Gathering data by sailboat

An oceanographic campaign has succeeded in collecting data from non-research vessels (sailboats, dugouts, ferries), paving the way for low-carbon, low-cost marine exploration.

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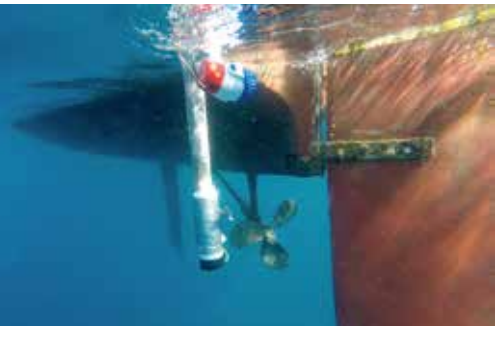
Doctoral student checking measuring equipment before deploying it from the pirogue, Senegal.



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Boom fitted with measuring equipment on a sailing boat, Senegal.

Senegal's national dish is Thieboudienne, a mixture of rice, vegetables and fish, often large sardines known as sardinella. Every year, 400,000 tonnes of sardinella are caught for regional consumption. However, since 2008, Senegalese consumption has been halved in favour of processing the fish into oil and flour for export to Europe and Asia. This is undermining the food balance of local populations and raising concerns about the state of sardinella stocks, as fishing of this species is either unregulated or poorly regulated.

Furthermore, the physical functioning of the area is both complex and poorly understood. Over the last twelve years or so, several oceanographic campaigns have been implemented, each with a specific objective: to gain a better understanding of the massive upwelling of nutrient-rich cold water; to analyse the ecosystem, and in particular the plankton that forms the basis of the sardinella diet; and to collect fishing data. In 2015, a physical measurement campaign was set to begin, but due to a lack of funding, it had to be scaled back and low-cost alternatives sought. Sensors were installed on a single sailing boat to collect physical data (temperature, salinity, current) and biogeochemical data (oxygen, nutrients, plankton communities, biodiversity) on the southern Senegalese plateau and in the Sine Saloum and Casamance estuaries. Regular transects were carried out, not over two or three weeks as during oceanographic campaigns, but throughout the whole year, in order to cover the region's seasonal variability.

Collaborations were also launched with fishermen to equip their dugouts with data sensors. In the same vein, a ferry called the Diambogne, which runs between Dakar and Ziguinchor, will also be collecting data. These measures will provide a wealth of information, particularly for shallow areas (< 15 m) that are never explored by large oceanographic vessels. The low-cost approach has proved very interesting and opens the way to a new kind of low-carbon marine exploration for collecting data in coastal environments.

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••• Regular data collection by a sailing boat off the coast of Senegal has offered a better understanding of ocean dynamics •••

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Seine fishing for *Sardinella Aurita* off the coast of Joal, Senegal.

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The variability of upwellings
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Understanding the complexity of Southeast Asia's climate
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Is the sinking of the Mekong Delta inevitable?

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Reducing vulnerability in the city of Douala

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Food security in Polynesia

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Towards sustainable resources

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Towards a new ocean governance

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