

Devonian deposits of the southern Timan: Paleomagnetic data

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Paleomagnetic data allow us to quantify a number of important parameters: paleolatitude, meridian azimuth, and polarity of the geomagnetic field in geologic time for the sampling point. This allows us to define a basis for geodynamic and other paleoreconstructions (climatic, geographic, tectonic, geodynamic), which is important for designs model of sedimentary basins and orogenic belts. In 2007, A. N. Khramov and N. S. Oknova reconstructed the geodynamic evolution of the Timan-Pechora basin using paleomagnetic data. The first paleomagnetic data for the Northern Timan were obtained by G. I. Goncharov in the 70s of the last century. In 2000-2020 numerous paleomagnetic data have been obtained for sites of the Upper Devonian sediments (Frasnian Stage) from Russian Platform and Timan. Comparison of the paleomagnetic poles of Timan with the Russian Platform shows a 15-25 degrees rotation of Timan structures with respect to the Russian Platform. Paleomagnetic studies of a reconnoitering sample collection (Frasnian age) taken from 11 sections along the Ukhta and Izhma rivers showed the presence of several different age components of natural remanent magnetization of the studied rocks. Two of them are pre-folding: component C of the Late Carboniferous age and component D3 of the Late Devonian age, which pass the geomagnetic field polarity reversal test. Comparison between paleomagnetic results for the Carboniferous deposits of the Main Devonian Field and the secondary component C shows agreement. All of them shifted in longitude to the east relative apparent polar wander paths. The position of the paleomagnetic pole according to the characteristic component D3 is also shifted in longitude with respect to the available data on the Main Devonian Field of the Russian Platform, but to the west. The bipolar component D3 allows to detect several zones of normal and reverse polarity of the geomagnetic field in the studied sections. The obtained data, despite their fragmentary character, are in agreement with the available world magnetostratigraphic scales. As a result of the collision with the active margin of the Pechora plate in the late Vendian-early Cambrian, the Riphean complex accumulated on the submarine margin of the East European continent was crushed and partially metamorphosed as a result of the volcanic arc thrusting over it. The presence of rotations of Timan structures, according to paleomagnetic data, during thrusting processes (Caledonian, Hercynian, and Alpine cycles) shows the possibility of conditions for fluids into the thrust rock strata. This work was financially supported by RNF grant 23-27-00461, <https://rscf.ru/project/23-27-00461/>.