



# Research Brief

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Photo credit: John B. Weller

## Building Antarctic Ocean Resilience through Climate-smart Marine Spatial Planning

Widely used within national jurisdictions, marine spatial planning that is climate-smart could contribute to greater Antarctic resilience and broader ocean benefits.

### Background

The Southern Ocean, or the Antarctic Ocean, is critical to the functioning of our planet, influencing sea level, regulating climate, and driving global ocean circulation. What happens in Antarctica affects all coastal regions worldwide and the billions of people depending on them. With population growth and improved technological capabilities driving a growth in human activities in the region, such as a search for additional resources, threats from climate change are only compounded.

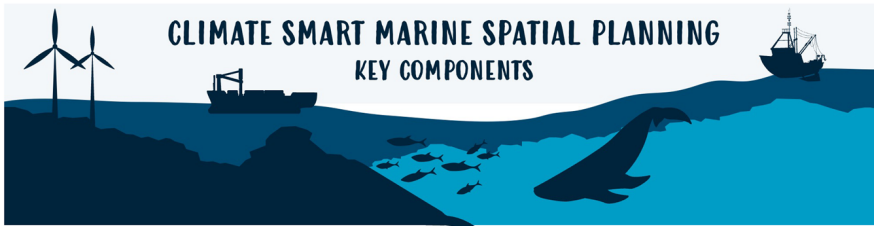
Several initiatives have already been developed to protect the Southern Ocean, including biodiversity hotspot identification, bioregional-scale conservation mapping, and designing highly protected areas. However, these initiatives have typically been developed for current conditions and do not take into account the impacts of climate change. In the face of a changing climate, only a climate-smart approach that is iterative, adaptive, and holistic in addressing all uses of ocean space and resources can deliver long-term resilience of all marine ecosystems and species. Climate-smart marine spatial planning (MSP) is a process for balancing multiple human demands with the ecological requirements for a healthy ocean that integrates climate-related knowledge, is flexible to changing conditions, and supports climate adaptation and mitigation actions. MSP is widely used within national jurisdiction in over 100 countries to address conflicts among ocean uses, and between uses and the environment, but has not yet been implemented in international waters.

The Southern Ocean is the ideal place to begin implementation of climate-smart MSP in international waters as, together with the Arctic, it is ground zero for climate change impacts. The Antarctic's governing body, the Antarctic Treaty, represents a unique governance structure with both the capacity and ability to build on decades of scientific research to pioneer climate-smart ocean planning.

### POINTS FOR POLICYMAKERS

Decision-makers for the Southern Ocean, such as Parties to the Antarctic Treaty, could consider the following four recommendations for climate-smart ocean planning in the Antarctic region:

- **Diversify data and knowledge types:** Climate-smart MSP must integrate information on climate-related impacts, risks, and opportunities across disciplines, scales, and knowledge types. Prioritization could be placed on identifying the distribution of key ecosystem processes, species and habitats, key human uses and activities, as well as determining which areas are most prone to social-ecological variation.
- **Ensure climate-smart marine spatial plans are forward-looking:** Exercises that explore and describe plausible alternative futures can be used to anticipate future challenges. The involvement of all relevant interested parties in MSP scenario-building and visioning exercises is key, and Parties to the Antarctic Treaty could develop a process for bringing these groups together.
- **Promote flexible and dynamic governance:** Enabling dynamic area-based management tools in international waters is fundamental to effective and sustainable management. Ocean plans have traditionally been static and lacking the flexibility to follow dynamic ocean processes, but climate change will require more flexible approaches that allow for change over time. To enable interested parties to be forward looking and flexible, a Southern Ocean data network is needed to coordinate data management and allow for data sharing agreements for climate-smart MSP.
- **Put ocean health at the heart of climate solutions:** Climate adaptation and mitigation actions can be supported through MSP through multiple means, from nature-based approaches to area-based management of industrial activities. Identifying areas where organisms are more likely to survive in adverse climate conditions (climate refugia) as well as protecting vital ecosystem processes will support ecological resilience to climate change and other stressors.



**1** **Prioritize ecosystem health** as the primary strategy for MSP decision-making, acknowledging that to be climate-smart MSP needs to sustain the ecosystems on which it relies  
**Foundational principle**



**2** **Understand system interactions and dynamics** to promote an integrated and systems view for ocean planning  
**Foundational principle**

**3** **Reinforce the importance of social knowledge, equity and change** in co-developing sustainable ocean plans  
**Foundational principle**



**4** **Integrate climate-related knowledge** into MSP, identifying expected climate impacts, risks, and opportunities (environmental, social, economic)  
**Operational pathway**

**5** **Develop proactive, future-looking plans** that explore future scenarios and can be used to stress-test ocean plans  
**Operational pathway**  
Based on 3 & 4



**6** **Promote adaptive and dynamic planning** to ensure MSP's ability to face uncertainty and adapt to moving biophysical features and uses  
**Operational pathway**

**7** **Balance flexibility with legal certainty** to address the tension between the human need for predictability and moving biophysical resources  
**Operational pathway**  
Key challenge of 6



**8** **Identify ocean-based climate solutions** and prioritize space allocation to support climate mitigation and adaptation actions  
**Operational pathway**  
Based on 3-5

**9** **Align policies for MSP and climate** to support the integration of climate change into MSP and ensure effective coordination among different policy arenas  
**Foundational principle**



**10** **Build common narratives** with policymakers, the private sector, civil society, and other integrated ocean management stakeholders to change perceptions of ocean sustainability and climate change  
**Operational pathway**

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## FOR MORE INFORMATION

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