



Triassic arc-derived detritus in the Triassic Karakaya accretionary complex was not derived from either the S Eurasian margin (Istanbul terrane) or the N Gondwana margin (Taurides)

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We present new U-Pb zircon source age data for Upper Triassic sandstones of the Istanbul Terrane (S Eurasian margin) and also for Triassic sandstones of the Taurides (N Gondwana margin). The main aim is to detect and quantify the contribution of Triassic magmatism as detritus to either of these crustal blocks. This follows the recent discovery of a Triassic magmatic arc source for the Triassic sandstones of the Palaeotethyan Karakaya subduction-accretion complex (Ustaömer et al. 2013; this meeting). Carboniferous (Variscan) zircon grains also form a significant detrital population, plus several more minor populations.

Six sandstone samples were studied, two from the İstanbul Terrane (Bakırlıkıran Formation of the Kocaeli Triassic Basin) and four from the Tauride Autochthon (latest Triassic Üzümdere Formation and Mid-Triassic Kasımlar Formations; Beyşehir region). Detrital zircon grains were dated by the laser ablation-inductively coupled plasma-mass spectrometer (LA-ICP-MS) U-Pb method at Goethe University, Frankfurt.

Our results do not reveal Triassic detritus in the Üzümdere Formation. The U-Pb age of the analysed zircon grains ranges from 267 Ma to 3.2 Ga. A small fraction of Palaeozoic zircons are Permian (267 to 296 Ma), whereas the remainder are Early Palaeozoic. Ordovician grains (4%) form two age clusters, one at ca. 450 Ma and the other at ca. 474 Ma. Cambrian-aged grains dominate the zircon population, while the second largest population is Ediacaran (576 to 642 Ma). Smaller populations occur at 909-997 Ma, 827-839 Ma, 1.8-2.0 Ga and 2.4-2.6 Ga.

The sandstones of the Kasımlar Formation have similar zircon age cluster to those of the somewhat younger Üzümdere Formation, ranging from 239 Ma to 2.9 Ga. A few grains gave Anisian ages. Cambrian zircon grains are less pronounced than in the Kasımlar Formation compared to the Üzümdere Formation.

The detrital zircon record of Tauride sandstones, therefore, not indicates significant contribution of Triassic or Carboniferous (Variscan) arc sources, in marked contrast to those of the Triassic Karakaya subduction complex.

In comparison, the ages of the analysed zircons in the Upper Triassic sandstones of the Istanbul Terrane range from 294 Ma to 3.1 Ga. Triassic zircons are again absent, while Variscan-aged zircons (294 to 339 Ma) dominate the zircon population. Additional zircon populations are dated at 554 to 655 Ma, 0.9 to 1.2 Ga, 1.5 Ga, 1.65 Ga, 2.0 to 2.15 and 2.5 to 2.8 Ga. The Precambrian zircon age spectra are compatible with derivation from an Avalonian/Amazonian/Baltic crustal provenance.

In summary, there is no evidence in either the Triassic sandstones of the İstanbul Terrane or of the Taurides of the Triassic magmatic arc source that dominates the Triassic Karakaya subduction-accretion complex. Where then was the source of the Karakaya arc detritus? A likely option is that the Karakaya subduction-accretion complex is an exotic terrane that was detached from a source magmatic arc and displaced to its present location, probably prior the initial deposition of the Early Jurassic cover sediments.

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