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Neoarchean Supercontinent Kenorland: geological and paleomagnetic data

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The idea that most of the fragments of the Archean continental crust were included into the first supercontinent (Kenorland or Pangea-0, Monogea, Protopangea) in the Neoarchean has been actively discussed recently [4, 6, 7]. The supercontinent(s) problem can only be approached using both geological and paleomagnetic data [1].

Archean [2, 3] and Paleoproterozoic (ca 2.5-2.4 Ga) [5] paleomagnetic data from the Kaapvaal, Karelian, Superior, Pilbara, Yilgarn and Zimbabwe cratons are used to show that the movement trends of some of these blocks in the 2.8-2.5 Ga period are similar and that they were closely spaced during the ca 2.5-2.4 Ga period when dyke swarms were formed. This evidence suggests that the continental blocks could be the constituents of a single plate such as a supercontinent [4, 7].

Available geological data show that the Meso-Neoarchean evolution of the continental earth crust of the Fennoscandian Shield (Karelian, Belomorian and Kola provinces) is very similar to that of the eastern Superior province) [4, 8]. Not only the timing of the most significant accretional-collisional events, but also the general trends of subduction, responsible for the interaction of terrains, are correlated [4, 7, 8]. 2.71-2.68 Ga Belomorian collisional events are correlated with the 2.68 Ga Minnesotan orogeny (Superior province) and 2.7-2.67 Ga processes in the Limpopo complex, South Africa (Fig. 1) [4, 7, 8].

Paleomagnetic and geological data suggest that the Kenorland Supercontinent, composed of the Karelian, Kaapvaal, Zimbabwe, Pilbara, Superior, Yilgarn cratons [4, 5, 7], was formed at the end of the Neoarchean (2.7-2.6 Ga) and began to disintegrate at 2.4 Ga.

Figure 1: Configuration of Kenorland Supercontinent at ca 2.7 Ga

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