OceanPlanner©: global assessment of the effects of regulation measures
• 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 to capability to
  o extrapolate and forecast at large scale
  o address the cumulative, temporal and spatial characteristics of both URN ad GHG
  o 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)
o Reference Area: Fos – Marseille – Toulon

o Reference Period: August

o A majority of pleasure boats frequent the area, but for short distances and at low speed

o Cargo/tanker/container ships represent 25% of ships but 46% of traveled distances

o Passenger ships represent 5% of ships, but 21% of the traveled distances

o 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
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

<table>
<thead>
<tr>
<th></th>
<th>All vessels</th>
<th>Passenger</th>
<th>Cargo and Tankers</th>
<th>Fishing</th>
<th>Pleasure</th>
<th>Tug and pilots</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average delays</strong></td>
<td>+6%</td>
<td>+10%</td>
<td>+1%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Fuel Over-consumption</strong></td>
<td>+48%</td>
<td>+47%</td>
<td>+3%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Fuel Saving</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
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.
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

<table>
<thead>
<tr>
<th></th>
<th>All vessels</th>
<th>Passenger</th>
<th>Cargo and Tankers</th>
<th>Fishing</th>
<th>Pleasure</th>
<th>Tug and pilots</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average delays (%)</td>
<td>+9%</td>
<td>+19%</td>
<td>+4%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fuel Over-consumption (%)</td>
<td>+49%</td>
<td>+41%</td>
<td>+1%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fuel Saving (%)</td>
<td>-8%</td>
<td>-16%</td>
<td>-5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
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.
**Conclusion**

**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

ocean-planner@quiet-oceans.com