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## Deconstructing marine maps: revealing map-making choices through fishing and pleasure boating

By Juliette DAVRET

### Résumé

La cartographie critique a montré que les cartes ne sont pas impartiales et pourtant elles sont un outil de prise de décision. Cet article, à travers l'étude de la pêche et la plaisance, explore les variations cartographiques possibles. Ces deux activités maritimes distinctes, mais complexes à cartographier en raison de leur variabilité spatio-temporelle, permettent d'aborder une large gamme d'enjeux cartographiques. Des données existent pour décrire la pêche, mais elles présentent des limites. La plaisance, peu surveillée, manque de données spatialement cartographiées. L'exploration des variations cartographiques à partir d'un même jeu de données pour chacune de ces activités permet d'ouvrir la boîte noire des systèmes d'informations géographiques et de constater l'influence des choix opérés dans les systèmes de traitements de données sur la représentation des activités maritimes.

### Mots-clés

géotechnologies, cartographie, SIG critiques, pêche, plaisance, variabilité spatio-temporelle.

### Abstract

Critical cartography has shown that maps are not neutral, yet they are a decision-making tool. This article uses the case study of fishing and pleasure boating to explore possible map-making choices. These two distinct marine activities, which are complex to map because of their spatio-temporal variability, provide an opportunity to address a wide range of cartographic issues. Data exist to describe fishing, but have limitations. Pleasure boating, which is poorly monitored, lacks spatially mapped data. Exploring map-making choices based on the same dataset for each of these activities open up the black box of geographic information systems and reveals the influence of the choices made in data processing systems on the way marine activities are represented.

### Keywords

geotechnologies, cartography, critical GIS, fishing, pleasure boating, spatio-temporal variability.

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# Deconstructing marine maps: revealing map-making choices through fishing and pleasure boating

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## Introduction

Using critical cartography and an exploratory approach, this article outlines the various mapping options that can be considered in the context of two specific activities: fishing and pleasure boating.

The choice to focus on these two marine activities is justified by their contrasting and complex nature. These two activities are characterised by their spatial dispersion and temporal variability. As a result, the data processing and representation choices made are subject to meanings that are raised by an interactive approach to map deconstruction based on the work of Davret (2023).

## Fishing

Fishing activity has been studied in depth in the scientific literature, particularly in the context of Marine Spatial Planning (MSP) (see, for example, Said & Trouillet, 2020). This activity is characterised by various datasets, although the Automatic Identification System (AIS) and the Vessel Monitoring System (VMS) are mainly used on a global scale (Dupont, 2021).

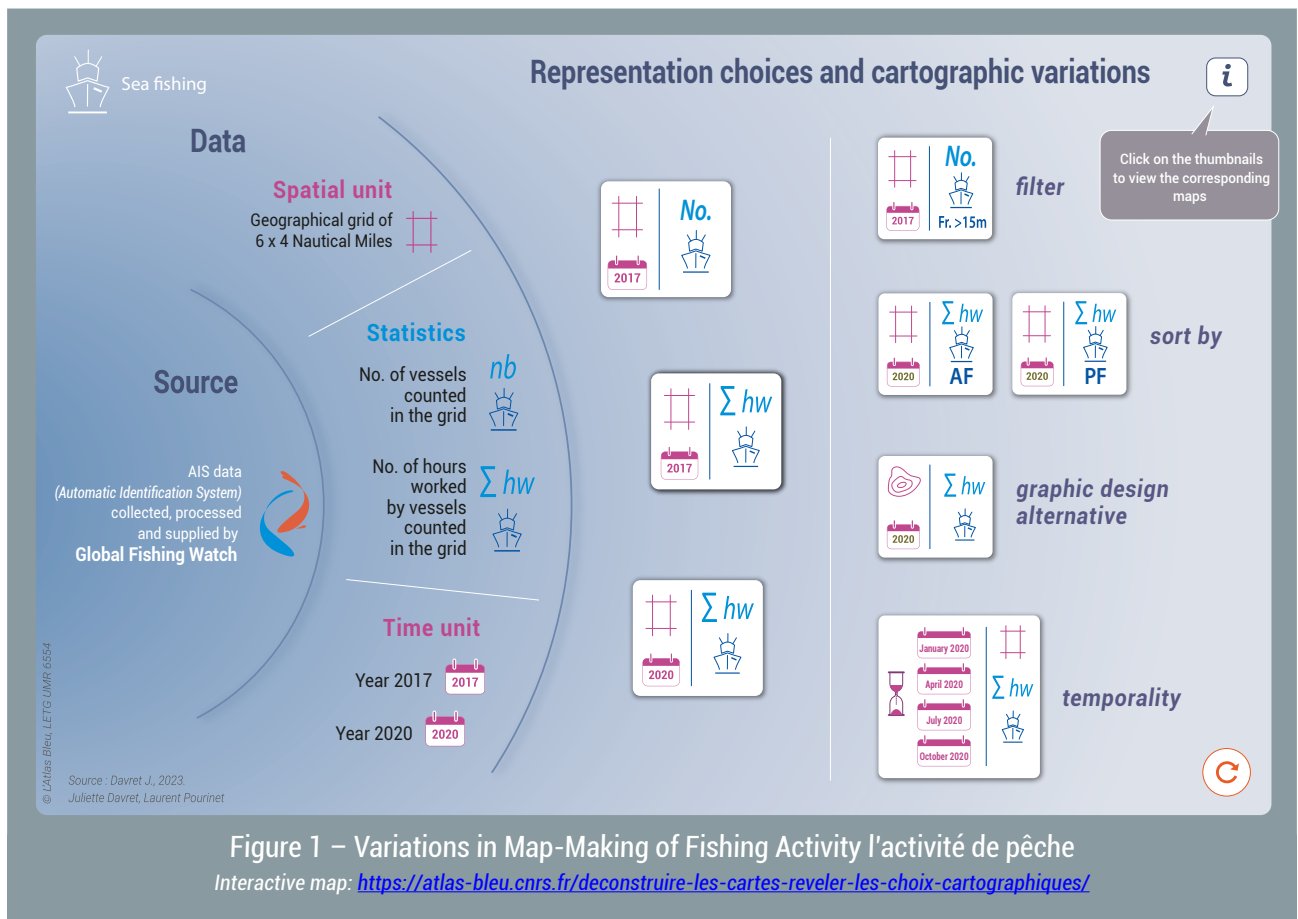


Figure 1 – Variations in Map-Making of Fishing Activity / l'activité de pêche  
Interactive map: <https://atlas-bleu.cnrs.fr/deconstruire-les-cartes-reveler-les-choix-cartographiques/>

In terms of mapping, fisheries are the subject of studies, on the one hand, to reveal the limitations inherent in cartographic representations and, on the other, to test possible alternatives (Trouillet, 2019). Although fisheries are monitored using various devices such as satellites, this monitoring is not harmonised. For example, the vessel segments monitored by these tracking systems vary from one country to another and are not necessarily representative of the active fishing fleet. In France, VMS is only compulsory for vessels over 12 metres in length (with a few exceptions), representing around 20% of the French fleet. Therefore, the majority of French vessels are not tracked and are not included in spatial analyses based on these data. Similarly, AIS is only mandatory under European regulations for vessels over 15 metres. Therefore, some of the fleet escapes surveillance, although quantifying and distributing this activity is crucial to planning (Shepperson et al., 2018).

To show a sample of possible maps of fishing activity, depending on the choice of data and processing, this article presents a selection of a dozen maps. This sample was drawn up on the basis of criteria identified in the scientific literature that are likely to influence the way in which fishing activity is represented (figure 1).

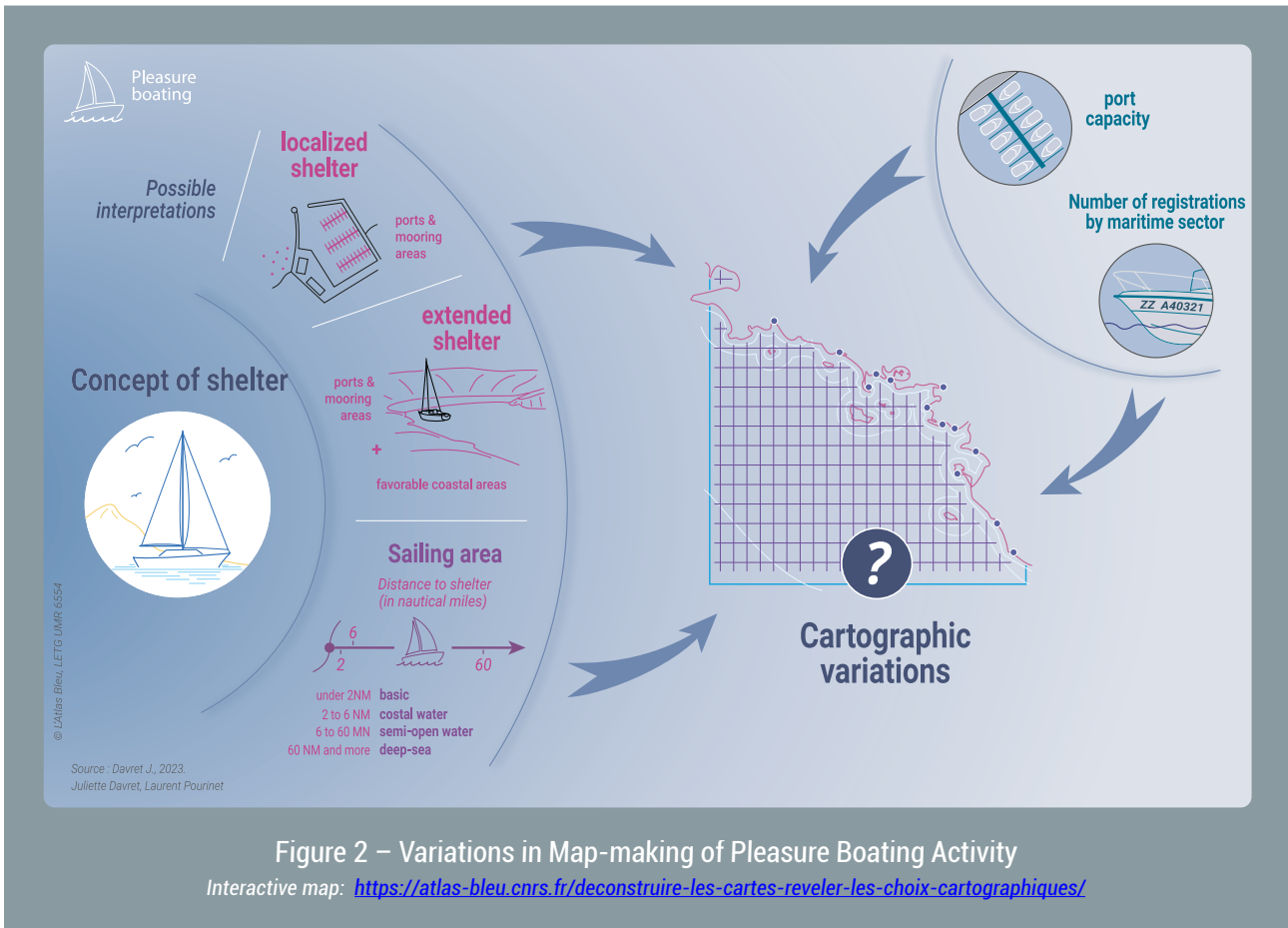
Figure 1 shows a series of maps based on AIS data supplied by Global Fishing Watch (the only data available free of charge). This series of maps encompasses several versions, all starting with the same basic data, and varies according to several criteria: 1) the choice of spatial unit, 2) statistical calculations, and 3) time unit. Using these three criteria as parameters, a series of mappings is presented in order to allow in-depth comparative analysis (e.g. according to the types of fisheries, the type of graphical representation, etc.) and to give rise to a systematic evaluation of the effects of the prior choices on the final representation of the activity.

## Pleasure boating

In contrast to fishing, monitoring data for pleasure boating in France is very limited. Given that there is no requirement for satellite monitoring of light pleasure craft, i.e. those less than 20 metres long, it is particularly difficult to understand pleasure boaters' habits and to spatialise this activity for planning purposes (Brigand, 2004). From a critical cartography perspective, it is necessary to question the validity of the representations developed for an activity that has very limited information on the space in which it is deployed and which is based mainly on quantitative and terrestrial data (Nardin et al., 2008).

The series of maps dedicated to pleasure boating has been developed on the basis of two hypotheses relating to two potential interpretations of the regulatory notion of «shelter» for pleasure boats (inspired by Tonini & Trouillet, 2005) and depending on navigation zones, in accordance with article 240 of the decree of 23 November 1987 concerning ship safety and pollution prevention (Figure 2). The first definition, «localised shelter», encompasses all stationary locations where a pleasure boat can take shelter, including ports and the associated secure and structured mooring areas. The second definition, «extended shelter», covers all coastal areas where a boat can safely run aground, including sandy and muddy areas, as well as areas where the coastline has been artificially altered.

Based on this, variations are proposed using two sets of data projected at sea: port capacity and the number of registrations by marine sector. Using a double-entry table (depending on the data and the hypotheses defined for the concept of shelter) and varying the grids, several map options are proposed to help the public make a critical reading of the possible interpretations of pleasure boating activity.



## Conclusion

The cartographic exploration undertaken in this study has highlighted the wide range of maps, and therefore ways of representing, that can be created for the same activity. Thus, each decision taken during the cartographic construction process has an influence on the way the activity is perceived through its representation. These choices encompass fundamental aspects such as the data used and the statistical operations employed, as well as elements of design, such as the colour palette chosen. Although all maps are in principle valid in terms of the criteria they reflect, they do not converge on a single optimal method of representation. So, there are many ways of representing, not just one single and unambiguous way.

In sum, this article highlights the crucial importance of challenging binary mapping and thus recognising the inherent complexity of marine activities. For balanced and informed marine spatial planning, it is essential to include map-making in the public debate, rather than considering it as an input or a finished product. Critical and participatory cartography offers a promising way of involving stakeholders throughout the data life cycle, increasing transparency, and providing more nuanced cartographic representations adapted to the real issues at stake.

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## Bibliography

**Brigand, L., 2004.** Connaître la fréquentation nautique. *Espaces Naturels* 9, 16.

**Davret, J., 2023.** La partie immergée de l'information géographique : analyse critique à travers le cas de la planification maritime (PhD Thesis). Nantes Université.

**Dupont, C., 2021.** Contribution des données de surveillance maritime à la Planification de l'Espace Maritime français - AIS, VMS, radar: entre potentiels techniques et contraintes politiques (Thèse de doctorat). Université de Bretagne occidentale, Brest.

**Nardin, G., Le Berre, I., Brigand, L., 2008.** Un SIG pour connaître et pour gérer la plaisance dans le Finistère. *Noroi. Environnement, aménagement, société*. <https://doi.org/10.4000/noroi.270>

**Said, A., Trouillet, B., 2020.** Bringing 'Deep Knowledge' of Fisheries into Marine Spatial Planning. *Maritime Studies*. <https://doi.org/10.1007/s40152-020-00178-y>

**Shepperson, J.L., Hintzen, N.T., Szostek, C.L., Bell, E., Murray, L.G., Kaiser, M.J., 2018.** A comparison of VMS and AIS data: the effect of data coverage and vessel position recording frequency on estimates of fishing footprints. *ICES Journal of Marine Science* 75, 988–998. <https://doi.org/10.1093/icesjms/fsx230>

**Tonini, B., Trouillet, B., 2005.** Les bassins de navigation : éléments d'une typologie., in : N, B. (Ed.), *Le Nautisme. Acteurs, Pratiques et Territoires*. Presses Universitaires de Rennes (PUR), pp. 29–48.

**Trouillet, B., 2019.** Aligning with dominant interests: The role played by geo-technologies in the place given to fisheries in marine spatial planning. *Geoforum* S0016718519303008. <https://doi.org/10.1016/j.geoforum.2019.10.012>

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