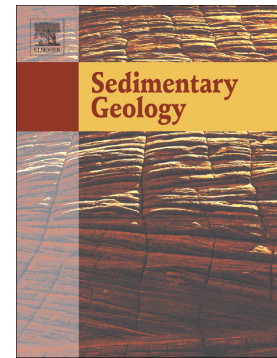


## Accepted Manuscript

Revisiting morphological relationships of modern source-to-sink segments as a first-order approach to scale ancient sedimentary systems

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# 1 Revisiting Morphological Relationships of Modern Source-to-Sink 2 Segments as a First-Order Approach to Scale Ancient Sedimentary 3 Systems

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## 10 Abstract

11 Catchments provide water and sediment to downstream sedimentary systems, and these form individual source-to-  
12 sink systems. Source-to-sink systems comprise adjacent linked segments, commonly hinterland catchments, alluvial-  
13 and coastal plains, the continental shelf, continental slope and submarine fan. The dimensions of the catchment and  
14 how it scales to downstream segments provides insight into the sedimentary and tectonic controls that influence the  
15 morphology and sedimentation patterns in a basins evolution. In ancient sedimentary successions, where the  
16 sedimentary routing system is buried and inaccessible for study, or fragmented due to uplift and erosion, using  
17 scaling relationships can provide a powerful tool to understand the complete sedimentary system.

18 Observational data from modern sedimentary systems provide an opportunity to create morphological and  
19 sedimentological scaling relationships of segments on the entire source-to-sink system. However, previous studies  
20 on global modern source-to-sink systems have typically been based on a limited number of examples restricted by  
21 the data available at the time and the methodology used to analyze large datasets. In the last decade, the volume and  
22 quality of remotely sensed information has significantly improved so that it is now timely to revisit scaling  
23 relationships of modern source-to-sink systems' segment morphologies, and discuss the implications of those results  
24 for sedimentological parameters and applicability to ancient source-to-sink systems.

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