



ÉCO-MIST

UNDERSTANDING THE LINKS BETWEEN EROSION OF THE CONTINENTS AND ENVIRONMENTAL CHANGES

Continents are eroded through the combined actions of chemical erosion (alteration) and mechanical weathering on rocks. The chemical reactions which occur alongside the alteration of silicate rocks are a major means of sequestering atmospheric CO₂.

There is abundant evidence that human activities such as agriculture, deforestation and anthropogenic CO₂ emissions are significantly increasing the chemical alteration and erosion rates of continental soils.

The ECO-MIST project will explore the use of novel rare-earth element isotopic tracers (combined hafnium and neodymium isotopes) and molecular biomarkers (such as the BIT index) in marine sediments. This will allow past variations in continental silicate rock erosion to be recreated.

The first part of the project will mainly be based on the analysis of a large number of different marine sediments deposited since the ice age. These come from the continental margins, at the mouths of drainage basins with very varied geological and climatic contexts (such as the rivers Amazon, Nile, Congo, Niger, Mackenzie, Yangtze and Danube).

The second part of the project will apply the novel tracers to the study of two exceptional marine sediment records:

- A 125 m drilled core from the East Corsica margin, providing a continuous record of chemical alteration for the past 500,000 years; and
- A core recovered from the subaqueous fan of the river Congo, showing silicate erosion on a continent scale during the Quaternary period.

Partner

Research center

Ifremer, Géosciences marines,
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