CLEANATLANTIC CONFERENCE

Vigo, 21st June

09.00 – 16.30 h
(UTC+2h00, Madrid, Bruselas)

Advances on modelling and mapping marine litter:

A Regional Lagrangian Model for Assessing the Dispersion of Floating Macroplastics from Different Source Types over the Iberian Peninsula

Silvia Allen-Perkins, Silvia Calvo, Garbiñe Ayensa, Pedro Montero (Intecmar)
Sara Cloux, José Antonio Moares, Vicente Pérez-Muñuzuri (USC)
Hilda de Pablo, João Sobrinho, Ramiro Neves (IST)

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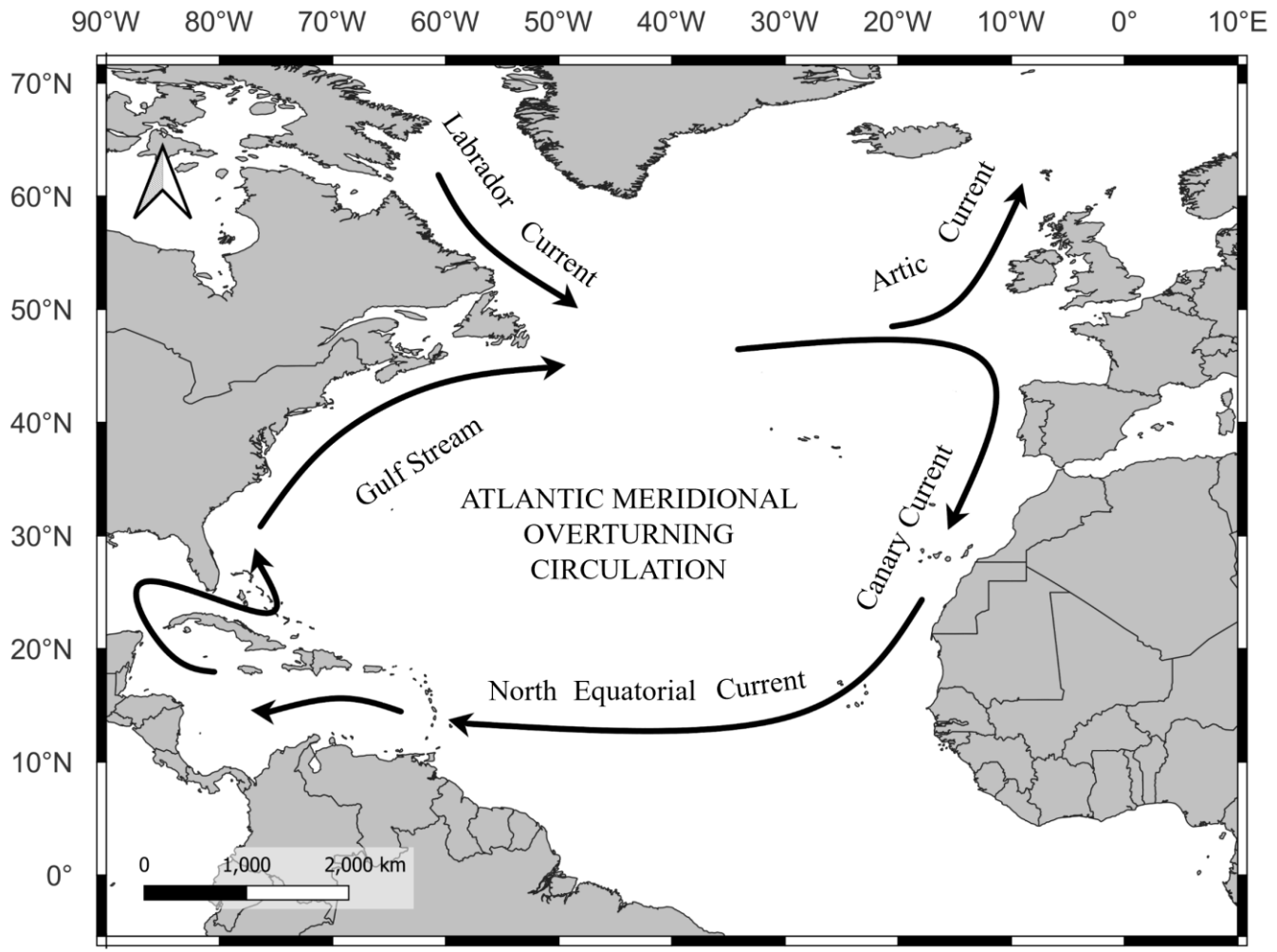
TÉCNICO LISBOA
MARETEC
USC UNIVERSIDADE DE SANTIAGO DE COMPOSTELA
intecmar INSTITUTO TECNOLOXICO PARA O CONTROL DO MEDIO MARIÑO DE GALICIA

Oceanic Circulation



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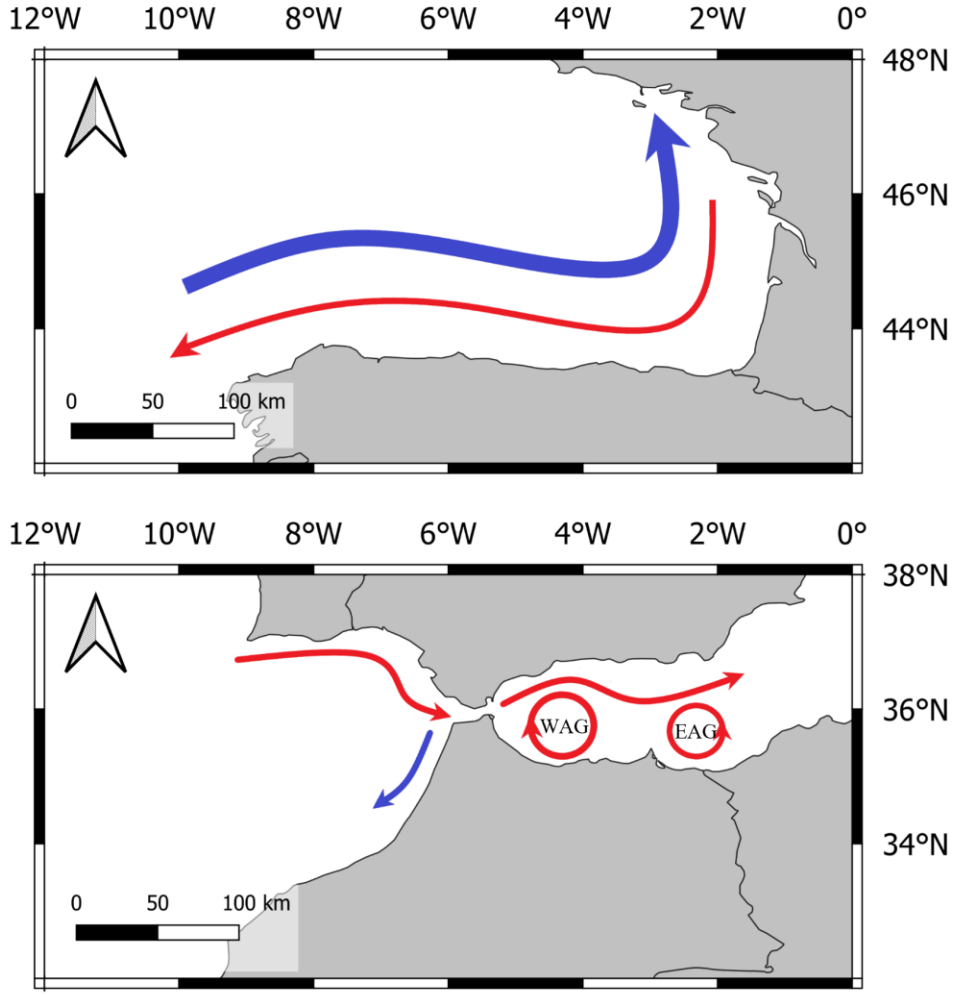

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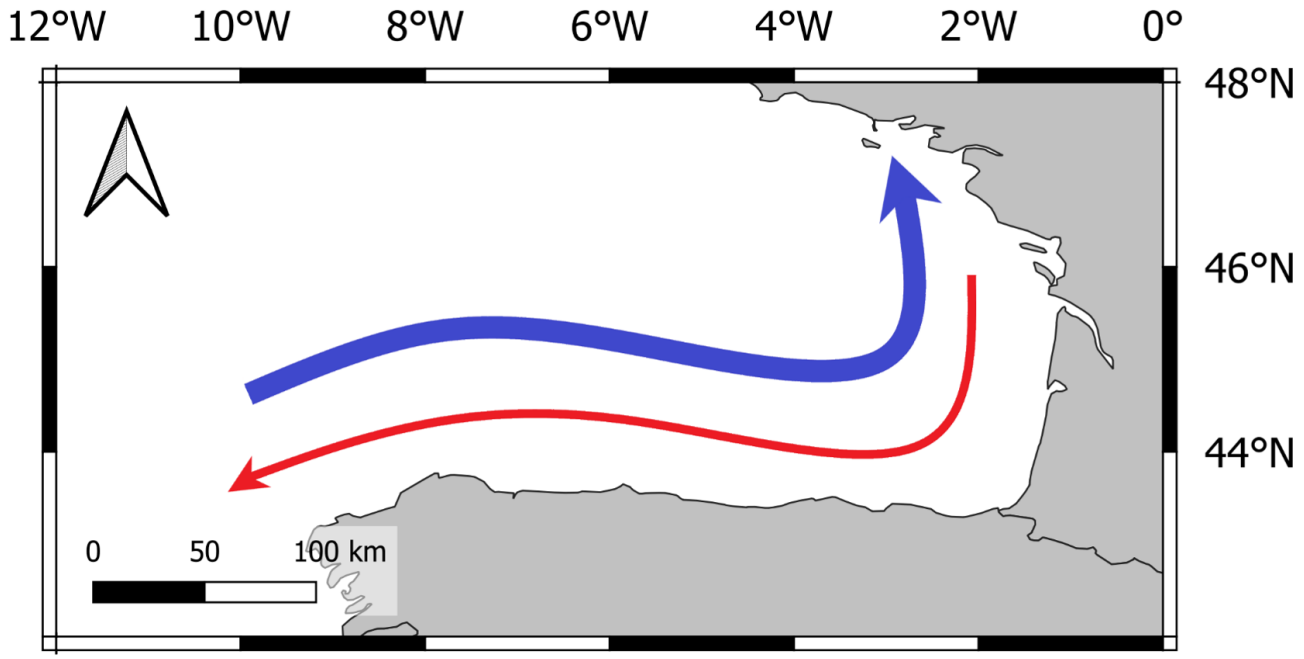
Oceanic Circulation



Cold Seasons Currents $= 3 \cdot$ **Warm Seasons Currents**

MOHID-Lagrangian. Simulation setup

Input Data

Daily **CMEMS** 9km grid resolution

Simulation

$T = 7\ years$
$\Delta x = 9km$
$\Delta t = 1\ day$

Emission Points

$Rivers$
$On - land\ points$
$Marine\ Traffic$

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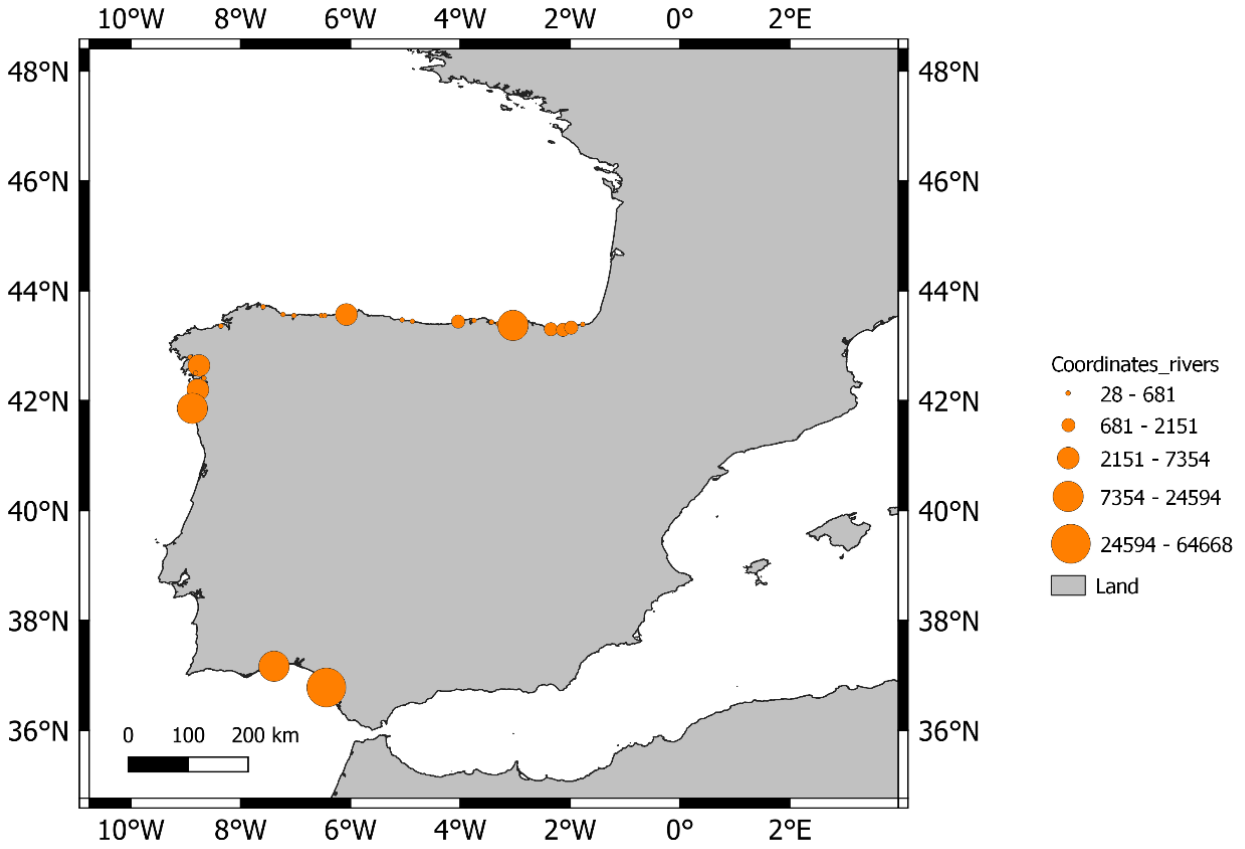
Land emissions. Rivers

Mouths of the **27 rivers** considered. The size of the points is proportional to the annual average of floating macro litter estimation of *González-Fernández et. al, (2021)*.

The emission rate follows the **river discharge** values that have been **weighted according to** the above mentioned **paper**.



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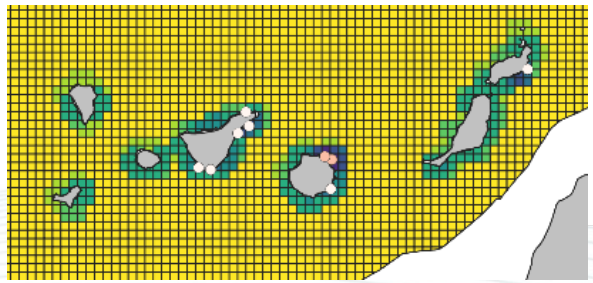
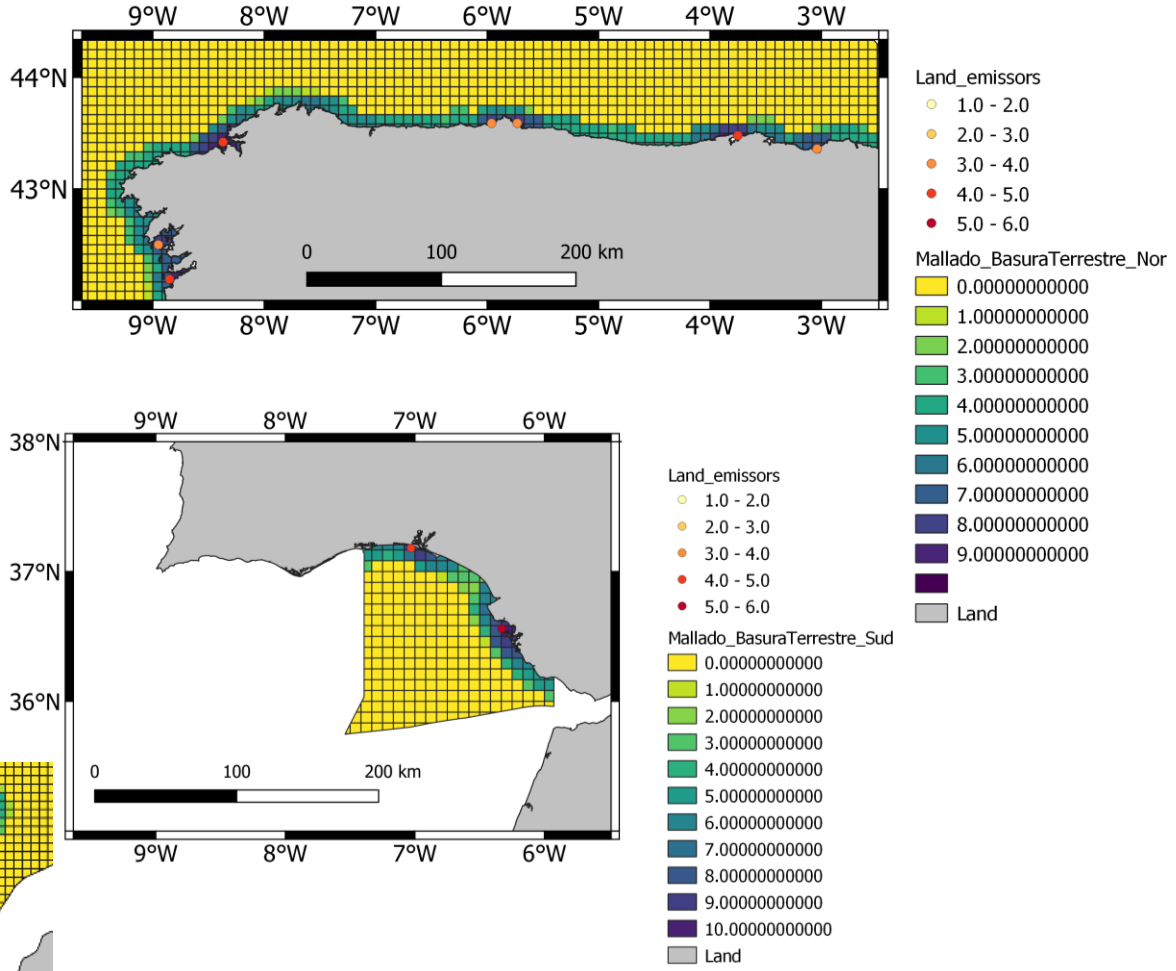
Land emmisors. Inland points

We use the Analysis of Pressures and Impacts of the Marine Strategy (MAPAMA and CEDEX, 2012). This work mapped and assessed the accumulation of pressures considering **coastal population centers, ports, bathing areas, solid urban waste dumps and rivers.**

Here the sources were **weighted** according to **pressure values** considering a **continuous** emission.





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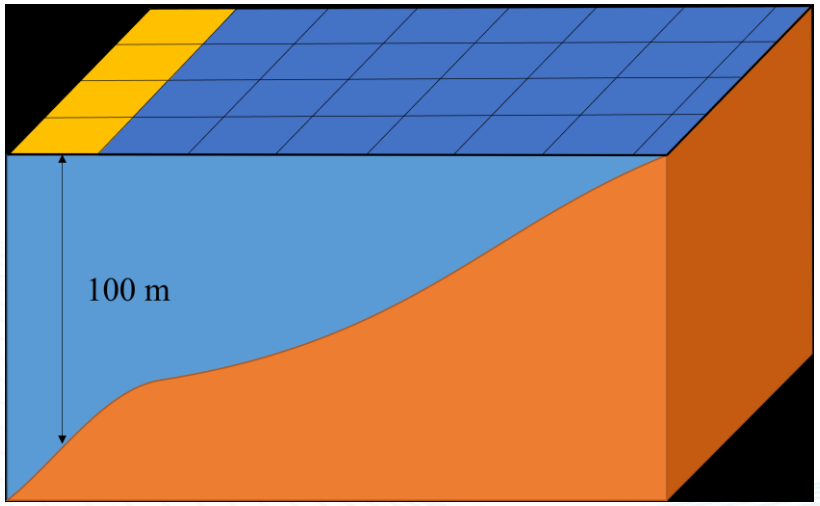
Offshore emissions. Marine traffic

Due to the difficulty of establishing the location of each of the maritime emission sources and assigning an emission rate to each of them, we consider an **ideal emission** that covers **all potential maritime emission points**.



To do this, we obtain the **bathymetric profile** at depths around **100-150 meters** along the coastline of the **Iberian Peninsula**.

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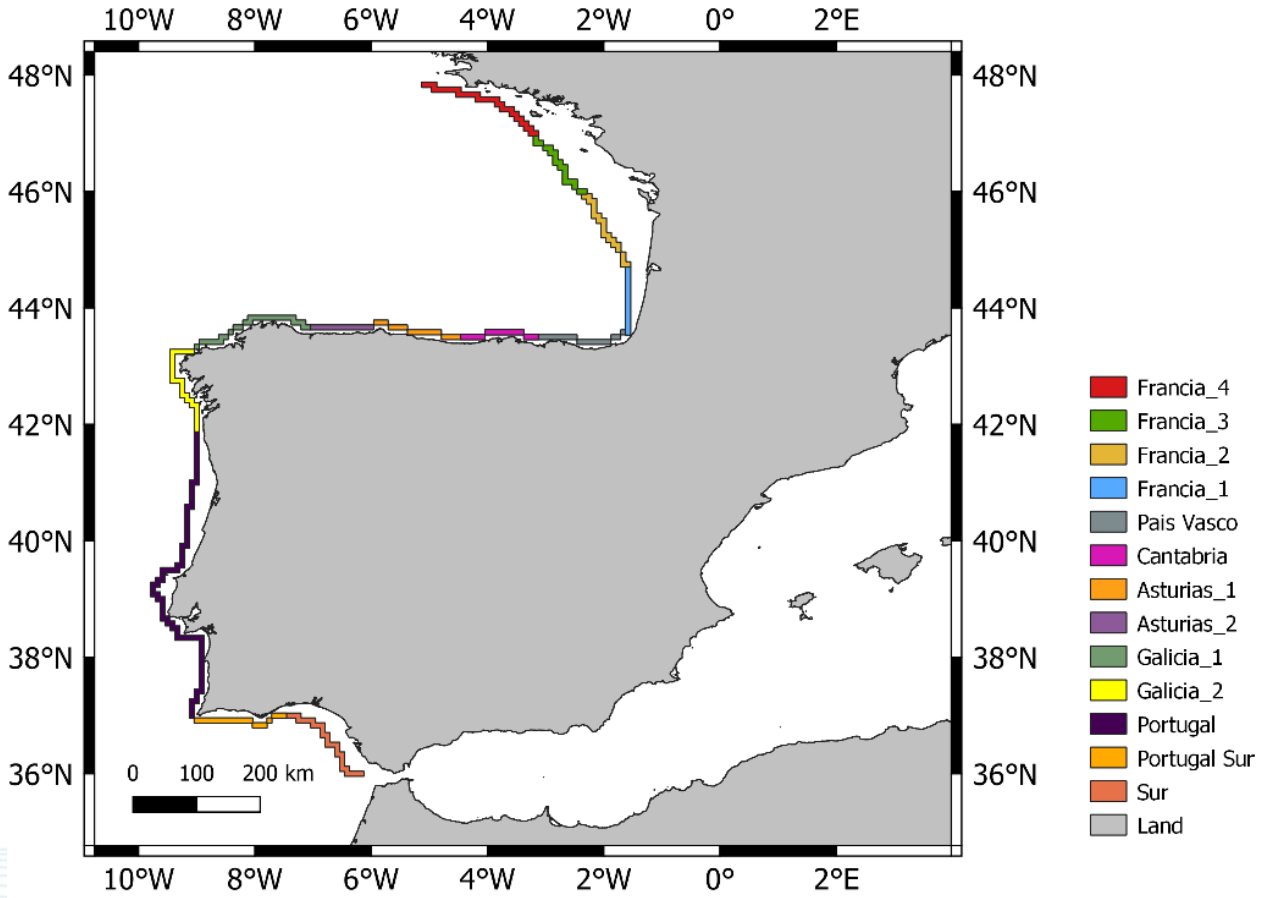
Offshore emissions. Marine traffic

Here, not only the marine traffic of **Spain** was considered, but also the contributions of **Portugal and France** in order to have an idea of the transboundary pollution.

Here, we establish a **continuous emission** by selecting an emission point at approximately **every 9 km**, respecting the resolution of the hydrodynamic grid.



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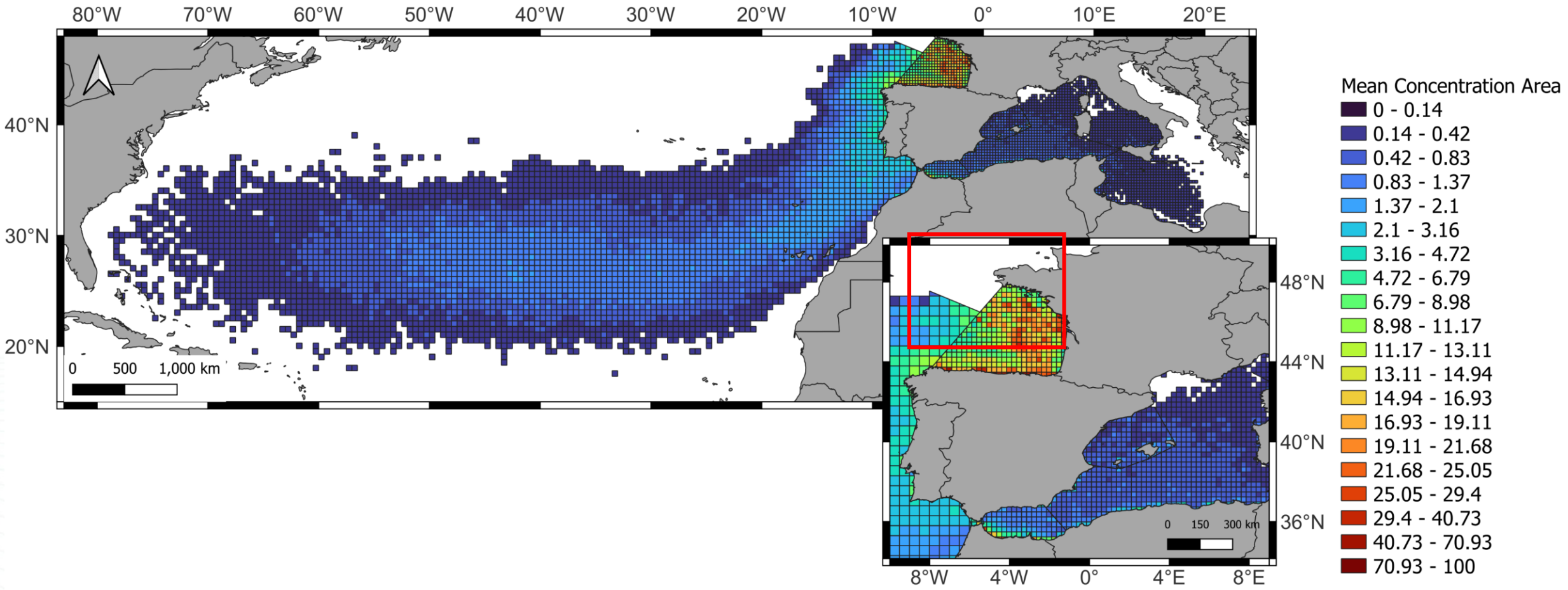
Results. Marine Traffic income.



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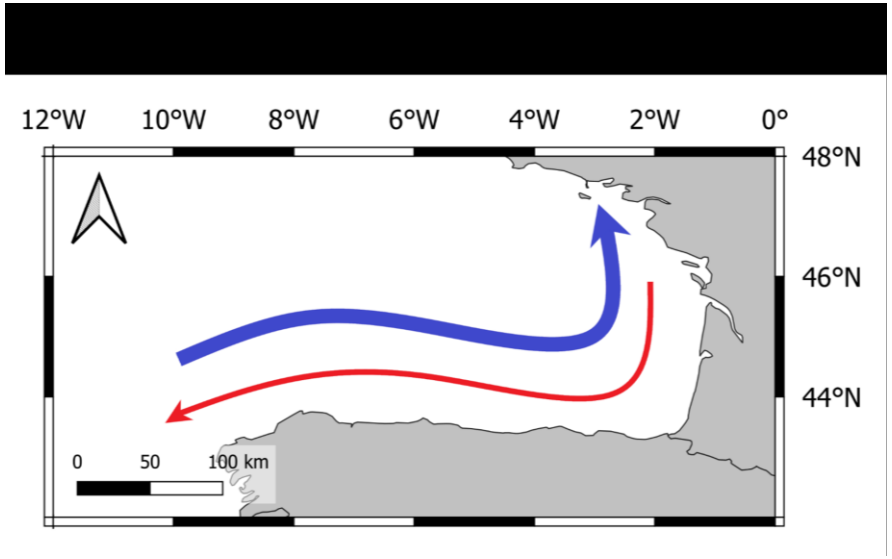
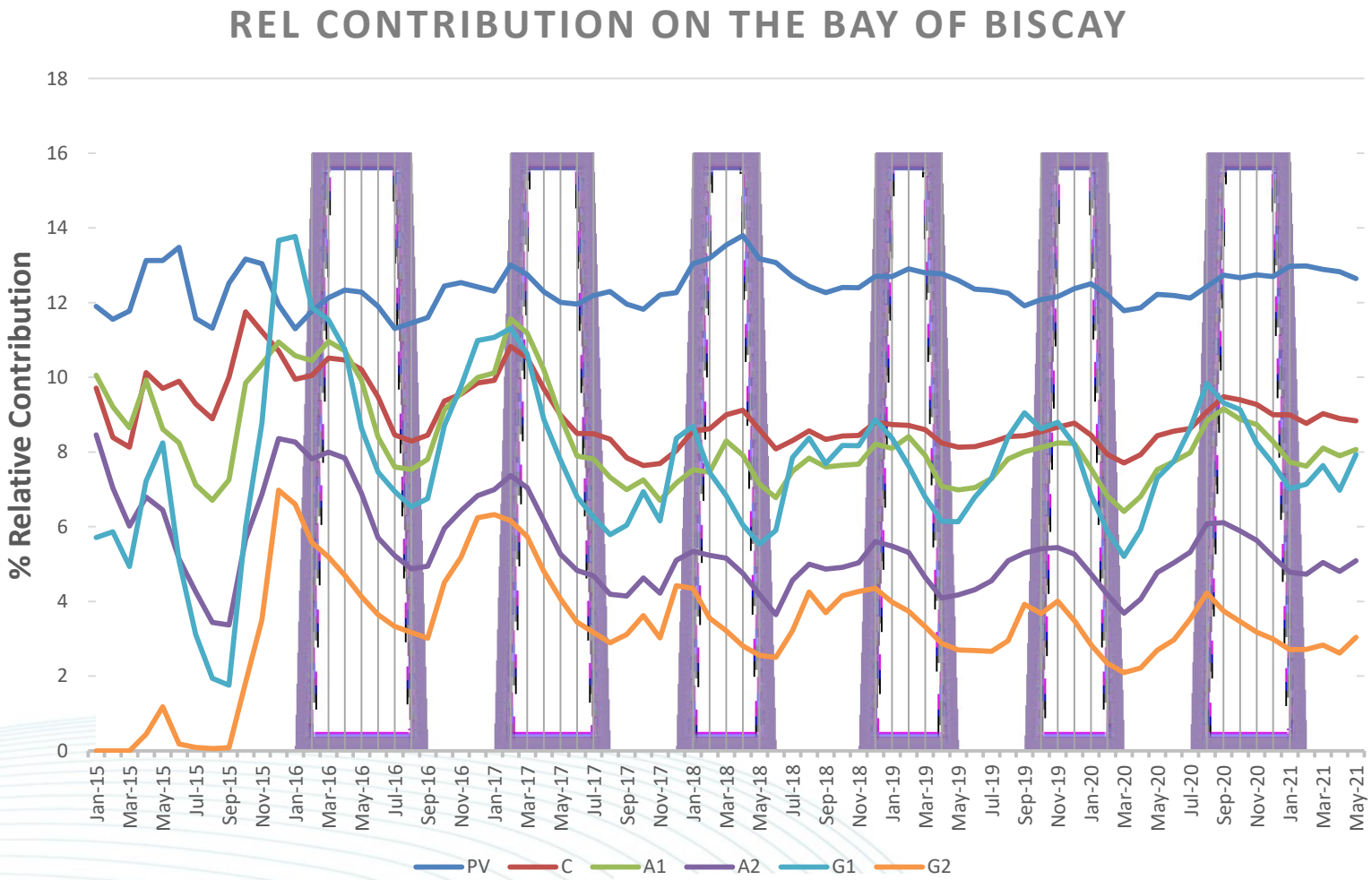
Results. Seasonality for Marine Traffic income





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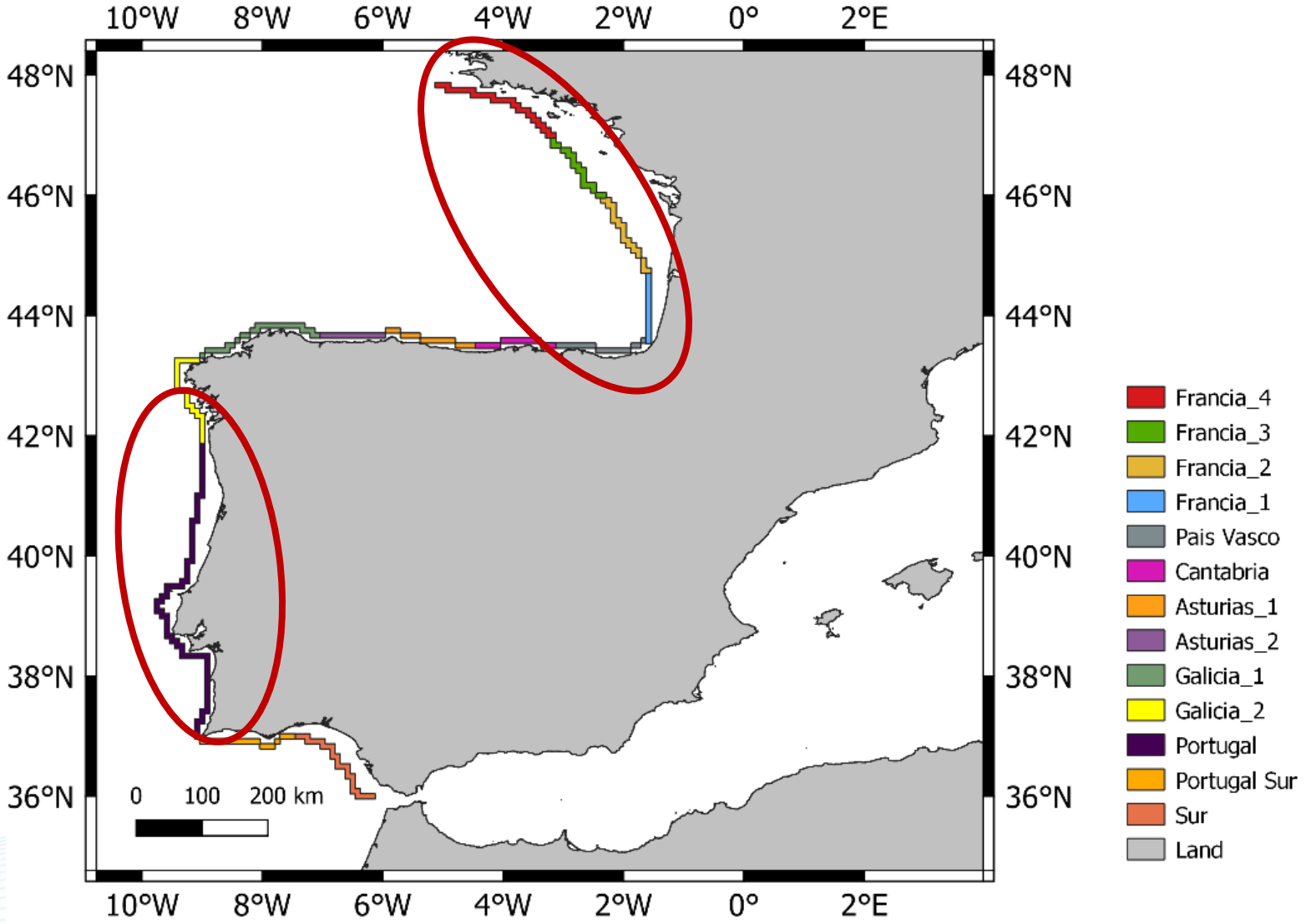
Results. Transbound ary Pollution



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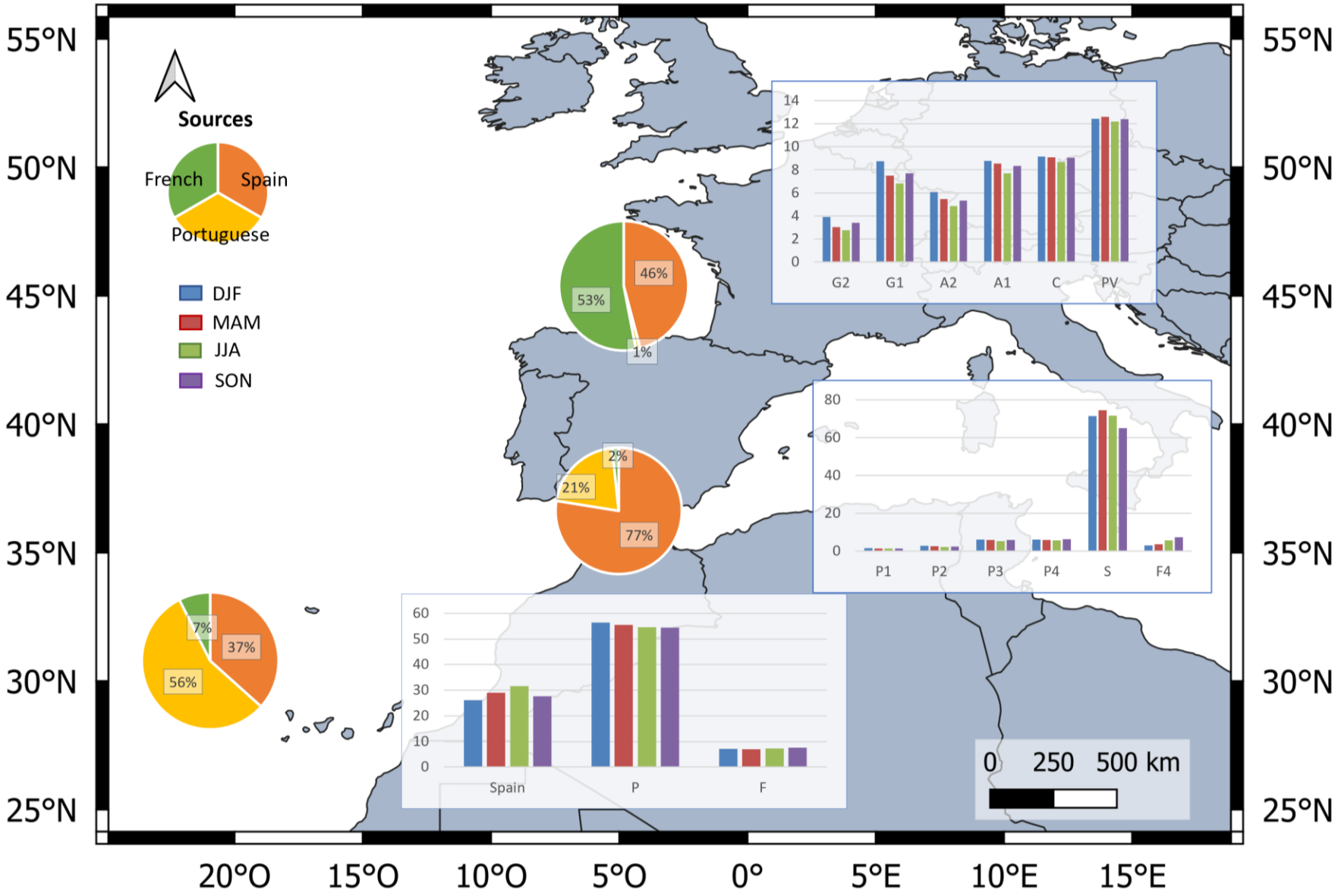

Thanks for your attention

saracloux@gmail.com

Cloux, S., Pérez, P., de Pablo, H., & Muñuzuri, V. P. (2023).
A regional Lagrangian model to evaluate the dispersion of floating macroplastics in the North Atlantic Ocean from different types of sources in the Iberian Peninsula. Submitted to Science of Total Enviroment.

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