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Title:	Geochemical and sedimentological characteristics of surface sediments from Ashtamudi Estuary, Southern India: implications for provenance and modern sedimentary dynamics
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Keywords:	Mixing analyse Ashtamudi Estuary Hydrodynamic factors
Issue Date:	2019
Publisher:	Springer Link
Citation:	Environmental Earth Sciences, 78(14).
Abstract:	Geochemical and end-member mixing analyses (EMMA) of the grain-size distribution were conducted on recent surface sediments from Ashtamudi Estuary, Southern India to investigate the hydrodynamic factors that influence the depositional processes in the region. The complex interplay between the natural (fluvial and marine) and anthropogenic influences on the Ashtamudi Estuary have been delineated based on the inter-relationships between geochemical elements and the end members (EM) derived from the grain-size parameters. Si, Al and Fe are the major elements in the sediment of Ashtamudi Estuary constituting 26–47%, 9–21%, and 8–14%, respectively. Four grain-size end members were identified with dominant modes of 7 $\phi$ (EM1), 6 $\phi$ (EM2), 4.5 $\phi$ (EM3), and 3.3 $\phi$ (EM4) corresponding to fine silt, medium silt, coarse silt, and fine sand, respectively. The high contributions of Al, Fe, Cr and Ni combined with the EM1 and EM2 in the upstream of the estuary indicated that the fine-grained sediments were derived from the fluvial inputs into the basin. The marine/tidal influenced lower estuary is characterised by high concentrations of Si, Ti, Ca, Sr and coarse fraction end member (EM3). The elemental concentration of Cu, Zn and Co along with EM4 shows higher values along the shore region suggesting human interventions in the basin. This integrated geochemical analysis and EMMA provide advancement in the knowledge of the transportation mechanisms and regional sediment dynamics from the estuarine system in Southern India.
Description:	Only IISERM authors are available in the record.
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