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TITLE: Global Patterns in Marine Sediment Carbon Stocks

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ABSTRACT:

To develop more accurate global carbon (C) budgets and to better inform management of human activities in the ocean, we need high-resolution estimates of marine C stocks. Here we quantify global marine sedimentary C stocks at a 1-km resolution, and find that marine sediments store 2322 (2239?2391) Pg C in the top 1 m (nearly twice that of terrestrial soils). Sediments in abyss/basin zones account for 79% of the global marine sediment C stock, and 49% of that stock is within the 200-mile Exclusive Economic Zones of countries. Currently, only 2% of sediment C stocks are located in highly to fully protected areas that prevent the disturbance of the seafloor. Our results show that marine sediments represent a large and globally important C sink. However, the lack of protection for marine C stocks makes them highly vulnerable to human disturbances that can lead to their remineralization to CO₂, further aggravating climate change impacts.

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