

## Depositional facies and magnetic susceptibility of Mobarak formation (Lower Carboniferous in central and eastern Alborz Mountains, North of Iran)

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At the northern margin of Gondwana, after the Paleotethys opening, the first step of development of the carbonate factory corresponds to the Mobarak Formation, during the Lower Carboniferous (Tournaisian-Viséan). In this study, sedimentology, magnetic susceptibility (MS) and biostratigraphy have been used to obtain a better understanding of the Shahmirzad and Aruh sections in the central and eastern Alborz Mountains. These 300 m thick lateral equivalent sections are distant of about 200 kilometres and belong to two different sedimentation areas: (1) central Alborz Mountains (Aruh section), where the sedimentation is relatively shallow, with bioclastic shoals (crinoids, peloids, shell fragments and algae); and laterally grades into (2) eastern Alborz Mountain (Shahmirzad section): deeper-water facies with an alternation of dark grey brown siliceous mudstone with fine grained bioclastic wackstone to packstone. Paleoenvironments correspond to a carbonate ramp platform dominated by crinoids with frequent storm deposits. Different facies that have been observed are, ranked from proximal to distal: (1) crinoid banks; (2) in-situ bioherms, mainly constituted by accumulations of tabulate corals, shell fragments and crinoids stems; (3) distal to proximal tempestites and (4) bioturbated dark argillaceous mudstone. The main sedimentological trend from the base to the top of the two sections is a shallowing-upward trend.

Magnetic susceptibility data were used for correlation between the two sections and to get a better understanding of sedimentary dynamics (through the link between MS and lithogenic inputs). It appears that MS values are the lowest for the more energetic environments which corresponds to the trends observed in the Devonian carbonate ramp in Belgium (da Silva *et al.*, 2009).