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Perspective

About the early Late Cretaceous siliciclastic turbidites in Corsica and northern Apennine ophiolitic successions

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I shall take the interesting paper by Durand-Delga et al. [6] as a starting point for making some remarks on the puzzle of passive margin turbidites of the so-called Alpine Corsica and on their relationships with those of the northern Apennine Ligurian units, and, in particular, regarding those sedimented before the orogenic stages.

For higher concision I put forward some points:

- (1) distinction between the pre-orogenic and the syn-orogenic turbidites;
- (2) provenance of the siliciclastic turbidites;
- (3) correlation between Corsica and the Apennine.

(1) To distinguish the pre-orogenic from the syn-orogenic turbidites, it is necessary to establish when the orogenic phases started. On the basis of the available data, 84 ± 5 Ma for the Accendi–Pipa eclogites in Corsica [8] and the Campanian age of the ophiolitic olistostromes in the external Ligurides trench turbidites [7], the beginning of an orogenic tectonics between Corsica and the northern Apennine is not earlier than the Santonian–Campanian. Therefore, all the pre-Santonian turbiditic events were a sure product of a passive margin.

(2) Concerning the provenance of the siliciclastic turbidites, I perfectly agree with the authors about the European provenance of the turbiditic siliciclastic material present from the Albian–Cenomanian until Eocene in the non-metamorphic ophiolitic units of Corsica.

As vaguely outlined also by the authors, but explicitly stressed by others [1,3,12], the question is: was the Adriatic margin active during the pre-orogenic phase? The Apenninic Cretaceous turbidites, which can be hypothetically put into correlation with the starting of this passive margin are the pre-Turonian [4,9] quartzose sandstones intercalated in the Palombini shales of the ophiolitic Unit (Val di Vara) of southern Tuscany and the Turonian–Santonian lithic sandstones (Ostia, Scabbiazza and Pietraforte) present in the external Ligurides [7].

(3) Regarding the correlation between the Corsica and Apennine, many siliciclastic turbiditic bodies of the Internal Ligurides units of the northern Apennine (e.g., Lavagna–Gottero) and of the Ligurian Alps (Bordighera sandstones) were also given a European provenance, as already pointed out by different authors [1,2,7]. Nevertheless, unlike many Corsican turbidites dated to the Albian–Cenomanian, the Balliccione flysch included, all these Apennine siliciclastic turbidites, as the authors also make note, developed only starting from basal Campanian [7], during the beginning of the orogenic phase. Nevertheless, in Corsica, some Albian–Cenomanian flyschs [10], like the northern Balagne calcareous and Macinaggio flyschs and probably the Tralonca–Santa Lucia and Vezzani flyschs, lasted until the Campanian and are correlated to the Liguride Elba flysch [14]. About point (1), it can be disputed whether the early orogenic phases are linked to subduction or to transpression [11]. The cluster of the high pressures in Corsica, excluding the Accendi–Pipa date, is Middle–

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Upper Eocene. This could mark the moment of the real Ligurian ocean subduction.

Regarding point (2), the pre-Turonian turbidites rich in quartz present in the Palombini shales of the southern Tuscan ophiolitic unit, always positioned in the internal Liguride, derive, on my opinion, from the Corsica margin, possibly ascribable to Altureia flysch distal zones [6 (Fig. 4)] or from another similar source, now missing.

The lithic turbidites present of the external Ligurides units, supposing that they derive from a hypothetical emerged Tuscan–Ligurian Adriatic Insubric margin [1, 3], could have been activated only in the Turonian–Santonian interval, which is very difficult to explain. What is the cause of this limited activation of this margin? Why do not we have similar siliciclastic turbidites in the basinal plane Scisti Policromi and Scaglia (s.l.) sedimentation present in a widespread area of the Adria continental margin, close to its hypothetical western emerged border?

The geological history of the whole Adriatic margin, the Pelagonian included, starting from the Trias, is characterized by a slow but inexorable subsidence and it remained under the sea level or at its vicinity until its involvement in the Apenninic Tertiary orogenesis.

At the beginning of the Late Cretaceous, this margin was still submerged. The above mentioned lithic sandstones have an extraordinary likeness with the coeval Lombard flysch of Insubric derivation (central Alps), hence can be referred to those sources [7], as well as, later, both the granitoid olistoliths of the external Ligurides.

About point (3), as is indirectly admitted also by Durand-Delga et al. [6] in their Fig. 4 and in preceding works [5,13], the siliciclastic flyschs of the Internal Ligurides derived also from the European margin.

They probably were in the western portion with respect to the tectonic event (subduction or else, there is no room for this debate), which also produced the ophiolitic olistoliths and olistostromes in the External Ligurides.

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