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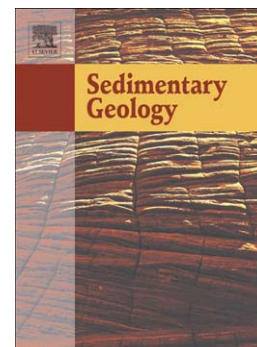
Shifts in sediment provenance across a hierarchy of bounding surfaces: A sequence-stratigraphic perspective from bulk-sediment geochemistry

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**Shifts in sediment provenance across a hierarchy of bounding surfaces:
A sequence-stratigraphic perspective from bulk-sediment geochemistry**

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Abstract

Geochemical differentiation of sediment packages framed by surfaces of chronostratigraphic significance represents an effective tool to unravel the stratigraphic architecture of multi-sourced sediment-supply systems on a variety of temporal scales and through a wide spectrum of lithofacies assemblages. Sediment provenance shifts were examined across three-orders of bounding surfaces, arranged in a hierarchy of 10^5 to 10^3 years sediment packages, from late Quaternary alluvial, deltaic, coastal and shallow-marine strata of the Po Basin, where controlling factors of sedimentary evolution are firmly constrained by strong age control. A total of 150 samples were analyzed for bulk-sediment geochemistry by X-ray fluorescence spectrometry (XRF). Geochemically unique catchment lithologies, such as ultramafic rocks and dolostones, were used as end-member grain assemblages to assess clear geochemical signatures, and chemostratigraphic correlations were generated on the basis of key element abundances and ratios.

Sequence boundaries originating in response to tectonic uplift and related to 10^5 years sediment packages are associated with marked, basin-wide changes in sediment composition that reflect phases of substantial basin rearrangement, with strong modification of the drainage patterns. On an intermediate temporal scale (10^4 years depositional units), large magnitude sea-level fluctuations had a major impact on sediment pathways, producing sharp provenance shifts on a systems tract

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