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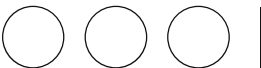
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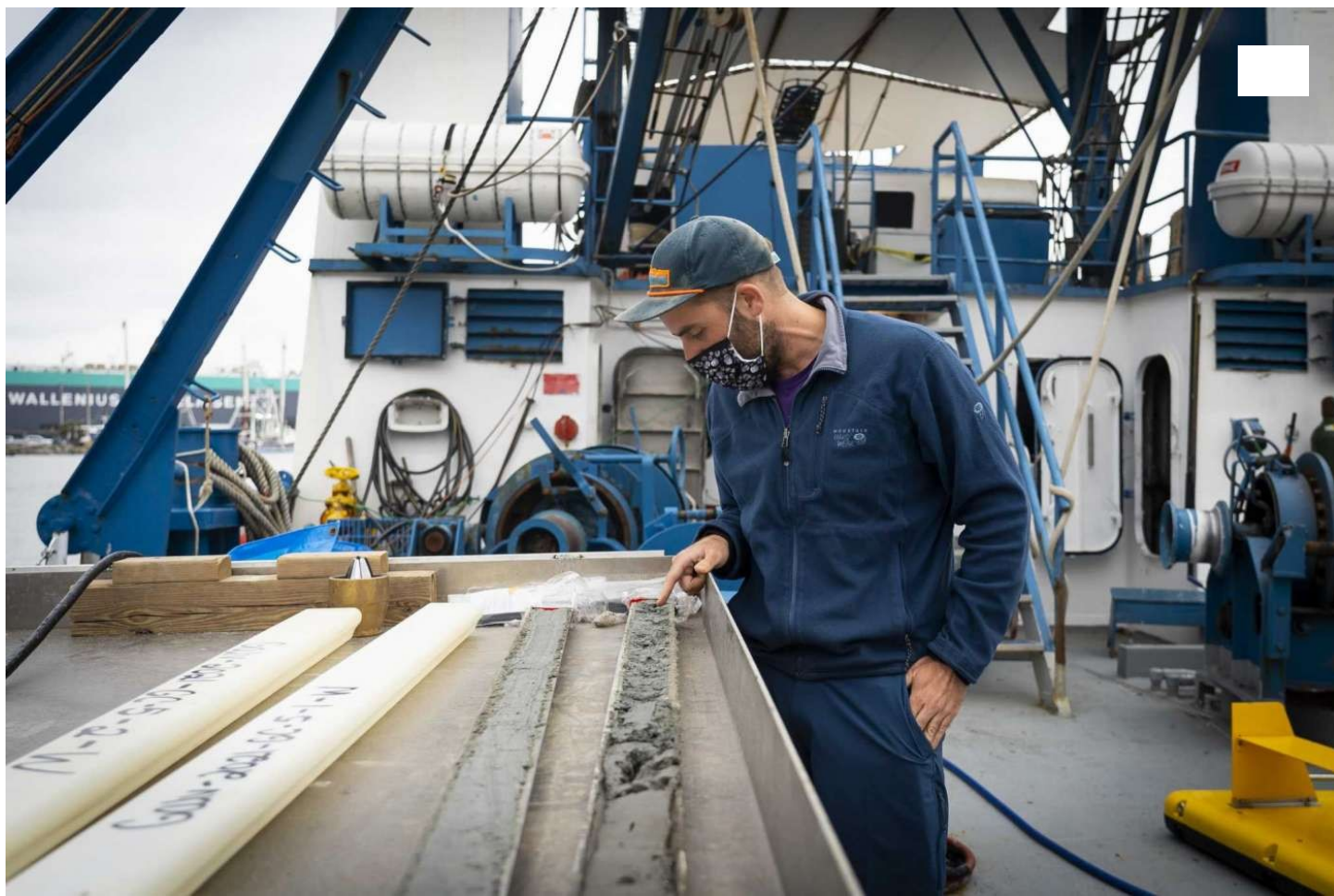
As the seas rise and storms threaten, scientists hunt for sand to strengthen the Texas coast



Emily Foxhall, Staff writer

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Chris Lowery, a University of Texas Institute for Geophysics research associate, looks at a sample from the bottom of the Gulf of Mexico a few miles offshore from Galveston, Thursday, April 22, 2021, while docked in Galveston Harbor. The sample can reveal thousands of years of geological history. This one contained the remains of a worm tube that could be seven thousand years old, Lowery said. The University of Texas Institute for Geophysics scientists are collecting geophysical and sedimentological data this month to study offshore sand deposits.

Mark Mulligan, Houston Chronicle / Staff photographer

GALVESTON – On the gently rocking deck of Research Vessel Tommy Munro, Chris Lowery bent over a metal tube split lengthwise and filled with gray sludge. He poked it with a finger, then rubbed his fingers together, feeling for the sand he and other University of Texas scientists had spent eight days looking for.

The state's General Land Office and the federal Bureau of Ocean Energy Management were funding the scientists' work exploring where sand might be offshore. It's part of the GLO's recent push for a large-scale look at potential sources of offshore sand. BOEM wants to understand better where it's located.

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Many factors cause erosion naturally, but global warming is exacerbating it. Sea levels are rising amid the warming climate, as ice melts and the water itself expands. Stronger storms such as those last summer are also expected to be more likely, devastating coastlines and highlighting the need for a so-called first line of defense such as natural dunes or wetlands, or projects that feature human engineering as in the proposed coastal spine.

Enter Lowery, a paleo-oceanographer, and other scientists. They're studying where the Trinity River flowed during the Ice Age, before glaciers melted and the ocean and a new layer of sediment covered it up. They want to find what kind of sand that ancient river valley might be storing – and where.

The answer could help them understand the characteristics of where other Texas rivers flowed before they were submerged, perhaps with all sorts of useful material to fight the sea's next big rise.

John Goff, a senior research scientist, and Chris Lowery, a research associate, talk about the scientific work they are doing in the Gulf of Mexico offshore from Galveston, Thursday, April 22, 2021, while docked in Galveston Harbor. The University of Texas Institute for Geophysics scientists are collecting geophysical and sedimentological data this month to study offshore sand deposits.

Mark Mulligan, Houston Chronicle / Staff photographer

Sand demand

Coastal restoration work is not new to Texas. Among the GLO's efforts are projects that stem from the 1999 Coastal Erosion Planning and Response Act, which tasked the agency with reducing the impacts of erosion. They've replenished beaches, built dunes and restored marshes.

But the agency has more it hopes to do as sources for sand on land are depleted: In its updated coastal resiliency master plan, the GLO prioritized 123 projects that it wants to see carried out.

Climate change brings added pressure to strengthen the ever-eroding coast. University of Texas Bureau of Economic Geology researchers who map coastline changes say about 80 percent is eroding. And at the Harte Research Institute for Gulf of Mexico Studies, coastal geologist James Gibeaut finds that the sea level rise that has already changed shorelines is going to have a large impact in the future.

Whether Texas will adapt to climate change concerns Amanda Fuller, director of the Texas Coast and Water Program for the National Wildlife Federation. To her, erosion stands out as a major issue as violent storms accelerate the damage.

Fuller is among those pushing to build back natural ecosystems. Various groups in addition to the GLO have pursued their own projects. Penalties from the 2010 Deepwater Horizon disaster settlements notably paid for much restoration work, too.

People walk along a beach area where coastal erosion is occurring, in Brazoria County. Scientists are looking for sand in the Gulf to use for future projects to protect against erosion along the Texas coast.
Steve Gonzales, Houston Chronicle / Staff photographer

Lowery was also dropping weighted pipes onto the seafloor, then pulling up long samples of sediment such as the one he studied on the deck. Somehow in that material he could see those different layers represented. He will also look for tiny fossils that can tell him about what the environment was like at the time the sediment was deposited.

When its research is complete, GLO will use the data to locate more specific places to survey where it might actually pump out sand. The research could help BOEM decide where to earmark more areas as sediment sources.

There was much work ahead: Lowery had split the core open that morning, he

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Reach Emily on

Emily Foxhall covers the environment for the Houston Chronicle. She joined the paper in 2015 as a suburban reporter. She has documented the city's sprawl while playing a key role in the paper's breaking news and enterprise coverage. Her reconstruction of the Santa Fe High School shooting, along with two other colleagues, won first place for feature writing from the Texas Associated Press Managing Editors. She was part of the Chronicle team that was named a finalist for the Pulitzer Prize for breaking news in 2017 for coverage of Hurricane Harvey. Soon after, she began roaming the state as the Texas Storyteller.

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BY PAUL TAKAHASHI

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