



A new international tectonic map of the Arctic (TeMAr) at 1:5 M scale and geodynamic evolution in the Arctic region

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A new tectonic map of the Arctic (TeMAr) at 1:5 M scale is a part of the international Atlas of Geological Maps of the Circumpolar Arctic, which is being compiled under the aegis of the Commission for the Geological Map of the World (CGMW). Compilation of the TeMAr was initiated in 2009 after the publication of base maps of the Atlas – geological map (geological survey of Canada) and magnetic and gravity maps (geological survey of Norway) – with the use of a wide range of bathymetric, geophysical, geological, isotope and geochronological data, including new dated seabed samples and new bedrock samples obtained during recent field studies on the Arctic territory. Making use of these data in the map legend employing tectonic settings enabled correlation of various onshore and offshore fragments of the map. The map reflects Arctic regions' tectonic structure, which consists principally of orogenic belts of the Neoproterozoic to the Late Mesozoic age, platform and basin sediments that overlie them and rift structures formed in part as a consequence of seafloor spreading in the North East Atlantic. Furthermore, many structures are traced from the land throughout shelf regions and into deepwater parts of the Arctic Ocean and show a tendency to become younger northwards toward the Canada Basin. For example, collisional structures of South Ural were formed in the Late Carboniferous, those in the Middle Urals in the Permian, and those of Polar Ural, Pay-Khoy and Novaya Zemlya in the Late Permian and Triassic. The Triassic traps of Eastern and Western Siberia were followed by Cretaceous basalts of the High Arctic large igneous province (HALIP). Cenozoic rifting and subsequent spreading (ca. 56 Ma) was caused by the propagation of sea-floor spreading in the North East Atlantic penetration into the Central Arctic along the Gakkel Ridge