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Wide occurrence of self-reversal of magnetization in the Siberian traps and in other basic rocks of the northern Siberian platform

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Detailed paleomagnetic studies indicate that numerous Siberian trap basalt flows (especially, from the Maymecha-Kotuy area) contain often 2-3 and, sometimes, even 4 nearly antipodal ancient magnetization components.

Whereas the component with lowest unblocking temperatures (100-300°C) can be interpreted as recent one of probably viscous origin, the other three components are clearly different from modern dipole field and their mean directions correspond to expected permo-triassic one for the Siberian platform. These three components are destroyed in temperature intervals 300-550°C, 420- 590°C and (only several samples) 600-660°C. The paleomagnetic and geological context demonstrates that these components unlikely to be attributed to subsequent thermal or chemical overprint, therefore we consider self-reversal as a probable cause for observed antipodal magnetization components. In our report we discuss evidences for occurrence of self-reversal of magnetization in studied samples, their magnetic mineralogy and possible mechanism of the self-reversal.

Our detailed paleomagnetic study carried out on tens of mesoproterozoic basic sills and dykes from Anabar uplift (northern Siberian platform) reveals often the similar paleomagnetic record indicating that self-reversal of magnetization in the basic rocks may be much more spread in the nature than it is usually regarded.