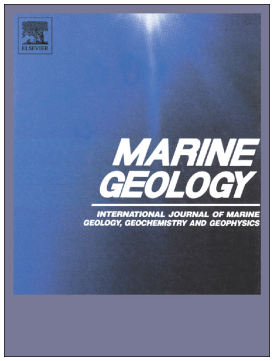

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Identifying and quantifying erosion beneath the deposits of long-runout turbidity currents along their pathway

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Abstract

Variations between the geochemical compositions, coccolith species compositions and the physical properties of turbidite muds and their underlying hemipelagites can be used to understand the erosive nature of sediment gravity flows. Large-volume submarine landslides on the NW Moroccan continental margin produce long-runout turbidity currents capable of traversing hundreds-to-thousands of kilometres across the adjacent Moroccan Turbidite System (MTS). These turbidity currents are responsible for turbidites that are among the largest-volume, most aerially extensive, and longest-runout deposits recorded. These resulting turbidite beds can be correlated over distances of greater than 1,800 km across the full 250,000 km^2 area of the MTS. Due to the ability to trace these individual flow deposits throughout the MTS large-volume beds A5, A7, A11, A12 and A15 can be shown to be erosive upon debouching Agadir Canyon, whilst smaller-volume flows were not erosive. These aforementioned large-volume flows have been capable of eroding up to 15 km^3 of material in the Canyon mouth, equating to as much as 50% of the later deposit volume. Evidence suggests individual flows erode up to 4.5 m of sediment within scours in the mouth of Agadir Canyon. However, these scours are greater than 8.0 m deep, indicating that several