Science & Technology

What the Ocean Floor Can Tell Us About Climate Change

Deep-sea sediment provides a trove of information about our planet’s past and future. Illustrations by Jackie Roche.

By
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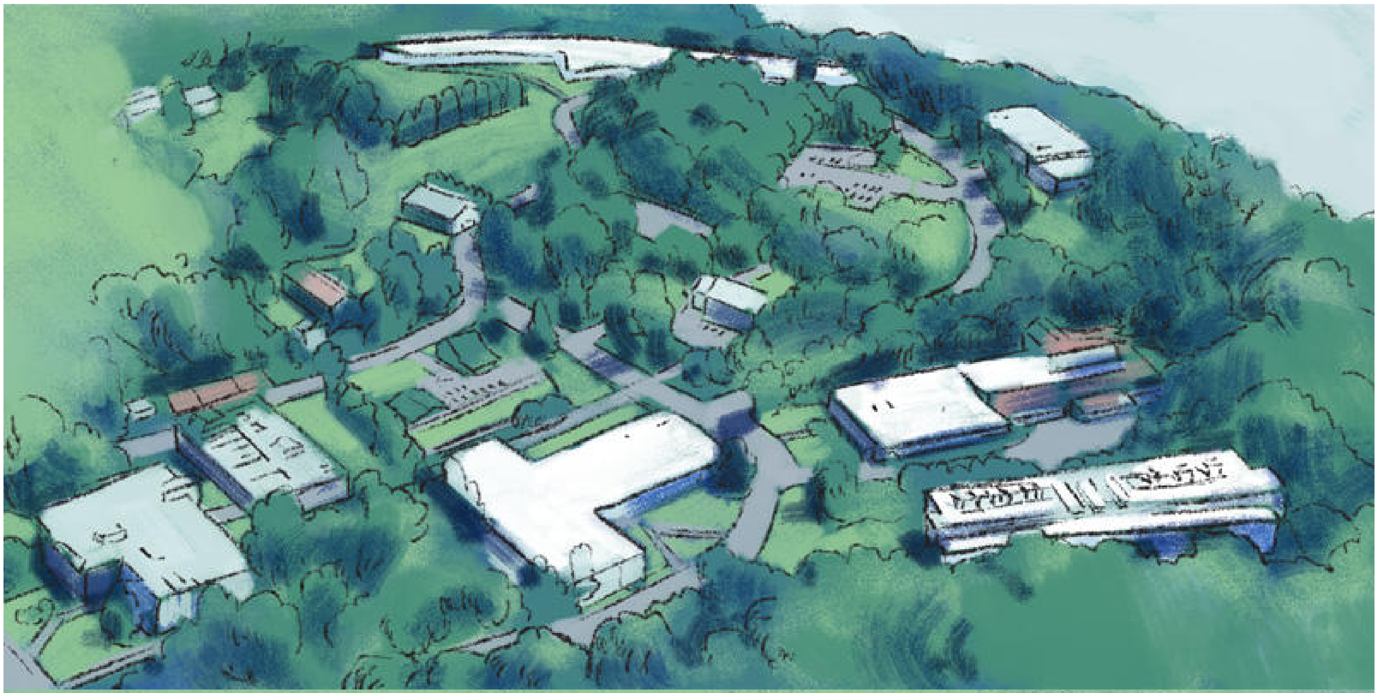
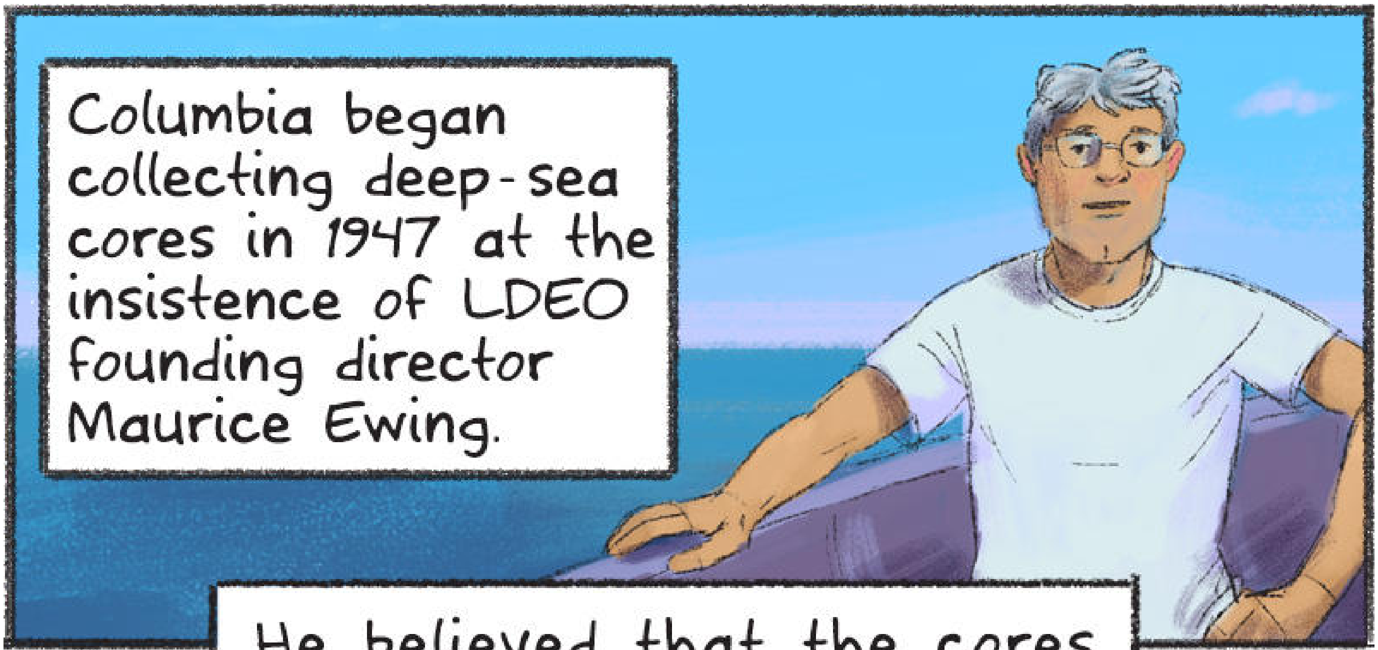


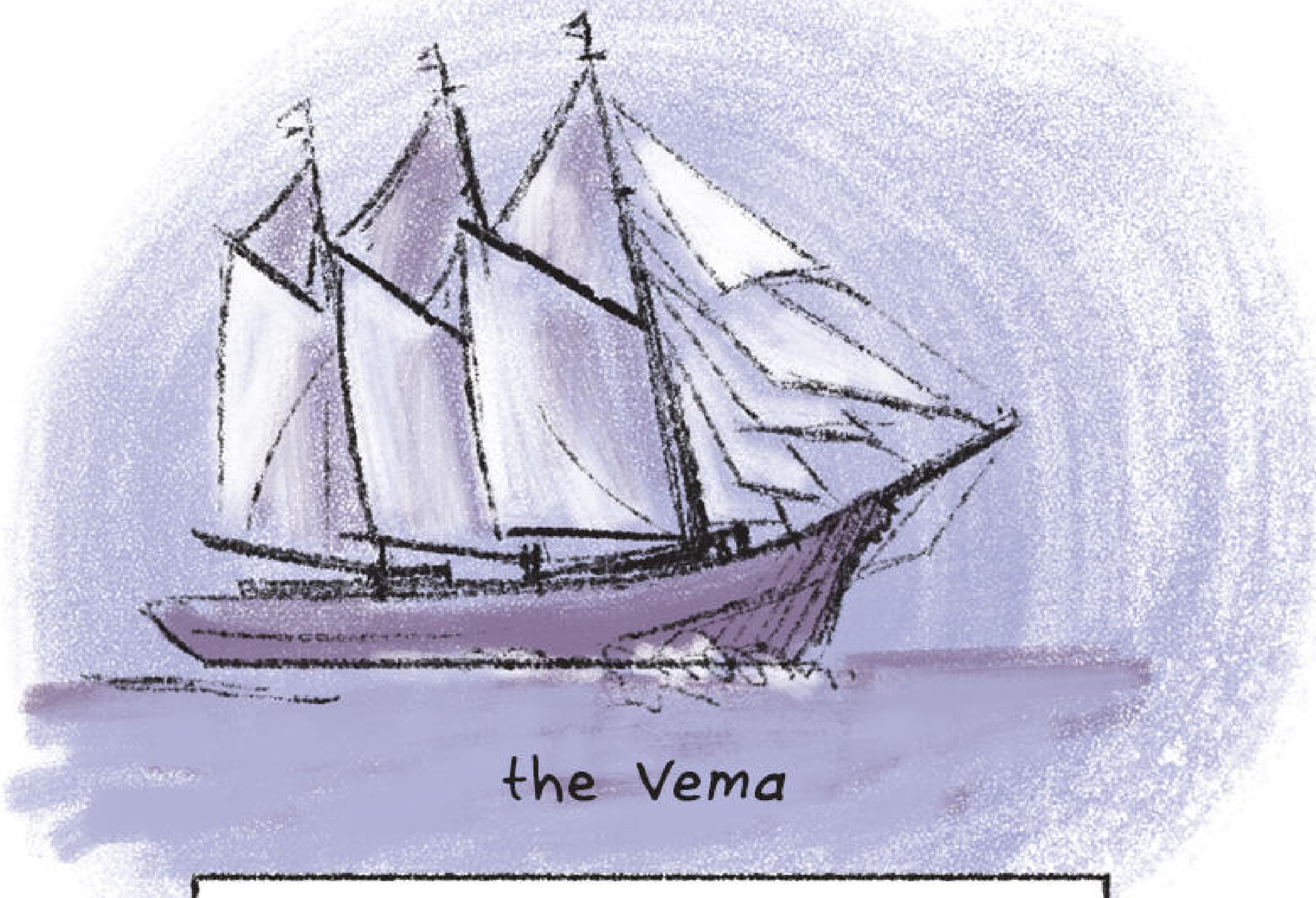
In the rural hamlet of Palisades, New York, sixteen miles north of Morningside Heights, scientists at Columbia's Lamont-Doherty Earth Observatory (LDEO) study the planet from the outer reaches of its atmosphere to the depths of its oceans.

Their research is lauded for its insights into our planet's geological evolution, tectonic activity, and climate systems.

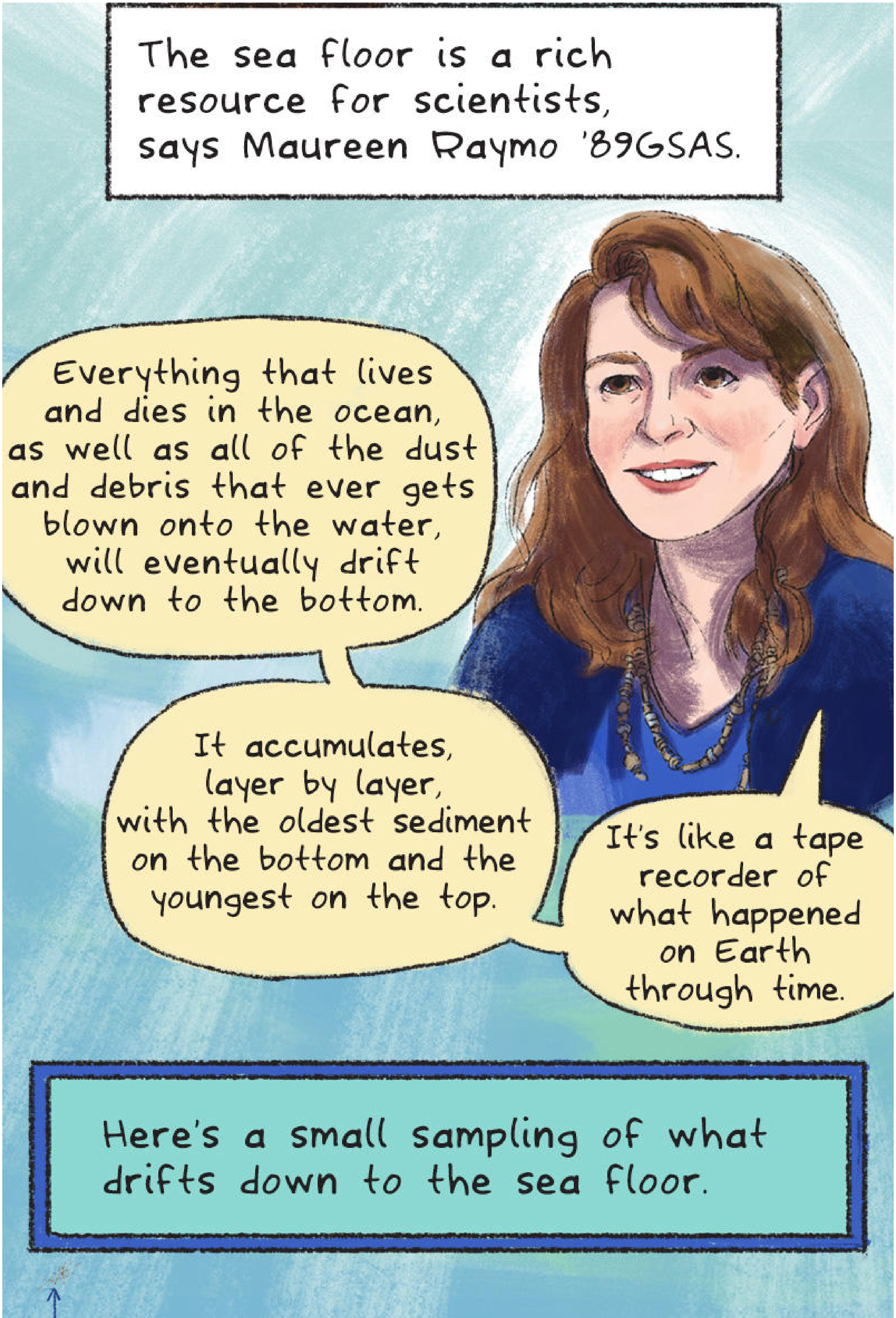


Columbia began collecting deep-sea cores in 1947 at the insistence of LDEO founding director Maurice Ewing.

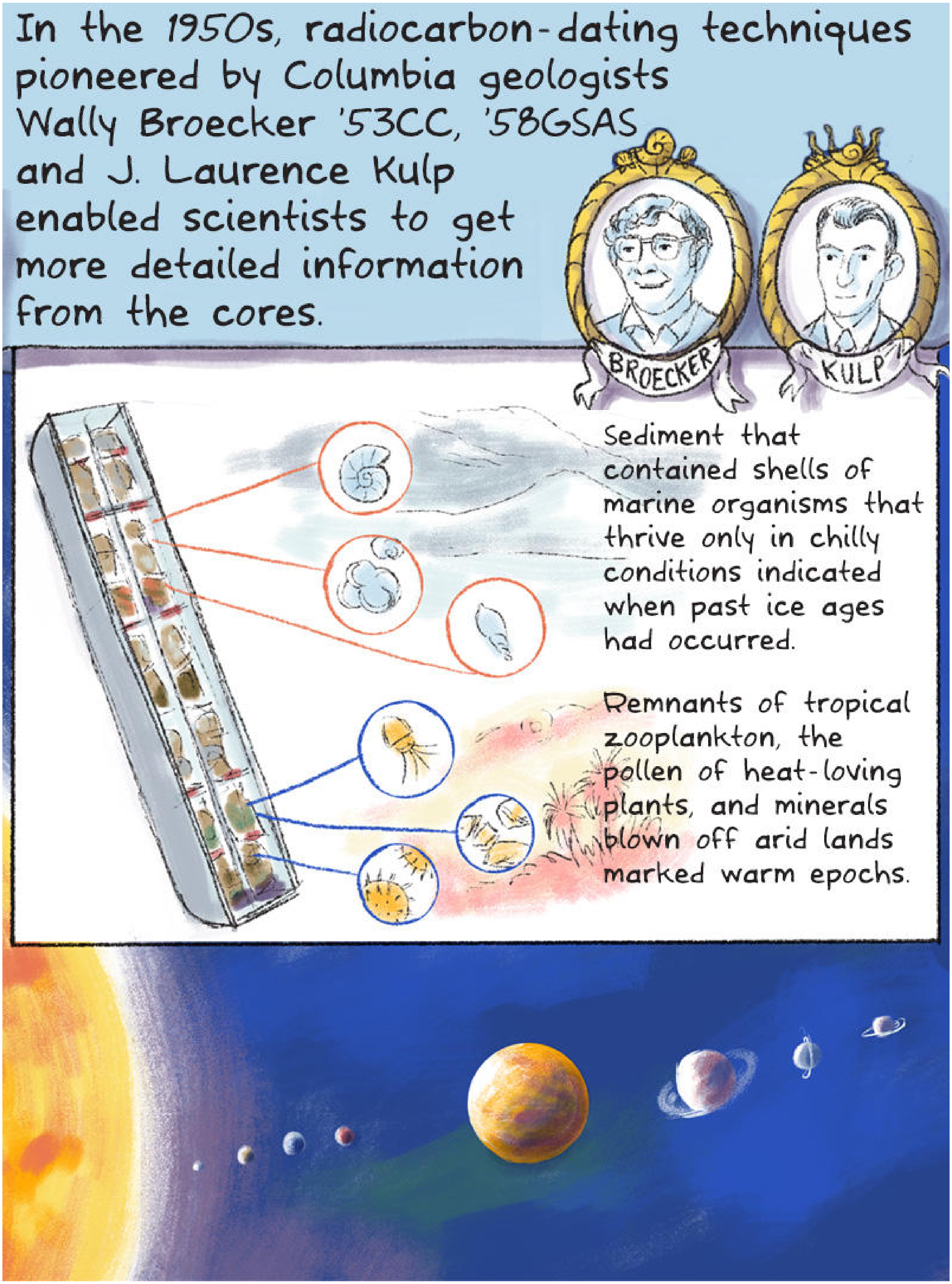
He believed that the cores would provide clues to our geological history.



Over the next four decades, the University had two research ships at sea, The sea floor is a rich resource for scientists, says Maureen Raymo '89GSAS.



Here's a small sampling of what drifts down to the sea floor.

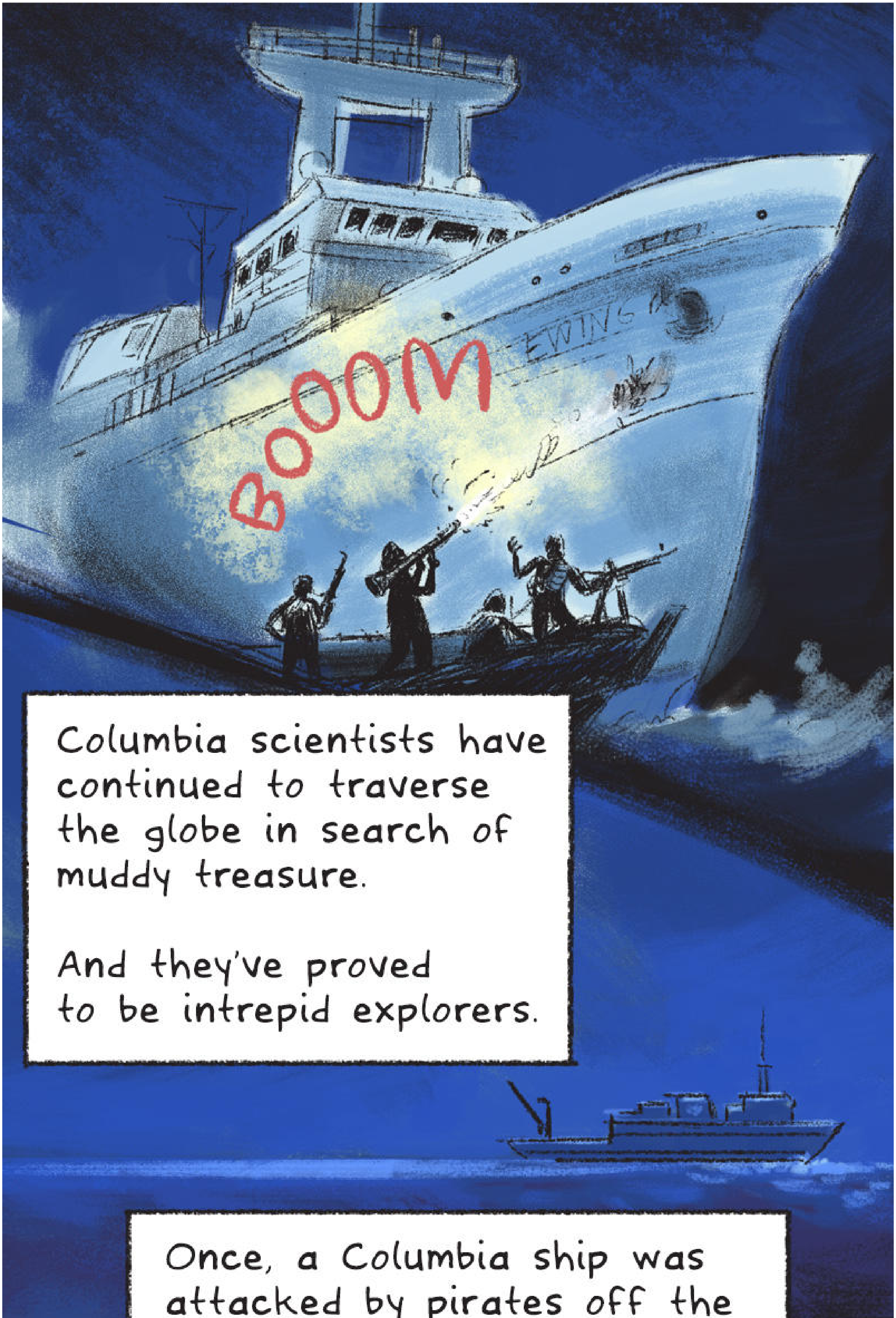


In the 1950s, radiocarbon-dating techniques pioneered by Columbia geologists Wally Broecker '53CC, '58GSAS and J. Laurence Kulp enabled scientists to get more detailed information from the cores.

Sediment that contained shells of marine organisms that thrive only in chilly conditions indicated when past ice ages had occurred.

Remnants of tropical zooplankton, the pollen of heat-loving plants, and minerals blown off arid lands marked warm epochs.

Thousands of analyses by researchers at Columbia and other institutions were



Columbia scientists have continued to traverse the globe in search of muddy treasure.

And they've proved to be intrepid explorers.

Once, a Columbia ship was attacked by pirates off the


Today, much of the research conducted at LDEO investigates how specific parts of the world have been affected by climate change in the past — and how they might be affected in the future.

Analysis of ocean sediment has led scientists to predict, for instance, that large areas of North America, Central Asia, Africa, and the Middle East could become much less hospitable in the coming decades because of water shortages.

Meanwhile, interest among the larger scientific community in LDEO's deep-sea cores continues to grow.

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