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Limiting global warming to 1.5°: the Antarctic context

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Information Paper submitted by ASOC¹

Summary

In 2018, the Intergovernmental Panel on Climate Change (IPCC) released an important report on the consequences of 1.5°C of global warming. In this paper, ASOC summarizes key Antarctic findings from this report. Antarctic ice sheets are expected to contribute to global sea level rise through 2100 even if warming is limited to 1.5°C. The Antarctic Peninsula region is expected to continue to experience significantly higher temperature increases and associated impacts than those projected in other regions for a global 1.5°C increase. While the ATCM cannot itself reduce global emissions, it can take steps to promote ecosystem resilience and limit the impacts of climate change, including: incorporating climate considerations into EIAs, creating a strategic plan for representative protected areas across the Antarctic Treaty Area to promote climate resilience, implementing the Climate Change Response Work Programme, and supporting action at the IMO to reduce emissions from shipping by 2023.

Introduction

In 2018, the Intergovernmental Panel on Climate Change (IPCC) released the first product of their Sixth Assessment Report cycle, the Special Report on Global Warming of 1.5° (SR1.5). While the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement contains an aspirational goal to limit global temperature increase to 1.5°, climate scientists noted that there was scant published literature addressing this temperature threshold. Almost all of the published climate science used a 2° temperature threshold instead. To address this gap, the UNFCCC requested that the IPCC create this special report. This paper seeks to describe the Antarctic context of the IPCC's 1.5° report and suggests action steps the ATCM can take in response.

Key Findings of SR1.5

To date, human activities have caused about 1.0° of temperature increase above preindustrial temperatures². Limiting warming projections to 1.5° instead of 2.0° reduces climate-related risks, including degradation of habitats, species declines, the disintegration of polar ice sheets and resulting sea level rise, and numerous impacts on human communities and livelihoods³. Attaining 1.5° without sustained overshoot requires about 45% decarbonization by 2030 and reaching net zero emissions by 2050⁴. Most of the pathways for achieving this require significant investment in the design and implementation of carbon capture and storage technologies that are not yet commercially feasible. Reaching 1.5° requires deep emission reductions, quickly and broadly across sectors⁵.

Antarctic Context

Antarctica is featured twice in the SR1.5 Summary for Policymakers and numerous times in Chapter 3, Impacts of 1.5°C of Global Warming on Natural and Human Systems. Antarctic references in this report are almost entirely focused on the contributions of the Antarctic ice sheets to global sea level rise. Both 1.5° and

¹ Lead author Jessica O'Reilly with contributions from Claire Christian and Rodolfo Werner.

² IPCC 2018, 6.

³ IPCC 2018, 7.

⁴ IPCC 2018, 14.

⁵ IPCC 2018, 17.

2.0° of global temperature increases raise global sea levels through and beyond 2100⁶. In addition, disintegration of the West Antarctic Ice Sheet due to marine instabilities and/or the disintegration of the Greenland Ice Sheet could cause multi-meter global sea level rise and is expected to be triggered somewhere between 1.5° and 2.0°⁷.

While SR1.5 considers Antarctica in relation to its impacts on the rest of the planet, the Antarctic will also continue to experience climate impacts under a 1.5° temperature increase. A 1.5° global average increase means that some regions would experience significantly higher or lower temperature changes⁸. As WP1 argues, the Antarctic Peninsula is expected to continue to experience significantly higher temperature increases and associated impacts than those projected for a 1.5°C increase.

Tools for enhancing climate resilience

While the ATCM cannot restrict emissions on its own, it can take steps to promote resilience and limit the impacts of climate change. There is now a wide body of literature on incorporating the present or anticipated impacts of climate change into conservation tools that policymakers can use to develop effective conservation strategies. This literature covers many areas of existing interest to the CEP and ATCM, including protected areas, environmental impact assessments (EIAs), and non-native species. Below, we summarize some important findings for the CEP and ATCM as they consider future work on the protected areas system.

Protected Areas

Protected areas are a key aspect of many climate resilience strategies. By eliminating potential sources of impact from other human activities, overall stress on ecosystems and species is reduced and they are more resilient to climate change. Having reference areas can allow researchers to distinguish climate impacts from other impacts. An IUCN report on protected areas and climate change titled *Natural Solutions* notes that “conservation of large intact ecosystems may be an important measure for sustaining the populations of species in areas where climate change will reduce habitat condition”⁹. This could be particularly important for Antarctic Peninsula species, some of which are likely to move to southern areas (see also ATCM XLII/WP 1). Ensuring that there is sufficient new habitat available in suitable areas will facilitate survival of these species.

In terms of identifying areas for protection, Schmitz et al. identify six approaches to biodiversity conservation planning under climate change:

- Protect current patterns of biodiversity
- Protect large, intact natural landscapes
- Protect the geophysical setting
- Maintain and restore ecological connectivity
- Identify and appropriately manage areas that will provide future climate space for species expected to be displaced by climate change
- Identify and protect climate refugia¹⁰.

These approaches must be considered at several levels: species and population, ecosystem, and landscape to result in strong conservation outcomes¹¹. ASOC recommends that these considerations should be integrated into a systematic conservation planning process to further develop the Antarctic protected areas system (see IP 134).

⁶ IPCC 2018, 9.

⁷ IPCC 2018, 9.

⁸ IPCC 2018, 6.

⁹ Dudley et al. 2010.

¹⁰ Schmitz et al. 2015.

¹¹ Ibid.

Environmental Impact Assessments

Even with expanded area protection, it will be necessary to integrate climate change into other aspects of the ATCM and CEP's work. The Antarctic Treaty Meeting of Experts on Climate Change (2010) made this one of its recommendations. The International Institute for Sustainable Development (IISD) recommends that climate change considerations should be fully incorporated into EIA processes, and that this should happen early on in the process¹².

Climate change is currently mentioned in the EIA guidelines, but not in great detail. ASOC urges those conducting EIAs to consult resources such as the IISD and the EU's Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessments¹³ and apply relevant considerations to their own IEEs and CEEs.

Climate Change Response Work Programme

Finally, the SGCCR has identified non-native species response as a key priority for the CCRWP (see WP 36 submitted to this meeting). ASOC supports the proposed reformatting of the CCRWP and hopes it will lead to a coordinated effort to minimize the risks from non-native species.

Reduction of emissions from shipping

Emissions of greenhouse gases in the Antarctic Treaty area come largely from three sources – bases, aviation and shipping. In 2018, the International Maritime Organization (IMO) – the UN agency responsible for regulating international shipping - adopted an initial strategy on the reduction of greenhouse gas emissions from ships, which applies to all ships including those operating in the Southern Ocean. The initial strategy commits to decarbonising the industry as soon as possible, with an at least 50% reduction in absolute emissions by 2050, and prioritises immediate measures to reduce emissions before 2023 (when the initial strategy will be revised). At subsequent sessions, the modalities for future work, in particular the ToR for a Fourth IMO GHG Study and a procedure for the impact assessment of new measures proposed to reduce GHG emissions, were agreed. Discussions of short-term, mid- and long-term measures aimed at reducing greenhouse gas emissions have made little progress but will be considered further at a series of intersessional working groups later in 2019 and early 2020.

Action Steps

In light of the assessment of the scientific literature on global warming at 1.5°C, it is clear that the Antarctic poses climate risks to much of the planet, and is also threatened by climate change itself. ASOC recommends that the ATCM and CEP:

- Include assessment of climate impacts in EIAs, following Recommendation 8 of the Antarctic Treaty Meeting of Expert of Climate Change (2010).
- Create a strategic plan for representative protected areas across the Antarctic Treaty Area, which promotes climate resilience continent-wide in light of emerging risks.
- Support the coordination and communication plans outlined by the Subsidiary Group on Climate Change Response, detailed in WP36.
- Implement the actions of the Climate Change Response Work Programme, particularly with regard to non-native species.
- Support urgent action at IMO to reduce shipping CO₂ emissions before 2023.

¹² IISD 2016.

¹³ European Commission 2013 and IISD 2016.

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