



Sediment was retrieved with a Multicorer to allow for a detailed analysis of sediment biogeochemistry and its inhabitants along a transect of oxygen concentrations. (© R. North, Eawag, Switzerland)

Breath-taking moments in the Black Sea

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Periodic oscillations of bottom-water oxygen concentrations can alter benthic communities and carbon storage for decades, reveals a new study published in Science Advances. This is particularly relevant as low oxygen conditions are on the rise in the world's oceans.

The seafloor plays a key role in the global elemental cycles. Its inhabitants consume and recycle organic matter sinking to the bottom. Usually, only a minor part of that material gets buried in the seafloor. The lion's share is remineralised by seafloor life – i.e. broken down and fed back to the ecosystem for the production of new biomass. Thus, the fate of this material at the seafloor crucially impacts global carbon and nutrient cycling and, as a consequence, marine productivity and our climate.

Temporary shortage, long-term storage

Animals need oxygen to breathe. Hence, declining bottom-water oxygen supply negatively impacts the community composition and activity of marine sediments. To which extent it also determines remineralisation and thus carbon burial rates remained controversial. Now an international team of researchers guided from Max Planck Institute for Marine Microbiology in Bremen, Germany, with involvement of Eawag publish their findings in Science Advances: Declining bottom-water oxygen concentrations significantly influence carbon storage in the seafloor for decades. This effect happens earlier than previously thought and over larger areas of seafloor.



Retrieval of cores from the seafloor with the submersible JAGO. Below the black layer that is visible close to the sediment surface the sediment is free of oxygen. (© JAGO-Team, GEOMAR Kiel)

Related Links

Original publication

Release from MPI Bremen

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