

Tectonic units of the Alpine collision zone between Eastern Alps and western Turkey

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We present a map that correlates tectonic units between the Alps and western Turkey accompanied by a text providing access to literature data, explaining the concepts used for defining the mapped tectonic units, and some first-order paleogeographic inferences. Along-strike similarities and differences of the Alpine-eastern Mediterranean orogenic system are discussed. The map allows (1) for superimposing additional information, such as e.g., post-tectonic sedimentary basins, manifestations of magmatic activity, location of ore deposits, onto a coherent tectonic framework and (2) for outlining the major features of the Alpine-eastern Mediterranean orogen. Dinarides-Hellenides, Anatolides and Taurides are orogens of opposite subduction polarity and direction of major transport with respect to Alps and Carpathians; polarity switches across the Mid-Hungarian fault zone, a suspected former trench-trench connecting transform fault. The Dinarides-Hellenides-Taurides (and Apennines) consist of nappes detached from the Greater Adriatic continental margin during Cretaceous and Cenozoic orogeny. Internal units form composite nappes that passively carry ophiolites obducted in the latest Jurassic–earliest Cretaceous (in the case of the Dinarides-Hellenides) and during the Late Cretaceous (in the case of western Turkey) on top of the Greater Adriatic margin successions. The ophiolites on top of composite nappes do not represent oceanic sutures themselves, but root in the Neotethys suture zone that formed well after obduction. Suturing between Greater Adria and the northern and eastern Neotethys margin occupied by the Tisza and Dacia mega-units and the Pontides occurred in the latest Cretaceous along the Sava-Izmir-Ankara suture zone. The enigmatic Rhodopian orogen is interpreted as a deep-crustal nappe stack that formed in tandem with the Carpatho-Balkanides fold-thrust belt, now exposed in a giant core complex that became exhumed in late Eocene to Miocene times from below the Carpatho-Balkan orogen and the Circum-Rhodope unit. Its tectonic position is similar to that of the Sakarya unit of the Pontides. We infer that the Rhodope nappe stack formed due to north-directed thrusting. Both Rhodopes and Pontides are suspected to preserve the westernmost relics of the Paleotethys suture zone.