zone where permeability and (sulphate and chloride) salt data are correlated. At greater depth, continual wetting with salt and subsequent heating increases permeability and pore connectivity of the sandstone block. Salt crystallization enlarges and fractures pores, enabling the ingress and movement of soluble chloride salts. The stone's intrinsic properties (permeability and porosity) have been changed by salt weathering, ultimately leading to deterioration and accelerated stone decay.

Age and provenance of Palaeozoic and Mesozoic sediments from Northern Greece: Constraints for palaeotectonic reconstructions

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The Internal Hellenides of Greece are part of the Alpine–Himalayan orogen. The relationships between different pre-Alpine crustal fragments of the Internal Hellenides are now masked by younger (Mesozoic to Cenozoic) complex tectonic and metamorphic events. This, together with the scarcity of biostratigraphic, geochronological and palaeomagnetic data, has given rise to equivocal palaeotectonic models and interpretations. The age and origin of pre-Alpine basement units in the Internal Hellenides has however important implications for our in-depth understanding of the evolution of North Gondwana-derived terranes and consequently for alternative palaeotectonic reconstructions for the Palaeozoic and Mesozoic. A multidisciplinary sediment provenance study was undertaken since sedimentary rocks can provide information about rock lithologies in the source area, which have often been destroyed and recycled during ancient plate tectonic processes. Palaeozoic and Mesozoic sedimentary rocks from key areas of the Internal Hellenides in northern Greece were analysed using whole-rock major- and trace-element geochemistry (XRF, ICP-MS), detrital mineral chemistry (EMP), detrital zircon geochronology (SHRIMP, LA-ICP-MS) and biostratigraphic analysis. In particular, detrital zircon ages are useful to evaluate potential source regions and ancient magmatic events. Furthermore, in the absence of fossil and other stratigraphic data, the youngest grain (e.g. zircon) in a sedimentary rock can indicate a maximum limit for the age of deposition.

Quartzite samples from the Pirgadikia Terrane of the Serbo-Macedonian Massif are correlated with Ordovician overlap sequences at the northern margin of Gondwana on the basis of their maturity and zircon age spectra. The Pirgadikia Terrane can be best interpreted as a peri-Gondwana terrane of Avalonian origin, which was situated close to the Cadomian terranes in the Late Neoproterozoic–Early Palaeozoic, very much like the Istanbul Terrane of NW Turkey. Metasedimentary rocks (e.g. garnetiferous mica schists) from the Vertiskos Terrane of the Serbo-Macedonian Massif probably represent an Ordovician active-margin succession of the Hun superterrane, comparable to successions of the Intra-Alpine terranes.

Clastic metasediment samples investigated from the Circum-Rhodope Belt west of the Serbo-Macedonian Massif belong to the Permian–Triassic Examili Formation, the Early–Middle Jurassic Melissochori Formation (former Svoula flysch) and the early Cretaceous Prinochori Formation. Clastic sediments studied from the Circum-Rhodope Belt of the Thrace region come from the Early–Middle Jurassic Makri Unit and the Late Jurassic–Cretaceous Melia Formation. The rocks of the Circum-Rhodope Belt record Mesozoic rifting, related to the opening of a Neotethyan Ocean, Middle–Jurassic intraoceanic subduction, attendant volcanic-arc magmatism, ophiolite emplacement, and finally oceanic basin closure. Polyphase tectonics and metamorphism complicate palinspastic reconstructions.

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