Microfacies, palynofacies and depositional environment of the Upper Permian Wargal Limestone, western Salt Range, Pakistan

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Abstract

Wargal Limestone at the Zaluch Nala and Nammal Gorge sections, western Salt Range has been studied for microfacies, palynofacies and depositional paleoenvironments. The formation shows variable thickness at the Zaluch Nala (i.e. 168 m) and Nammal Gorge section (i.e. 141 m) and is divided into five lithological units. In general, the formation shows dominant limestone with intercalations of thinly laminated shale beds in almost all units studied at these sections; however at the Zaluch Nala, a sandy unit, rich in terrigenous sediments is also encountered. The limestone is nodular, thin to thick bedded, having wavy beds and chert nodules in places. Based on allochems and matrix, a total nine microfacies have been identified within the Wargal Formaton, which include; 1. Peloidal packstone, 2. Echino-packstone, 3. Mudstone, 4. Calci-mudtone, 5. Quartz rich facies, 6. Dolomitic mudstone, 7. Algal boundstone, 8. Bioclastic wackstone-packstone and 9. Bioclastic packstone-grainstone. The microfacies, and the fauna therein and palynofacies, i.e. sedimentary organic matter type (representing dominant amorphous organic matter and phytoclasts) support an intertidal to middle shelfal setting for the deposition of the Upper Permian Wargal Limestone, Salt Range, Pakistan.