

## **Organic matter processing and burial in times of hypoxia**

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Low-oxygen conditions in the ocean were common in the past, are a natural phenomena of the modern ocean and will be increasing in volume, extent, intensity and duration in the future. Climate change is a major driver of ocean hypoxia via warming and changes in stratification and circulation. In the Anthropocene humans also directly impact coastal hypoxia via eutrophication and other perturbing activities.

Hypoxia have major consequences for marine organisms and biogeochemical cycles, in particular those in sediments. Organic matter delivery to sediments may be impacted by hypoxia because of differences in primary producers in the sunlit ocean, in the attenuation of carbon fluxes with water depth and in the contributions of biodepositing and filtering metazoans at the seafloor. In the absence of bottom-water oxygen, anaerobic organic-matter degradation and anaerobic re-oxidation pathways dominate. Microbes increase at the expense of metazoans in carbon processing. These shifts in organic matter processing have the consequence that more carbon and of better quality is eventually buried in marine sediments. The enhanced burial of organic matter in low-oxygen oceans has implications for global oxygen and carbon cycles.