# Comparison between the Dinaric and Carpatho-Balkan karst(s) in Serbia



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The central axis of the Balkan Peninsula is dominated by a complex double-vergent Carpatho - Balkan - Dinaric orogenic system, which is part of a much wider Alpine - Himalayan collisional orogen. The Carpatho - Balkan - Dinaric orogen is a result of Cretaceous closure of the **Neotethys** (Vardar Tethys) **Ocean**, that existed in-between Gondwana (Africa) and Eurasian (Europe) continental plates, as well as subsequent Late Cretaceous - Neogene collisional and post-collisional phases. Territory of Serbia occupies this central part of the orogen, and because of that, the geological framework of Serbia can be defined as consisting of two collages of continental units (Gondwana and Eurasia) separated by a complex belt of dismembered **ophiolites** (remnants of the Neotethys). The ocean was closed along a single suture zone, often referred to as the Sava - Vardar suture zone. The ophiolites were obducted to the WSW, over the Dinarides, while the contact of the ophiolites to the Carpatho-Balkan units is still a matter of debate. In that sense, nowadays geographically multiple belts of the ophiolites and ophiolite mélanges, that can be found all the way from north-western Dinarides to southern Greece, represent remnants of this single ocean realm, dismembered during Late Cretaceous - Neogene compression that led to the out-of-sequence thrusting.

GEOLOGICAL INTRODUCTION - HOW WE GOT BOTH THE CARBONATES AND OPHIOLITES?

### INTERNAL DINARIDES

Rocks that record the Late Permian to Early Triassic Neotethys intracontinental rifting phase can be found in the Dinarides. These are represented mostly by autochthonous rock sequences that consist of shallow-water marine/lagoonal limestones, often incorporating gypsum layers, and continental siliciclastic sediments. During the **Triassic**, the proximal part of the Gondwana margin was characterized by deposition of **thick shallow-water carbonate sediments**.

#### Karst morphology

On the surface, dolines and dry valleys dominate on plateaus (e.g. Pešter plateau, Tara Mt. plateau). Uvalas are smaller and shallower than in the Central Dinarides. Part of the Pešter plateau is sometimes called a polje, but it is not typical.

The longest cave is Ušački Sistem (6185 m) – through cave, underground tributary of the Uvac River.

Vertical caves are not deep, due to debris chokes. The deepest one is situated on Tara Mt. -Jama kod Čehove kuće (-260 m); extremely narrow and difficult.

Pešter plateau





## CARPATHO-BALKANIDES

European continental margin acted as the eastern passive margin of the Neotethys during most of the Mesozoic. Sedimentation related to the existence of the Neotethys ocean in this area started in Early Triassic by the deposition of continental red beds over the basement of the Dacia mega-unit, continuing gradually up to the Late Triassic by deposition of shallow marine limestones. East Serbian Carpatho-Balkanides are characterized by **Upper Jurassic** reef limestones, as well as **Lower Cretaceous limestones**. The whole area underwent the main phase of east-directed nappe stacking during the mid-Cretaceous.

#### Karst morphology

On the surface, dolines and dry valleys dominate on plateaus (e.g.Kučaj Mt. plateau, Suva Planina Mt. plateau, Miroč Mt. plateau). True uvalas are rare and there is one border polje – Odorovačko polje.

More than 10 natural bridges (e.g.Vratna, Samar) and short through caves.

The longest caves are Lazareva (>15 km, explo in course) and Cerjanski Sistem (>7 km, explo in course). 6 out of 10 deepest caves in Serbia are located on Miroč Mt, including the deepest one, paking page (\_202\_m)

Rakin Ponor (-303 m).







# COMMON CHARACTERISTICS

- · Countless carbonate outcrops, segmented and isolated, surrounded by impermeable rocks
  - Varieties of contact karst / fluviokarst features (blind valleys, pocket valleys, canyons)
    - dolines and dry valleys on plateaus

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