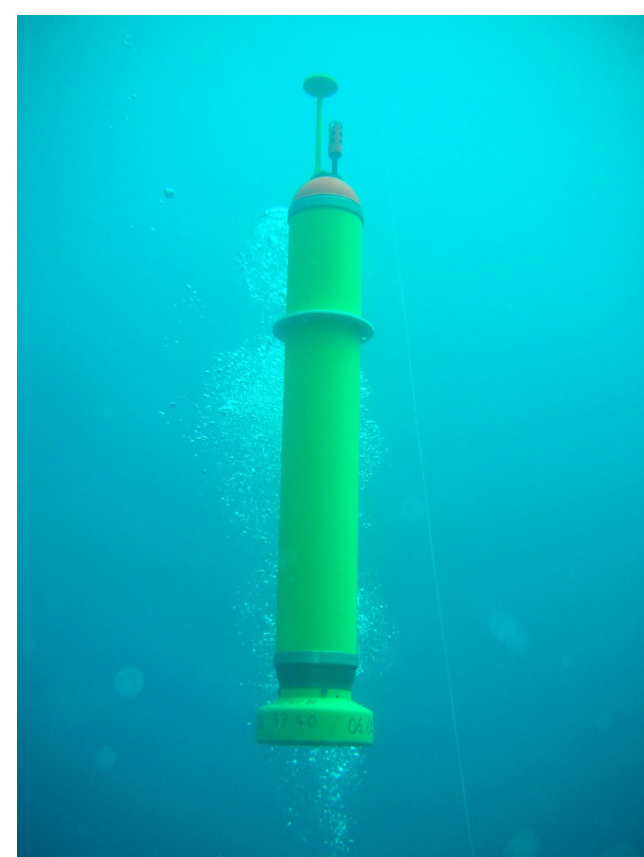


### What is MERMAID?

*Mobile Earthquake Recording in Marine Areas by Independent Divers* are freely drifting oceanic floats equipped with a hydrophone designed to detect, classify, and report low-frequency hydroacoustic signals. Diving to 2,000–4,000 m depth, they record the oceanic soundscape.



MERMAID-I  
(2003–2012)

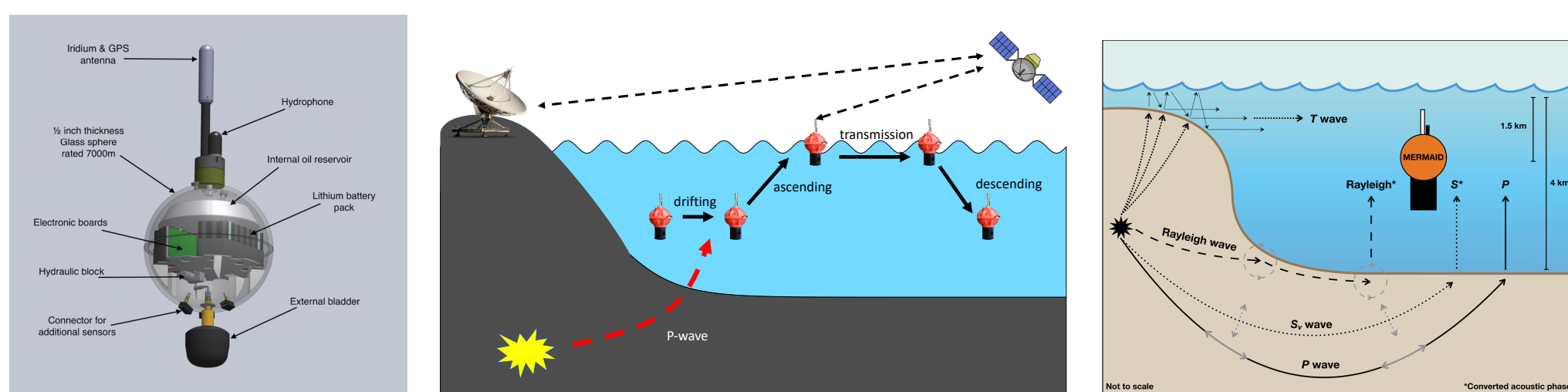


MERMAID-II  
(2012–2016)



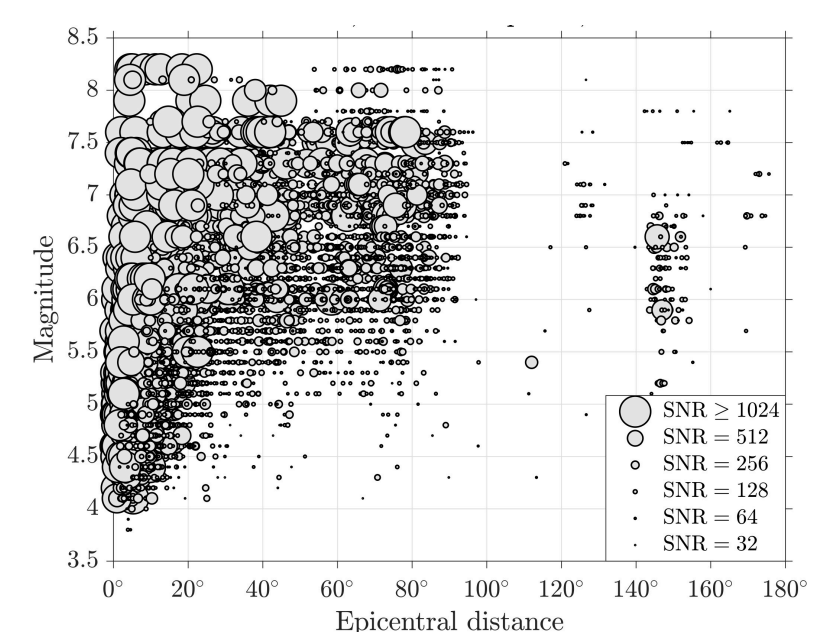
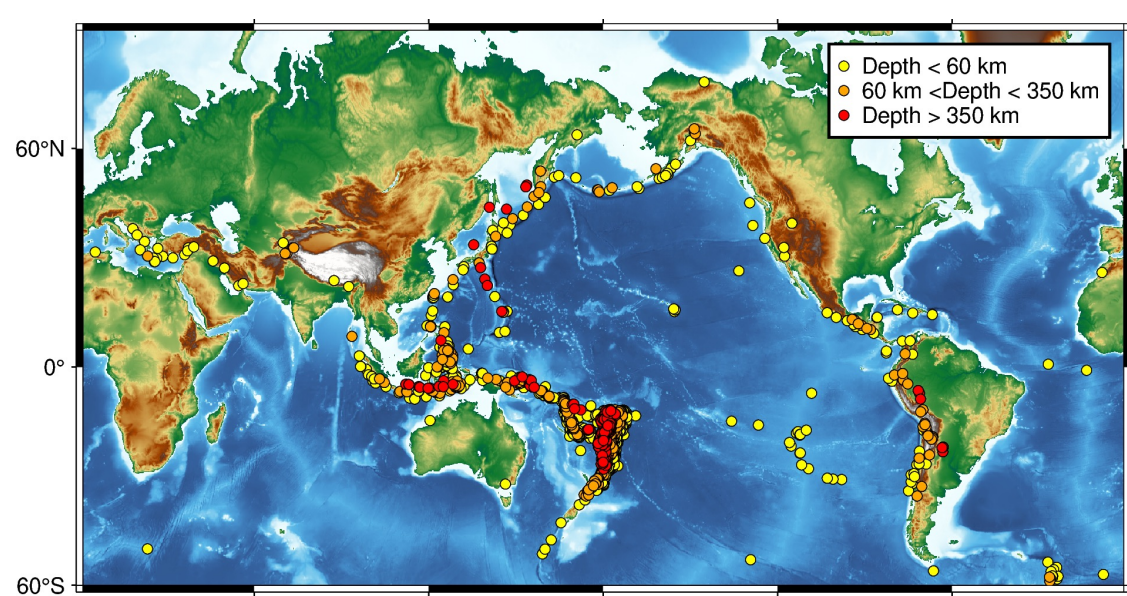
MERMAID-III  
(2016–now)

### The third-generation instrument, built by OSEAN SAS



Equipped with GPS and two-way Iridium communications, MERMAID-III detects & reports earthquake signals, returns acoustic 1-year buffer data upon request, with a lithium-battery lifetime of 5+ years (or 250+ customizable cycles).

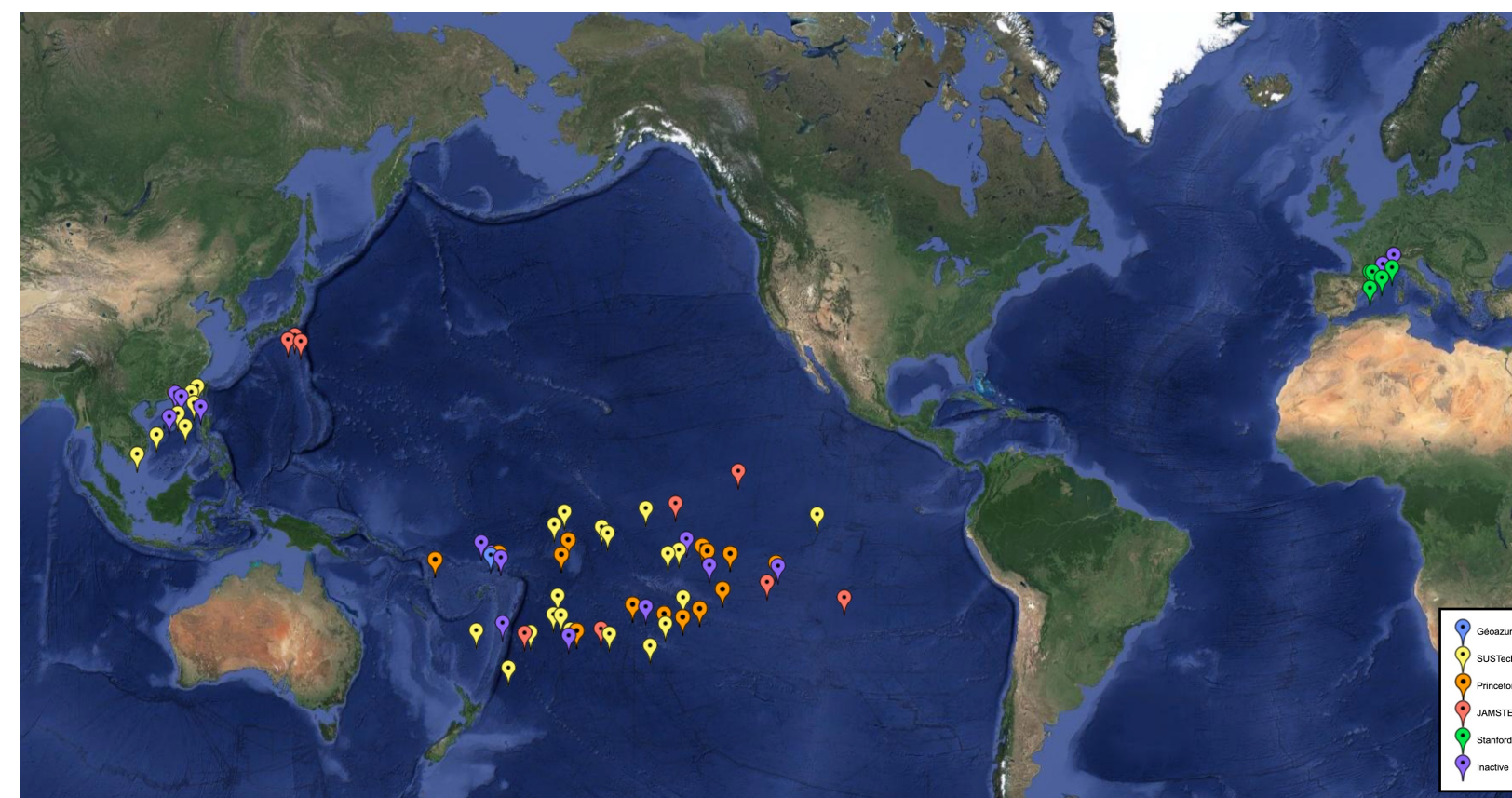
### The South Pacific Mantle Plume experiment (2018–)



Over 50 MERMAID-III instruments were deployed in the South Pacific to collect earthquake seismograms, to conduct tomographic wavespeed inversions of the upper mantle, to study the composition and temperature of mantle plumes underneath Polynesian hotspots. Over 3,000 earthquakes have been identified.

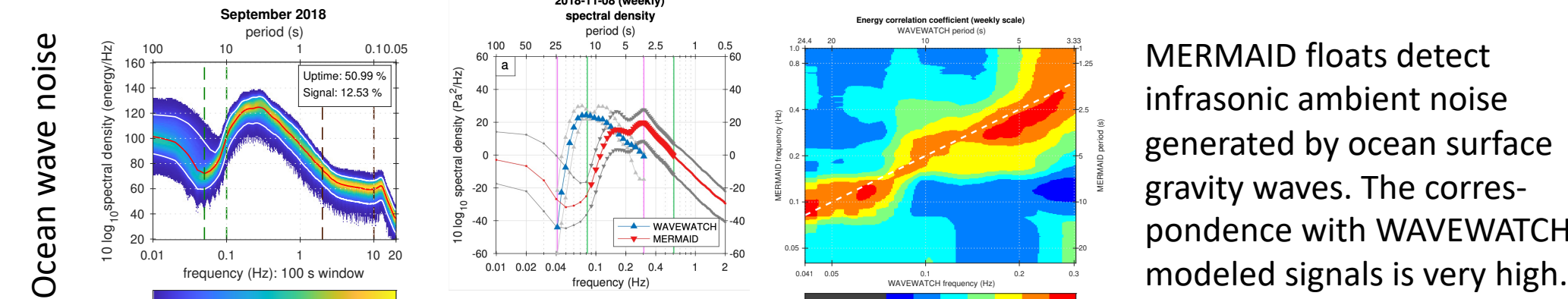
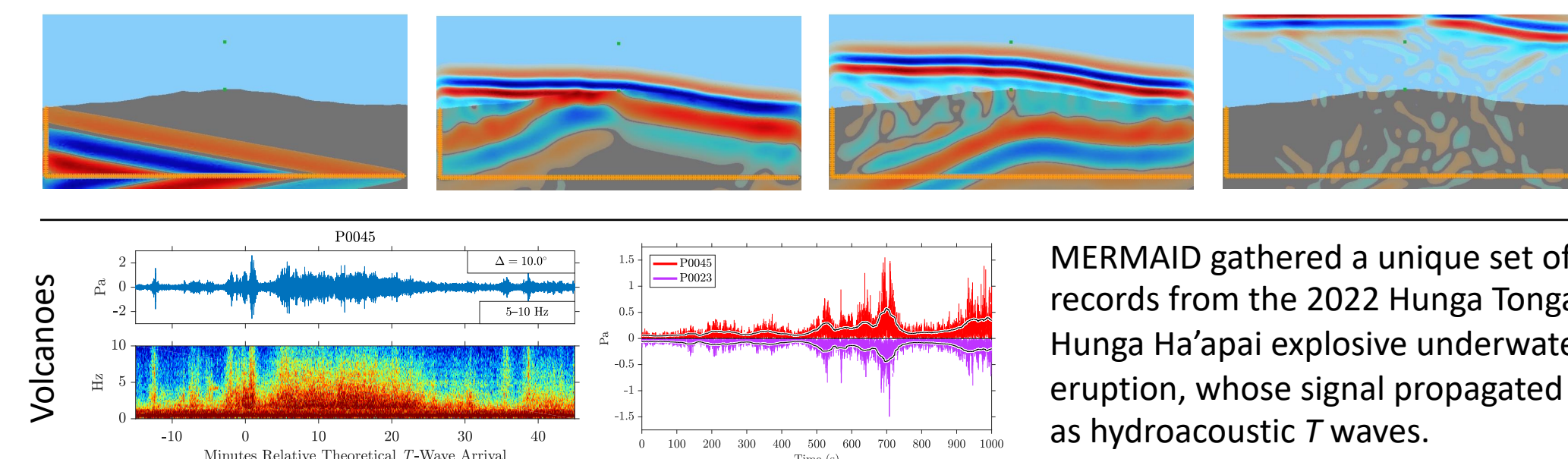
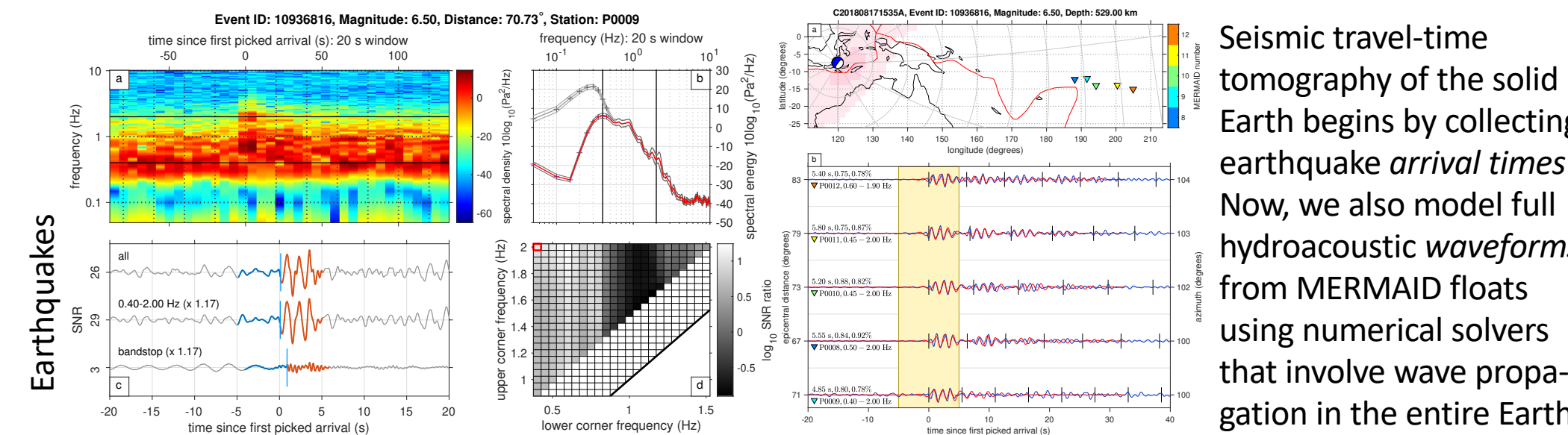
### What is EarthScope-Oceans?

We are a multidisciplinary international academic consortium who have created a global network of ocean-based sensors for seismology and solid-Earth science, expanding into volcanology, environmental sensing, meteorology, oceanography, and marine bioacoustics.



Some 75 MERMAID-III instruments have been deployed in the Pacific, the Mediterranean, and the South China Sea. The average instrument lifetime, targeted for 250 descent-ascend cycles, exceeds 5 years. EarthScope-Oceans' goal of bringing 300 MERMAIDs into all of the world's oceans was endorsed as a UN Ocean Decade *Programme in Ocean Observing CoDesign* project in 2022.

### Modeling Earth and Ocean Sounds



### The future

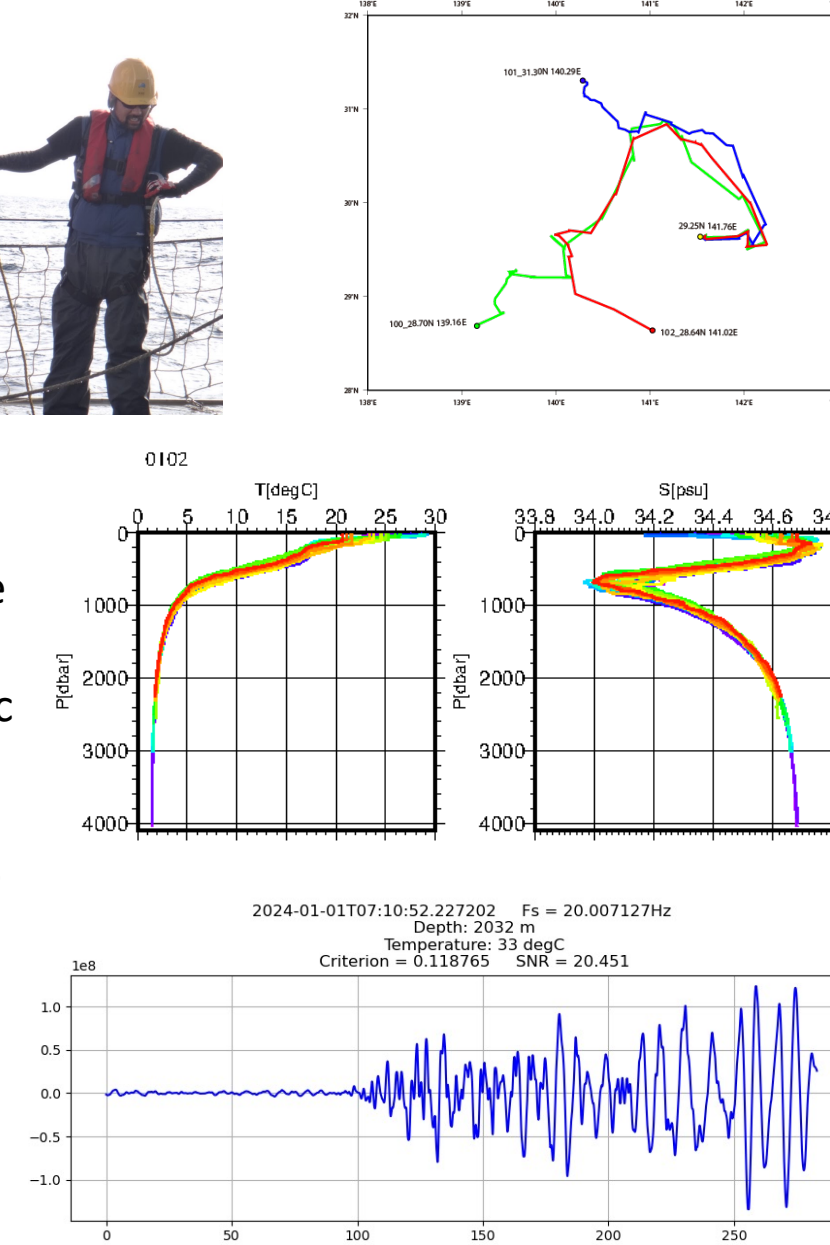
MERMAID includes several open data ports suitable for other sensors. Princeton, JAMSTEC, CNRS Géoazur, and OSEAN SAS integrated an SBE conductivity-temperature-depth sensor (CTD) into a new MERMAID-IV model capable of carrying out profiling missions to depths of 4,000 m.



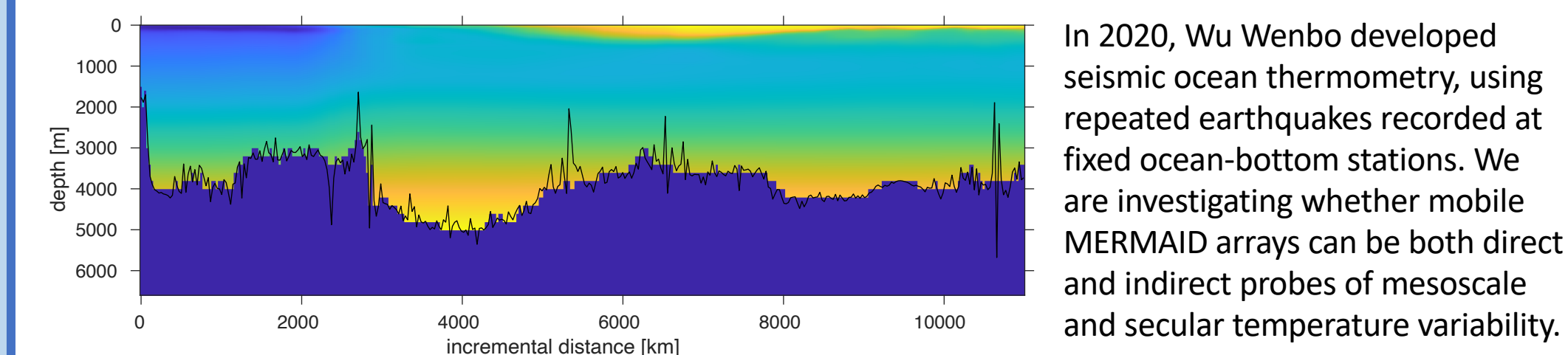
MERMAID-IV  
(2023–now)



The latest generation has effectively become a Deep-Argo float, collecting hydrographic CTD profiles while continuing to record and report earthquake waveforms. Three instruments were launched in the Pacific in June 2023. A 6,000 m version is under development.



### Active and Passive Ocean Thermometry



### Outreach: Adopt-A-Float (2003–now)

### Literature: A sample