



Paleolatitude reconstruction of upper Permian limestone olistoliths within the Karakaya Complex (Turkey): Eurasia or Gondwana?

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The Karakaya Complex within the Sakarya Zone in northern Turkey has been interpreted as a mid-late Triassic subduction/accretion complex of the Paleo-Tethys Ocean. The Complex consists of heavily deformed and locally metamorphosed sedimentary and volcanic units of late Permian and Triassic age, and is unconformably overlain by lower Jurassic and younger sediments. The upper Permian to middle Triassic Çal unit within the Karakaya Complex is a chaotic volcano-sedimentary melange. It comprises an upper Permian mixture of radiolarites, shallow marine limestone olistoliths, calcarenites with limestone fragments, abundant volcanic rocks, as well as lower Triassic pelagic limestones and middle Triassic carbonates. The basement underlying the Çal unit is unknown.

There is debate on the source of the upper Permian limestone olistoliths: they could either have been derived from a platform at the southern margin of Eurasia, or from the northern margin of Gondwanaland. Determination of the paleolatitude of the upper Permian olistoliths could help to distinguish between models on the paleogeographic location of the Karakaya Complex.

We have carried out paleomagnetic analysis on an upper Permian shallow-water limestone olistolith within the Çal unit. Our results pass the reversal test and give a paleolatitudinal position of 26°. There is little constraint on the hemisphere of deposition. We discuss several options on the origin of the olistoliths: deposition in the northern

vs. southern hemisphere, and (recent or Triassic) remagnetization. The available paleontological data from the upper Permian limestone blocks are ambiguous with authors relating the *fusulinid* assemblages in the olistoliths either to the southern or northern margin of the Tethys. However, there are no known Permian limestone platforms in the Black Sea-Caucasus region, which were located on the northern side of Paleo-Tethys, whereas they are common around the Arabian and Gondwanan margin. We therefore argue that a southern hemisphere origin in the vicinity of Arabia is the most likely option for the Permian limestones.