slope existed to the second half of Paleogene, as far as on the slope and its foots lasted a flisch formation. Outside of dependencies from paleogeographic position existed a regional background composition formations. Shallow water terrigenous deposits are located on the shelf of the Hauterivian - Albian and on the continental slope it is a terrigenous flysch. Upper Cretaceous is submited on the North by planktonogenic formation of chalk, but in the South - by carbonate flysch.

The setting apart of the Great Caucasus basin from .one of the Lesser Caucasus and differenciation of former united deep-watter basin began in the Eocene as a result of subduction and closing of Tethys. That led to the forming of a row of half isolated basins. In the Oligocene here began forming a lower marine molasse.

From the end Miocene appeared a subaeral relief, height and contrast of which progressively increased, including - with the late Pliocene - and to the account of volcanic activity. This has stipulateed a forming of rough upper molasse. Moving the hard masses from the South has stipulated the lifting of oceanic and slope sediments, partial underthrusting of them under Epi-Hercynian platform, that led to the forming of mountain - folded structure and intensive overland volcanism. Herewith in mountain building were involved areas of former shelf and shallow marine sediments became now lifted on the height of 3 - 3,5 /1. within modern Rocky ridge. As a result the section of northern declivity of Great Caucasus is packed by shallow marine shelf deposits, but southern - by deep-water deposits of continental slope and its foots. Different style in tectonic of northern and southern slopes of the Great Caucasus - folded with overturning foldes southward on the South and monoclinal-cuesta on the North, unmeasured higher degree of metamorphism on the southern slopes in contrast with northern is stipulated by movement oh a hard mass from the South and accordingly lateral pressure.

Paleogeographical types of the carbonate sediments of the Pre-Caspian depression

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Pre-Caspian basin is one of the most deep depression of the Globe. In Paleozoic apparently with the Ordovician to the end of the early Permian, it was developed as a deep-water basin - a microocean, which to the beginning the Kungurian was practically isolated from the World ocean and deep-water basin was filled by Kungurian salts.

Carbonate sedimentation in the depression and on its setting began in the late Devonian and lasted with small breaks to Artinskian age inclusive. Three paleogeographic types of carbonate formation are installed - shelves, isolated shoals and reefs.

1. On west and north surrounding areas are developed three thick carbonate complexes upper Frasnian - Tournaisian, middle Visean - Bashkirian and middle Moskovian - Artinskian, which are divided by terrigenous complexes of the lower Visean substage and Vereiskian horizon of the Moskovian stage. Here wide-spread shallow-marine bentogenic carbonate sediments of the humid or more often arid zones, with thickness from 250-300 to 900-1000 m. They are presented by limestones, less dolomite sometimes with evaporites. On the more narrow eastern shelf develop two shallow-marine carbonate complexes upper Visean - Bashkirian and upper Moscovian - upper Carboniferous each with thickness of 500-700 m, divided by terrigenous strata with the thickness 350-500 m. On the most narrow southern-western shelf is located upper Visean - Asselian shallow-marine carbonate shelf formation with total of thickness near 1000 m.
2. Within the Pre-Caspian microocean among deep-water bituminous-siliceous carbonate-clayey sediments is discovered several isolated carbonate platforms, the most studied of them are Astrakhan. Its roofing is disposed on the depths 3900-4100 m. Carbonate deposits with the thickness near 2000 m have the upper Devonian - Bashkirian age. Sizes of platform approximately 150x175 km, and its elevation above the sea floor reached 1000 m.
3. The third paleogeographic type of earbonate sediments are reefs. Three types of reefs are established:
   - an asymmetric reef system, surrounding edge of shelves of different age. Different types of shifting reef systems of different age in compare to each other are installed. Progradation of reefs towards depression is predominated, but there is also inverse shifting, moreover there are cases, when in one time in one parts of the slope occurs progradation, but in other - regradation
   - shelf reefs of the Serpukhovian and lower Permian age, usually small on areas and height. Distinctive, that shelf reefs develop in sharply arid zones, in the composition which dominate dolomite, but often are presented also evaporites.
   - intrabasin reefs. The most studied examples are Tengiz and Karachaganak. Sizes of atoll-like reef Tengiz is approximately 17x23 km. It is pack by two carbonate deposits of the upper Devonian - Tournaisian and upper Visean - Bashkirian age, total thickness more than 3500 m. Height of reef was 1200-1500 m. Reef Karachaganak in the Visean - Bashkirian was developed as an atoll by the size 15x30 km, but after the long hiatus (middle - late Carboniferous) in early Permian as a dome-like comparatively isometric reef with dimension of 12-5 km. Total thickness of reef exceeds 2000 m, and its height reaches 1100-300 m.

Sharp cessation of development of isolated carbonate platforms and intrabasin reefs or long-term break of forming last is connected with anoxic events in the deep-water basin, which led to the disappearance of carbonate-precipitating including reef-building organisms. Hereinafter area of possible carbonate sedimentation are rendered in aphotic zone and accumulated here only deep-water sediments.

It is installed that depths of Pre-Caspian consecutively increased from 250-300 m at the late Tournaisian to at least once 2000-2200 m to the beginning Kungurian.

Neptunian dykes and cavities in drowned platforms: opening and filling mechanics. Selected Jurassic examples from Tata Hill (Hungary) and Monte Kumeta (W. Sicily)

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Neptunian dykes are common in Jurassic carbonates of the Tethys region. Two localities belonging to different paleodomains were studied; in both places the neptunian dykes and associated dissolution cavities formed primarily during times of break up of large carbonate platforms. Observations of the dykes and cavities lead to several interpretations for their origin.

Tata.Three major cavity types were observed around the Tr/J drowning unconformity surface, in the top section of the Tr Dachstein Lst. and in the covering Liassic pelagic section (FÜLÖP 1975, MINDSZENTY 1992, HAAS 1995). These are the following: 1/ Karstic dissolution cavities in the Tr host. 2/ Neptunian dykes cutting the Tr as well as the lower part of the Liassic series. 3/ Bed parallel cavities (stromatactis-like structures) in particular levels of the Liassic succession. The dykes can be grouped into parallel

dyke sets, pointing to tensional tectonic origin. The dyke filling material is red, crinoidal limestone and fine red laminated mud without significant fossils. Sedimentary structures of the dyke filling mud show complex patterns: episodes of sediment starvation documented by cement-growth, alternated with slow gradual, and/ or repeated fast sedimentation events shown by wavy or distorted lamination and eventual gradation etc.
The neptunian dykes often cut across earlier, calcite sealed karstic holes. They may fill up open pores and also create space for themselves as the forcefully injected material swept away the earlier cavity filling mud and forced apart the pre-existing cracks.
Some early, upward decaying and radiating neptunian dykes could be related to stromatactis-like structures formed close to the Liassic sediment surface in the semiconsolidated, burrowed mud.
Palaeogeographically the locality was situated in a tectonically active intrashelf basin margin environment close to the escarpment of the submarine Gorba High to the East.
M. Kumeta. Cavities and polyphasic neptunian dykes occur in the Jurassic carbonate-siliceous succession cropping out on M. Kumeta (Palermo Mts., W. Sicily). Peritidal limestones (L. Liassic) passing upward to oolitic and peloidal facies form the base of the succession. Pliensbachian crinoidal limestone indicates the beginning of the platform drowning, followed by condensed Rosso Ammonitico type facies (Toarcian-Tithonian) (Catalano & D'Argenio 1990).
Polyphasic neptunian dykes are up to 1 m wide. The infilling sediment is crinoidal limestone, followed by mudstones/wackstones related to the Lower Rosso Ammonitico. Calcite cements are either interstratified with the sediments or occur as vein fillings. Injection dykes and in situ breccia suggest that hydraulic fracturing may have been important in the case of some dykes (Montenat et al. 1991). Dissolution morphologies along some dyke walls indicate that early undersaturated fluids were present. Orientations of dykes are similar to those of Lower Jurassic faults suggesting that the dyke formation is tectonically controlled and related to the first stages of opening of the Tethys during the Jurassic.
A later generation of dykes (cm-width) occurs in the lower part of the Upper Rosso Ammonitico. Internal sediments are preserved as clay-rich neomorphic spar followed by coarse fibrous calcite and reddish pelagic sediment similar to the host rock. The low angle dip of the fractures, their random orientation, and the rounded fragments of host rock fragments near dyke walls suggest that the fractures originated from sliding of semilithified deposits along preferential surfaces. A later episode of hydraulic fracturing may be indicated by veins of calcite which cross cut or re-open these cavities.

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Neugliederung der Mürzalpen-Vielfaziesdecke auf der Basis von stratigraphischen, faziellen und Conodont Colour Alteration (CAI) Daten

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Anknüpfend an frühe Vorstellungen von Kober (1912) haben Kristan-Tollmann & Tollmann (1962) bei ihrer tektonischen Neugliederung der östlichen Kalkhochalpen eine neue juvavische Einheit, die Mürzalpen-Decke, geschaffen. In ihrer Eigenschaft als "Vielfaziesdecke" soll diese neben triadischen Seichtwasserkarbonaten in Dachsteinkalk-Entwicklung (Hochschwab-Fazies, Fölz-Fazies) vor allem unterschiedliche Varietäten der Hallstätter Fazies (Mürztaler Fazies, Aflenzer Fazies) in sich vereinigen. Auf Grund dieser seltenen Konfiguration schien die Mürzalpen-Dekke eine Schlüsselposition für eine Klärung der alten Streitfrage der Einwurzelung der Hallstätter Zone einzunehmen.
Zu den zentralen Diskussionspunkten des Mürzalpen-Decken-Konzeptes zählt u. a. die Frage, ob die räumlich isolierte Hohe Wand eine östliche Fortsetzung der Mürzalpendecke darstellt und ob die zahlreichen, auf dem Rücken der Mürzalpen-Decke situierten Deckschollen als Erosionsrelikte einer einst zusammenhängrenden höheren tektonischen Einheit, der Schneeberg-Decke zu werten wären.
Untersuchungen der Diagenese- und Metamorphoseüberprägungen der Mürzalpen-Decke und ihrer angrenzenden Gebiete zeigen zunächst klar, daß sich der thermisch sehr einheitlich überprägte Hauptkörper der Mürzalpen-Decke mit einheitlichen CAI-Werten von CAI 5.5-6.0 (Gesäuse, Hochschwab – CAI 5.5-6.0) deutlich von seinem tirolischen Vorland (CAI 1.0-1.5) abhebt (Abb.). Vor diesem Hintergrund ist nun geklärt, daß der nördlich der Gesäusestörung gelegene Abschnitt zwischen Buchstein und Haller Mauern, der bisher als nordwestlicher Teil der Mürzalpendecke gegolten hat (Tollmann 1976, 1985), aufgrund seiner geringen thermischen Überprägung (CAI 1.5-2.0) keinesfalls der juvavischen Mürzalpen-Decke zuzuordnen ist, sondern ein tirolisches Element darstellt, wie das schon Plöchinger & Prey (1968) vermutet haben. Wir bezeichnen diesen Teil der ehemaligen Mürzalpen-Decke als Gesäuse-Decke (Abb.).
Aufgrund ihrer geringen diagenetischen Alteration (CAI 1.0-1.5) ist auch die Hohe Wand im Bereich der östlichen Mürzalpen-Dekke als Hohe Wand-Decke (inklusive Fischauer Berge) abzutrennen und somit nicht Teil der Mürzalpen-Decke. Dagegen dürfen die bisher als westliche Fortsetzung der Hohen Wand angesehenen und unter die Schneeberg-Decke abtauchenden Hallstätter Gesteine des Ödenhof-Fensters und der Geyerstein-Schuppe (bis CAI 7.0) tektonisch nicht mehr der Hohen Wand-Decke zugeordnet werden, sondern sind als eigenständige tektonische Elemente aufzufassen (Abb.). Dabei zeigen diese Hallstätter Gesteine einheitliche CAI-Werte von CAI 6.0, z. T. auch CAI 7.0 im Gegensatz zu den Hallstätter Gesteinen im Bereich der Hohen Wand, der Proles-Decke und der Hüpflinger Deckschollen, die einheitlich niedrige CAI-Werte von CAI 1.0, z. T. auch CAI 1.5 aufweisen (Abb.)
Jene im oberen Mürztal der Mürzalpen-Decke auflagernden und von Tollmann (1976) als Äquivalente der Schneeberg-Decke angesehenen Deckschollen (Roßkogel, Lachalm, Schneealm) sollten schon aus faziellen Gründen nicht mit dieser Einheit zusammengefaßt werden (Lein 1981). Besonders deutlich zeigt sich dies nun bei der Rosskogel-Deckscholle, deren geringe thermische Überprägung (CAI 1.5-2.0) sich deutlich von beträchtlich höheren Werten der Schneeberg-Decke (CAI 4.0-5.0, meist CAI 4.0) abhebt (Abb.). Die auf dem Rücken der Mürzalpen-Decke auflagernden Deckschollen dagegen zeigen mit einheitlichen CAI-Werten von CAI 5.5-6.0 gleiche CAI-Werte wie die zentrale Mürzalpen-Decke und sind nicht mit den CAI-Werten der Schneeberg-Decke zu vergleichen.
Das Konzept der Mürzalpendecke als Vielfaziesdecke i. S. von Kristan-Tollmann & Tollmann (1962) läßt sich auf der Basis der vorliegenden stratigraphischen, faziellen und CAI-Daten im bisherigen Umfang nicht aufrechterhalten. Vielmehr legen die vorhandenen CAI-Daten unter Einbeziehung der stratigraphischen