

Absolute plate tectonic reconstructions of Siberia in Paleozoic: anchoring longitudes and constraining igneous provinces

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Different continental blocks accreted to the Siberian craton since the Precambrian formed the Siberian continent, one of the largest tectonic structures on Earth. As the Siberian apparent polar wander path is reasonably well resolved (Torsvik et al., 2012), we applied the method of geometrical parametrization of apparent polar wander paths described in Wu and Kravchinsky (2014) and Wu et al. (2015) for calculating both paleolatitudes and paleolongitudes in order to perform absolute plate tectonic reconstructions. Our reconstructions demonstrated that the position of Siberia varied greatly in latitude, but not in longitude during the Paleozoic and largely in paleolongitudes, but not in latitudes during the Mesozoic. Based on our reconstructions, we showed that Siberia has traveled along the western edge of the African Large Low Shear Velocity Province (LLSVP) in the Paleozoic, generally fitting with the model proposed by Kuzmin et al. (2010) and Torsvik et al. (2010) from their analyses based on other approaches. Temporary correlation between location of Siberia above the north-western large feature of the African LLSVP and formation of large igneous provinces supports the largely disputed idea of the long-term stability of the major features of the LLSVP.