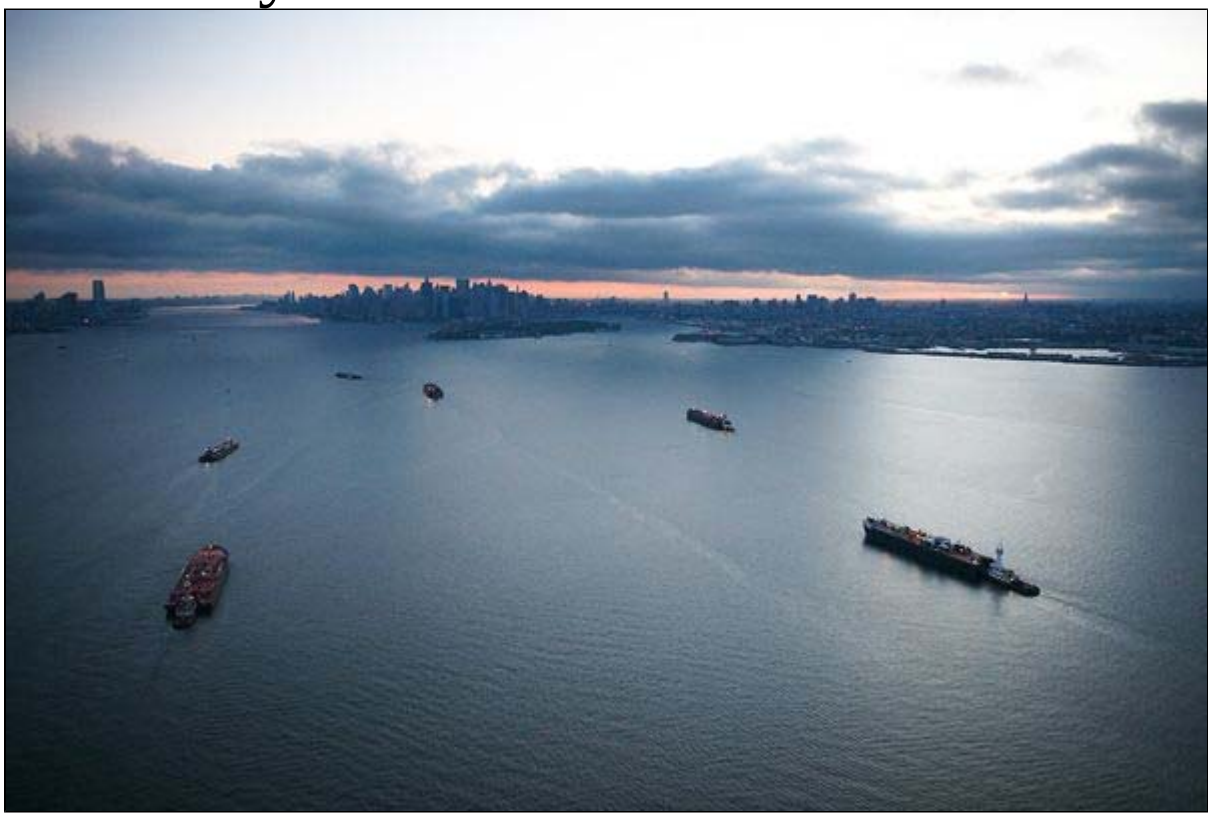
Giant Carbon "Vault" Proposed Near New York City



The New York City harbor is seen before sunrise.

Photograph by Cameron Davidson, Photographer's Choice/Getty Images

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for National Geographic News

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Several new underwater "vaults" that could stash the potent greenhouse gas carbon dioxide have been found—and one of them is right outside New York City, a new study says.

Such close-in vaults would be convenient, but could pose an earthquake risk, experts say.

Some of Earth's largest ancient lava flows lie below the Atlantic Ocean seafloor not far from the Big Apple.

The vault regions include rubble-filled, fractured, and otherwise porous volcanic layers in which massive amounts of liquid CO2 could be safely stored, the research found.

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"We're saying, here's a potential reservoir that has favorable characteristics, and it might be worth looking at some more," said study author Dennis Kent, a geologist at Rutgers University.

It's unknown how much the New York City-area reservoir could hold. But scientists estimate that one vault near the beach in Sandy Hook, New Jersey, could store emissions from up to four coal power plants for the next 40 years.

However such underground carbon storage is still in the preliminary phase, with pilot projects underway in Iceland and in the United States' Columbia River plateau, experts say.

Great Jersey Valley

The team used seismic imaging to discover several promising carbon-storage sites within the undersea Central Atlantic Magmatic Province, which stretches along the eastern U.S. and Canadian coasts.

The rocks formed when lava oozed out some 200 million years ago as the

supercontinent Pangaea broke apart.

At the time, New Jersey was home to a great rift valley full of volcanic-rock flows. The area looked like today's East Africa, where the Horn of Africa is slowly drifting away from the rest of the continent.

In some cases the rock formations stretch right up to beaches like Sandy Hook. Other sites lie a dozen or so miles offshore, according to the study, published this week in the*Proceedings of the National Academy of Sciences.*

High pressures and cool temperatures far beneath the ocean floor should maintain CO2 as a liquid denser than seawater—making leaks unlikely, Kent said.

A thick, overlying layer of seafloor rock and sediment would also serve as an additional natural seal to prevent escape.

But if CO2 leaks did occur, they could hurt marine wildlife and change ocean chemistry.

Quake Risk

Storing carbon close to cities could pose both advantages and risks, experts say.

For one, CO2 could be more easily captured from nearby smokestacks or other polluting sources, without the logistical challenges and expenses of long-distance transport.

On the other hand, keeping CO2 vaults so close to metropolises may be disastrous should anything go wrong.

For instance, the project carries the potential risk of triggering earthquakes, Kent said.

"Even though this is a seismically benign area, by overpressuring [the rock] a bit and changing local stresses, it's conceivable that earthquakes could be triggered."

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