ALLOCHTHONOUS LATE JURASSIC REEFAL CARBONATES ON TOP OF SERPENTINITES IN THE ALBANIDES (ALBANIA, KURBNESH AREA) – NEW DATA FOR THE DEVELOPMENT OF THE IDEAS ON THE ORIGIN OF ALBANIAN OPHIOLITES

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The Albanian ophiolites represent the remnants of Mesozoic oceanic crust by occurence within the Dinaride-Hellenide segment of the Alpine orogenic system. A lot of new studies (e.g., ROBERTSON & SHALLO 2000, SHALLO & DILEK 2003 – with references) show two different ophiolitic belts: according to these authors, the western ophiolite belt and the eastern ophiolite belt form a small ocean basin (Pindos-Mirdita basin) since late Early Jurassic (ca. 185 MA), which was closed in Late Jurassic times. Flysch deposition should start in Tithonian times with maximum redeposition in Early Cretaceous.

The Albanian ophiolites and the reconstruction of their geodynamic history form therefore a critical transition from the Alpine Jurassic ophiolites in the northwest to the Jurassic-Cretaceous ophiolites and also in the eastern Mediterranean area to the southeast. Thus, these ophiolites form a significant geological and geodynamic link between these two different interpreted domains within the Tethyan realm.

The Perlat-Kurbnesh ophiolitic melange is in central position of the eastern ophiolithic belt and should be overlain by Early Cretaceous flyschoidal sediments indicating the closure of the Mirdita Ocean since Tithonian. In the recent suprasubduction model (e.g., ROBERTSON & SHALLO 2000), an intraoceanic subduction zone was formed between the western and the eastern ophiolite belt around the Middle/Late Jurassic boundary. Along these subduction zones, the first flysch deposits should occur in Tithonian times forming deep water carbonates of Maiolica type. Since the Early Cretaceous, the redeposition of coarse grained flysch deposits is evidenced by several authors, e.g. nearby the Kurbnesh area (MARKU 2002).

In the Kurbnesch area in central Albania, we evidenced the existence of an unknown Late Jurassic shallow water carbonate platform by component analysis of mass-flow deposits in pelagic sediments. Late Jurassic to Lower Cretaceous pelagic sedimentary succession on top of serpentinites seals the thrusting events in the central Albanides. The serpentinites are part of the Perlat-Kurbnesh ophiolitic melange of the eastern ophiolite belt (dated as Middle to early Late Jurassic by means of radiolarians in different localities – unpublished new data by GAWLICK, DUMITRICA, MISSONI).

The Kurbnesh section

The radiolarian cherts (?Callovian, ?Oxfordian) follow the serpentinites and are in turn overlain by a 30 m thick series of mass-flow deposits intercalated with pelagic and allodapic limestones. In the mass-flows, a large number of shallow water litho- and bioclasts occur deriving from an unknown carbonate platform area. Reefal components with stromatoporoids amongst *Tubuliella fluegeli* TURNSEK and *Tubulitella* cf. *rotunda* TURNSEK being most abundant, sponges (e.g. pharetronids, *Calcistella* sp., siliceous sponges), corals and *Bacinella/Lithocodium*-crusts are dominating. Noteworthy, that *T. fluegeli* and *T*. cf. *rotunda* has been described from a several hundreds of kilometer wide Upper Jurassic reef-belt in Slovenia, whose continuation has been assumed in Albania (MILAN 1969, TURNSEK 1966, TURNSEK et al. 1981). There are also components of possible lagoonal origin as well as slope deposits and basinal carbonates. In different clasts we find rare remains of dasycladales, and most common and significant the protohalimedacean alga *Nipponophycus ramosus* YABE & TOYAMA, the benthic foraminifera *Protopeneroplis striata* WEYNSCHENK, the incertae sedis *Koskinobullina socialis* CHERCHI & SCHROEDER and *Radiomura cautica* SENOWBARI-DARYAN & SCHÄFER, and the problematic alga *Consinocodium japonicum* ENDO crudely determining a Kimmeridgian-Tithonian age. Indications for Berriasian parts have not yet been evidenced.

This carbonate platform must have been eroded by later orogenic events or simply has not been discovered so far. The rocks of the Munella carbonate platform on top of the ophiolites of the Eastern Belt are dated for the moment as Hauterivian or Barremian-Aptian. In the moment there are no new data available directly from the Munella platform.

These new detected and investigated mass-flows with the Upper Jurassic clasts are overlain by pelagic limestones dated as Late Berriasian by finding of Calpionellids (HOXHA 2001). On top of the latter, a more than hundred meter thick succession of flysch-like deposits follows, containing a large number of reefal limestone clasts. In these mass-flows, identical with the mass-flows overlying the plagiogranite volcanic, ultramafic and gabbro grains are common. The Late Berriassian to Valanginian age of these mass-flows can be manifested by the occurrence of *Protopeneroplis ultragranulata* (GORBATCHIK), *Pseudocyclammina lituus* (YOKOYAMA), *Trocholina chiocchini* MANCINELLI & COCCIA and *Trocholina campanella* ARNAUD-VANNEAU et al. and *Macroporella praturloni* DRAGASTAN.

The detection of an eroded Late Jurassic shallow water carbonate platform which topped the ophiolites of the Eastern Belt and sealed the ophiolitic melange below, shows that the orogenic events in the Albanian ophiolite belt started much earlier as expected and seems to be contemporaneous with the carbonate clastic radiolaritc flysch formation in the Northern Calcareous Alps, which is also sealed by a Kimmeridgian to Tithonian shallow water carbonate platform. Thus, the Middle to Late Jurassic evolution of the Pindos-Mirdita Ocean Basins in the Albanides has to be critically checked in the light of our new results.

Our new data on the dating of the sealing of these ophiolites, dating their emplacement bring them in a greater geodynamic scenario for the southeast Tethyan region. The actual controversial discussions about the tectonic interpretation of these ophiolites show, that we need a lot of new stratigraphic data from all sediments in contact with these ophiolites.

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	Sample (Al-)	Benthic Foraminifera										Calcareous algae						Mikroproblematica								Metazoa						
		Mohlerina basiliensis (MOHLER)	*Neotrocholina* sp.	*Protopeneroplis striata* WEYNSCHENK	*Protopeneroplis ultranulata* (GORBATCHIK)	*Pseudocyclammina lituus* (YOKOYAMA)	*Trocholina chiocchini* MANCINELLI & COCCIA	*Trocholina campanella* ARNAUD-VANNEAU et al.	*Trocholina* sp.	*Troglotella incrustans* WERNLI & FOOKES	Dasycladales indet.	*Clypeina sulcata* (ALTH)	*Salpingoporella* ? sp.	*Montenegrella floifera* SOKAC & NIKLER	*Macroporella?* praturloni DRAGASTAN	*Nipponophycus ramosus* YABE & TOYAMA	"Rivulariaceae"	*Bacinella / Lithocodium*	*Coptocampylodon aff. lineolatus ELLIOTT*	*Iberopora bodeuri* GRANIER & BERTHOU	*Koskinobullina socialis* CHERCHI & SCHROEDER	*Radiomura cautica* SENOWBARI-DARYAN & SCHÄFER	"*Tubiphytes*" *morronensis* CRESCENTI	*Carpatiella perforata* MISIK, SOTAK & ZIEGLER	*Carpathiella triangulata* MISIK, SOTAK & ZIEGLER	*Consinocodium japonicum* ENDO	corals	chaetetids	pharetronid sponges	*Calcistella* sp.	siliceous sponges	"stromatoporoids" (e.g. *Tubulitella fluegeli* TURNSEK)
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Kimmeridgian	63															■		■	■						?		■		■		■	■
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Tab. 1: Benthic Foraminifera, Calcareous Algae, Mikroproblematica and Metazoa in the Kurbnesh section Kimmeridgian to ?Valanginian).