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Title:	Seasonal sediment plumes in the Krishna-Godavari basin using satellite observations
Authors:	Yunus, Ali P. (/jspui/browse?type=author&value=Yunus%2C+Ali+P.)
Keywords:	Sediment plumes Satellite observations ocean studies
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Citation:	Deep-Sea Research Part I: Oceanographic Research Papers, 188(1), 103850
Abstract:	Diffuse attenuation coefficient ($K_d(\lambda)$), a measure of water quality and an indicator to predict the euphotic zone, is one of the key optical variables in ocean studies that can be determined remotely from satellite sensors. Here, we examined the seasonal plume pattern and $K_d(490)$ trends (2002–2021) in the coastal waters of Krishna-Godavari basin, India, using Moderate Resolution Imaging Spectroradiometer (MODIS) data. Additionally, we discussed the dynamics of sediment plumes by analyzing multiple hydro-geophysical variables such as sea surface temperature (SST), wind speed, sea surface height anomaly (SSHA), river discharge, and precipitation dataset. Our result presents the first $K_d(490)$ seasonal climatology and long-term trends of sediment plumes over the study region. We noticed that the plume is at its maximum during the summer, when there is an abundance of precipitation and river discharge, and the $K_d(490)$ value can reach over 1.72 m ⁻¹ . Contrarily, the sediment plume is nearly nonexistent during the rest of the season. During summer, the decrease of SST coincides with the increase of $K_d(490)$ and vice versa. Furthermore, we observed that the surface waters had a homogenous SST during the winter, whereas stratified SSTs dominate at the surface during the summer. Although the temporal variability of $K_d(490)$ is strongly dominated by the seasonal component, a long-term decreasing trend of about -0.00011 m ⁻¹ y ⁻¹ in $K_d(490)$ concentration is noted, and is associated with the decrease of the Godavari river discharge and sediment load during summer.
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