Sargassum taking over

Two pelagic species of brown sargassum seaweed, *Sargassum natans* and *Sargassum fluitans*, have been growing in large quantities in the Tropical Atlantic since 2011. Their build-up along coasts threatens ecosystems and economies in the Caribbean and West Africa.

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Damage caused by rafts of sargassum in the port of Marigot, Martinique.

Although Christopher Columbus first reported the presence of floating rafts of sargassum in the North Atlantic in 1492, pelagic sargassum seems to have been confined to the subtropical gyre and the Gulf of Mexico for several centuries. However, from 2011 onwards, it began to appear much further south and in unprecedented quantities, particularly on the coasts of the French West Indies. These sargassum blooms hamper economic activities such as fishing and tourism, threaten the health of coastal populations, particularly through hydrogen sulphide emissions on beaches, and also disrupt fragile coastal ecosystems, such as seagrass beds, mangroves and coral reefs.

To explain this scourge, researchers initially thought that there was a link with the continued development of human activity in the Amazon and Congo watersheds, which could have increased the input of nutrients into the ocean and encouraged sargassum bloom in new latitudes. However, analysis of satellite images and development of digital models have shown that the places where sargassum grows are actually little or not at all connected to the plumes of these major rivers. So, what is the real reason? Studies combining observations and digital modelling have revealed that a certain interannual climate phenomenon known as the North Atlantic oscillation, associated with particularly strong fluctuations in 2009-2010, led to abnormal ocean currents for a certain time. They transported the sargassum further south, where it found a favourable environment for growth and has persisted ever since.

Researchers then developed a seasonal forecasting system for the Tropical Atlantic, to anticipate seaweed strandings up to seven months in advance. This should enable local authorities and private actors to adapt coastal protection and clean-up campaigns. Research currently underway will make it possible to estimate whether areas of proliferation are likely to expand in the years or decades ahead, or whether the situation can still be reversed.

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••• Satellite observations and digital modelling have shown that the recent appearance of sargassum in the French West Indies - and its persistence - is linked to a temporary anomaly in ocean currents •••

Sargassum floating on the surface of the ocean.

"Although major scientific advances have been made in addressing the sargassum problem, we still have more questions than answers, and major debates remain on nearly every aspect of new sargassum blooms. However, almost all scientists agree that sargassum blooms will continue in the future, and that the harmful effects will be felt in other ecosystems, particularly, and with great concern, on the reefs of the Mesoamerican Barrier Reef System."

Julio Sheinbaum, Ensenada Center for Scientific Research and Higher Education, Mexico

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Is the sinking of the Mekong Delta inevitable?

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Towards a new ocean governance

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