



Saturn

Developing Solutions for
Underwater Radiated Noise

IMO Workshop – 19.09.2023

OceanPlanner[©]: global assessment of the effects of
regulation measures



SATURN has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101006443.

- Assessment of actual individual vessel URN and GHG emissions is mature
- Technical solutions have been identified to reduce individual vessel URN noise and GHG emissions
- Going to scale implies capability to
 - extrapolate and forecast at large scale
 - address the cumulative, temporal and spatial characteristics of both URN and GHG
 - support noise management planning defined in the guidelines (IMO)



OceanPlanner is an operational service
for assessing current environmental risks
and

to define future management measures for maritime activities.



OceanPlanner provides a comprehensive assessment:



Changes in **underwater sound**



CO₂ emissions



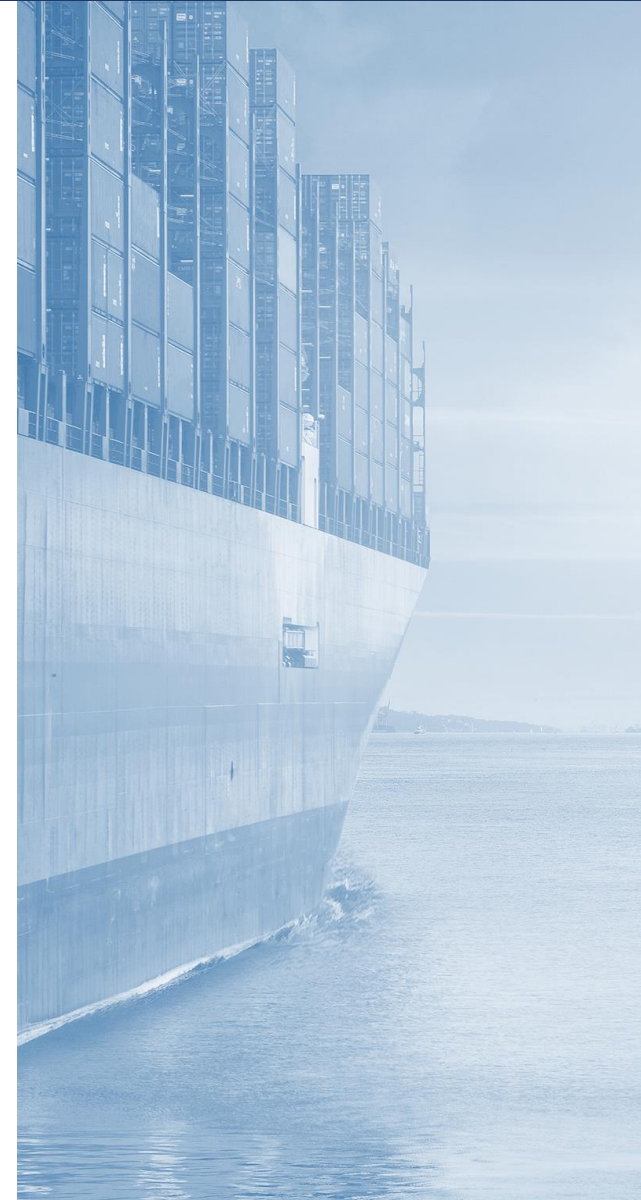
Changes in **shipstrike** risk

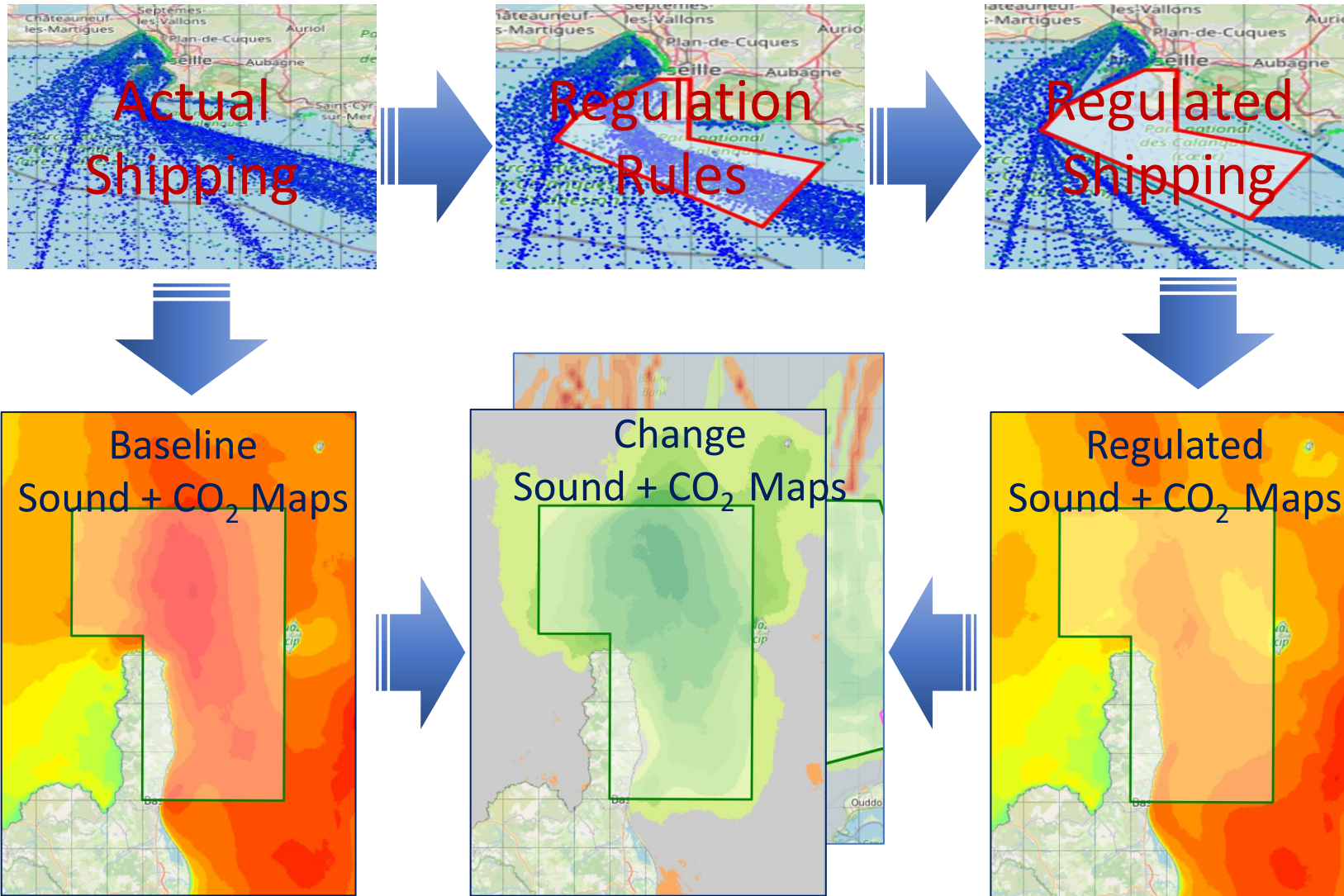


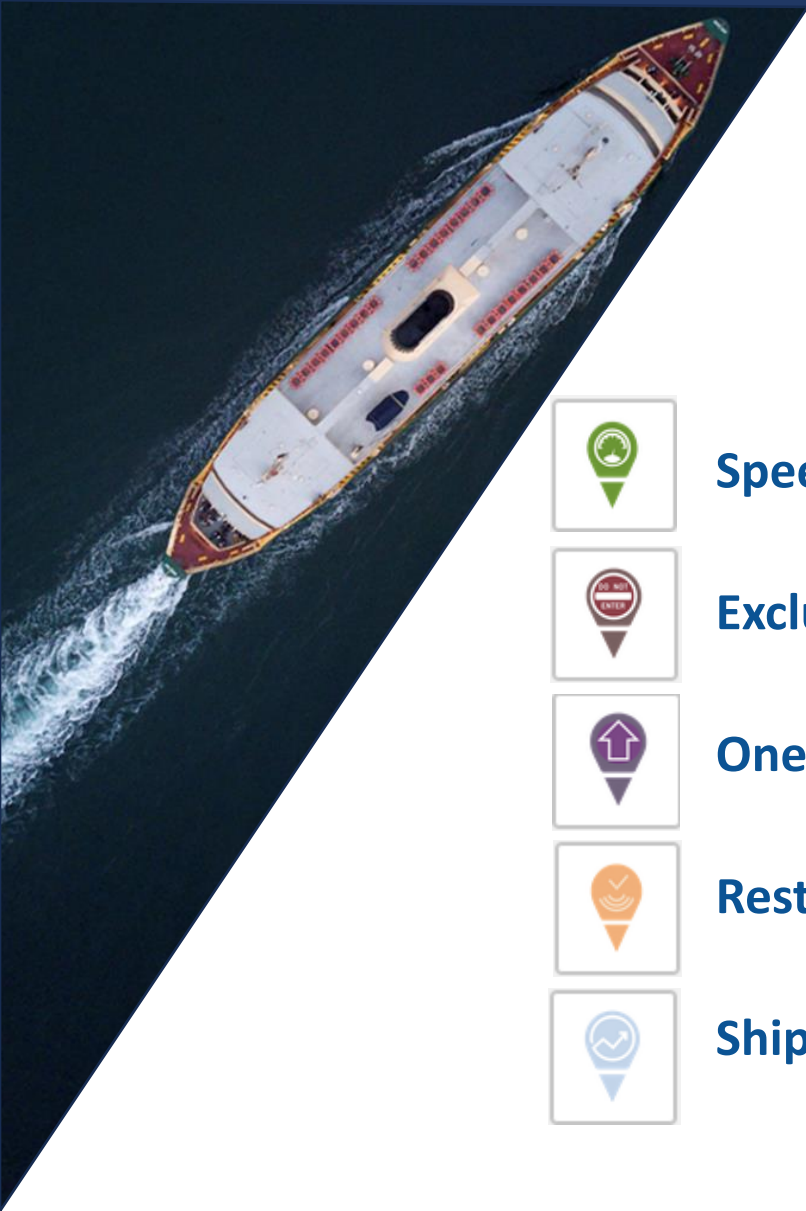
Delays: quantification of the delays induced by the regulation



Overconsumption or saving of fuel induced by the regulation







OceanPlanner supports the following maritime space management measures:



Speed limit: geographical area in which vessel speed is limited



Exclusion zone: geographical area prohibited to navigation



One way: Traffic Separation Scheme



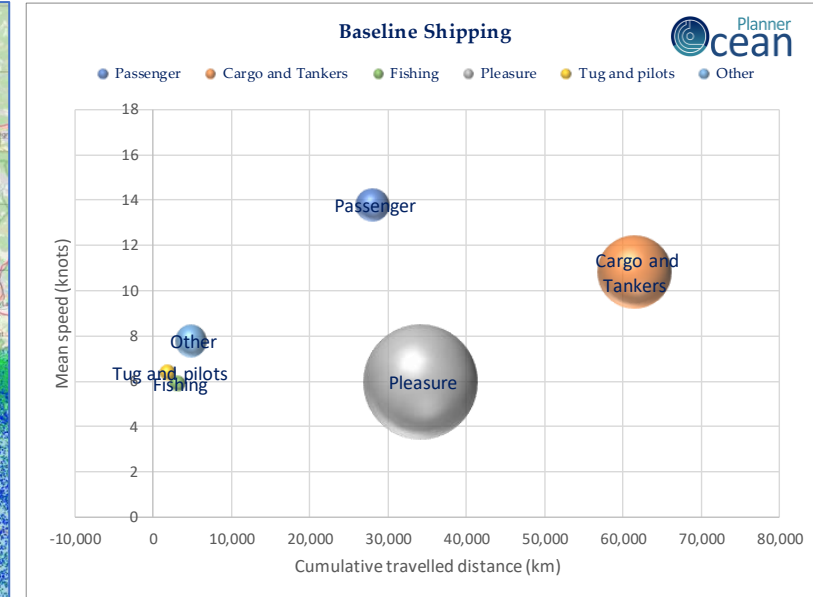
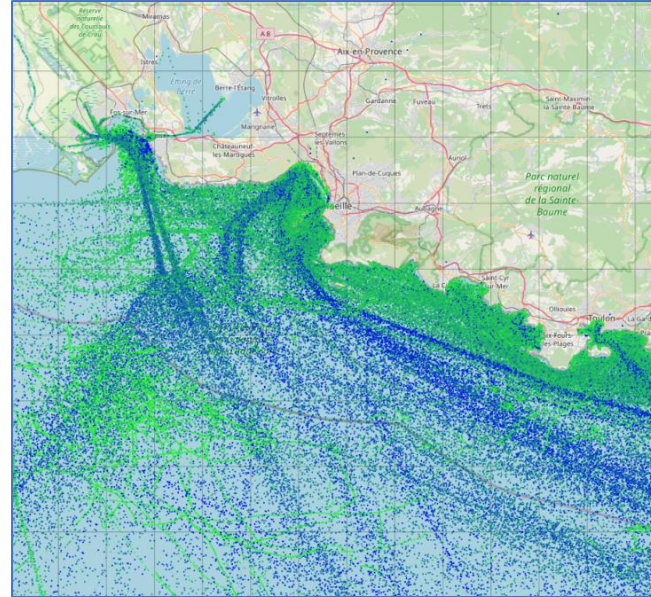
Restricted access: area restricted to ships that comply with a given noise level limit



Shipping trend: evolution of traffic (growth or decrease)

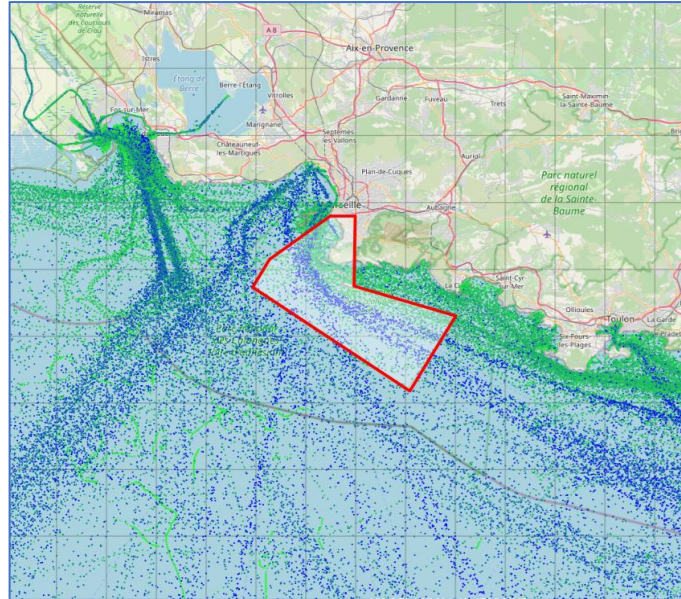
EXAMPLE OF SCENARIO ANALYSIS: BASELINE

- Reference Area: Fos – Marseille – Toulon
- Reference Period: August
- A majority of pleasure boats frequent the area, but for short distances and at low speed
- Cargo/tanker/container ships represent 25% of ships but 46% of traveled distances
- Passenger ships represent 5% of ships, but 21% of the traveled distances
- Other activities are less significant in the area



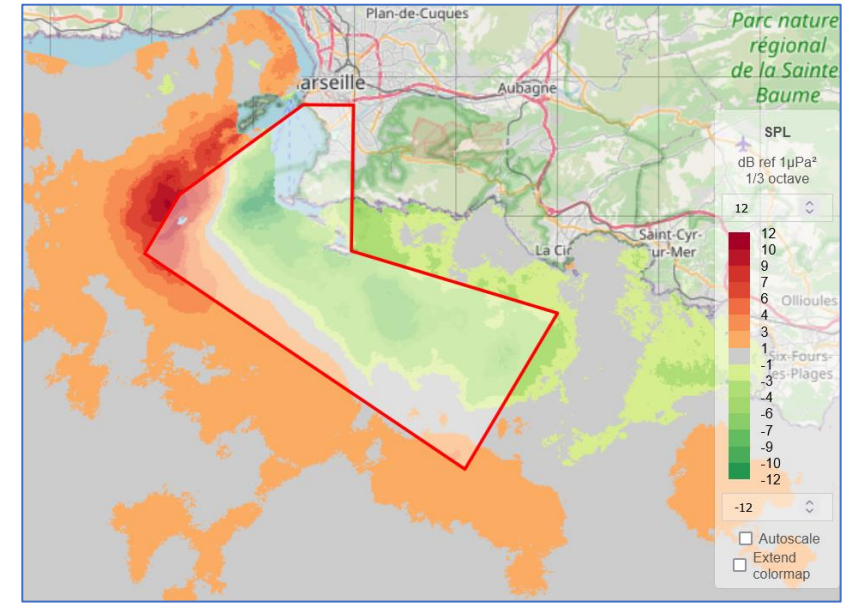
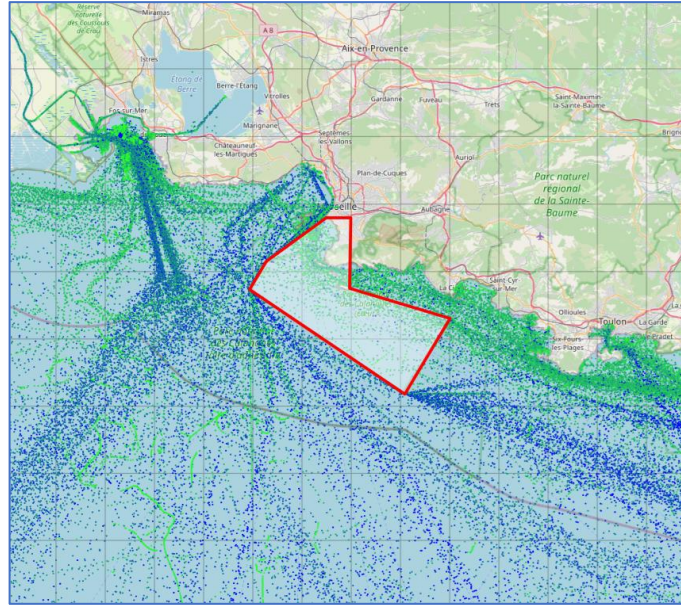
EXAMPLE OF SCENARIO ANALYSIS: REGULATION

- Regulation in the Calanques National Park area
- Exclusion zone for passenger ships and cargo/tanker/container
- Other activities are not regulated



EXAMPLE OF SCENARIO ANALYSIS: REGULATION

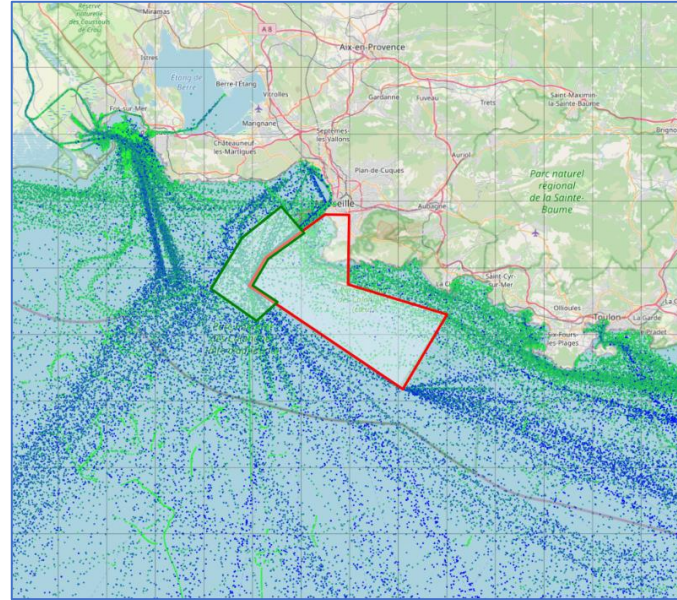
- The measurement cost is 10% delay on average for passenger ships and a 50% increase in fuel consumption in the reference area
- The cost for cargo/tankers/containers is not significant
- The noise is globally reduced in a major part of the Park and locally reaches 10 to 12 dB, but increases strongly (12dB) along the boundaries



	Costs & Savings						
	All vessels	Passenger	Cargo and Tankers	Fishing	Pleasure	Tug and pilots	Other
Average delays (%)	+6%	+10%	+1%	-	-	-	-
Fuel Over-consumption (%)	+48%	+47%	+3%	-	-	-	-
Fuel Saving (%)	-	-	-	-	-	-	-

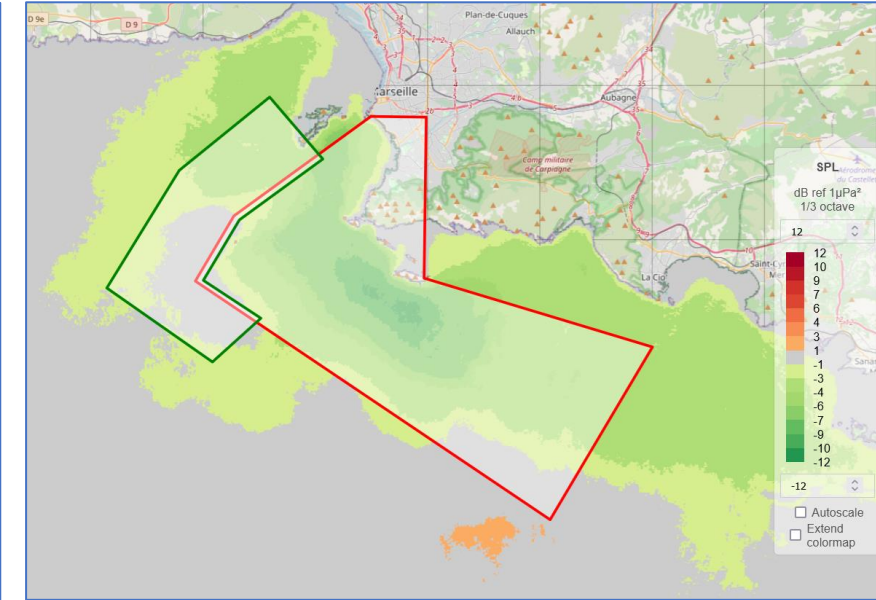
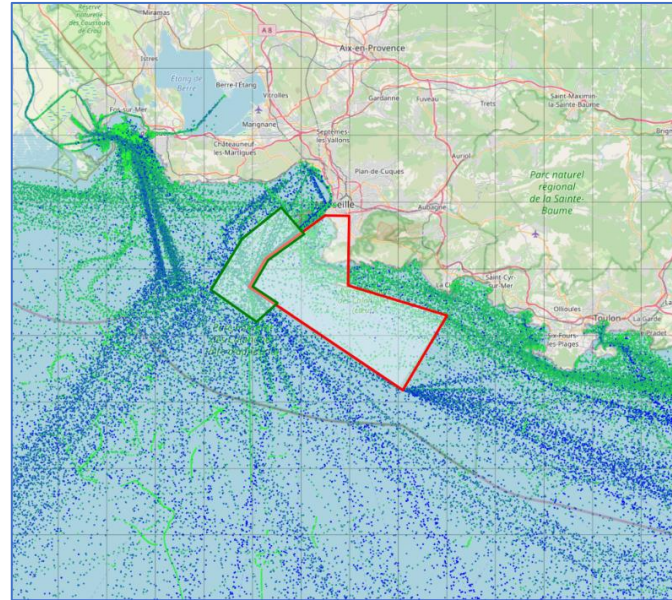
EXAMPLE OF SCENARIO ANALYSIS: REGULATION

- In order to reduce noise on the periphery, an 11-knots speed limit area is added in the west of the Marine Park for cargo/tanker/containers and passenger vessels



EXAMPLE OF SCENARIO ANALYSIS: REGULATION

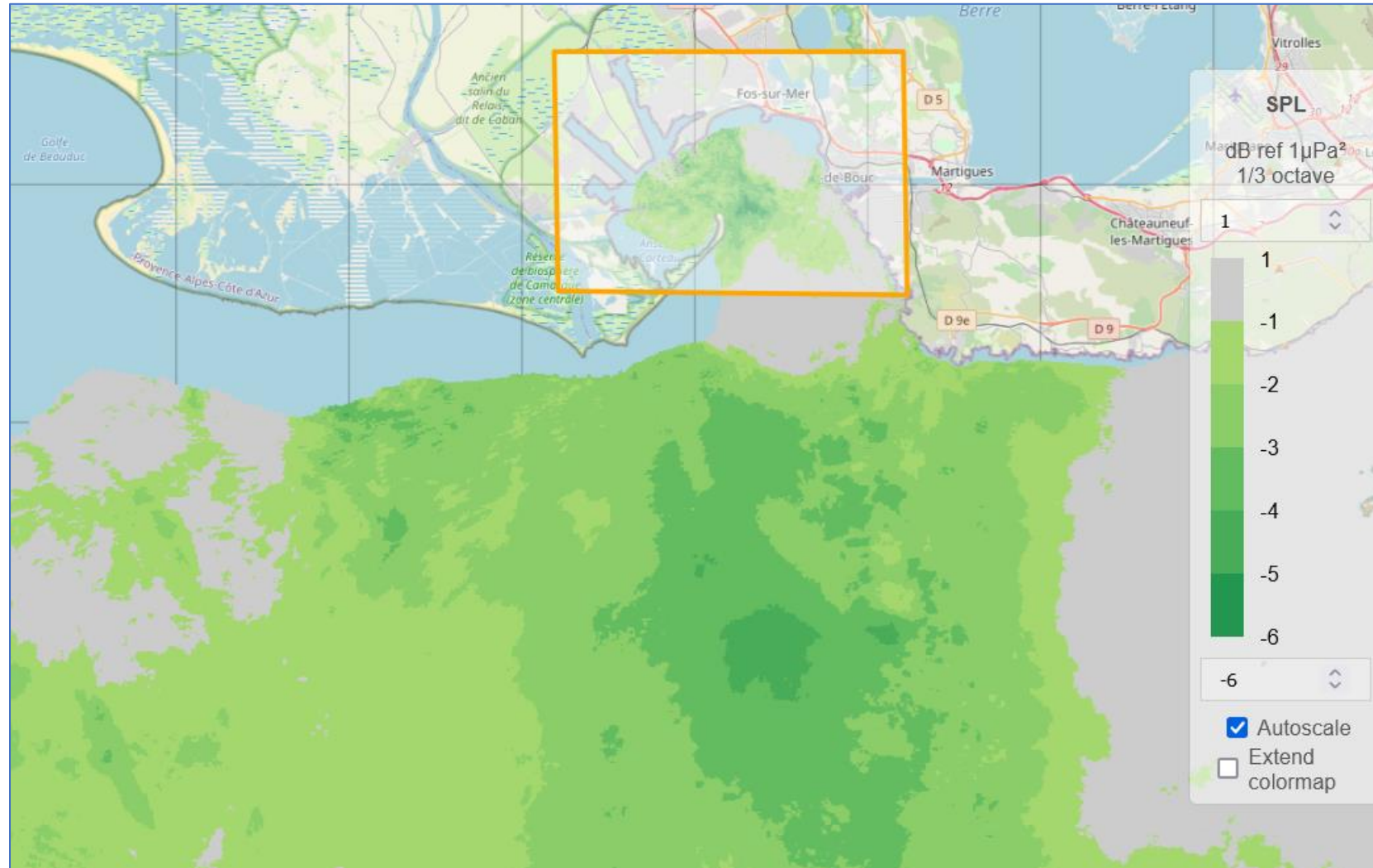
- Noise reduction now covers the entire park up to 12dB. The gain exceeds the borders of the park in the bays of Marseille and Saint-Cyr up to 6 dB.
- The number of vessels affected by the regulation is increasing.
- The average delay increase in the reference area increases to 19% for passenger ships, but the cost in fuel consumption is reduced. It may even be a net saving for vessels only affected by the speed restriction.
- The cost for cargo/tanker/containers remains insignificant.



	Costs & Savings						
	All vessels	Passenger	Cargo and Tankers	Fishing	Pleasure	Tug and pilots	Other
Average delays (%)	+9%	+19%	+4%	-	-	-	-
Fuel Over-consumption (%)	+49%	+41%	+1%	-	-	-	-
Fuel Saving (%)	-8%	-16%	-5%	-	-	-	-

EXAMPLE OF SCENARIO ANALYSIS: REGULATION

- The regulation consists in considering that all the ships frequenting the port of Fos-sur-Mer have taken the measures not to exceed the "Controlled" limit defined by Bureau Veritas.
- The gain spreads the entire region down to 6dB.



OceanPlanner is a decision support tool that allows to objectively assess the benefits and costs induced by maritime spatial planning regulation measures.

Managing ship toward GHG and noise reduction is now **operational**

Tool is **ready to use** for shipowners, charterers, harbors and regulators

Tool **supports** the implementation of the Noise Management Planning as recommended by the **IMO guidelines**





Contact

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