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TITLE: Enhancement of sedimentation rates in the Foix Canyon after the renewal of trawling fleets in the early XXIst century

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ABSTRACT:

Commercial bottom trawling causes some of the largest impacts on the sea floor, and it has been identified as one of the major drivers of sediment resuspension on continental slope regions, particularly in areas surrounding submarine canyons. To assess whether there have been significant trawling-induced alterations in the sediment dynamics within the Foix Canyon (Northwestern Mediterranean) during the past century, sediment accumulation rates obtained using ^{210}Pb and ^{137}Cs radiochronology were compared between sediment cores retrieved in 1993 and in 2013 from the canyon axis at 860 m depth. The results indicate an almost two-fold increase in the sedimentation rate in the 1960-70s, from $0.5 \text{ cm}\cdot\text{y}^{-1}$ to $0.9 \text{ cm}\cdot\text{y}^{-1}$, as a consequence of the rapid industrialization of the fishing sector at that time. Sedimentation rates further doubled to $1.8 \text{ cm}\cdot\text{y}^{-1}$ in the early 2000s. This period was characterized by the construction of bigger trawlers with more powerful engines as well as the modernization of the engines of existing vessels, all of which were largely under-declared. These results provide compelling evidence of the increasing impact of bottom trawling due to the modernization of trawling fleets at the beginning of the XXIst century.

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