



Paleomagnetism of Siberian Trap Intrusions: Implications for the Timing and Intensity of the Magmatic Activity

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Large Igneous Provinces (LIPs) are the areas of the exceptional interest due to associated Cu-Ni-Pt deposits, problems of the causal link between volcanic hazards and mass extinctions, and questions about mantle plume dynamics. High-precise U-Pb and $^{40}\text{Ar}/^{39}\text{Ar}$ dating determined the duration of the main phase of the most voluminous Siberian Trap province formation as 1-2 Ma (Kamo et al., 2003; Reichow et al., 2008). Recent paleomagnetic investigations demonstrated the predominance of pulsating volcanic activity during LIPs formation (Chenet et al., 2009; Pavlov et al., 2015).

We perform the results of detailed paleomagnetic study of intrusive complexes from Tunguska syncline and Angara-Taseeva depression (Siberian Trap province). Our data taken together with the previous paleomagnetic results from trap intrusions revealed two different styles of magmatic activity. In the central part of Tunguska syncline emplacement of was rather even without sharp bursts. Local intrusive events coeval to volcanic eruptions took place within spatially limited areas. In contrast, in the periphery of Tunguska syncline several short and powerful peaks of magmatic activity happened on the background of weak prolonged magmatism. These events resulted in huge Padunsky, Tulunsky and some other sills in the southern part of the Siberian platform. According to our paleomagnetic data, the duration of such pulses did not exceed 10-100 thousand years.

Taking into account our paleomagnetic data and recent U-Pb ages for Siberian trap intrusions from (Burgess, Bowring, 2015), it is possible to correlate intrusive complexes with the volcanic section. In particular, formation the largest Tulunsky and Padunsky sills happened right after the termination of the main phase of Permian-Triassic volcanic activity on the Siberian platform.

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