

The overlooked role of submarine canyons in the transport of organic carbon from coasts to the deep-sea

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Fluxes of carbon between the atmosphere, land and ocean reservoirs have been quantified extensively in global carbon budgets to feed climate models. In contrast, the transfer of particulate organic carbon (POC) from coastal to deep-sea environments remains poorly considered. POC transfer from coasts to deep-sea is controlled by >9000 canyons on the World's submerged margins. However, measuring carbon fluxes in submarine canyons is challenging because canyons are deep and dynamic environments, which can be harmful to monitoring instruments. Key questions thus remain unanswered, inhibiting accurate assessment of the global coast-to-deep-sea carbon flux: How is organic carbon transported from coastal to deep-sea environments? What are the fluxes of carbon involved in this transfer?

This seminar will address these questions by presenting novel observational and sampling data collected in two areas. First, I will present results obtained in small-scale submarine canyons in fjords of British Columbia where recent advances in technology to monitor canyons allowed new sediment transport processes to be discovered and carbon fluxes to be estimated. Second, I will present observations and samples collected using an ambitious array of acoustic and sampling instruments deployed for four months in one of the largest submarine canyons globally: the Congo Submarine Canyon connected to the Congo River.