In its western segment (Andrychow – Krakow) the Polish part of the Carpathian wedge is characterised by a flat sole thrust located above mostly undeformed Miocene foredeep sedimentary infill overlying faulted Precambrian to Palaeozoic basement.

Within the tectonic “Gdow embayment” (i.e. tectonic re-entrant), located in the central part of the study area (vicinity of Krakow), thick-skinned structures rooted in the Meso-Paleozoic basement influenced Miocene evolution of the Carpathian front. Miocene compression led to localised inversion of early normal faults, responsible for the formation of small local basin filled by the lower Badenian siliciclastics. Thick-skinned thrust faulting in the pre-Miocene basement was accompanied by thin-skinned back-thrusting and formation of a triangle zone along the Carpathian front within the most external unit built of the Badenian foredeep sediments.

The central-eastern part of the Carpathian front in Poland between Bochnia and Pilzno is dominated by thin-skinned wedge tectonics induced by combined effect of diverse erosional morphology of the pre-Miocene basement and the areal extent of the Badenian foredeep evaporites. Wedging along the Carpathian front produced well-developed triangle zones of the Miocene Zglobice unit, frequently cored by highly deformed salt succession, including world-famous Wieliczka Salt Mine near Krakow.

In its eastern segment, the Carpathian orogenic front is defined by shallow-dipping foreland-verging thrusts overlying undeformed Miocene foredeep deposits. In the vicinity of Rzeszow a system of deep paleovalleys has been described, filled in their axial part by the Badenian evaporites.

Within the easternmost segment of the study area (vicinity of Przemysl) the final stage of evolution of the orogenic front was strongly influenced by the Miocene normal, reverse and strike-slip faulting within the pre-Miocene basement. This complex faulting was caused by Miocene reactivation of the Teisseyre – Tornquist Zone, i.e. crustal-scale boundary between the East European (Precambrian) Craton and the West European (Palaeozoic) Platform.

Radiolarian dating of Lower Cretaceous carbonate gravity-flow deposits from Bohinj area (NW Slovenia): significance for reconstruction of a lost carbonate platform in the Internal Dinarides

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Carbonate gravity-flow deposits at Srednja vas near Bohinj have been studied for radiolarian dating and composition of resedimented limestones. Paleogeographically, the area was part of the Bled Trough, which had a relativelly distal position on the Adriatic continental margin and was rather far from the stable Dinaric Carbonate Platform. The Jurassic to Lower Cretaceous succession of the Bled Trough consists of: Lower Jurassic limestone with echinoderms (Hierlatz facies), Middle and Upper Jurassic bedded radiolarian cherts and shales, Biancone limestone, alternation of marls and shales, and finally siliciclastics with limestone olistoliths and ophiolite debris. This research is focused on the Biancone limestone, an approximately 40 m thick series of well bedded pelagic limestone, which includes intercalations of resedimented carbonates.

The lower part of the studied section consists of radiolarian packstone with chert nodules and layers, and in places contains thin interlayers of marl. Radiolarian assemblages from these beds indicate an Early Cretaceous age (Berriasian – early Valanginian). The age assignment is based on the following species: *Archaeodictyomitra apiarium* (Rüst), *Cinguloturris cylindra* Kemkin & Rudenko, *Dicerosaturnalis dicranacanthos* (Squinabol), *Hiscocapsa pseudouterculus* (Aita), *Mirifusus minor* Baumgartner, *Pantanellium squinaboli* (Tan), *Pseudodictyomitra carpatica* (Lozyniak), *Ristola cretacea* (Baumgartner), and *Tethysetta boesii* (Parona). The upper part consists mainly of carbonate breccias. Microfacies analyses showed angular to subangular shallow-water grainstone lithoclasts, ooid grains, fragments of calcareous algae, miliolid foraminifera and various other skeletal fragments of different size. Clasts of pelagic limestone are also present and contain *Calpionella alpina* Lorenz whose range is late Tithonian to earliest Valanginian. The matrix of breccias is radiolarian-rich lime mudstone. The age of the platform carbonates is determined on the basis of calcareous alga *Clypeina jurassica* Favre which is characteristic of late Kimmeridgian to earliest Berriasian. In the uppermost part, carbonate breccias alternate with calcarenites. Slump folds are common.

Extraclasts and calcareous debris undoubtedly prove a platform origin of resedimented limestone. The Biancone limestone of the Tolmin Trough, which occupied an intermediate position between the Dinaric Carbonate Platform and the Bled Trough, consists of micrite without resedimented limestones. Therefore we conclude that the Dinaric Carbonate Platform could not be the source of shallow-water carbonates in the Bled Trough. We believe that these breccias represent evidence of a carbonate platform which must have been located more internally but is now not preserved. This inferred platform may have developed on top of a nappe stack, which formed during the early emplacement of the internal Dinaric units onto the continental margin.

Genetically similar isolated carbonate platforms of more or less the same age are known from several localities in the Alpine - Dinaride - Carpathian mountain belt. The Oxfordian / Kimmeridgian to Berriasian Plassen Carbonate Platform of the Northern Calcareous Alps in Austria and the Kimmeridgian? – Tithonian Kurbnesh Carbonate Platform from the Mirdita Ophiolite Zone in Albania have so far been the best documented. Other examples include Upper Jurassic reef limestones unconformably overlying the Vardar ophiolites in Serbia and the South Apuseni ophiolites in Romania.

Time constraints and plate tectonic controls for lateral extrusion in the Eastern Alps

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Late-orogenic normal faulting subsequent to the juxtaposition of European and Adriatic continental margins has been documented along the entire length of the Alps and there is a broad consensus that much of the exhumation history of deep seated rocks is related to slip along these normal faults. The structure of the Eastern Alps is characterized by a system of fault zones that developed during late Oligocene to Miocene times. This fault system is related to orogen-parallel escape of Austroalpine units towards east, a process also termed lateral extrusion. Lateral extrusion encompasses tectonic escape (plane strain horizontal motion of tectonic wedges driven by forces applied to their boundaries) and extensional collapse (gravitational spreading away from a topographic high in an orogenic belt). Northward oblique indentation by a rigid crustal block (the so-called Adriatic indenter represented by the Southern Alps) caused thickening in front of the indenter and east- directed tectonic escape. This study comprises a review and discussion of the classical model of lateral extrusion in the Eastern Alps, including the evolution of the confining fault systems in space and time. Distinct phases of extrusion are discerned by thermochronological data from the area of the Eastern Alps east of the Tauern Window. During Mid Miocene times the extrusion of the Central Australpine orogenic lid was not only lateral in terms of parallel to the trend of the orogen, but was characterized by a displacement vector at high angle to the strike of the orogen. This resulted in the exhumation of the so called Schladming block to the east of the Tauern Window and detachment of the Gurktal Block along the Katschberg - Niedere Tauern Southern Fault System. The eastern termination of the Gurktal block is defined by the Pöls-Lavanttal Fault System. Simultaneously the Pohorje Pluton intruded an extensional bridge at the southern termination of the Pöls-Lavanttal Fault System. The Dinaric trench holds a prominent position with respect to the East Alpine extrusion corridor because it separates the wedge into two domains with distinctly different evolution. The domain to the west of the trench, i.e., to the west of the Pöls-Lavanttal fault system, was continuously under compression, the area to the east was continuously under extension. The early phase of the