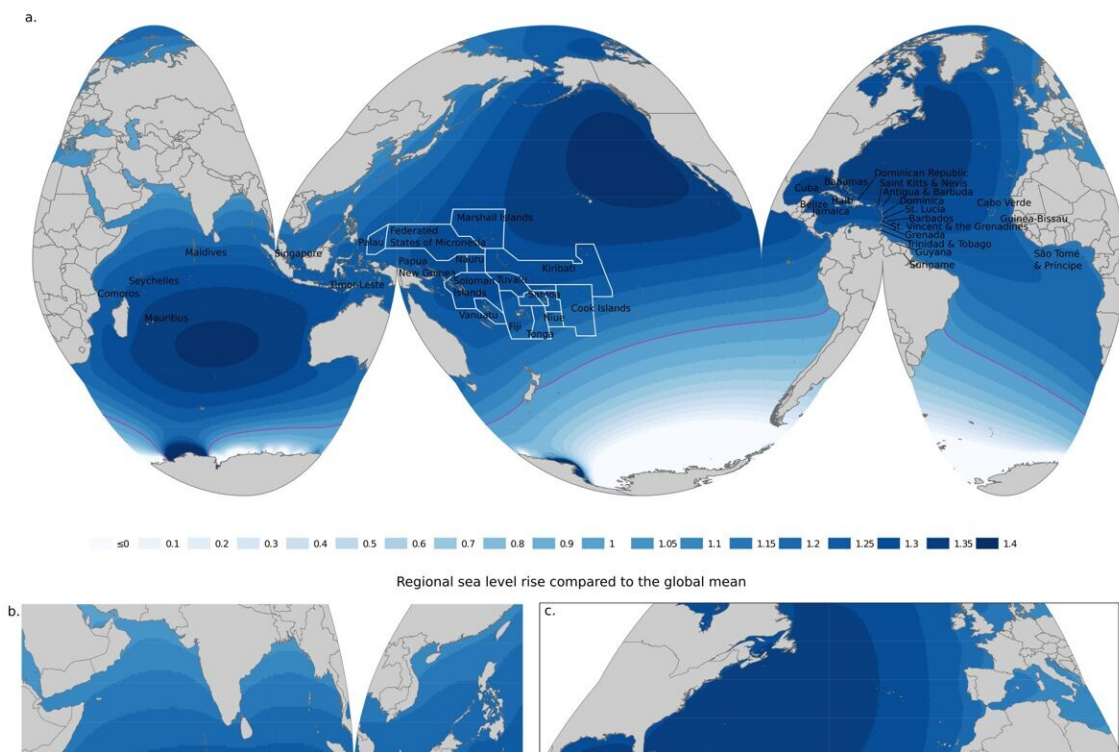


# Paris Agreement temperature targets may worsen climate injustice for many island states

December 13 2022



The spatial distribution of the Antarctic contribution to sea level rise at 2100 (relative to 2000) under one of the IPCC's intermediate emissions scenarios. AOSIS members are disproportionately affected by sea level rise. Numbers shown in the map legend are factors in comparison to global mean sea level, for instance a factor of 1.2 indicates that location experiences sea level rise 1.2 times the global mean value. Credit: *Earth's Future* (2022). DOI:

While the world focuses on limiting the rise in global temperature to 1.5 or 2 degrees Celsius over the preindustrial average, increasing meltwater from ice sheets presents an existential threat to the viability of island and coastal nations throughout the world.

Now, research from the University of Massachusetts Amherst, recently published in the journal *Earth's Future*, shows that even the most optimistic temperature targets can lead to catastrophic sea-level rise, which has already begun and will affect low-lying nations for generations to come.

While rising temperatures are having many [deleterious effects](#) on global ecosystems, economies and human well-being, an interdisciplinary team of researchers at the University of Massachusetts emphasize that temperature alone is not a sufficient basis for [climate policy](#). The team focused on the Antarctic Ice Sheet, which holds the world's largest store of freshwater—enough to raise the oceans by 58 meters, and which is melting at an accelerating pace.

But the physics of the ice sheet itself also contribute to its liquification, which will continue for millennia, even if global carbon emissions are reigned in. And because melting ice can slow rising temperatures in the atmosphere, it is conceivable that the melting ice sheet could help maintain what is commonly considered a "safe" level of warming, 1.5 degrees, say, while actually allowing for devastating sea-level rise.

Furthermore, all that Antarctic meltwater won't cause the same amount of sea-level rise everywhere in the world. Some areas in the Caribbean Sea as well as the Indian and Pacific Oceans will experience a

disproportionate share of the sea-level rise from Antarctic ice—up to 33% greater than the [global average](#).

This gap between temperature and sea level has immediate repercussions for many places throughout the world, and especially for the Alliance of Small Island States (AOSIS), an organization of 39 island and coastal nations across the globe. Indeed, the paper's authors show that, though AOSIS countries have emitted a negligible portion of the planet's anthropogenic greenhouse gasses, they are bearing the brunt of the world's rising waters.

"Temperature is not the only way to track [global climate change](#)," says Shaina Sadai, the paper's lead author, who completed this research as part of her doctoral studies in geosciences at UMass Amherst, "but it became the iconic metric in the Paris Agreement. Knowing that Antarctic melt can delay temperature rise while increasing sea levels, I wondered what it meant for climate justice. But [climate science](#) alone can't answer that question of justice."

Enter Regine Spector, professor of political science at UMass Amherst and one of the paper's senior authors. Spector brought expertise in political power dynamics and the history of global inequality to the team's work to demonstrate how politically powerful countries influence global climate negotiations and continue historic patterns of colonial exploitation experienced by AOSIS nations. "Focusing on temperature misses other real consequences of climate change, such as [sea-level rise](#), that are being felt all over the world today," says Spector.

The team demonstrates that an [interdisciplinary approach](#) to research, which centers the experiences of AOSIS countries, can be used to better understand climate justice impacts of international negotiations and the relationships between science, policy and political power. "We need to listen to the voices of the people facing the vanguard of climate change,"

say Sadai and Spector. They hope this research can serve as a model for future studies.

**More information:** S. Sadai et al, The Paris Agreement and Climate Justice: Inequitable Impacts of Sea Level Rise Associated With Temperature Targets, *Earth's Future* (2022). [DOI: 10.1029/2022EF002940](https://doi.org/10.1029/2022EF002940)

Provided by University of Massachusetts Amherst

Citation: Paris Agreement temperature targets may worsen climate injustice for many island states (2022, December 13) retrieved 23 June 2024 from <https://phys.org/news/2022-12-paris-agreement-temperature-worsen-climate.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.