

SEDIMENT TOTAL ORGANIC CARBON: IS IT TIME TO PULL THE PLUG ON THIS INDICATOR?

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Total organic carbon (TOC) content of sediments has been used as an indicator of benthic community condition during multiple cycles of the EPA National Coastal Assessment (NCA). Because percent TOC is generally positively correlated with sediment percent fines, previous analyses have shown that an uncorrected TOC index will substantially overestimate potentially impacted sites. Analysis of NCA data indicates that biogeographic regions differ significantly in the relation of TOC to grain size. Within a region, individual estuaries also differ significantly in the regression slopes of TOC and grain size, and estuary classification has so far failed to provide insight into the drivers of this variation. Within an individual estuary, the spatial variation in depositional versus erosional conditions may drive the relationship. Analysis of studies conducted along organic enrichment gradients found varied responses of benthic species richness to TOC, ranging from strongly negative to positive. Given the multiple scales and sources of variation, we conclude that TOC is currently not a useful indicator of marine benthic condition in regional scale assessments.

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