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Lateral particle supply as a key vector in the oceanic carbon cycle

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Despite the potential importance in the oceanic carbon cycle and benthic ecosystem, global feature of lateral supply of aged organic matter hosted on lithogenic particles derived from sediment resuspension has not been systematically examined. We compiled concentrations and fluxes of lithogenic material in the ocean in a global-scale by using literature data of sediment trap studies to understand the contribution of resuspended sediment to sinking particulate matter. We find that these contributions are significant in various oceanic settings, particularly over continental margins. Lithogenic material flux decreased with increasing distance from the margins and above the seafloor. Examination of $\Delta^{14}C$ values of sinking POC revealed strong relationships with parameters that represent contribution of resuspended sediment. We then derive estimates for the contribution of aged POC from sediment resuspension to sinking POC based on these relationships and global lithogenic material flux data.