Tempestite facies displaying hummocky cross-stratification and subaqueous channels in Ordovician shelf deposits

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Abstract
Sediments of the Dubaydib Formation and Tubeiliyat Member (Mudawwara Formation) of Early Ordovician age (previously known as the Sabellarifex and Conularia sandstones) in the southern desert of Jordan, comprise at least 330 m of siliciclastic sediments. These sediments were divided into three major lithofacies; hummocky cross-stratified sandstone, channelled sandstone and silty shale. The most striking sedimentary features in these sediments are the hummocky cross-stratification and the subaqueous channels, which are considered to be diagnostic of inner shelf storm deposits, and have been attributed to the action of strong storm-wave surges. The interaction of intermittent storm-wave events and fair weather conditions, associated with eustatic sea-level changes and minor transgressive-regressive phases, were responsible for the accumulation of several coarsening-upwards sequences, in an inner to mid shelf setting.