

Metamorphic Conditions of Neotethyan Meliatic Accretionary Wedge Estimated by Thermodynamic Modelling and Geothermobarometry (Inner Western Carpathians)

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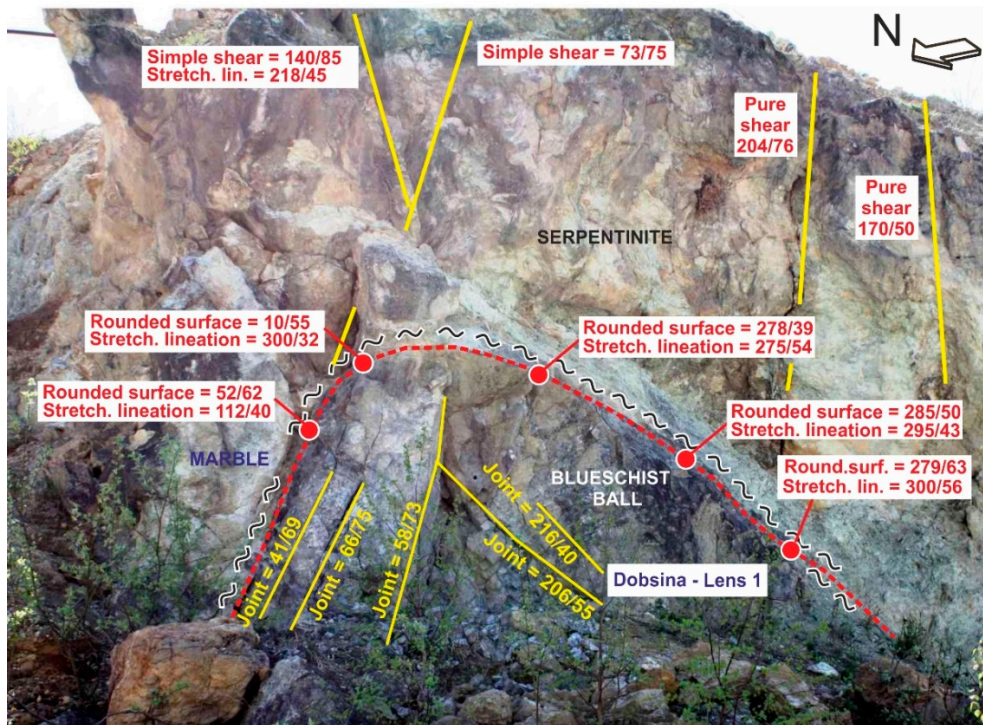


Figure S1. Rounded block (4 x 3 m) of a calc-alkaline blueschist (sample DO-31) exhumed during D2 stage in serpentinite mélangé (late D2–D3 stage) with marbles, Tlc–Chl–Ph–Cal schists, rodingites and alkaline OIB-type blueschist-facies metabasalts in the southern part of the Dobšiná quarry. The blueschist block is internally fragmented [48,138].

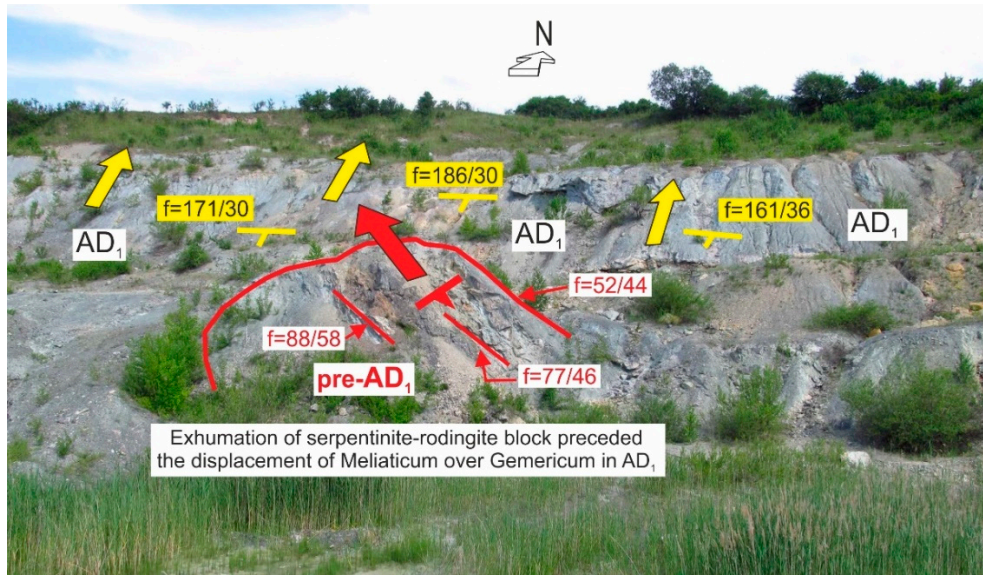


Figure S2. Serpentinised harzburgite with rodingite vein exhumed during the D2 stage in the serpentinite mélange (late D2–D3 stage). Internal structure of a Meliatic mélange block in the northern part of the Dobšiná quarry, shown in the red circle. Erosion furrow with violet Permian siliciclastic metasediments reveals AD1 thrust plane of Meliaticum over the Gemicic basement and Permian cover, in yellow. f = planar mesostructural elements [138].

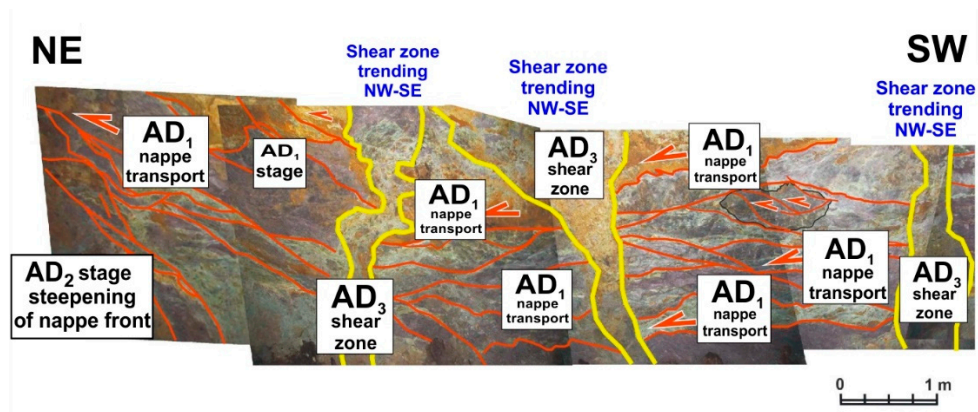


Figure S3. AD1 thrust plane system of Meliaticum (serpentinite mélange block) over Gemicum in a gallery of the Dobšiná quarry, in red. Crosscutting steeply dipping northwest–southeast trending transpressional shear zones (D3 stage), in yellow. f = planar mesostructural elements [138].

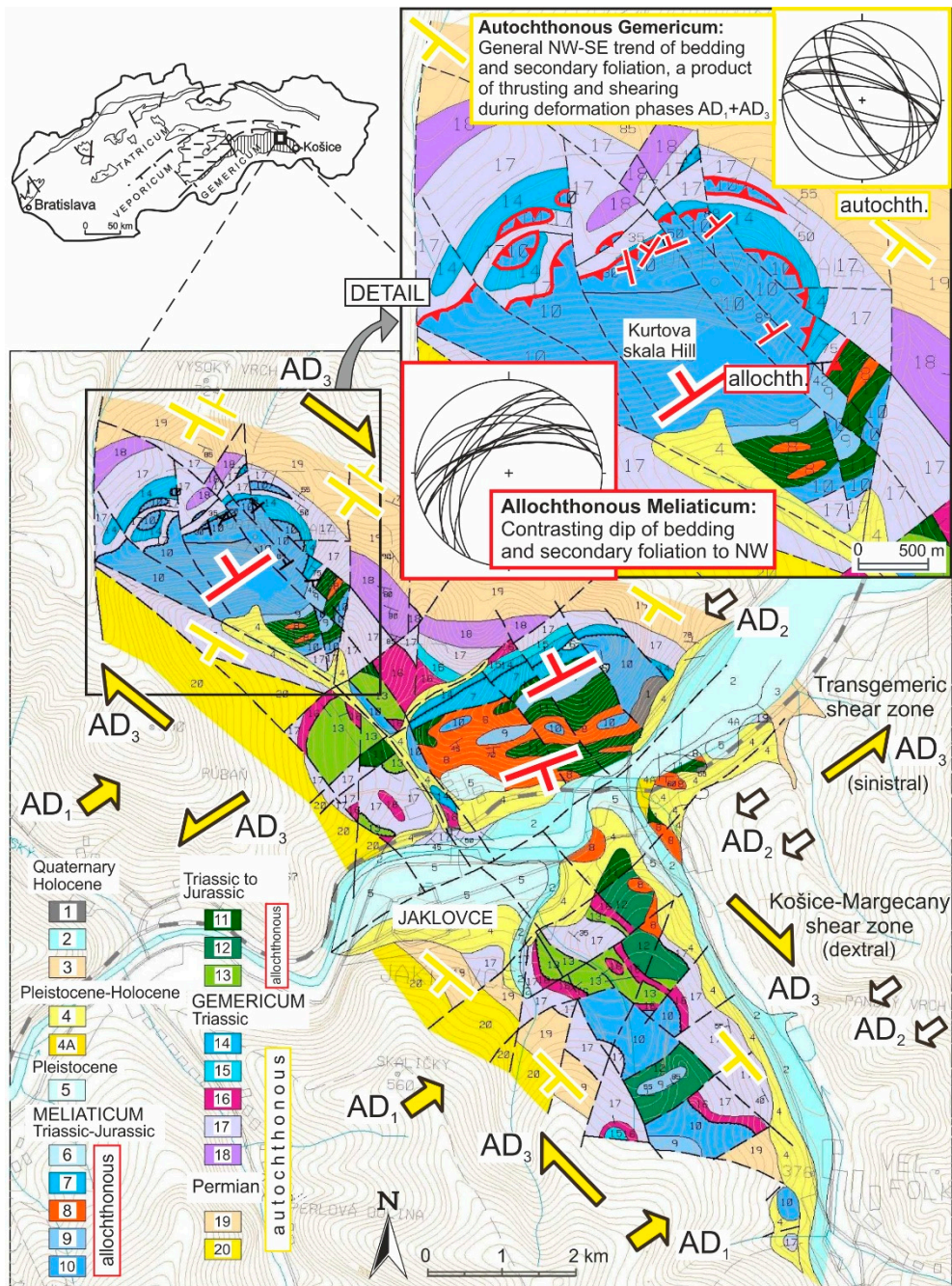


Figure S4. Position of Meliaticum in the north Gemic zone [95]. Internal structure of Meliaticum unifies different lithological blocks from the pre-D1 stage. The scheme includes a direction of thrusting (AD₁, top-to-the northeast), unroofing (top-to-the southwest); more external—relates to the contact of Gemicum and Veporicum superunits (AD₂), as well as conjugated northwest-southeast trending dextral shearing (AD₃, Košice-Margecany shear zone) and northeast-southwest trending shearing (Trans-Gemic shear zone). The map, as well as the detail of the Kurtavá skala Hill, show the angular discordance of northwest-dipping planar elements in allochthonous Meliatic bodies with the general Alpine structural plan in the north Gemic zone.

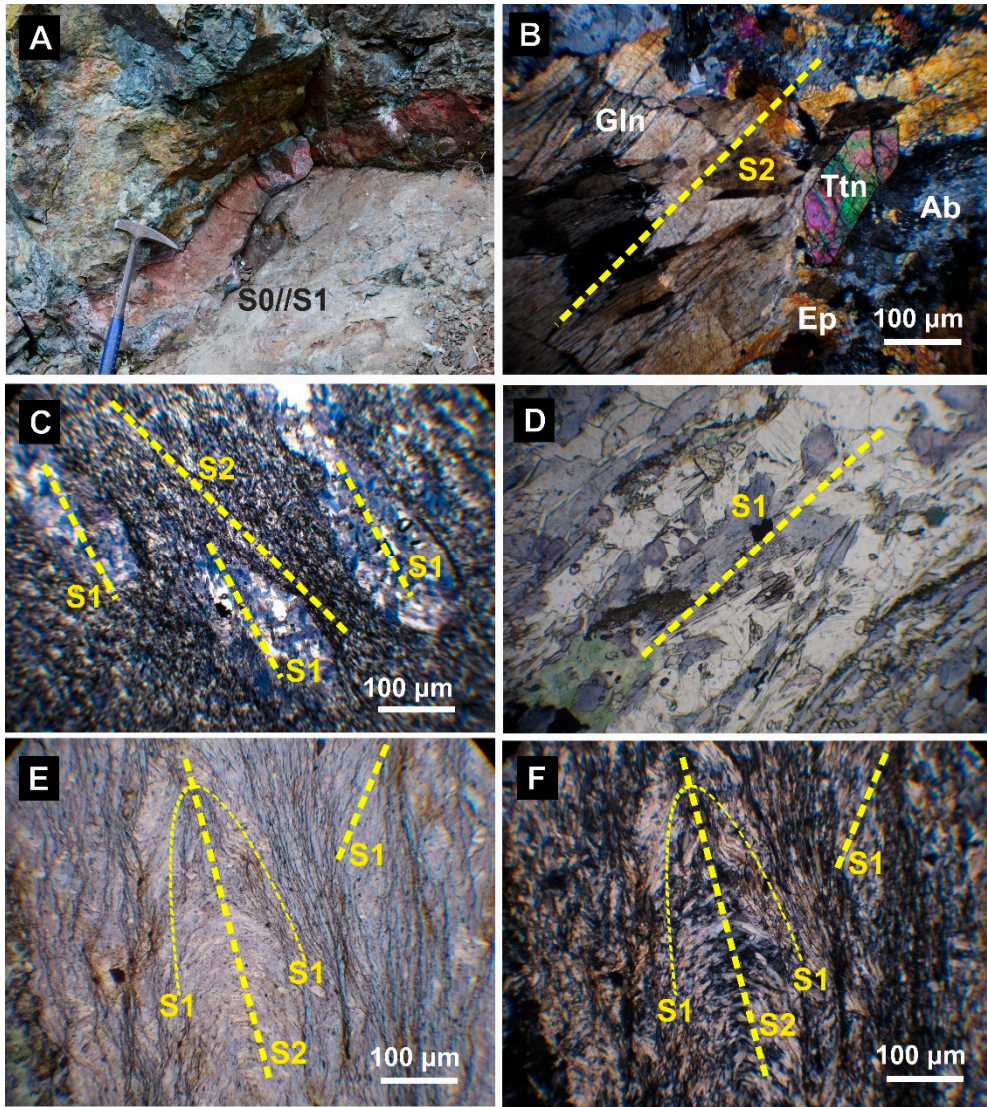


Figure S5. Structures of metabasites from Meliatic paleotectonic units. **A, E–F** from Jaklovce Unit, **B–D** from Bôrka Unit. Examples of the Bôrka Unit blueschists: (**A**) pre-metamorphic (pre-D1) layering—alternation of reddish radiolarites with N-MOR type basalts and dolerites; (**B**) refolded metamorphic schistosity S1 with the Gln (D1) of a blueschist layer in Tlc–Chl–Ph–Cal schists, with an axial-plane cleavage with Ttn (D2); (**C**) lenses of a blueschist mineral assemblage from the D1 stage with S1 defined by Gl–Ph–Grt in secondary cleavage planes, S2, with signatures of shearing and the grain size reduction (D2); (**D**) blueschist layer in marble with oriented Gln aggregates in D1 metamorphic schistosity S1 overgrown by Chl (D1–D2); and (**E–F**) microfolds of the blueschist metamorphic schistosity S1 (D1) defined by bluish Gln aggregates. Axial plane schistosity S2 (D2) with reoriented and partly recrystallised Gln. Pictures C–E at *II N*; B and F at *X N*.

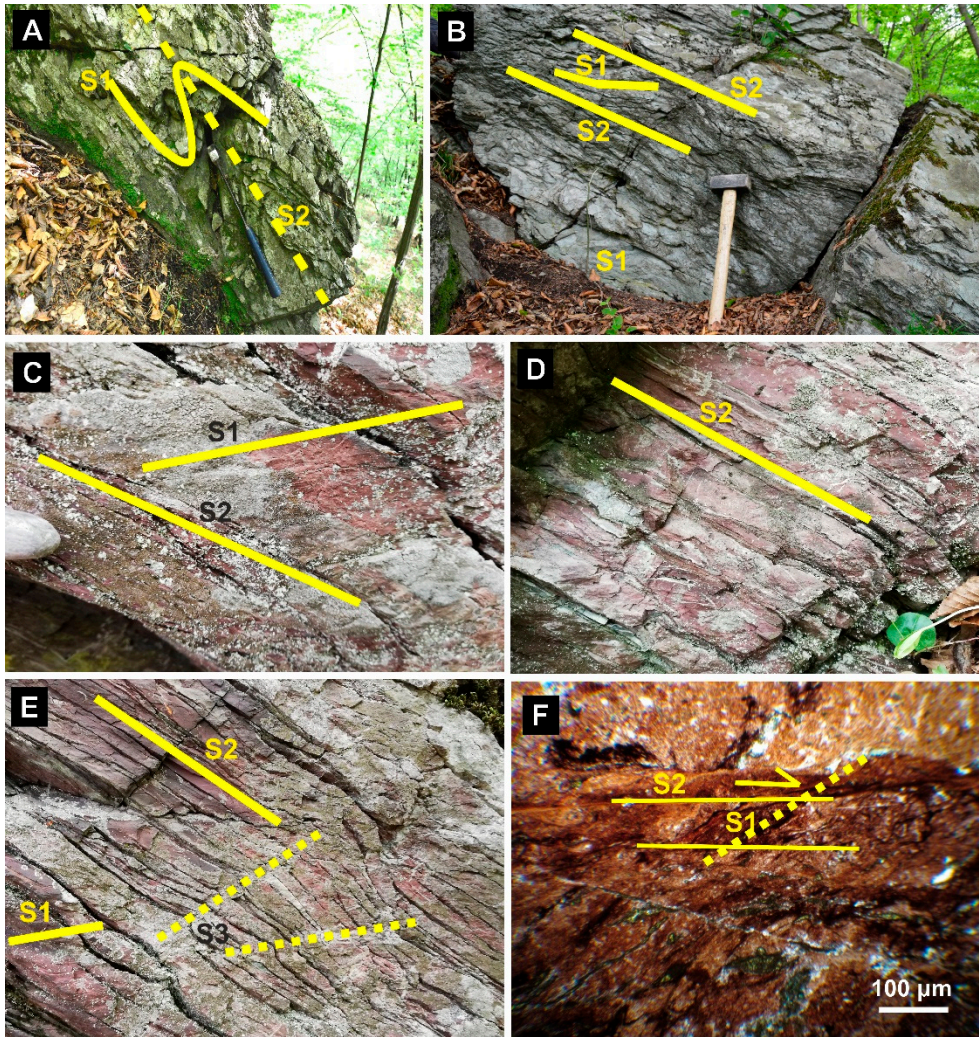


Figure S6. Meso- (A–E) and microstructures (F) of metasilicites from Jaklovce Unit: (A) similar folds with a southeast dipping axial plane cleavage in greenish metaradiolarite (late D2–D3 stage?); (B) distinctly schistose metasilicite. S-dipping S1 metamorphic schistosity (D1) crosscut by SE-dipping //S2 metamorphic cleavage (D2); (C–E) angular relationship between S1 metamorphic schistosity (D1) and S2 late-metamorphic cleavage (D2); brittle-ductile kink folds with S3 system (AD3?); (F) sheared metasilicate (D2?). Picture F at 11 N.

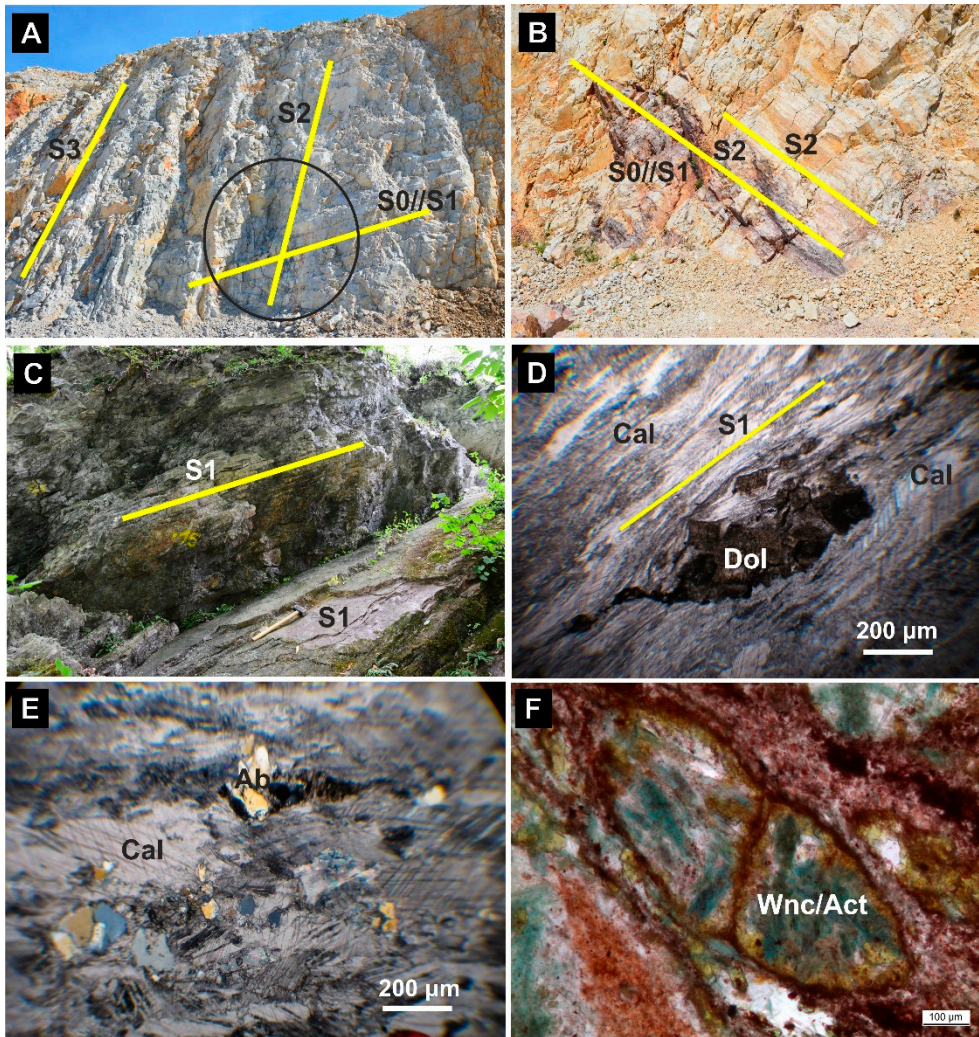


Figure S7. Meso- (A–C) and microstructures (D–F) of marbles from Bôrka (A–E) and Jaklovce (F) paleotectonic units: (A) alternation of pale carbonates and dark schists indicate northwest dipping sedimentary bedding planes S0 parallel to superimposed S1 metamorphic schistosity (D1). Northwest steeply dipping S2 metamorphic layering (D2, visible in circle). Southwest steeply dipping cleavage S3 (AD3); (B) hematite-rich layers as indicators of refolded S0 bedding and S1 metamorphic planes (D1), crosscut by predominant northeast-dipping axial-plane metamorphic schistosity S2 (D2). A and B—Kurtavá skala Hill quarry at Jaklovce; (C) predominant S1 metamorphic schistosity of a mid-Triassic metacarbonate as olitolith in Jurassic flysch. C–E—Meliata quarry; (D) S1 metamorphic schistosity and shearing in Cal marble with fragmented Dol porphyroclasts (D1–D2); (E) coarse-grained part of the marble with Ab porphyroblasts (D1); (F) flattened nodules of siliceous metacarbonate infilled by metamorphic Wnc/Act (D1); pictures of D and F at *II N*, E at *X N*.

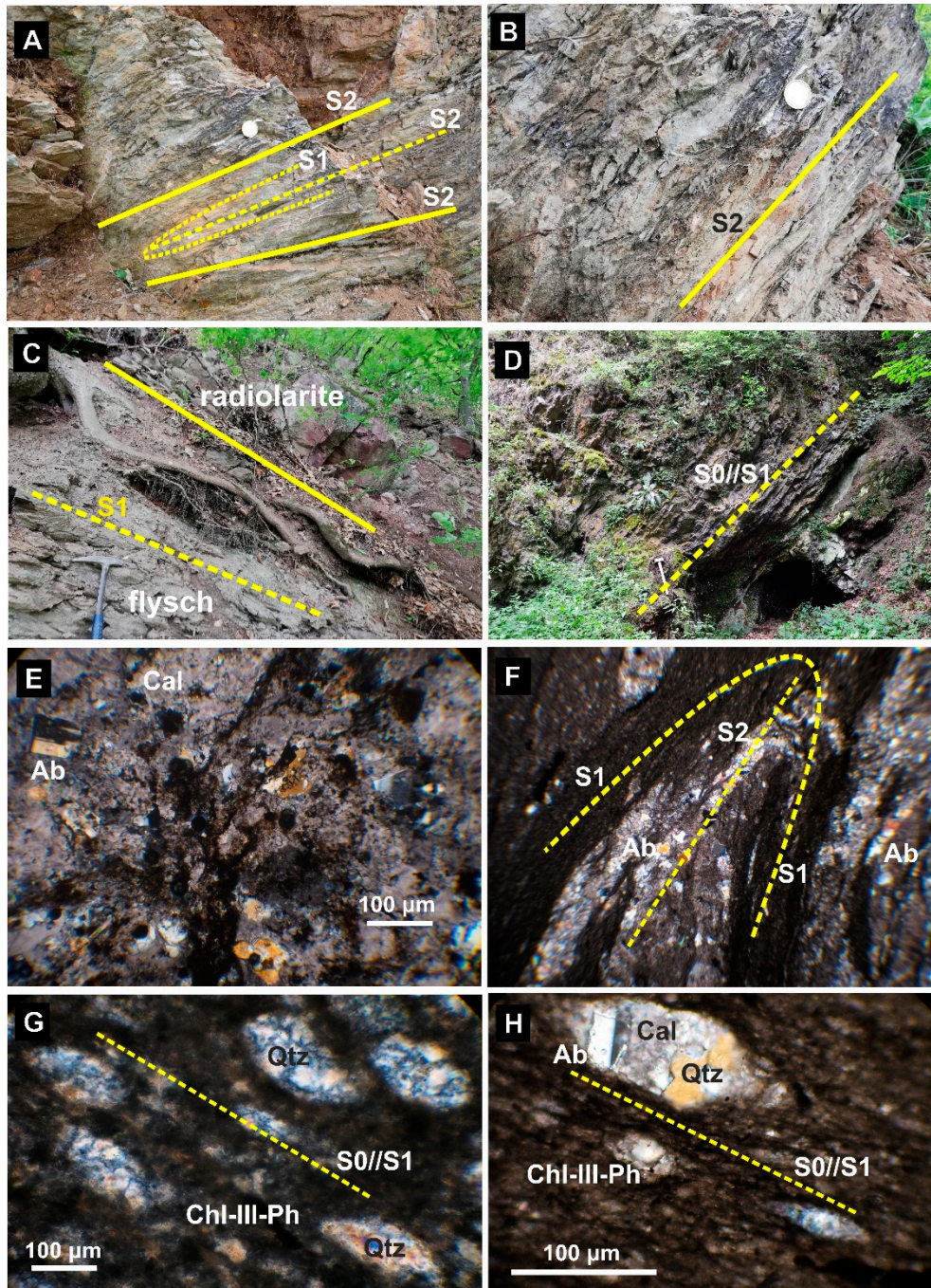


Figure S8. Meso- (A–D) and microstructures (E–H) of calciclastic (A–B, E–F) and siliciclastic (C and H) flysch metasediments, with a Triassic radiolarite olistolith (D and G, at the Meliata locality) from the Meliata Unit; (A–B) mesoscopic intrafolial folds of metamorphic S1 planes (D1) with axial-plane cleavage S2 (D2) in calciclastic flysch in Jaklovce (D1–D2 stages); (C) tectonic contact of metaradiolarite with siliciclastic flysch in the Jaklovce mélange (late-D2–D3 stage); (D) bedding planes S0 // S1 anchimetamorphic schistosity, see picture G) of a mid-Triassic radiolarite olistolith in Jurassic flysch olistroma at the Meliata village; (E) calciclastic flysch (from outcrops A, B) with recrystallised Cal-rich layer with newly formed Ab; (F) microscopic intrafolial folds of metamorphic S1 planes (D1) with axial-plane cleavage S2 (D2) in calciclastic flysch in Jaklovce (D1–D2 stages; cf. A, B); and (G) anchimetamorphic schistosity S1//S0 (D1–D2?) in a dark red Triassic radiolarite olistolith in siliciclastic flysch metasediments; (H) anchimetamorphic schistosity S1 (D1–D2?) in cherty siliciclastic flysch metasediments at Meliata village; Qtz–Ab–Cal pseudomorphs after radiolarians. Pictures E–H at X N.

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