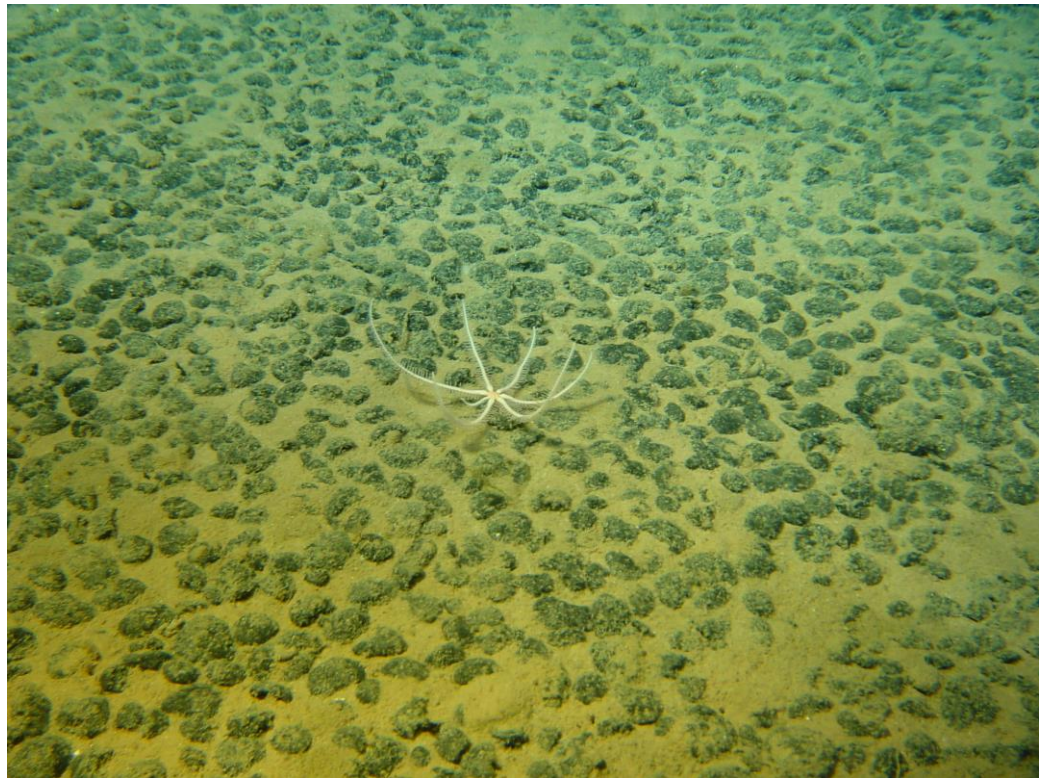


Six new seamounts discovered in the Pacific

Scientists on board the oceanographic vessel *Pourquoi pas ?*, flagship of the French oceanographic fleet operated by Ifremer and its shipping subsidiary Genavir, have recently mapped 16 seamounts in the North Pacific off Mexico. Ten were previously identified by satellite imagery but the other six had never been recorded.






This discovery is a direct result of Ifremer's strategy to optimize routes of research vessels when they sail to little-accessed and therefore little-studied areas, such as the abyssal plains between Mexico and the Clarion-Clipperton zone. - CC-BY Ifremer

Contacts

Sacha Capdevielle /
Alexis Mareschi
06 07 84 37 97 /
06 15 73 95 29
presse@ifremer.fr

www.ifremer.fr

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Although satellite imagery (or altimetry) can generate global maps of the ocean, the topography of the ocean floor remains relatively inaccurate with this method. To improve our knowledge of underwater relief, we need to deploy oceanographic vessels and subsea equipment. The ships of the French Oceanographic Fleet now optimize their routes to map virtually uninvestigated areas around the globe. As an example, transits of the NODULE-2024 oceanographic campaign (financed under the France 2030 "Deep Seabed" program managed by the French National Research Agency), in April 2024, produced a bathymetric map with better resolution than altimetric maps, of an area of over 44,000 km² between Mexico's EEZ and the Clarion-Clipperton zone. In this sector, 16 new seamounts were mapped instantaneously and for the very

first time directly from the research vessel Pourquoi Pas?.

“Six of these features had never been identified, as they are too small to be detected by altimetry,” explains **Delphine Pierre, a hydrographer at Ifremer**. Thanks to the deep-sea multibeam echo sounders on the research vessel *Pourquoi pas ?*, we produced a bathymetric map of the ten seamounts already identified by satellite data, but four times more accurate, and revealed the existence of six other small seamounts.”

These submarine mounts, ranging from 600 to 3,800 metres in height are located at more than 620 kilometers from the nearest coast off mainland Mexico.

STEPPING STONES FOR BIODIVERSITY, FROM THE ABYSS TO THE SURFACE

Seamounts are generally the only hard substrata found on abyssal plains, where they provide ideal anchorage for large marine invertebrates (sponges, corals) and habitats for other species. They constitute habitats and stepping stones for fixed benthic fauna, as well as for species living in the water column, including marine mammals that feed in these areas.

“The highest peak of these new seamounts is just 430 meters below the surface, while the surrounding seafloor is more than 4,100 meters deep,” details **Florian Besson, a geologist at Ifremer**, “which necessarily makes them exceptional structures both from a hydrodynamic point of view and in terms of the biodiversity they may harbor.”

Identifying and mapping new seamounts is the first step towards a better understanding of their role in the functioning of the global ocean. To investigate the role of these landforms in biomass development, marine species dispersal, and regional ocean dynamics, a number of selected seamounts are being studied in greater detail and equipped with underwater observatories, such as those deployed on the seamounts in New Caledonia in 2023.




The international effort to map the world's oceans

Bathymetric data collected by the vessels of the French Oceanographic Fleet, operated by Ifremer and Genavir, are available to the public on Ifremer's SISMER bathymetric data portal. These maps contribute to the joint efforts of the scientific community, through the EMODnet program for the European seabed and the international Seabed 2030 initiative, which aims to map all the oceans by the end of this decade

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