

# Saharan dust storms sustain life in Atlantic Ocean

July 18 2008

---

Research at the University of Liverpool has found how Saharan dust storms help sustain life over extensive regions of the North Atlantic Ocean.

Working aboard research vessels in the Atlantic, scientists mapped the distribution of nutrients including phosphorous and nitrogen and investigated how organisms such as phytoplankton are sustained in areas with low nutrient levels.

They found that plants are able to grow in these regions because they are able to take advantage of iron minerals in Saharan dust storms. This allows them to use organic or 'recycled' material from dead or decaying plants when nutrients such as phosphorous – an essential component of DNA – in the ocean are low.

Professor George Wolff, from the University's Department of Earth and Ocean Sciences, explains: "We found that cyanobacteria – a type of ancient phytoplankton – are significant to the understanding of how ocean deserts can support plant growth. Cyanobacteria need nitrogen, phosphorous and iron in order to grow. They get nitrogen from the atmosphere, but phosphorous is a highly reactive chemical that is scarce in sea water and is not found in the Earth's atmosphere. Iron is present only in tiny amounts in sea water, even though it is one of the most abundant elements on earth.

"Our findings suggest that Saharan dust storms are largely responsible

for the significant difference between the numbers of cyanobacteria in the North and South Atlantic. The dust fertilises the North Atlantic and allows phytoplankton to use organic phosphorous, but it doesn't reach the southern regions and so without enough iron, phytoplankton are unable to use the organic material and don't grow as successfully."

Professor Ric Williams, co-author of the research, added: "The Atlantic is often referred to as an 'ocean desert' because many nutrients, which are essential in plant life cycles, are either scarce or are only accessible in the darker depths of the ocean. Plants, however, need some sunlight in order to absorb these important nutrients and so can't always access them from the ocean depths. They therefore need to find the nutrients from elsewhere. Now that we are able to show how cyanobacteria make use of organic material we can understand more clearly how life is sustained in the ocean and why it isn't an 'ocean desert.'

"These findings are important because plant life cycles are essential in maintaining the balance of gases in our atmosphere. In looking at how plants survive in this area, we have shown how the Atlantic is able to draw down carbon dioxide from the atmosphere through the growth of photosynthesising plants."

The research is published in *Nature GeoScience*.

Source: University of Liverpool

Citation: Saharan dust storms sustain life in Atlantic Ocean (2008, July 18) retrieved 25 April 2024 from <https://phys.org/news/2008-07-saharan-storms-sustain-life-atlantic.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is

provided for information purposes only.