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Original Citation:

New data on the age of the Simoni Mélange, Northern Mirdita Ophiolitic Nappe, Albania / M. Chiari , V. Bortolotti, M. Marcucci , G. Principi. - In: OFIOLITI. - ISSN 0391-2612. - STAMPA. - 32 (1):(2007), pp. 53-56.

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13 September 2026

SHORT NOTE

NEW DATA ON THE AGE OF THE SIMONI MELANGE, NORTHERN MIRDITA OPHIOLITE NAPPE, ALBANIA

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Keywords: *Simoni Mélange, Kalur Cherts, radiolarian, biostratigraphy, Mirdita Ophiolite Nappe, Late Jurassic. Albania.*

INTRODUCTION

In the Albanian sector of the Dinaric-Hellenic Chain, the ophiolites have been subdivided into two parallel belts: the Western Belt (WB) and the Eastern Belt, due to their different stratigraphical, petrological and geochemical characteristics: WB represents oceanic lithosphere generated at a mid-oceanic ridge (MOR ophiolites), EB represents an oceanic basin developed over a subduction zone (SSZ ophiolites) (ISPGJ-IGJN, 1990; Beccaluva et al., 1994; Bortolotti et al., 1996, and bibl. therein). EB overthrust westwards WB. The radiolarian cherts (Kalur Cherts) covering the volcanites of both the successions have the same ages, comprised between latest Bajocian-early Bathonian (UAZones 5 of Baumgartner et al., 1995) and middle Callovian-early Oxfordian (UAZones 8) (Chiari et al., 2004, and bibl. therein). Thin levels of radiolarian cherts intercalated in the basalts of EB have late Bajocian to latest Bajocian-early Bathonian ages (UAZones 4-5) (Chiari et al., 1994 and Chiari et al., 2004).

A "blocks in matrix-type" sedimentary mélange, the Simoni Mélange, unconformably covers both the successions, indistinctly lying on the radiolarian cherts or on the upper portions of the underlying volcanites (Bortolotti et al., 1996; Carosi et al., 1996). It grades upwards to the Firza Flysch (latest Tithonian-Valanginian age after Shallo 1991; Gardin et al., 1996), a pelagic sediment with frequent ophiolite-bearing polimict pebbly sandstones and mudstone intercalations. The mélange includes blocks of different sizes (up to several hundred meters) of continental derived (predominant) and ocean derived rocks, in a shaly matrix. It can be interpreted as "syn-orogenic....deposited after the inception of ophiolite deformation" (Bortolotti et al., 1996). The age of the mélange was indirectly determined, being comprised between middle Callovian-early Oxfordian, the more recent age found at the top of the Kalur Cherts (Marcucci and Prela, 1996), and the latest Tithonian-early Berriasian?, found at the base of the Firza Flysch (Gardin et al., 1996).

The aim of this note is to present new biostratigraphical data that define a more precise age of the Simoni Mélange, dating a cherty-silty level found at the top of the Kalur Cherts near the Lumi i Zi (northern Albania).

THE LUMI I ZI SECTION

In the Lumi i Zi area, south of Puke, Mirdita (Fig. 1),

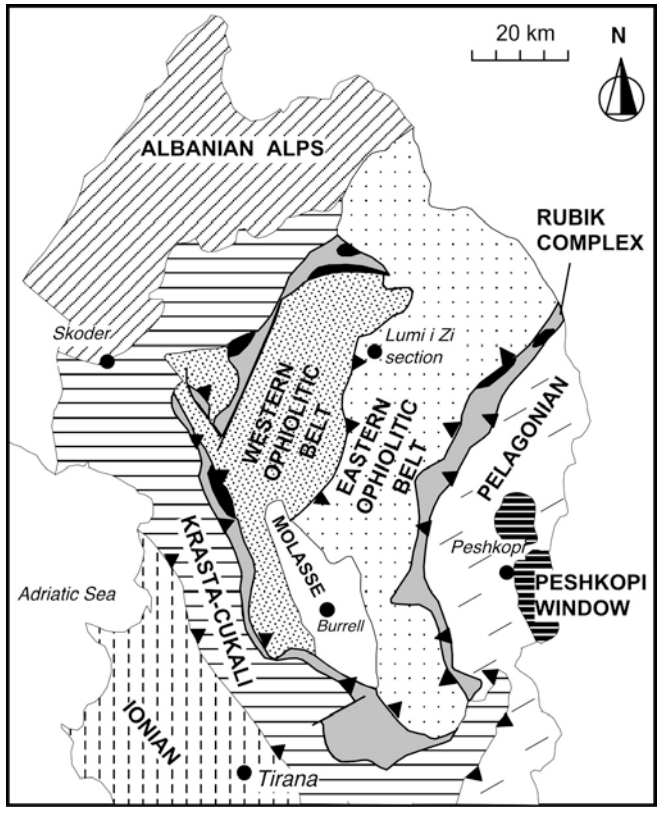

Fig. 1 - Schematic geologic map of the northern Albania with the site of the studied section (modified from Bortolotti et al. (2004).

Marcucci and Prela (1996) dated a section of Kalur Cherts at the top of the volcanites of the Eastern Belt. Moreover, they wrote that on top of the Kalur Cherts, a 12 meters thick level of "green siltstones and tuffites with unfossiliferous green cherts" was present.

This locality was the only one in which sediments with cherty beds, conformably covering the Kalur Cherts, were found. On this account, a successive sampling of this level was performed, and furnished significative radiolarian assemblages.

The sampled section, reported in Fig. 2, from the base upwards consists of:

1- pillow lavas, extending downwards for some hundred meters;
2- thin beds of red radiolarian cherts regularly alternating with thinner shale beds (the Kalur Cherts), with at the

base 2 meters of red siliceous shales. For this level (5 m thick) Marcucci and Prela (1996) obtained a late Bathonian-early Callovian age (UAZones 7) at the base of the cherts and a middle Callovian-early Oxfordian age (UAZones 8) at the top.

3- tufites and greenish siltites, with green and more rarely reddish cherty beds. In this level (12 m thick) the new radiolarian assemblages have been found.

RADIOLARIAN BIOSTRATIGRAPHY

Four samples have been examined for radiolarian analysis (LU 1 - LU 4).

We adopted also for this study the UAZones proposed by Baumgartner et al. (1995).

Sample LU 1 (2 m from the top of the Kalur Cherts) yielded the following species: *Archaeodictyomitra primigena* Pessagno and Whalen, *Emiluvia sedecimporata* (Rüst), *Podocapsa amphitreptera* Foreman. The age is middle-late Oxfordian to late Kimmeridgian-early Tithonian (UAZones 9-11) for the presence of *Podocapsa amphitreptera* and *Emiluvia sedecimporata***.**

After Pessagno and Whalen (1982) the age range of *Archaeodictyomitra primigena* is late Bathonian. O'Dogherty et al. (2006) found this taxon in a sample of middle Bathonian age. Considering also the age of the sample LU 1 where this taxon occurs, the range of *Archaeodictyomitra primigena* could be extended from middle Bathonian to middle-late Oxfordian or from middle Bathonian to late Oxfordian-early Kimmeridgian.

The sample LU 3 (8 m upside) yielded the following species: *Archaeospongoprunum* sp., *Emiluvia orea ultima* Baumgartner and Dumitrica, *Emiluvia sedecimporata* (Rüst), *Emiluvia* sp. cf. *E. orea* s.l. Baumgartner, *Mirifusus dianae* s.l. (Karrer), *Paronaella kotura* Baumgartner, *Podobursa* sp., *Podocapsa amphitreptera* Foreman, *Praeconosphaera sphaeroconus* (Rüst), *Protunuma japonicus* Yao, *Sethocapsa* sp., *Syringocapsa spinellifera* Baumgartner, *Triactoma foremanae* Muzavor, *Zhamoidellum ovum* Dumitrica. The age is late Oxfordian-early Kimmeridgian (UAZones 10) due to the presence of *Emiluvia orea ultima*, *Praeconosphaera sphaeroconus* with *Paronaella kotura*. In this work we consider for *Praeconosphaera sphaeroconus* a late Oxfordian-early Kimmeridgian to Neocomian age range as reported in Chiari et al. (2007).

The sample LU 4 collected in the same level of LU 3 yielded the following species: *Archaeospongoprunum* sp. cf. *A. imlayi* Pessagno, *Emiluvia ordinaria* Ozvoldova, *Hexasaturnalis nakasekoi* Dumitrica and Dumitrica-Jud, *Perispyridium* sp., *Praeconosphaera sphaeroconus* (Rüst), *Tritrabs* sp. cf. *T. ewingi* s.l. (Pessagno). The age of this last sample is late Oxfordian-early Kimmeridgian to late Kimmeridgian-early Tithonian (UAZones 10-11), for the presence of *Emiluvia ordinaria* and *Praeconosphaera sphaeroconus*.

In this sample the taxon *Hexasaturnalis nakasekoi* occurs, its first appearance is during the lower Bathonian and its last occurrence probably at the end of the Kimmeridgian or lowermost Berriasian, after Dumitrica and Dumitrica-Jud (2005).

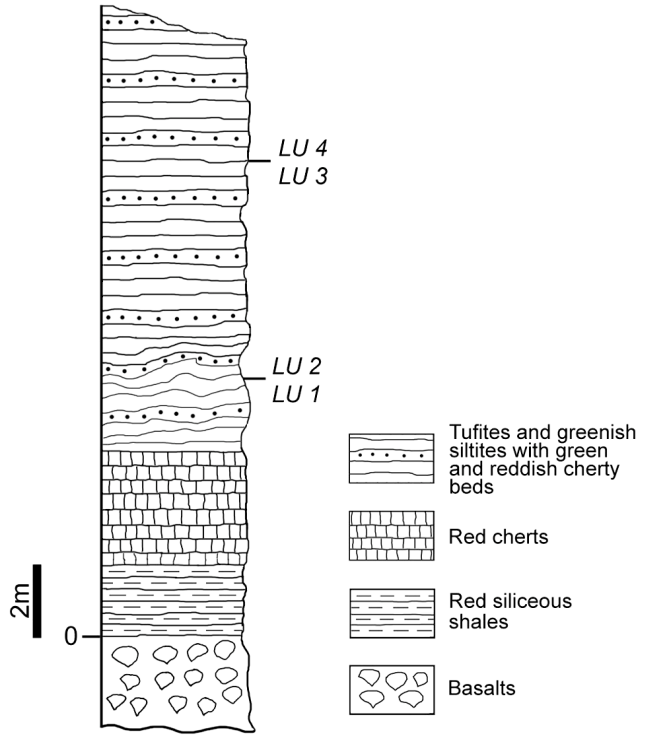

Fig. 2 - Lithological column of the Lumi i Zi section.

CONCLUSIONS

The age span in which the Simoni Mélange was deposited, previously considered to be comprised between late Callovian-early Oxfordian and latest Tithonian-early Berriasian? Can be now restricted to the interval late Oxfordian-early Kimmeridgian and latest Tithonian-early Berriasian?, a time span of about 10-15 my (Gradstein et al., 2004 time scale).

Even if this age span has been slightly restricted, a large sedimentary gap between the cherty sedimentation and the overlying Simoni Mélange formation, is clearly present.

AKNOWLEDGEMENTS

We express our thanks to Simone Corti and Ivan Aiello, which, during a geological mission in Albania, collected the samples studied in this article.

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Received, April 30, 2007
Accepted, June 4, 2007

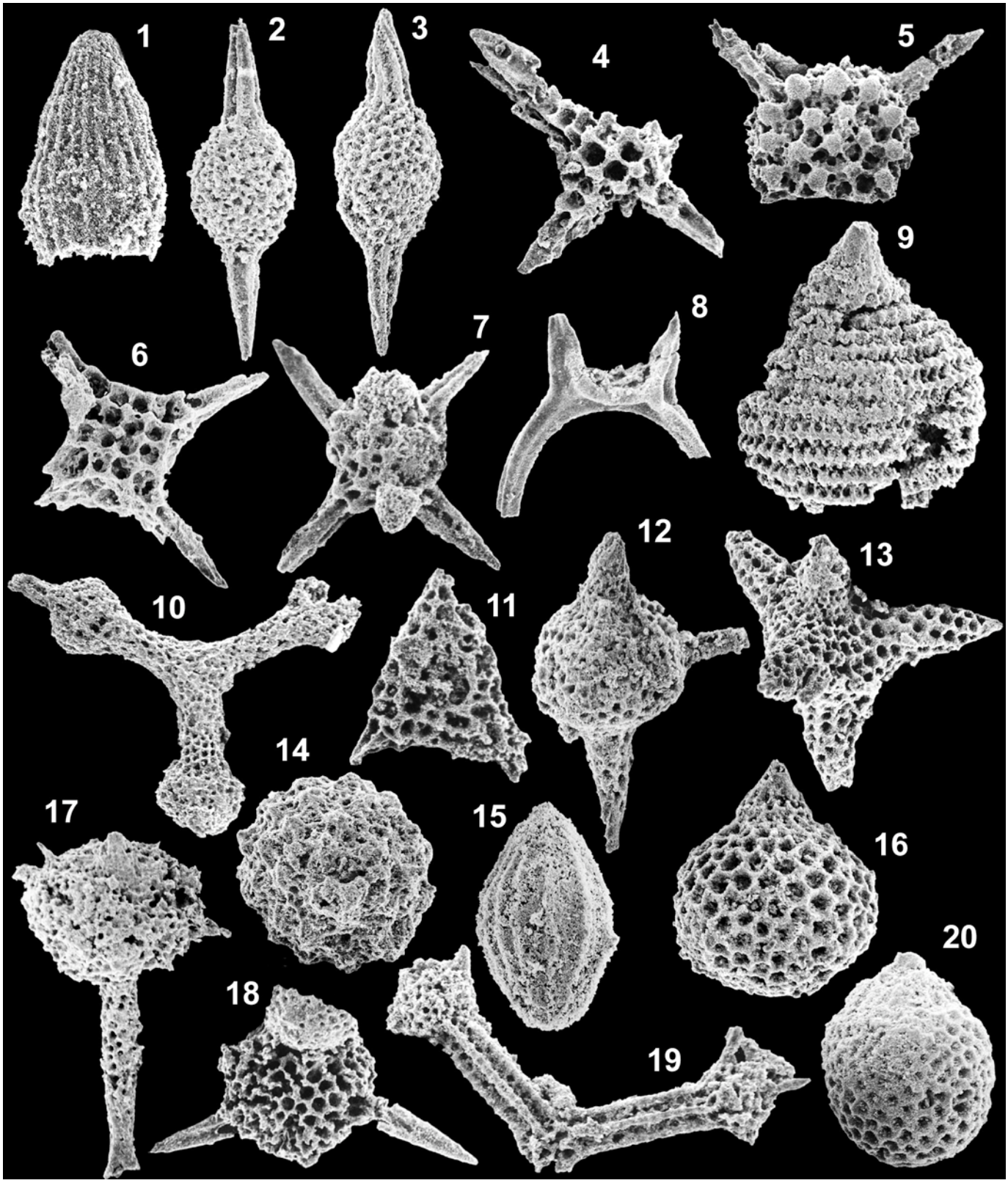

Plate 1 - 1) *Archaeodictyomitra primigena* Pessagno and Whalen, LU 1, x265; 2) *Archaeospongoprunum* sp. cf. *A. imlayi* Pessagno, LU 4, x160; 3) *Archaeospongoprunum* sp., LU 3, x150; 4) *Emiluvia ordinaria* Ozvoldova, LU 4, x140; 5) *Emiluvia orea ultima* Baumgartner and Dumitrica, LU 3, x120; 6) *Emiluvia sedecimporata* (Rüst), LU 3, x150; 7) *Emiluvia* sp. cf. *E. orea* s.l. Baumgartner, LU 3, x145; 8) *Hexasaturnalis nakasekoi* Dumitrica and Dumitrica-Jud, LU 4, x175; 9) *Mirifusus dianae* s.l. (Karrer), LU 3, x100; 10) *Paronaella kotura* Baumgartner, LU 3, x145; 11) *Perispyridium* sp., LU 4, x175; 12) *Podobursa* sp., LU 3, x150; 13) *Podocapsa amphitreptera* Foreman, LU 3, x150; 14) *Praeconosphaera sphaeroconus* (Rüst), LU 3, x155; 15) *Protunuma japonicus* Yao, LU 3, x235; 16) *Sethocapsa* sp., LU 3, x175; 17) *Syringocapsa spinellifera* Baumgartner, LU 3, x110; 18) *Triactoma foremanae* Muzavor, LU 3, x120; 19) *Tritrabs* sp. cf. *T. ewingi* s.l. (Pessagno), LU 4, x150; 20) *Zhamoidellum ovum* Dumitrica LU 3, x205.