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New paleomagnetic data from late Paleozoic sedimentary rocks of Novaya Zemlya Archipelago: tectonic implications

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New paleomagnetic data for Novaya Zemlya archipelago were obtained by processing the samples collection gathered during the 2014 field season. The paleomagnetic directions and paleomagnetic poles were determined from the Paleozoic sedimentary complexes located on the Southern Island (Upper Permian) and the Northern Island (Lower and Upper Devonian, Upper Carboniferous) of the archipelago.

Positive fold and reversal tests indicate that the isolated paleomagnetic directions correspond to the primary magnetization components.

The corresponding paleomagnetic pole are in good agreement with poles obtained earlier in the 1980s by E.L. Gurevich and I.A. Pogarskaya. Considering the confidence ovals, the paleomagnetic poles obtained for the sites of the Northern Island are located close to the corresponding path segment of the APWP of Europe. This means that at least since the early Devonian, the northern part of Novaya Zemlya Archipelago had a position that was close to its current position relatively to the Arctic margin of Europe and has not undergone significant shifts or rotations. However, the upper Permian paleomagnetic pole for the Southern Island is very different from the corresponding part of the European APWP.

We are considering this pole position within a model, involving significant intraplate movement between the structures of the European and Siberian tectonic provinces until the Late Cretaceous. The sinistral strike-slips inferred by the model could have caused or were accompanying the opening of the Mesozoic rift system in Western Siberia. This event has reached its maximum within the South Kara basin and resulted in the north-westward (in geographic coordinates) displacement of the southern part of the Novaya Zemlya Archipelago in relation to the Arctic margin of Europe and in the deformation of the Pay-Khoy-Novaya Zemlya margin, which caused its modern curved form.

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