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Modeling Sediment Transports under Extreme Storm Situation along Persian Gulf North Coast

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Abstract : The Persian Gulf is a bordering sea with an normal depth of 35 m and a supreme depth of 100 m near its narrow appearance. Its lengthen bathymetric axis divorces two main geological shires — the steady Arabian Foreland and the unbalanced Iranian Fold Belt — which are imitated in the conflicting shore and bathymetric morphologies of Arabia and Iran. The sediments were experimented with from 72 offshore positions through an oceanographic cruise in the winter of 2018. Throughout the observation era, several storms and river discharge actions happened, as well as the major flood on record since 1982. Suspended-sediment focus at all three sites varied in reaction to both wave resuspension and advection of river-derived sediments. We used hydrological models to evaluation and associate the wave height and inundation distance required to carriage the rocks inland. Our results establish that no known or possible storm happening on the Makran coast is accomplished of detaching and transporting the boulders. The fluid mud consequently is conveyed seaward due to gravitational forcing. The measured sediment focus and velocity profiles on the shelf provide a strong indication to provision this assumption. The sediment model is joined with a 3D hydrodynamic module in the Environmental Fluid Dynamics Code (EFDC) model that offers data on estuarine rotation and salinity transport under normal temperature conditions. 3-D sediment transport from model simulations specify dynamic sediment resuspension and transport near zones of highly industrious oyster beds.

Keywords : sediment transport, storm, coast, fluid dynamics
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