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Middle and Upper Eocene nummulite banks of Northern Italy: common traits and differences

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The well-known genus *Nummulites* flourished in the stable, oligotrophic environments of Eocene. During this time, peculiar monospecific accumulations called nummulite banks (Arni, 1965) developed. The paleoenvironmental interpretation of these banks is still debated. So far, several studies deal with nummulite banks but their quantitative aspects were neglected. Here we present new quantitative observations useful to better define the nummulite bank concept.

Samples were collected from Pederiva di Grancona (*N. lyelli* bank) and San Germano dei Berici (*N. fabianii* bank; both in the Berici Mts., northern Italy). According to the Shallow Benthic Zonation of Serra Kiel et al. (1998) the Pederiva bank is referred to the SBZ 17 (Early Bartonian), and the San Germano bank to the SBZ 19 (Early Priabonian). In both cases there is a bimodal grain size distribution of microspheres and megalospheres of *Nummulites* in a fine-grained matrix, giving rise to a packstone texture.

In Pederiva, 1448 *Nummulites* isolated specimens (A-forms) were counted and identified at the species level. Among them 1082 individuals are *Nummulites lyelli*, so 74.7% of the identified assemblage. *Nummulites striatus* is the second most-abundant species with the 11.5%, and the rest are the three accessory species *N. discorbinus*, *N. biarritzensis*, *N. beaumonti*.

In the San Germano bank, 2043 isolated A-forms of *Nummulites* were counted and identified at the species level. Among them, 1742 are *Nummulites fabianii*, which means 85.3% of the assemblage. The second most-abundant species is *Nummulites stellatus*, accounting for 10.6% of the assemblage. The rest of the assemblage is made by small, lenticular *Nummulites* (*N. incrassatus*, *N. chavannesi*, *N. cunialensis* and *N. garnieri*).

On polished surfaces of two samples from San Germano and Pederiva, two areas (38 and 76 cm^2 respectively) were observed to count all the visible specimens of *Nummulites* in order to calculate the A/B ratio. The "normal" A/B ratio usually reported in literature is 10:1. However, our results show that the A/B ratio in the banks varies from 28 to 42, whereas in "normal" nummulitic limestones it varies from 86 to 348. Therefore, in the nummulite banks the A-forms are still dominant but the number of B-forms is unusually high.

The San Germano and Pederiva banks are both monospecific assemblages, with one species accounting for about 75-85% of the individuals, and relatively low A/B ratio. This is consistent with the definition of nummulite bank by Arni (1965). However, there are some differences probably related to different paleoenvironmental settings: in Pederiva, apart for *Nummulites* there are only a few *Discocyclina*, whereas in San Germano the coralline algae and bivalves are accompanied by a few *Discocyclina.*

References:

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