternary sedimentation in The Okhotsk sea

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Analyzing planktonic foraminifera in marine sediments assists us in reconstructing historical maps of climatic changes. The object of the study is the Okhotsk Sea, largest Russian Far East sea. Okhotsk sea, like other marginal seas, is very sensitive to global and regional climate changes. Planktonic foraminifera are poorly investigated in Okhotsk sea. Studying of planktonic foraminifera in Okhotsk sea has some problems: low quantity of species, one taxon domination, low percents of another species, influence of dissolution. These facts don't allow us to use standard approaches for paleotemperature reconstructions using planktonic foraminifera. This research explores the response of this group of microorganisms to main paleoclimatic events in Okhotsk region and attempt to reveal the special characteristics of this proxy for interpreting the paleoodata. The research was based on samples from 4 cores in the central part of the sea and 67 sediment stations from north to south (total of about 270 samples). As a result of studying sediment stations we created a map of biogeographycal distribution of planktonic foraminifera and distinguished five provinces. Each province has specific quantitive and qualative characteristics of foraminifera assemblages that give us information about their modern distribution and ecological preferences. This information is necessary for comparison with cores data. By correlating data from other analysis (radiocarbon dating, benthic and planktonic δ18O records, geochemical, pollen, diatom analyses) with discovered foraminifera sample data (core 936), we established certain climatic patterns and defined 5 criteria to apply to all of the other cores that did not have the same depth of climate information. We find that variation in abundance of different morhpotypes allows determining period of cooling and warming, which is confirmed by the variation in abundance across all of foraminifera species. These criteria might be a solution for paleotemerature reconstruction using planktonic foraminifera.