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Stratigraphie

L'unité ophiolitique de Pineto (Corse) : signification du détritisme continental dans sa couverture de flysch albo-cénomanien

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Résumé

Les ophiolites jurassiques de l'unité de Pineto (N-MORB), épargnées par le métamorphisme alpin, peuvent être comparées aux ophiolites de l'Apennin. Elles s'en distinguent cependant par la présence, dans leur couverture, d'un flysch silico-clastique, que nous datons de l'Albo-Cénomanien. Des apports de même nature, mais plus grossiers, étaient déjà connus dans la couverture des ophiolites (E-MORB) de la nappe de Balagne, situées originellement sur une croûte continentale amincie, ou à son voisinage. De la même façon, une alimentation détritique à matériel continental a pu aussi atteindre, comme le montre l'unité de Pineto, un domaine à caractère franchement océanique du paléo-océan ligure. ***Pour citer cet article : M. Durand-Delga et al., C. R. Geoscience 337 (2005).***

Abstract

The Corsican N-MORB ophiolitic Pineto Unit (Corsica): Significance of the continental clastics within its Albian-Cenomanian cover flysch. The Jurassic N-MORB ophiolites of the Pineto Unit, which were unaffected by Alpine metamorphism, can be compared to the Apennine ophiolites. They are, however, distinguished by their cover rocks that include a silico-clastic flysch that we have dated as Albian–Cenomanian. Clastic deposits of the same type, but coarser grained, are known from the normal cover rocks of the Balagne Nappe E-MORB ophiolites, originally located on a thinned continental crust and/or near a continental margin. The Pineto Unit thus indicates that the detrital input of continental material was able to extend to a domain of clearly oceanic character in the Ligurian palaeo-ocean. ***To cite this article: M. Durand-Delga et al., C. R. Geoscience 337 (2005).***

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Abridged English version

The ophiolites of the 'internal' nappes of the Corsican-Apennine orogenic realm represent remains of the Jurassic Piedmont Ligurian oceanic lithosphere.

1. Geochemical characteristics of the ophiolites (Fig. 1)

T- or E-MORB basalts (i.e. enriched in LILE and LREE vs HREE) are found in Corsica in the Balagne Nappe ophiolites [3,8], which lie unconformably on the autochthonous Eocene of western Corsica [7,22], and also in the topmost unit of the Nebbio [23] tectonic stack that lies unconformably on the 'Schistes lustrés' (SL) Nappe to the west of Bastia (Fig. 2). These basalts are considered to have been emplaced on a thinned continental crust and/or near a continental margin during an early stage of oceanization.

N-MORB basalts (depleted in LILE) and occurring along ridge axes and in ocean basins are known in most of the SL ophiolites of Corsica [3]. They acquired their tectono-metamorphic features during the subduction that preceded their exhumation and emplacement within the accretion wedge. The internal Liguride ophiolites of the Apennines, unaffected by Alpine metamorphism, are of the same N-MORB type [26]. Finally, again in Corsica, two small non-metamorphosed ophiolitic units – the Rio Magno Unit (east of the SL) [18,19] and the Pineto Unit (to the west of the SL) [24] – also contain N-MORB basalts, on the basis of which they can be assigned to the Apennine Ligurides.

2. Characteristics of the supra-ophiolite sedimentary formations

The ophiolite units of the Corsica–Apennine realm are, with rare exceptions, overlain by radiolarites (Bathonian to Tithonian) [1] and limestones (generally Berriasian calpionellids-bearing micrites). In the specific case of the Balagne Nappe, these facies have been invaded by detrital inputs of continental origin [8], which agrees well with the E-MORB nature of the underlying basalts. These cover rocks are overlain by the 'Palombini', a clayey–marly formation with micrite beds showing silicified walls. The oldest of these deposits is Late Berriasian and, in certain parts of the Ligurian Apennines [9,14], may extend up to the Earlier Campanian.

Overlying the 'Palombini' in the Balagne Nappe [13], however, coarse-grained detrital facies of continental origin are found in the Albian–Cenomanian 'Flysch à lydiennes' [Lydite Flysch]. The presence of a silici-clastic flysch in the Pineto Unit, geographically close to the Balagne Nappe, led certain authors [17,21] to conclude that the two exposures belonged to a single complex that they termed 'Balano-ligure'. This grouping of the two units, however, is brought into question by the distinct geochemical features of their respective basalts.

3. Structural situation of the Pineto Unit

Located to the south of Ponte Leccia (Figs. 2–3), the Pineto Unit consists mainly of gabbros (700–800-m thick), overlain (Testa a l'Ortone) by thin basalts and their sedimentary cover rocks. The cover rocks plunge northwards beneath an isolated slice of 'Inzecca'-type [2] SL ('Aliterneta' Unit).

4. Sedimentary succession of the Pineto unit

Overlying the basalts, or resting directly on the gabbros, we find: (1) radiolarites (from 1 to 10-m thick); (2) pelites (50 to 100-m thick) with 'Palombini'-type beds, dated near the base by Calpionellopsis as Late Berriasian; (3) indurated olive-green marl (about 20-m thick) with thin beds of limestone or quartzite; (4) the pelitic to microbrecciated 'Flysch de Balliccione' [Balliccione Flysch] (about 300-m thick), which is commonly calcareous and contains rare (Fig. 5, Table 2) Albian–Cenomanian foraminifera.