

Abstract MBARI paper

Impacts of variable carbon availability on a benthic community structure

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There is recent evidence of large episodic pulses of particulate organic carbon to the seafloor off the California coast. How do these events impact food-limited communities at abyssal depth? A change in seafloor animal community structure at Station M (NE Pacific, ~4000m) was observed by remotely operated vehicle in 2011 after a large episodic pulse event. Here the community is investigated on a daily to weekly scale after the pulse event. Daily photographs were annotated for 21 mobile megabenthic deposit feeding species during time-lapse camera deployments from 2010 to 2018. Four significantly distinct communities were identified, one prior to the pulse event and three afterwards, which varied in density, evenness, diversity, and dominant species. These communities can be summarized as 1) a period of bloom, 2) a peak of the Elpidid *Peniagone* sp. A. with very low evenness, 3) a period of changing community with the greatest evenness and diversity, and finally 4) a more even community with a dominant taxon of *Psychropotes*. This variability on the abyssal seafloor, the largest environment on the planet, suggests a more dynamic view of these communities than previously understood. Current methods for investigating deep sea communities may need to include methods able to identify natural variability. Future research should investigate the long-term effects of changing carbon on abyssal communities in other locations and the potential to mask anthropogenic impacts.

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