

# Atmospheric CO<sub>2</sub> emissions and ocean acidification from bottom-trawling



Marine sediments are thought to be the ultimate long-term carbon store. Buried below the active layer, organic carbon can remain unmineralized for millennia to eons.

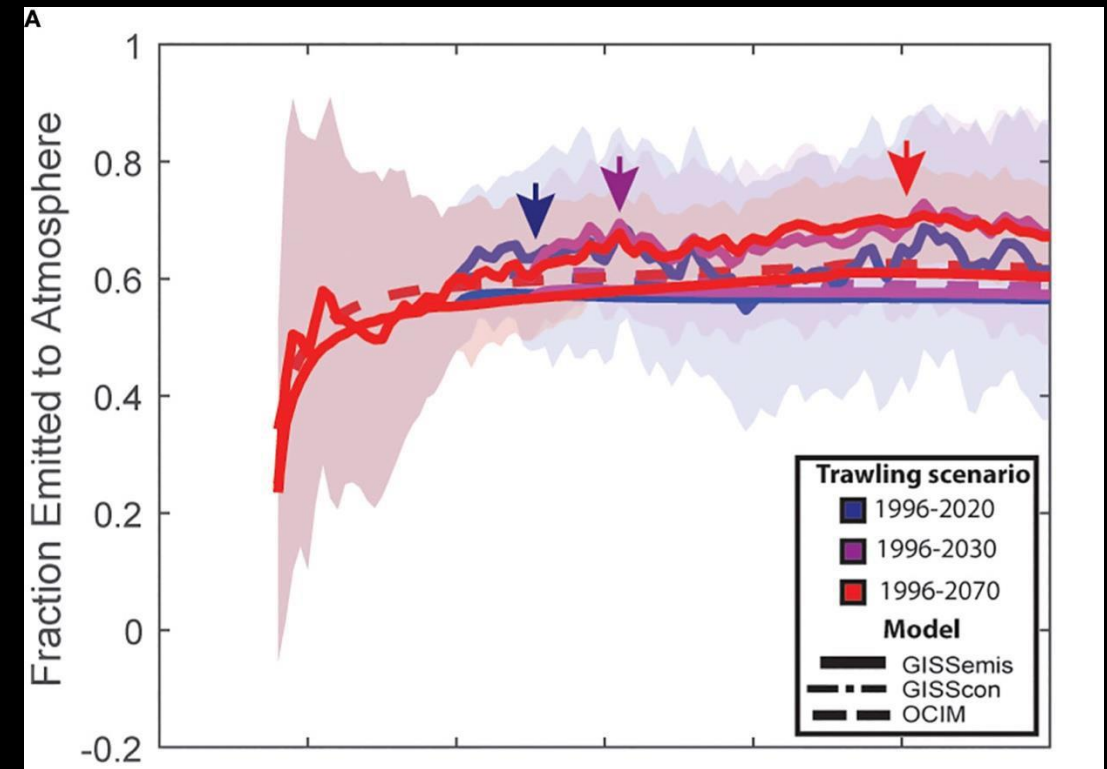
In the case of bottom-trawling, heavy fishing gear is dragged across the seafloor, re-exposing significant amounts of buried organic carbon.

This study shows that 55-60% of CO<sub>2</sub> produced from bottom-trawling is released into the atmosphere within nine years.

The study also found that 40-45% of the cumulative trawling-induced CO<sub>2</sub> emissions remained dissolved in seawater, augmenting the ocean acidification already occurring from the burning of fossil fuels.

Ocean-based climate solutions offer promise in closing the emissions gap to limit global temperature increases to 1.5°C, while also supporting co-benefits like biodiversity preservation and food security.

However, current climate policies and carbon markets require estimates of avoided atmospheric emissions. Such frameworks overlook the total impact of ocean-use change activities on the carbon cycle because they ignore factors such as the pool of dissolved inorganic carbon that remains sequestered by the ocean.



The fraction of trawled CO<sub>2</sub> emitted to the atmosphere from historical trawling (1996-2020) and future projections. Colors represent different trawling scenarios, with blue denoting historical trawling from 1996-2020 and zero trawling thereafter, magenta denoting a future scenario where trawling stops in 2030, and red denoting a future scenario where global trawling ceases in 2070.