Deep-sea carbon uptake off the California Coast (Station M, 4000 m)?

Crissy Huffard
Senior Research Technician

Pelagic-Benthic Coupling group: Ken Smith, Jr., Crissy Huffard, Linda Kuhnz, Larissa Lemon, Danielle Fabian, Rich Henthorn, John Ferreira, Paul McGill, Alana Sherman
Outline

• Background
• Introduction to MBARI
• Abyssal carbon dynamics
B.S. Marine Science
Ph.D. Integrative Biology
Post Doc at MBARI
4 yr. conservation science management (international)
5 yr. research tech
Monterey Bay Aquarium Research Institute (MBARI)

• MBARI is a peer relationship among scientists and engineers to accelerate ocean science progress through the development of new technology.
Monterey Bay Aquarium Research Institute

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Biologists/ecologists
Engineers

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  Backgrounds: Military Industry NGO Students Academia

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Monterey Bay Aquarium Research Institute

- Location in Moss Landing allows us easy access to the Monterey Canyon’s deep-sea ecosystems
Monterey Bay Aquarium Research Institute

- Website: www.mbari.org
- Twitter: @MBARI_News
- YouTube channel: MBARI
Big-picture questions

• How much carbon actually makes it to the deep sea and gets stored in deep-sea sediments?
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• What happens to it once it’s down there?
Big-picture questions

• How much carbon actually makes it to the deep sea and gets stored in deep-sea sediments?
• What happens to it once it’s down there?
• How are deep-sea ecosystems affected by changes in carbon supply?
Station M is 4000 m deep
We can go there 1-2 times/year
Station M is 4000 m deep
We can go there 1-2 times/year

• Instruments need to work autonomously (robotically) 4000 m (2.5 miles) deep for up to one year
FOOD SUPPLY: sinking carbon quantity and quality
FOOD DEMAND:
Sediment community respiration
Benthic Rover turning into current
Pelagic-Benthic Coupling lab findings

- More carbon is reaching the CA seafloor now compared to the previous 20 years
Station M 4 kilometers deep
Low food supply
Station M 4 kilometers deep
High food supply
Pelagic-Benthic Coupling lab findings

- More carbon is reaching the CA seafloor now compared to the previous 20 years.

- Most of that carbon is consumed shortly after it reaches the sea floor, but recently we have seen some big surpluses.
Pelagic-Benthic Coupling lab findings

• More carbon is reaching the CA seafloor now compared to the previous 20 years

• Most of that carbon is consumed shortly after it reaches the sea floor, but recently we have seen some big surpluses.

• Animals and microbes move into the area and reproduce when food is abundant.
Thank you for attending!

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Thank you ship’s crew and ROV pilots for supporting our at-sea endeavors