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Agglutinated encrusting foraminifers from the Agua de la Mula member (Agrido Formation, Neuquén Basin - Argentina): paleoecological and paleoenvironmental implications

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A new fauna consisting of agglutinated encrusting foraminifers has been collected from several nodular levels in the upper Hauterivian-lower Barremian Agua de la Mula Member of the Agrido Formation (Patagonia, Argentina). The study foraminifers come from two stratigraphic sections in the Neuquén Basin and show affinities with the genera *Haddonia* Chapman, 1898, *Alpinophragmium* Flügel, 1967, *Bdelloidina* Carter, 1877 and *Coscinophragma* Thalmann, 1951. Provisionally, the new specimens are considered to differ from the above-mentioned genera, but they remain in open nomenclature. One or more specimens are clustered around bioclastic nuclei of cerebroidal sub-spherical nodules, forming columnar and circum-granular 'microbuildups'. The nodules occur both separated from each other in a fine-grained siliciclastic matrix as well as forming larger mound-like accumulations of up to 2 meters in thickness. The encrusting foraminifers-bearing deposits consist of bioclastic sandstone, allochemic mudrock and micritic rudstone, and are embedded into an alternation of condensed bioclastic sandstone and grey/dark marly clay. The latter has been earlier interpreted as alternating couplets of sixth-order Milankovitch precession-driven cycles, named starvation/dilution sequences. These couplets are characterised by a switch from very low to high sedimentation rates, as recorded by deposition of condensed beds and siliciclastic intervals respectively. Semiquantitative analysis by Scanning Electron Microscope (SEM) was performed in order to characterise the morphology and test mineralogy of the specimens. A preliminary study on the type of growth of the 'microbuildups' allows us to corroborate previous interpretations of low oxygen conditions and of a lowered rate of terrigenous input for the analysed interval.

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Agglutinated encrusting foraminifera
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