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## NEW INSIGHTS INTO CARBON FLUXES IN THE OCEAN: RESULTS FROM MEDFLUX

Most particulate organic carbon (POC) biosynthesized in the upper ocean is returned there in inorganic form or redistributed in the water column as particles sink. Our MedFlux project in the Mediterranean seeks to understand and quantify variability in carbon flux through its association with ballast minerals, and thus to predict fluxes mechanistically. Collection of sinking material in a manner that enables identification of underlying mechanistic controls on settling and decomposition is fundamental for quantifying vertical flux and changing composition of particles. To do so we have developed new sampling strategies, notably sediment traps that collect material on the basis of in-situ sinking velocity. We are now able to measure the spectrum of sinking velocities and have found it to be remarkably constant at several depths and independent of total flux. Organic compositions of material vary as a function of settling velocity, with the larger, faster-sinking particles being enriched in biomarkers indicative of fresh algal material and zooplankton fecal pellets and the smaller, slower-sinking particles being more reworked by bacteria. Further implications of this work will be discussed.

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Oral (invited tutorial)

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