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Carboniferous carbonate rocks of Chukotka fold belt: facies, geochemical and isotopic data (North-East of Russia)

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Carbonates of Chukotka fold belt are widespread in Devonian – Carboniferous and Permian stratigraphic intervals. For Carboniferous they are represents by units of Visean to Moscovian – Kasimovian age. Carbonates of different tectonic domains were studied. We examine limestones from: (i) South-Anyui Suture (Polarny Creek); (ii) Alarmaut uplift, (iii) Kibera Cape, and (iv) Wrangel Island.

Limestones of Polarny Creek contain fragments of fauna and they occur in the succession with basalts and cherts [1, 2]. Sedimentation of the rocks was not far from bioherm reef. Carbonates of Alarmaut uplift High contain clastic materials, including grains of quartz, mica and volcanic rock fragments. They were accumulating in the shallow marine environment in active hydrodynamic setting. Carboniferous rocks of (iii) Kibera Cape consist of sandstones, gravels and conglomerates in the lower part. In the upper part they are replaced by limestones and dolostones. All carbonate rocks contain lenses and interlayers of cherts. Sedimentation of carbonates took place in shallow-marine shelf of carbonate platform environment. Limestones and dolostones of (iv) Wrangel Island are represented by two types: one is widespread in the Central zone of Island; another – in the Southern zone. Lower part of Carboniferous rocks in Central zone consists of conglomerates and gravels, whereas limestones are present in the upper part of succession. Carbonates of Southern zone consists of intercalation of limestones, dolostones, evaporates and other rocks.

Interpretation of REE data is ambiguous due to diagenetic alteration. We use the following geochemical criteria – HREE/LREE, Ce and Eu anomalies, and δO18 and δC13 isotopes.

Here we demonstrate the different paleogeographic environments for Chukotka's fold belt carbonates. Limestones of Polarny Creek may be a part of a carbonate sequence formed on a volcanic atoll. Sedimentological, geochemical and isotopic data indicate shallow-marine and lagoonal environments of carbonate platform for limestones of Alarmaut High, Kibera Cape and Wrangel Island with increasing of open-marine environments southward.

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