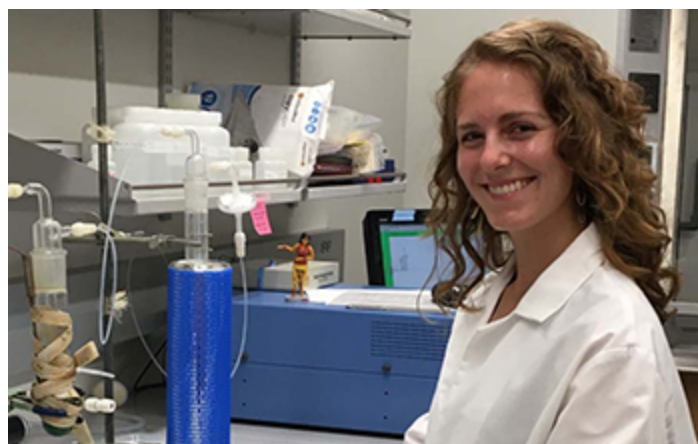




Research News

Researchers track nutrient transport in the Gulf of Mexico

Gulf receives considerable levels of nutrients from rivers that empty into it



Scientist Samantha Howe led research into nutrient levels in the Gulf of Mexico.

[Credit and Larger Version \(/discoveries/disc_images.jsp?cntn_id=301237&org=NSF\)](https://discoveries.nsf.gov/disc_images.jsp?cntn_id=301237&org=NSF)

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Researchers at [Florida State University \(/cgi-bin/good-bye?https://news.fsu.edu/news/2020/09/04/fsu-researchers-track-nutrient-transport-in-the-gulf-of-mexico/\)](https://news.fsu.edu/news/2020/09/04/fsu-researchers-track-nutrient-transport-in-the-gulf-of-mexico/) are making new discoveries about nutrient levels in the Gulf of Mexico. The findings of the [U.S. National Science Foundation <https://www.nsf.gov/awardsearch/showAward?AWD_ID=1737023&HistoricalAwards=false>](https://www.nsf.gov/awardsearch/showAward?AWD_ID=1737023&HistoricalAwards=false) -funded research are published in the *Journal of Geophysical Research – Oceans* ([/cgi-bin/good-bye?https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2020JC016047](https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2020JC016047)).

The Gulf of Mexico receives considerable levels of nutrients from the rivers that empty into it, especially the Mississippi River, causing the Gulf's northern waters to become overly enriched and more susceptible to algae growth.

But scientists have remained unsure whether a significant portion of those nutrients ever leaves the Gulf to affect the chemistry of the North Atlantic Ocean.

"The Gulf of Mexico is an economically important body of water, with the surrounding areas relying on it for tourism, fisheries and oil production, and it has significant ecological diversity," said Samantha Howe, who led the research. "It is important to track the nutrient input from the Mississippi and Atchafalaya River System to

the Gulf, as those nutrients contribute to harmful algal blooms in the northern Gulf."

Researchers found no evidence that nitrate from the Mississippi-Atchafalaya River System is mixing across the northern Gulf into the open waters of the Gulf of Mexico.

The findings are consistent with recent modeling work. That research indicates that 90% of Mississippi River nutrients are retained in the nearshore ecosystem, which implies that nutrients from the Mississippi River do not leave the Gulf.

"To assess and manage ecological challenges in the Gulf, it's important to understand whether the nutrients are processed and retained nearshore or whether they are transported to the North Atlantic," Howe said.

To conduct the study, the team collected and analyzed water samples taken during four research cruises to the Gulf and the Florida Straits.

The research is the first to provide isotopic composition measurements of nitrate in the Gulf of Mexico, as well as a new isotopic profile from the Florida Straits. These new water column profiles were then compared with prior measurements from the North and South Atlantic and with the magnitude of nitrogen inputs to the Gulf.

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