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To cite this version:

Eric Foulquier, Iwan Le Berre, Damien Le Guyader, Laurence David. Shipping Geographies in the Caribbean Maritime Area. International Symposium of Labex DRIIHM, Sep 2021, Toulouse, France. , 2021, 10.34972/driihm-b7a1fd . hal-03353374

HAL Id: hal-03353374

https://hal.science/hal-03353374v1

Submitted on 24 Sep 2021

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Shipping Geographies in the Caribbean Maritime Area

Eric FOULQUIER, Iwan LE BERRE, Damien LE GUYADER, Laurence DAVID

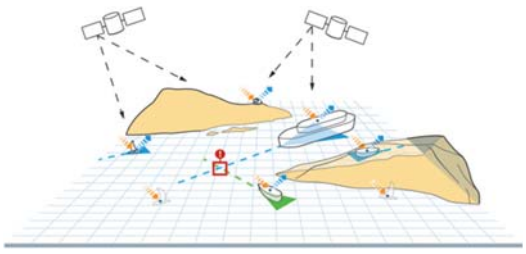
TRAFIC Programme

TRAnsport maritime Fréquentation portuaire et Inégalités environnementales dans les Caraïbes

Background

TRAFIC is a collaborative, interdisciplinary and interinstitutional project supported by the Fondation de France (2020-2022). It aims to create a suitable geographic database for analyzing human-environment interactions related to marine traffic based on AIS data.

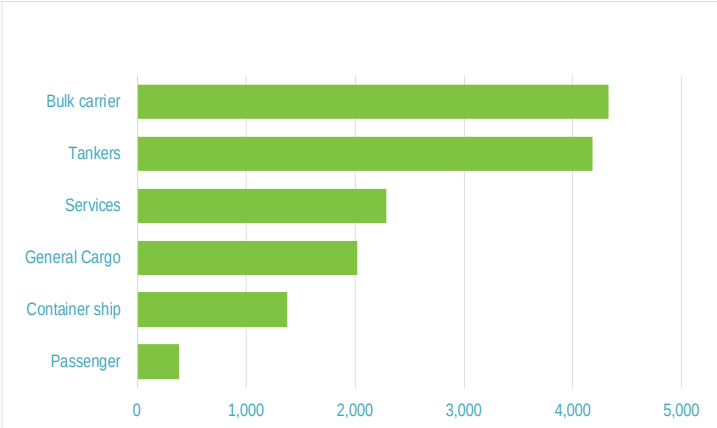
Material and method



Source : allaboutais.com

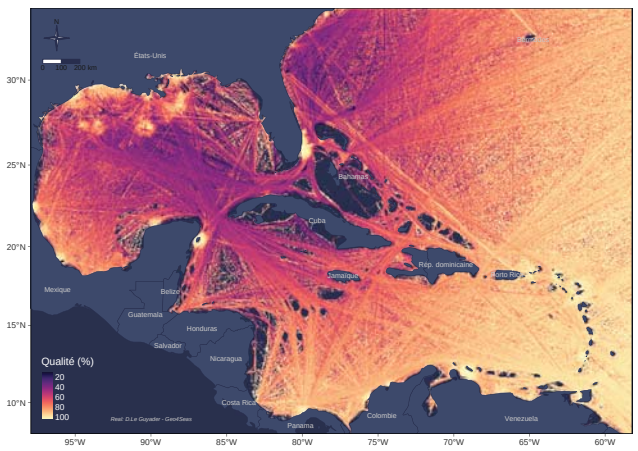
What is AIS data ?

Based on the automated exchange of messages by VHF radio between ships and between ships, satellite networks and maritime surveillance centres, Automatic Identification System allows the geolocation and identification in real time of transmitting ships.



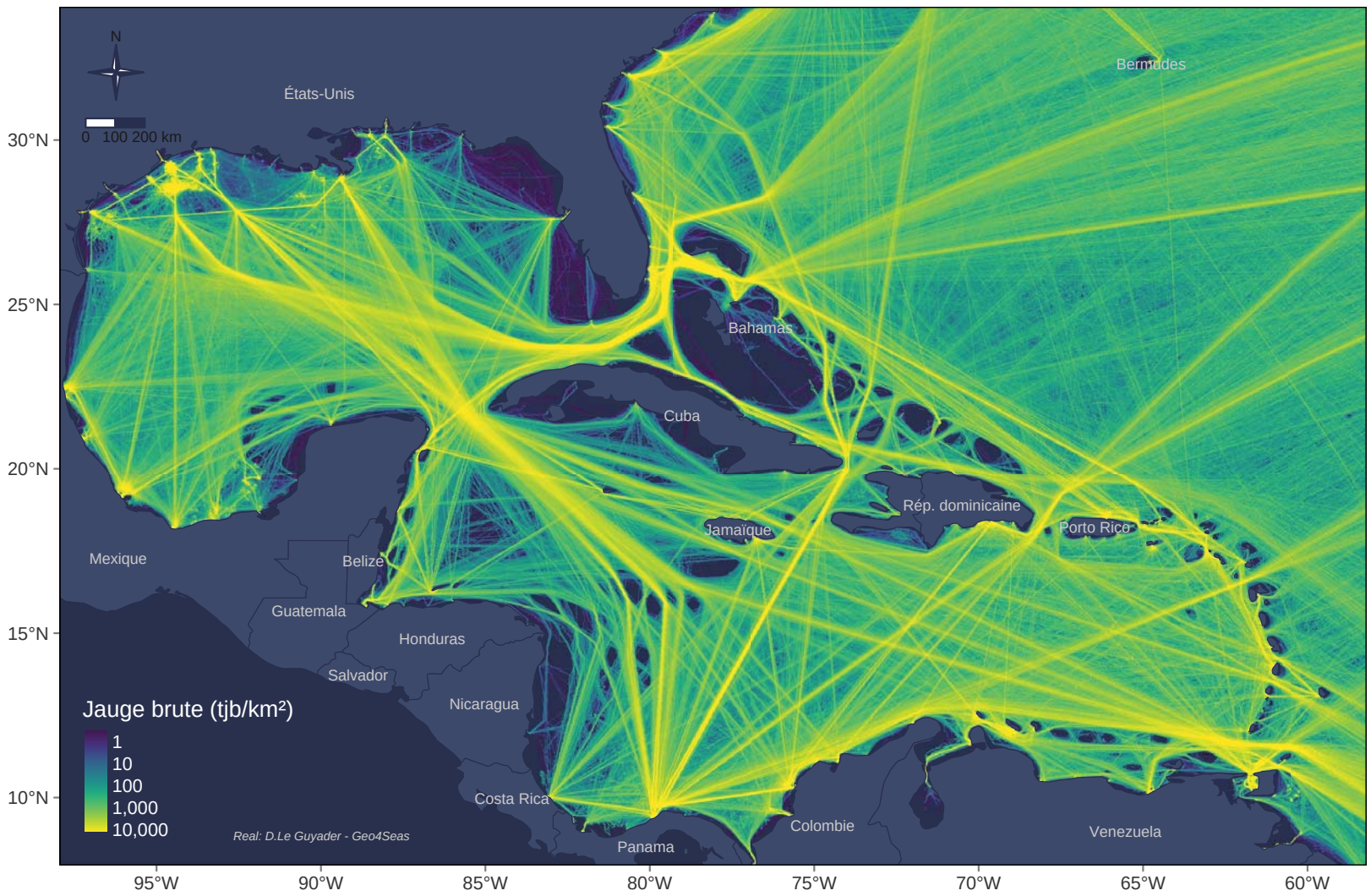
14,500 ships in 2019

The processing was carried out by *Geo4Seas* using an AIS dataset covering the year 2019 acquired from *ExactEarth*, It shows that 14,500 commercial vessels transited the Caribbean Sea Basin and called at one of the 300 ports in the sub-region.



Data quality in 2019

The quality of AIS data depends on the density of receivers. In the Caribbean, satellite constellations now allow to observe traffic both offshore and on the coast.



Results

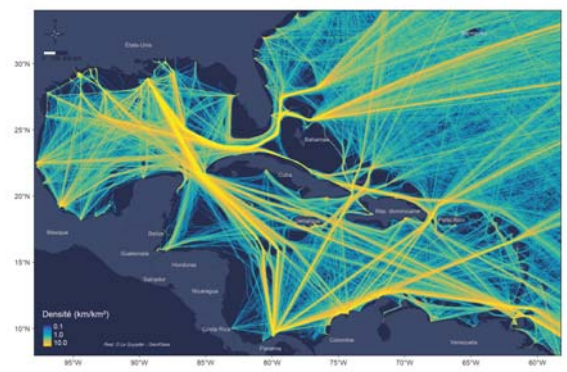
In total, all the ship trajectories observed in the Caribbean basin form a *«String art map»*.

This map is not that of a network as such. Rather, it reveals an extreme intensity of maritime traffic.

However, there are polarities in this traffic, corresponding either to key passages (southern Dominican Republic, Panama, Trinidad and the Florida Keys) or to major centres of maritime and port activity such as oil exploitation zones in the Gulf of Mexico or the major tourist destinations in the area.

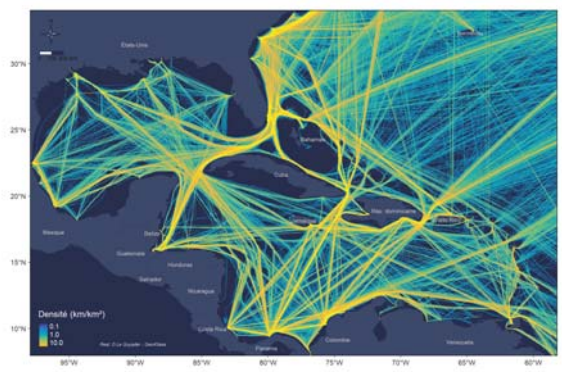
A few areas escape this intensity: the shallows in the southern Bahamas (Great Bahamas Bank), southern Cuba (Cayo de Largo), and Jamaica (Pedro Banks); the two western sides of Florida on either side of Tampa, as well as its south (Cay Sal Bank); the heart of the Gulf of Yucatan and the Mosquito Bank off Nicaragua.

But this cumulative vision hides very distinct geographical realities according to the types of traffic.



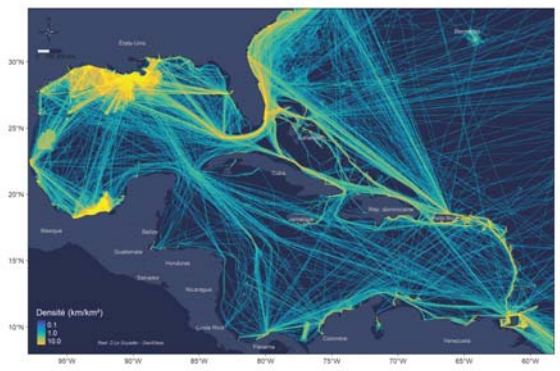
Bulk carrier

This map shows the operating methods of these kind of ships (straight navigation, tramping trade mode), which leads to a diffuse occupation and a meshing of the ocean space.



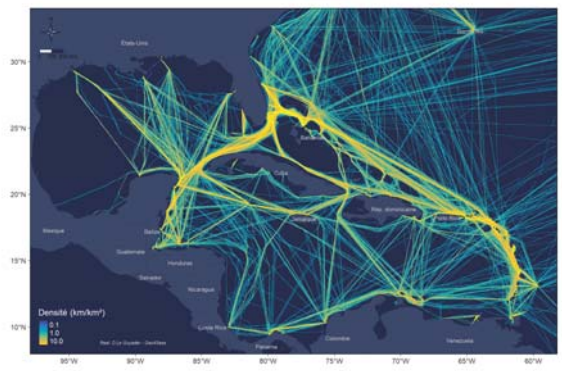
Container ships

Transatlantic traffic is also present. Ship circulation is linked to the feedering network which correspond to the cabotage along the two American coasts. The Caribbean space is thus a polarised space around the major transhipment hubs on either side of Panama.



Services

Most of these ships are attached to port areas, producing a non maritime geography. Some of them serve offshore installations which reveal the importance of oil activities in the Gulf of Mexico.



Passenger ships

The geography of passenger ships reveals two patterns: a) the location of the cruise industry, which is highly polarised by the ports of Florida, the Bahamas and the Yucatan Peninsula; b) the inter-island traffic in the Caribbean arc.

International Symposium of Labex DRIIHM - 2021
Inter-Disciplinary Research Facility on Human-Environment Interactions - ANR-11-LABX-0010
6-8 September 2021 - Université Jean Jaurès, Toulouse (France)