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Fennoscandia (the East European Craton) during Paleoproterozoic: new paleomagnetic and AMS data

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We carried out paleomagnetic and AMS studies of metavolcanic rocks, gneisses, granitoids and mafic intrusions from the Blekinge Province in southeasternmost Sweden. The U–Pb dating suggests that most of the Blekinge bedrock was formed within a narrow time interval of 1.77–1.75 Ga, including ‘coastal gneisses’ [3]. The crust of the Blekinge Province thus was formed at 1.77–1.75 Ga from relatively juvenile sources in a subduction-related environment along the southern edge of Fennoscandia and deformed prior to the intrusion of the Karlshamn-type granites at 1.45 Ga [3].

All studied mafic intrusions from the Blekinge Province carry a stable characteristic component NRM with shallow downward NNW direction. The primary remanence supported by positive contact test – the unbaked Tving granitoids carries a characteristic Svecofennian component with normal polarity. The remanence direction of mafic intrusions is very close to the remanence direction of mafic and composite intrusions in Småland, Sweden [6]. The mean paleopole for the studied mafic intrusions from the Blekinge Province thus corresponds to the 1.79 Ga pole for Fennoscandia [1].

On the other hand, both thermal and AF demagnetizations of a mafic dyke the NNE shallow upward components have been isolated in some samples from the contact zone. The mean direction of this component is close to the Mesoproterozoic paleomagnetic pole for the East European Craton [4]. Anisotropy of magnetic susceptibility (AMS) and structural geology are used to study the emplacement and structural data indicate that the magnetic fabrics within the contact zone of the mafic dyke are continuous and the metamorphic fabrics in the country rocks were formed during ENE–WSW compression and can be referred to the Danopolonian orogeny [2].

To recognize possible later remagnetizations we also studied a mafic dyke in the southernmost area of the Blekinge–Dalarna Dolerite swarm (BDD) near Karlshamn. The primary nature of their remanence was supported by the study of a backed country rocks, which has similar direction of magnetization and unbaked one with the medium-temperature component close to the dyke component. Paleomagnetic pole, recalculated from characteristic component ca 950 Ma Blekinge–Dalarna mafic dykes, is similar to the paleopole of Göteborg–Slussen mafic dykes in southern Sweden [5]. However, ca 950 Ma component has not been identified both in the Paleoproterozoic mafic intrusion and granitoids from the eastern part of Blekinge.

Using new Late Paleoproterozoic paleomagnetic data from Fennoscandia and published paleopoles for Laurentia we have reconstructed the their paleogeography during 1.80–1.75 Ga.

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