

Report: Antarctic is changing dramatically, with global consequences

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A new report from the Scientific Committee on Antarctic Research (SCAR) reveals how climate change is significantly impacting Antarctica's ice sheets, climate and ecosystems, with far-reaching global

consequences.

[The report](#), released May 24 at the Antarctic Treaty Consultative Meeting in Berlin, shows that Antarctic ice sheets are melting, the continent's climate is changing, and the Southern Ocean is warming, becoming more acidic and losing oxygen. Locally, changing climates are already affecting the region's iconic whales, seals, penguins, and the krill they rely on for food. Emperor penguins may be all but gone by the end of the century unless [urgent action](#) is taken, the report concludes.

But while seemingly isolated from the rest of the world, Antarctica's changes also have impacts on all other continents.

"What happens in Antarctica, does not stay in Antarctica," said Cassandra Brooks, assistant professor of environmental studies and contributor to the report, specifically on marine elements of the region.

Melting ice sheets mean that global average sea level rise will put nearly a billion people at risk from coastal flooding over the next several decades, a number that could increase by the end of the century. The Antarctic has also played a profound role in regulating the world's climate, in part by absorbing heat and [carbon dioxide emissions](#) resulting from human activity.

The report also states that: "Global impacts influenced by Antarctic change include extreme climate and weather events, droughts, wildfires and floods, and [ocean acidification](#)."

For example, current levels of global warming have already committed the planet to about 16 inches (40 cm) of global sea level rise, which turns what was considered a one in 100-year coastal flood event into an annual one.

"Antarctica's changes have profound consequences for all of us," said Monash University Professor Steven Chown, who led the report and is SCAR's immediate past president. Chown is also Director of Securing Antarctica's Environmental Future (SAEF), of which Brooks is a Partner Investigator, through CU Boulder's status as a Participating Organization.

The report makes clear that adhering to, and preferably exceeding, the Paris Climate Agreement greenhouse gas emissions reductions targets will substantially lessen changes to the Antarctic and their implications for society.

Its messages were developed specifically for the Parties to the Antarctic Treaty, who gathered in Berlin for their 44th Annual Meeting. The parties are those countries responsible for the environmental management of the Antarctic, including the United States. This was the first in-person meeting since 2019 and a key opportunity for the parties to strengthen their responses to [climate change](#).

The report was well received, and Parties acknowledged the need for urgent action, however they failed to reach consensus agreement to provide protections for Emperor penguins, which are threatened to near extinction under future climate projection scenarios.

There is another opportunity to bring the report forward in October, when governments meet to discuss management of the Southern Ocean.

"Currently, governments are discussing protecting vast areas of the Southern Ocean, and other initiatives for more climate resilient management. But as highlighted in our [report](#), a changing Antarctica has global implications," said Brooks, who recently received a Faculty Early Career Development Program (CAREER) award from the National Science Foundation to study the Antarctic toothfish, the Southern

Ocean's top fish predator and an indicator of the health of the Ross Sea system.

"It remains a global responsibility to reduce emissions to safeguard Antarctica, and in doing so, safeguard our own futures."

Provided by University of Colorado at Boulder

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