Age and microfacies of a carbonate-clastic radiolaritic basin fill above the Koziakas Mélange (Hellenides, Greece)

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The Koziakas unit is located in northern Greece and thrust westwards over the Pindos unit during the Early Tertiary. Both units present a similar stratigraphy including Mesozoic and Lower Cenozoic deep water sediments. Toward the east, the Koziakas unit borders with a NW-SE trending dextral transpressional fault zone, the Mesohellenic Trough that is filled with Upper Eocene to Lower–Middle Miocene turbidites. The Mesozoic sequence of the Koziakas unit is thrust over by ophiolites with a Middle Jurassic (Bathonian) ophiolitic mélange at their base. The ophiolitic mélange was formed in front of the advancing ophiolites as sedimentary mélange containing a mixture of ophiolite and continent-derived material. In the western part of the Koziakas unit, the basin was not completely incorporated into the thrusting process and remained open, receiving sediments during the time span from the Callovian to the earliest Cretaceous.

We studied the higher part of the basin fill in the central eastern Koziakas unit near the village Kori where a more than 300 m thick radiolarite sequence was deposited above the mélange. In the higher part of the radiolarite sequence mass transport deposits appear, consisting of open-marine and shallow-water carbonate clasts. We studied parts of the radiolarite sequence below these carbonate-clastic resediments and analysed the components in the different breccia layers.

Few of the processed radiolarite samples yielded moderately preserved radiolarian faunas. The radiolarian association of a sample from the radiolarite sequence yielded Cinguloturris carpatica, Emiluvia orea, Emiluvia nana, Fultacapsa sphaerica, and Tethysetta matshitaensis which point to a middle-late Oxfordian age. The younger radiolarian sample, roughly 50 m above, yielded *Angulobracchia biordinalis*, *Suna echiodes*, *Paronaella mulleri*, and *Tritrabs casmaliaensis* indicating a middle–late Oxfordian to early Kimmeridgian age. Approximately 100 m upward, first turbidites consisting of limestone clasts are intercalated. Later, the amount of turbidites increases and the first fine-grained mass-transport deposits show a coarsening-upward trend.

Near the village Kori, the limestone components from a series of well outcropping mass transport deposits and turbidites in a radiolarian-rich and silicified wackestone matrix were studied. Beside limestone clasts from a contemporaneously formed carbonate platform (containing "*Tubiphytes*" sp., encrusting organisms, and ooids), limestone clasts with *Saccocoma* and deep-water *Calpionella*-limestone clasts are incorporated into the mass transport deposits. Poorly preserved calpionellids (*Crassicollaria brevis* or *Calpionella elliptica*) point to the Berriasian as the oldest age of redeposition. These Upper Jurassic clasts are mixed with rare clasts from the Late Triassic Dachstein Carbonate Platform (*e.g.*, *Aulotortus sinuosus*) and Middle Jurassic *Bositra*-limestone clasts. Ophiolitic material is missing in these mass transport deposits.

We interpret that the Upper Jurassic components are derived from (I) a shallow-water carbonate platform formed on top of the ophiolitic nappes, and (II) from recycled material of a distal continental margin. Similar situations are known from the Albanides or the Northern Calcareous Alps.