Evolution of the Western Tethys as seen from the Western Carpathians' perspective

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The palaeogeographic positions of the pre-Cretaceous Tethys "western ends" (Kovács, 1992) and their relationships to easterly located oceanic domains remain to belong to the most challenging issues in deciphering the structure and tectonic evolution of the European Alpides (e.g. Schmid *et al*., 2020). Due to the westward increasing paucity of direct indications of ancient oceanic domains and their discontinuous occurrences, a number of sometimes considerably different reconstructions have been proposed by several authors. All these are based on various data and authors' preferences; therefore achievement of a widely accepted model seems not to be probable at present.

In general, searching for evidences of former oceanic domains in the nappe edifice of collisional mountain belts, commonly in the suture zones, is based on several fundamental criteria: 1) ophiolite slivers and ophiolite-bearing mélanges as vestiges of consumed oceanic lithosphere; 2) blueschist- to eclogite-facies metamorphosed units recording the subduction/exhumation processes within a subduction channel and/or accretionary prism; 3) deep-marine synorogenic sedimentary complexes like wildflysch or olistostromes; 4) mixture of these in chaotic units within an accretionary wedge; and 5) a specific case of intraoceanic subduction resulting in ophiolite obduction, but this is not considered as a continental collisional tectonic setting. Indirectly, position of past oceanic basins can be detected by: a) secondary occurrences of an oceanic crust-derived detritus, including the heavy mineral spectra, in syn- to early post-orogenic sedimentary clastic formations and clues to their source areas; b) shelf-slope-continental rise facies polarity of former passive margins; c) progradational trend of collisional thrust stacking of the lower plate with a suture (often totally destroyed) in the uppermost structural position in the rear part of an orogenic pro-wedge; d) subduction-related calc-alkaline magmatism accompanying the active margin; e) upper plate back-arc extension, or retro-wedge thrusting opposite to the pro-wedge in a bivergent orogen with the suture in its axial zone; f) major crustal-scale discontinuities revealed by deep seismic sounding connected to surface fault zones separating palaeogeographically distinct domains indicating possible plate boundaries.

All these potential clues have been considered while reconstructing the Mesozoic tectonic evolution of the Western Carpathians (Plašienka, 2018 and references therein). It should be noted that no single criterion characterized above, even not a few indirect signs are enough to define a particular orogenic zone or unit as an evidence for an oceanic suture. There is only one Western Carpathian zone which fulfils most of them. It is represented by units and rock complexes grouped in a tectonic superunit known as the Meliaticum and respective oceanic realm as the Meliata Ocean. The Meliata-related units bear clear signs of criteria 1, 2, 3, 4 and indirect indicators a, b, c and e. Whatever different are the interpretations of the Meliata Ocean origin (e.g. born as a back-arc basin initiated by the northward subduction of Palaeotethys, or simply as a northern margin or embayment of Neotethys), or even its existence as an independent domain (regarded as a facies zone only), all palaeotectonic interpretations of the Alpine tectonic evolution of the Western Carpathians have to take into account these pieces of evidence.

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