An overview on Structural position of Mesozoic succession of distal Adriatic continental margin on Ivanščica Mt. (NW Croatia)

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REVEALING MIDDLE TRIASSIC PALEOTETHYAN GEODYNAMICS RECORDED IN THE VOLCANO-SEDIMENTARY SUCCESSIONS OF NW CROATIA
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Mt. Ivanščica is one of inselbergs in the Internal Dinarides (NW Croatia) in the transitional area with Southern Alps (*Figure 1; Schmid et al., 2020*). In this area, NNW-verging Dinaric structures are overprinted by S-verging Alpine structures. Mt. Ivanščica is composed of Mesozoic shallow to deep-marine sedimentary succession of the passive continental margin of Adriatic plate which was facing the Neotethys ocean (*Schmid et al., 2008*), overthrust by ophiolitic mélange (*Babić et al. 2002*). Here, we aim to present new preliminary structural data from pelagic sediments of Ivanščica Mt. in attempt to better understand tectonic history of this part of Internal Dinarides.

Mesozoic succession of Mt. Ivanščica is composed of Triassic clastic, volcanic and carbonate rocks overlain by Upper Triassic to Lower Jurassic shallow-marine carbonates (*Šimunić et al., 1979; 1982*). These are overlain by Jurassic and Cretaceous pelagic sediments which include Tithonian−Valanginian "Aptychus Limestones" conformably overlaied by Lower Cretaceous Oštrc fm. (*Babić & Zupanič, 1973*). The Oštrc fm. is characterized by turbidites with ophiolitic detritus and represents syn-orogenic deposits presumed as formed in a front of advancing ophiolitic nappe(s) (*Lužar Oberiter et al., 2009*).

The focus of our investigation is primarily on structural characteristics of the "Aptichus Limestones" and the Oštrc fm. turbidites. The character of the contact between the "Aptychus Limestones" and underlying Upper Triassic to Lower Jurassic carbonates is still uncertain. According to Šimunić et al. (*1982*) "Aptychus limestones" unconformably overlays Triassic carbonates in periclinal geometry (Figure 2), while Babić (*1974*) suggests continuous condensed pelagic sedimentation throughout the Jurassic. In contrast with previous observations and interpretations, our observations suggest a tectonic contact (Figure 3), characterized by significantly different orientation of bedding and locally marked by fault gauge (clay) seams (*Halamić, 1998; Šimunić, 1992*).

Structural analysis shows numerous gentle to open asymmetric folds in the "Aptychus Limestones" and closed chevron folds and isoclinal folds in overlaying Oštrc fm. Chevron folds and open to gentle asymmetric folds indicate NW vergence in present day orientation (Figures 3 and 4) with fold axis parallel to the strike of the contact with underlying unit. Although different in shape and size, these folds are likely formed during the same tectonic event while their geometry is controlled by differences in rheological properties. Isoclinal folds occurring exclusively at the contact with ophiolitic mélange are characterized by E-W oriented fold axis (Figures 3 and 5) and S dipping axial surfaces which is in a contrast with aforementioned folds. Thus, we assume that these folds originated from another, presumably older tectonic event. Bedding in Triassic dolomites uniformly dips towards the SE. Local occurrence of condensed pelagic limestones and radiolarian cherts is interpreted, as rheologically weak horizon ideal to form a décollement that, at least locally, could be interpreted to mark a thrust fault.

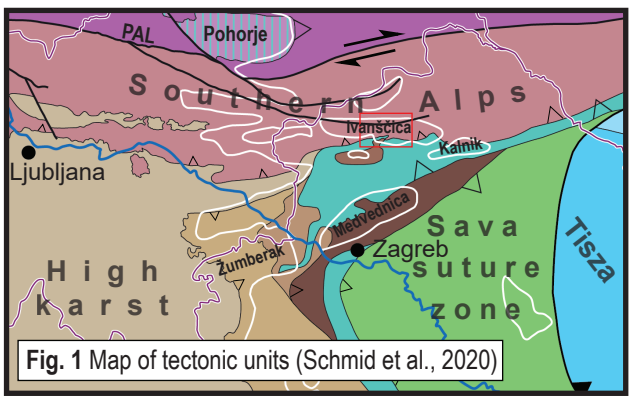


Fig. 1 Map of tectonic units (Schmid et al., 2020)

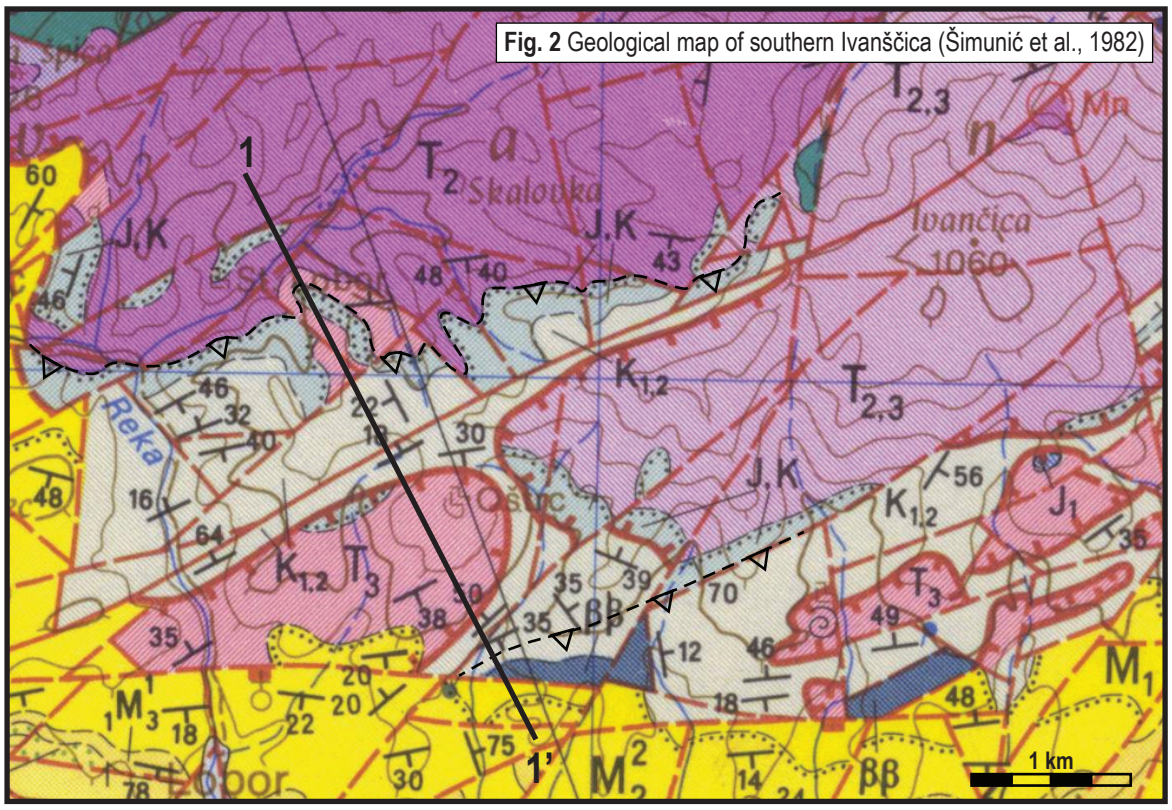


Fig. 2 Geological map of southern Ivanščica (Šimunić et al., 1982)

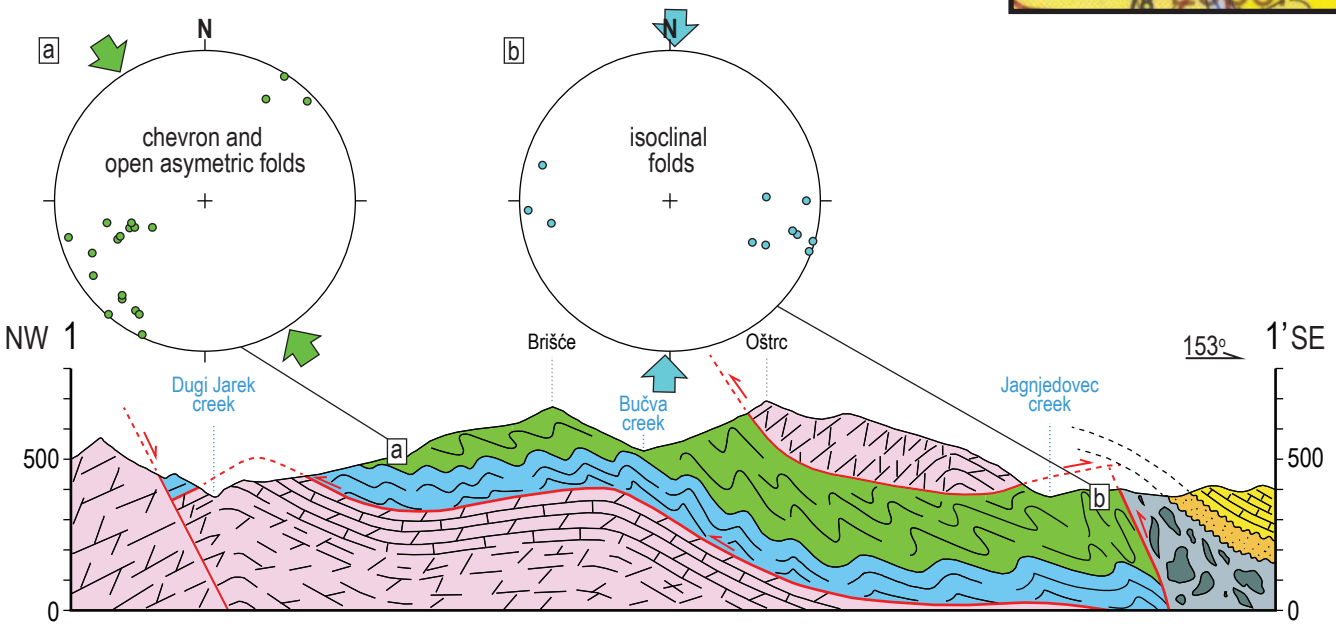


Fig. 3 *Section (M 1:25 000) across southern part of Ivanščica Mt. showing the contact of "Aptychus Limestones" and Oštrc turbidites with the basement and overlying ophiolitic mélange.*



Fig. 4 Chevron folds in Oštrc fm.



Fig. 5 Isoclinal folds in Oštrc fm.

Formation of isoclinal folds in the Oštrc fm. and the tectonic contact with ophiolitic mélange is preliminarily attributed to the **Aptian-Albian nappe stacking** known from the Internal Dinarides (*e.g. Tomljenović et al., 2008*). In addition, we assume that the pelagic succession of the "Aptychus Limestones" together with the overlying Oštrc fm. and the ophiolitic mélange are thrusted over the Upper Triassic to Liassic carbonates sometime later, possibly during the **final stage of Neotethys closure** in the Internal Dinarides. That still needs to be confirmed or denied in further more detailed investigations.

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