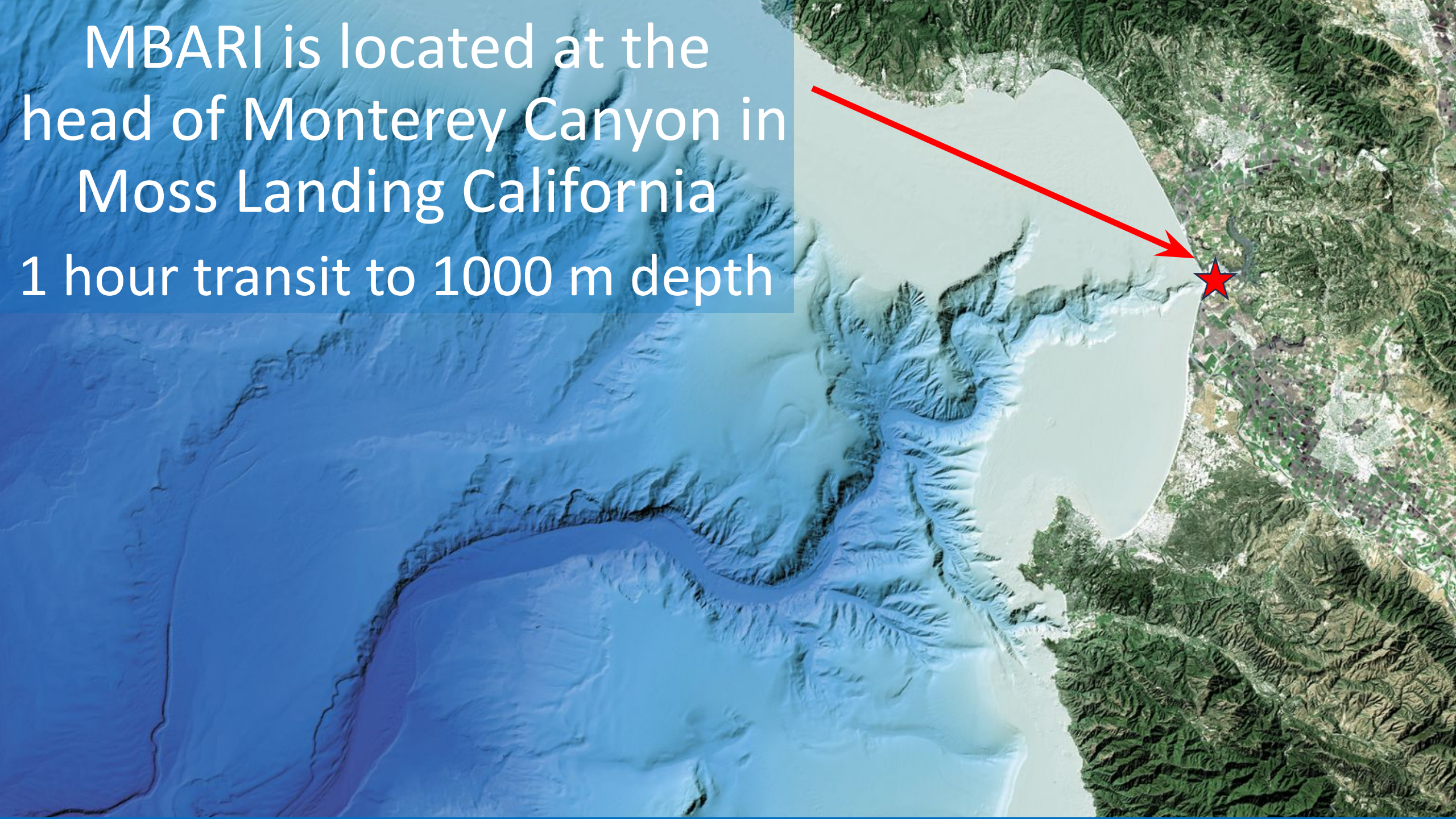
A photograph of two whale tails breaching the ocean surface. The tails are dark and covered in small, light-colored bumps. In the background, a large, multi-story building with a grey roof and blue-tinted windows is visible. Several birds are flying in the sky above the building. The water is dark blue with white foam from the whale's splash.

MBARI
Deep Submergence
Capability Update
David Caress
DeSSC Public Meeting
18 February 2024



Monterey Bay Aquarium Research Institute

- Private nonprofit founded in 1987 by David Packard
- Funded by David and Lucile Packard Foundation
- Sister institute to Monterey Bay Aquarium
- Annual budget ~\$60M
- About 200 staff (~60 scientists, ~60 engineers, ~40 operations)
- Mission: **Technology development for Oceanography through an equal collaboration of Engineering, Science, and Marine Operations**



MBARI is located at the
head of Monterey Canyon in
Moss Landing California
1 hour transit to 1000 m depth

MBARI operates three ships and many submarine robots to study the oceans



R/V *Rachel Carson*



R/V *Paragon*



Seafloor rover



R/V *Western Flyer*



Mapping AUVs



12MAP AUV



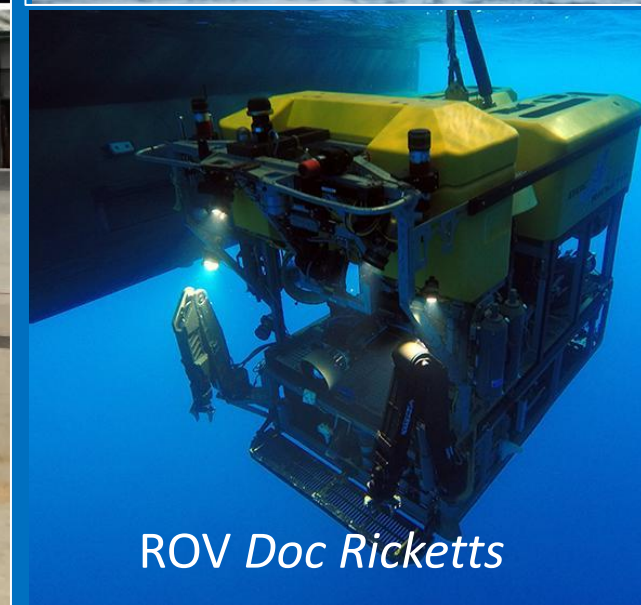
Gulper AUV



ROV *Ventana*



Long-range AUVs



ROV *Doc Ricketts*

New Research Vessel: R/V David Packard

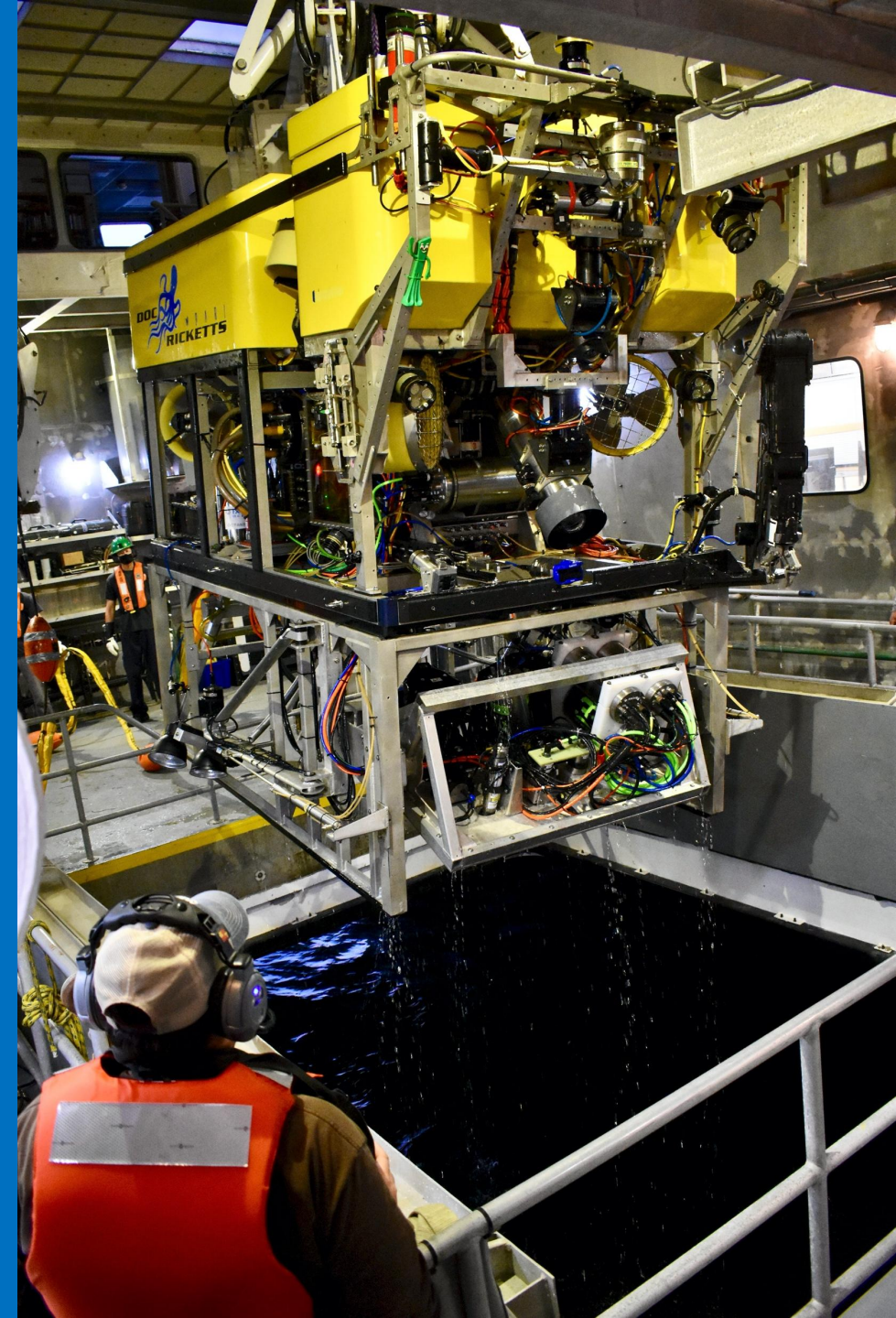
- 50 m (164 ft) length
- 3.7 m (12 ft) draft
- Delivery May 2024
- Regular ops 2025
- ROV Doc Ricketts (4000 m)
- AUV operations
- Science party 11-14



R/V Western Flyer gifted to Florida Institute of Oceanography

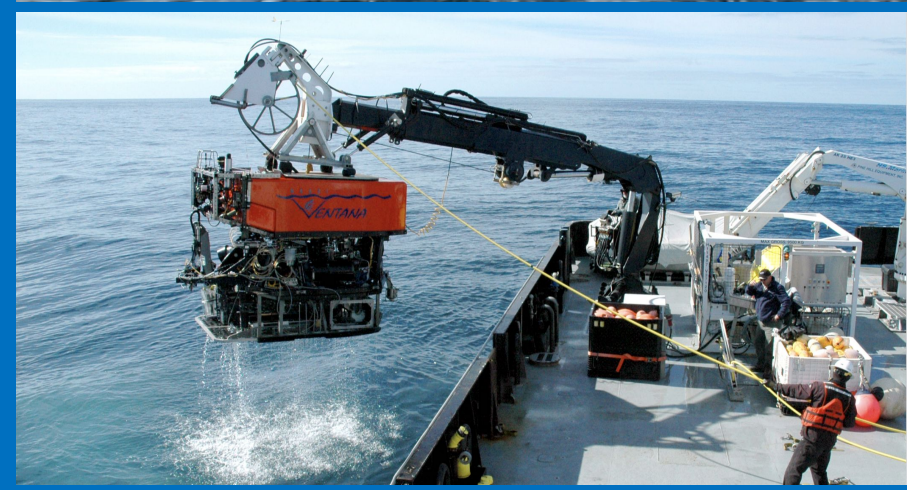
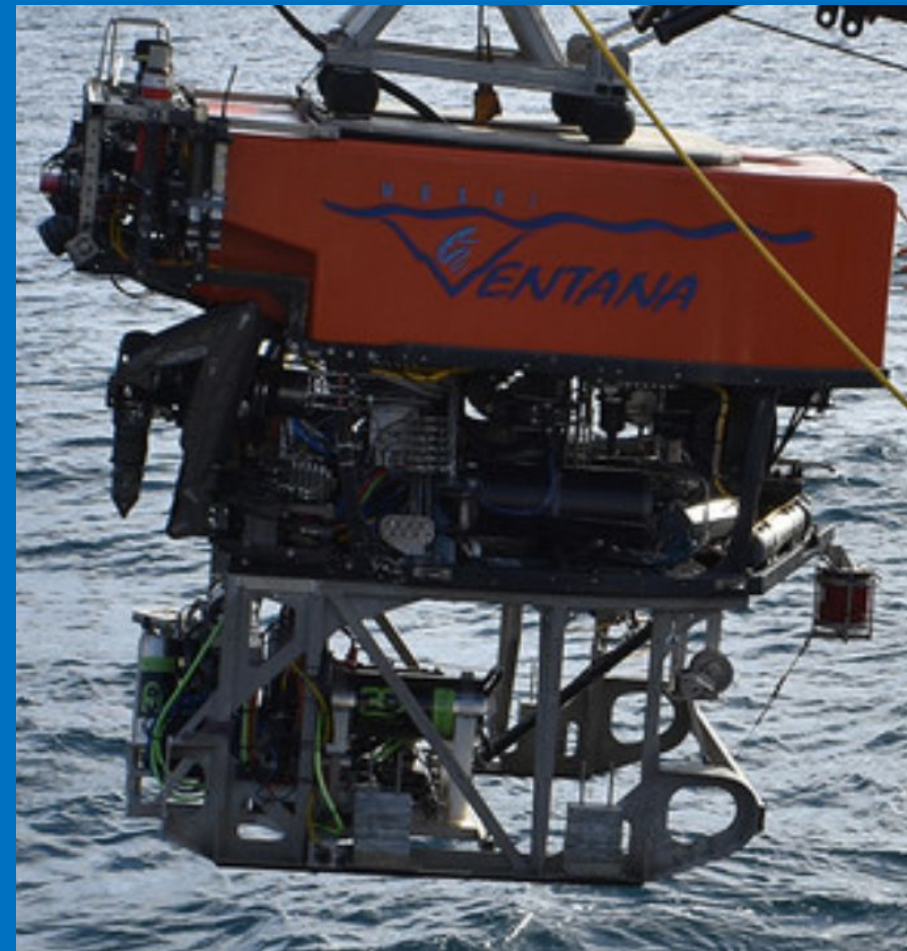
ROV Doc Ricketts

- 4000 m rated
- Hydraulic work class ROV
- 1461 dives since 2009
- ~120 ops days each year
- To be operated from R/V David Packard



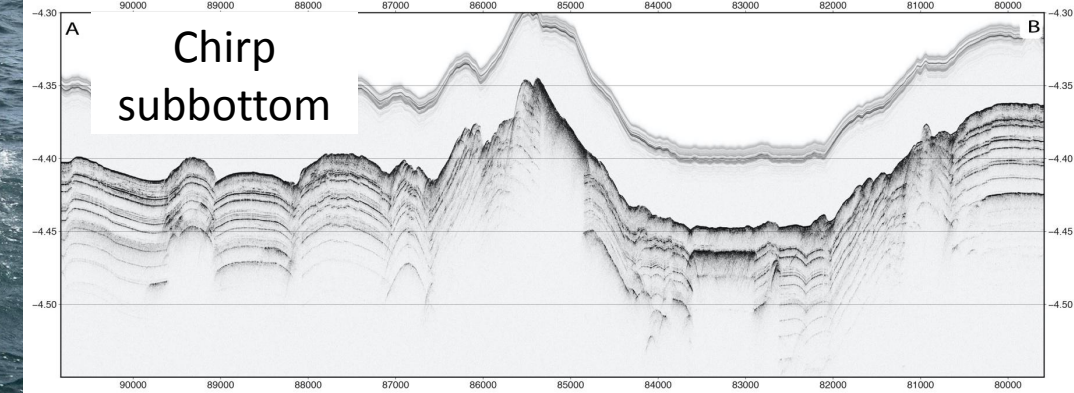
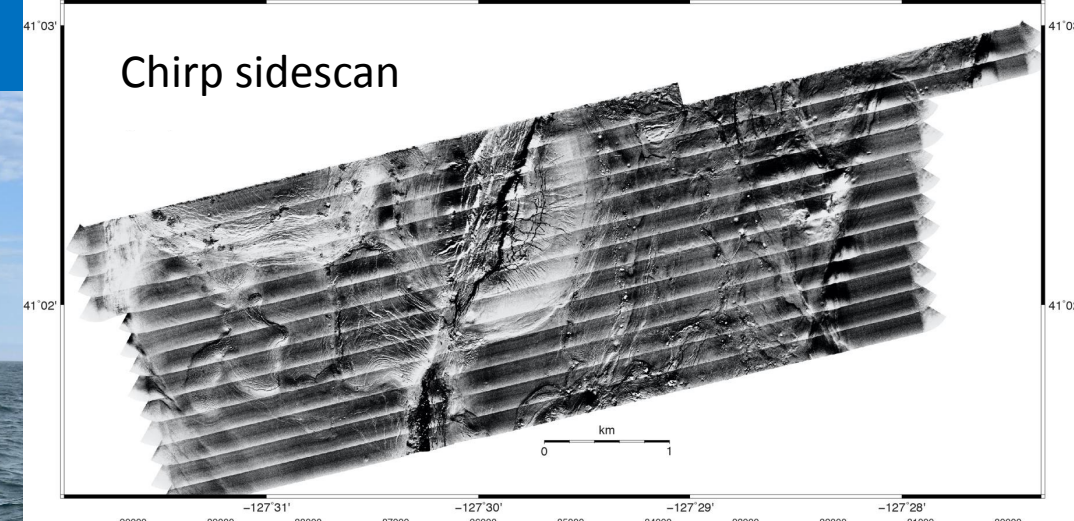
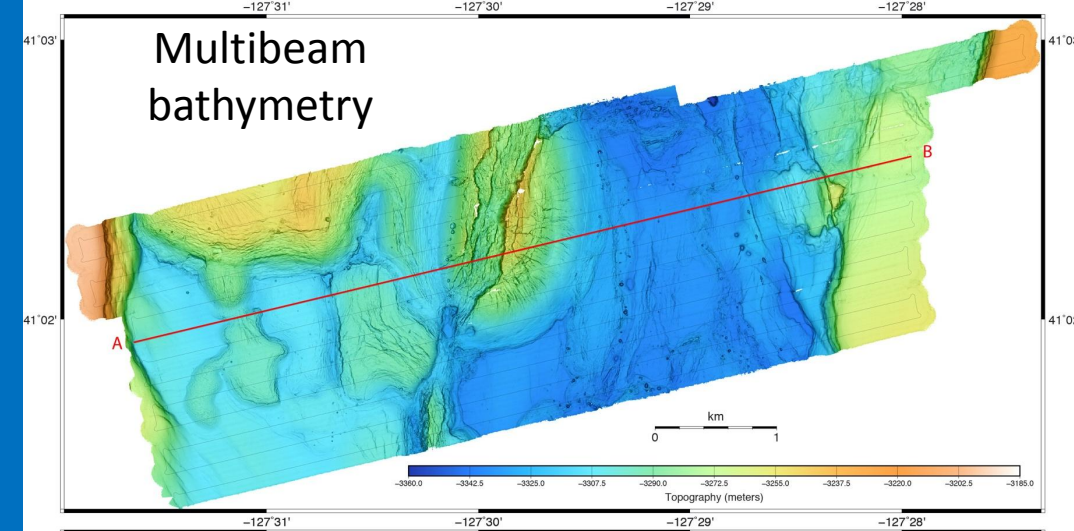
ROV Ventura

- Small hydraulic ROV
- 1850 m rated
- Operated on R/V Rachel Carson, mostly on day trips
- 4500 dives since 1989
- ~150 ops days each year



Dorado Mapping AUVs

- Two AUVs operated simultaneously
- 1-Meter Scale Mapping, 18 hour duration
- 6000 m depth rated
- Multibeam bathymetry & backscatter
- Chirp sidescan & subbottom
- Since 2006 – Hundreds of surveys



A wide-angle photograph taken from the deck of a research vessel. The sun is rising over a dark, silhouetted coastline in the distance, creating a bright orange and yellow glow on the horizon. The sky is filled with wispy, light-colored clouds. The water in the foreground is dark with small, rhythmic waves. The deck of the vessel is visible in the lower foreground, showing various pieces of equipment and railings.

Sunrise February 17, 2024
off Vigo Spain following
successful multibeam sea
trials of R/V David Packard