Comparative quantitative analyses of a nummulite bank and a "normal" nummulitic limestone, Middle Eocene of Pederiva di Grancona and Mossano sections (Veneto, Northern Italy)

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The present work aims to compare "normal" nummulitic limestones and nummulite banks by means of numerical and quantitative aspects. In particular, the number of A- and B-forms in each sample were counted to calculate the relative density and the A/B ratio.

Five hand samples were taken, four from the Pederiva di Grancona section (SBZ 17, lower Bartonian) and one from the Mossano area (SBZ 18, upper Bartonian), both in the Berici Mts. (Veneto, Northern Italy), less than 10 km from each other. In Pederiva one sample (PRV 1) was collected from the bank facies, characterized by high density of large B-forms of *Nummulites lyelli*; three other samples were taken from the overlying beds, in "normal" nummulitic limestones (samples PRV 2-4). In Mossano one sample from the nummulitic limestones with *Nummulites biedai* has also been taken for comparison. The sample from Mossano contains a diverse assemblage of coralline red algae, echinoids, and bivalves. The foraminifers include alveolinids, nummulitids and discocylinids. In all the levels sampled there is a high number of megalospheric *Nummulites,* but the number of B-forms is usually low in comparison with the unusual abundance found in the Pederiva bank. Therefore, it is suggested that all samples from the Mossano and Pederiva sections, with the only exception of PRV 1, are referred to "normal" nummulitic limestones.

Two problems were encountered in the present study:

1- The results here presented are significantly different from the ones presented in previous papers. In the literature the "normal" A/B ratio for a nummulite limestone is traditionally reported as 10/1. We found in "normal" limestones A/B ratios variable between 86/1 and 348/1, whereas the A/B ratio in the bank facies resulted about 42/1.

2- Little is known about the methods used to calculate the A/B ratios on nummulite limestones. The best explanation is given by Kondo (1995), who measured the A/B ratio on a quadrat (15 x 15 cm) on the outcrops; he did not specify, however, if the counting was made either directly in the field or on the photographs; moreover, it is not clear whether different species of *Nummulites* were counted altogether or the B-forms and A-forms counted were all cospecific. Furthermore, we do not know if the outcrops were fresh or weathered and the surfaces were surely rough and not homogeneous. For our work we used rectangles of 19 cm^2 (5 x 3.8 cm) on polished surfaces in order to count all the visible specimens of *Nummulites.*

The results of the present study show that in the Pederiva bank the numbers of both A- and B-forms are high with respect to the examined area. The A/B ratio is low in comparison with the "normal" nummulitic limestones. Regarding the latter, the absolute number of B-forms is usually very low, only one for Mossano, PRV 2 and 3, and only two for PRV 4. Due to this problem, the A/B ratio (348/1, 236/1, 86/1, and 117/1 respectively) could be subjected to a significant error.