Geophysical Research Abstracts
Vol. 12, EGU2010-3626, 2010
EGU General Assembly 2010

New Palaeomagnetic Data from the Kitoy River, South Siberia and applications to the Neoproterozoic palaeogeography

Sergei Pisarevsky (1), Dmitry Gladkochub (2), Konstantine Konstantinov (3), Anatoly Mazukabzov (2), Arkady Stanevich (2), Jennifer Tait (1), and Tatiana Donskaya (2)

(1) University of Edinburgh, GeoSciences, Edinburgh, United Kingdom (Sergei.Pisarevsky@ed.ac.uk), (2) Institute of the Earth's crust SB RAS, Irkutsk, Russia (gladkochub@mail.ru), (3) ALROSA, Aikhal, Russia

Revealing of past continental configurations has advanced by extending our knowledge backwards through time. Although the evolution of Pangaea and Gondwanaland is relatively well established, the exact configuration of the earlier supercontinent Rodinia and its predecessors are still widely debated due to our poor knowledge of the palaeogeography in the Neoproterozoic. The Neoproterozoic – Early Cambrian interval is marked by at least two major tectonic reconfigurations of the Earth: the final breakup of the remnants of the Rodinia supercontinent and the assembly of Gondwanaland. This was also one of the greatest orogenic epochs (Baikalian – Pan-African – Cadomian – Timanian orogenies). Many high-quality palaeomagnetic poles were used to construct Phanerozoic APWPs for the majority of continents, and there is general agreement about Phanerozoic tectonic history. In contrast, Neoproterozoic palaeomagnetic data are scarce and controversial, and it is impossible at this stage to apply the traditional APWP method. For example, no highly reliable and well dated Siberian palaeomagnetic poles with ages between ∼600 and ∼900 Ma have been published so far. Here we present new palaeomagnetic data from the ∼750 Ma mafic dyke swarm of the Kitoy River, southern Siberia. Dykes are unaltered, 0.3 to 3 m thick, shallow dipping with N to NNW trends. We collected 172 oriented cores of 14 dykes and host Archaean granites and gneisses for the baked contact tests. Thermal and AF demagnetisations revealed a stable bipolar remanence. The corresponding preliminary palaeomagnetic pole generally supports previously published palaeogeographic reconstructions with southern Siberia facing northern Laurentia with a significant gap in between. This gap is believed to be filled by some other continent or microcontinents. This Siberia-Laurentia configuration apparently did not change since ∼1500 Ma until after 750 Ma.