

Contrasting Styles of Fluvio-Aeolian Interaction: The Skeleton Coast Erg – a Modern-Day Dryland Reservoir Analogue

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The damming of river flow by aeolian landforms has been previously recognized as one of several principal types of fluvial-aeolian interaction. Our study on the Skeleton Coast ephemeral river systems is complementary in terms of considering variabilities of parameters within the fluvio-aeolian systems resulting in variable depositional sequences.

The Skeleton Coast forms part of the Atlantic coastline of northwest Namibia comprising several ephemeral rivers which flow episodically west-southwest towards -and sometimes into- the Atlantic Ocean. This climatically hyper-arid area receives less than 50 mm average annual rainfall. However, the major catchment areas of the rivers are about 100-200 km farther inland in regions with relatively higher annual rainfall. The coastal plain in the river downstream area is characterized by the a prominent NNW trending 165 km long belt of 20-50 m high, locally compound, barchanoid and transverse dunes, termed Skeleton Coast Erg. As the SSE-NNW trending dune belt is oriented perpendicular to river flow, the erg dams and interacts with the WSW flowing ephemeral river systems.

Five ephemeral rivers were chosen for the purpose of this study. The southernmost river, the Koigab River, plays an important role providing sand for the southern end of the erg. In contrast, the Hoarusib flows sufficiently often to prevent a northward migration of the erg forming the northern boundary of the erg by flushing aeolian sand into the Atlantic Ocean. Between these two, the remaining rivers provide a spectrum of types of interaction with the Skeleton coast Erg.