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Should carbon stored in marine sediments be reported as part of greenhouse gas inventories?

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Terrestrial and marine ecosystems play an integral role in the global carbon cycle, serving as major carbon stores and sinks, in some cases mitigating and reducing greenhouse gas (GHG) emissions from energy production, transport and land use change. However, the assessment of carbon stocks in the context of GHG-reporting on a nation-by-nation basis focuses on the terrestrial realm, i.e., carbon held in living plant biomass and soils, and on potential changes in these stocks in response to human activities. Oceans and underlying sediments store substantial quantities of carbon, but, despite the integral role of the oceans in the global carbon cycle and their vulnerability to climate change, this pool is presently not considered in the context

of national GHG-inventories. In this study, land and ocean carbon stocks were compared and contrasted on three countries – Namibia, Pakistan and the United Kingdom. Results show that marine sediment carbon stocks in these countries may be equal in size or even exceed land stocks. This provides motivation for reevaluation of how national carbon stocks of maritime countries are assessed and valued, with potential implications for the management of human activities on coastal environments and the policies that combat ecosystem degradation and climate change, as well as for the global carbon trade market, promoting a more sustainable use and conservation of water resources.

Biography

Silvania Avelar has completed her PhD in 2002 from the Swiss Federal Institute of Technology (ETH Zurich) and Postdoctoral Studies in 2008 from the Swiss Federal Laboratories for Materials Science and Technology (EMPA). As a research scientist at the Geological Institute of ETH Zurich, she worked on social and environmental sustainability projects. She has published more than 20 papers in reputed journals and has been serving as evaluation commission member of international cooperation projects for a Swiss NGO.

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