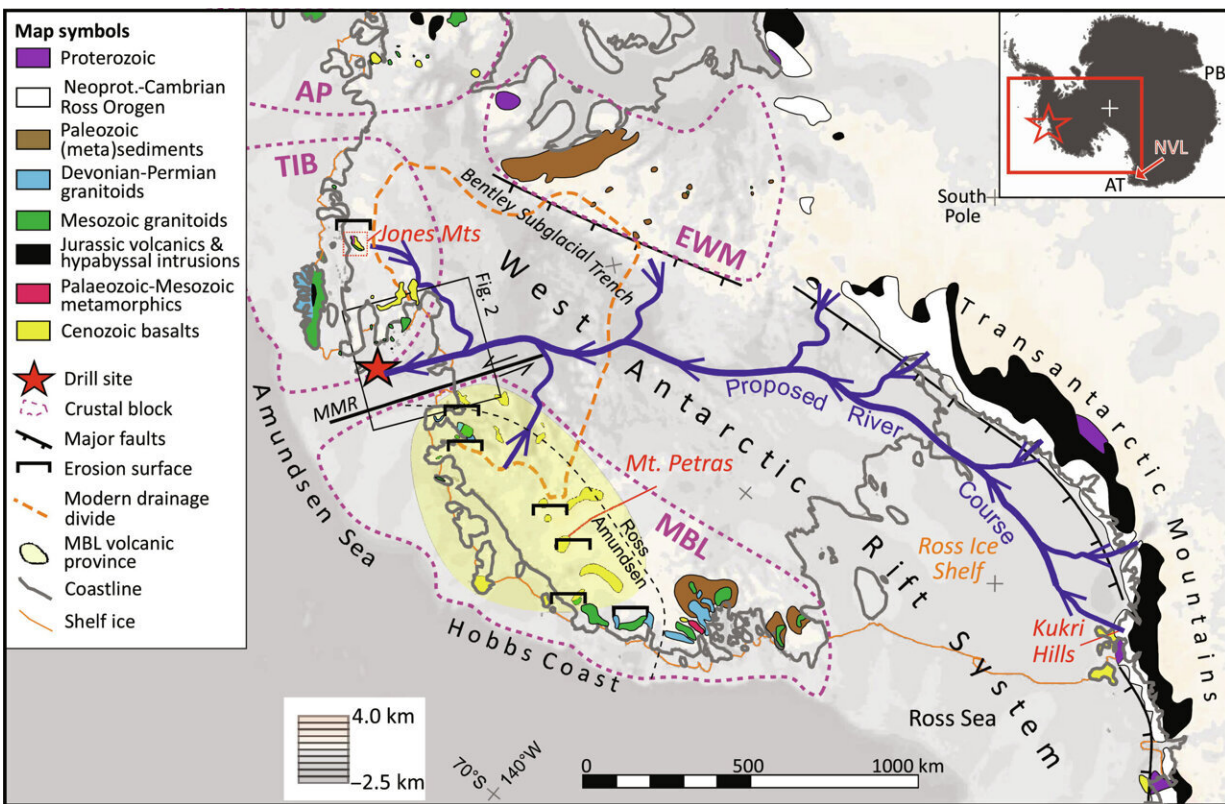


# Core sediment samples show West Antarctica was likely river delta or estuary during Eocene

June 6 2024, by Bob Yirka



Overview map of West Antarctica. The map shows the subglacial topography of the study area, including major geological units and tectonic structures as well as the proposed (schematic) location of the Eocene river system. Inset map shows

the position of the figure on the Antarctic continent. Credit: *Science Advances* (2024). DOI: 10.1126/sciadv.adn6056

By testing core samples, an international team of geoscientists and geologists has found evidence that much of what is now West Antarctica was a river delta or estuary 34 to 44 million years ago. Their [findings](#) are published in the journal *Science Advances*.

West Antarctica, also known as Lesser Antarctica, is one of the two major regions that make up Antarctica—it is located in the Western Hemisphere and is separated from East Antarctica by the Transantarctic Mountains. It is also covered by a massive ice sheet. The research team notes that little is known about the history of West Antarctica because it is covered in ice.

In 2017, another team of researchers sought to learn more about the ancient history of West Antarctica by venturing to the Amundsen Sea Embayment, near the area where the ice sheet covering the region flows into the sea. They drilled and collected multiple core samples from several middle and inner shelves. For this new study, the research team conducted an extensive analysis of several of those core samples.

They found sections of sandstone dating back to the middle to late Eocene, approximately 34 to 44 million years ago. They also found that the sandstone revealed evidence of a milder past. Using [isotopic analysis](#) and other techniques, the researchers found evidence of an ancient [river delta](#) or perhaps an estuary.

The [core samples](#) showed that sediment was carried from the mountains

to the sea by a large river, perhaps one as large as the modern Rio Grande in the U.S., a finding that showed the region was entirely above sea level.

The research team also found evidence of organic compounds, showing that the region had once hosted freshwater bacteria, and perhaps a wide variety of plants and animals—and it may have had temperatures as high as 19°C during the summer months.

**More information:** Maximilian Zundel et al, A large-scale transcontinental river system crossed West Antarctica during the Eocene, *Science Advances* (2024). [DOI: 10.1126/sciadv.adn6056](https://doi.org/10.1126/sciadv.adn6056)

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