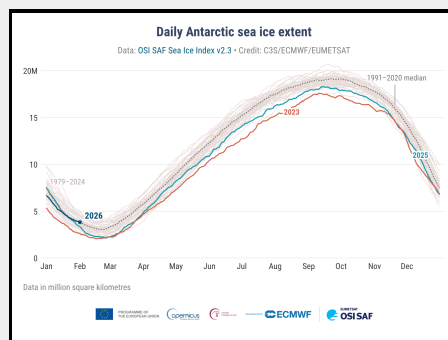


Scientists find Antarctic Sea- Ice is at record lows:

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The temperature suddenly drops. Southern right whales are nowhere to be found. An average temperature of -10 degrees drops to a freezing -34.4 degrees. In response, Antarctica goes through a period of expansion. Every year, the yearly Antarctic 'pack ice' freezes over to cover 19-20 million kilometers of the surrounding ocean. From February until September, the landmass almost triples in size. The sea ice is extremely important for maintaining planet earth's climate, wildlife and sea levels. However, this fragile system is under threat by one of the very creatures that it sustains; humans. Sea ice coverage has continued to trend below the 1981-2010 average since 2002, and shows no signs of returning to its former size as the years progress.

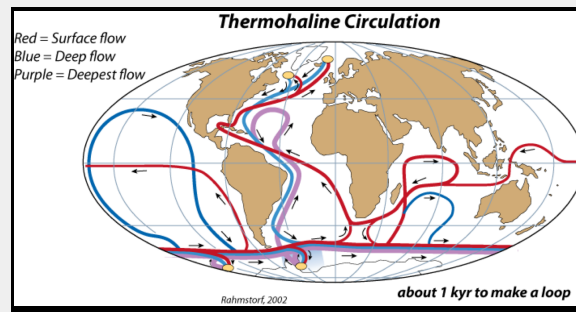


Antarctic sea ice extent 1979-2026. (Copernicus)

Global Thermohaline Circulation

Sea ice was reduced by 36% in 2023, according to the Australian Antarctic Program. This poses a huge problem; but why is this sea ice so important for the earth? The yearly occurrence is vital to maintain planet earth's temperate state. Antarctica acts as the earth's air conditioner. Because the colour white reflects heat, the sun's glare gets bounced off the surface of the snow and sent back to space. With less sea ice, the much darker oceans exacerbate the temperature of the already warming waters. Further more. The existence of Antarctic sea ice creates Polynyas. Polynyas are chunks of 'pack ice' that have formed from holes in the ice sheet. This extremely cold ice then sinks under its density and 'floes' off in ocean currents; sometimes even up to the Arctic in the North. Polynyas contribute to the ocean circulation & provide homes and refuge for animals like seals, whales and marine birds. Sea ice also provides protection to the land ice and glaciers of Antarctica's 'walls'. The southern oceans violent winter storms batter against the temporary pack ice instead. Without sea ice, Antarctica would heavily be at risk from losing more of its stored fresh water, damaging salinity levels.

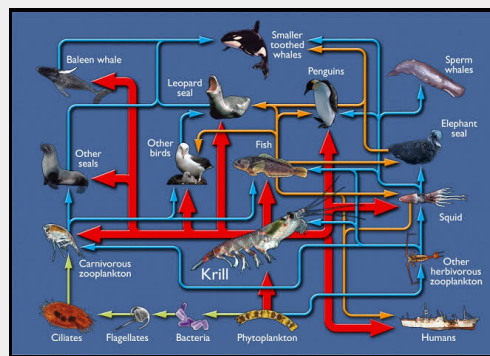




Brief diagram of global ocean currents. (InTeGrate)

Fragile foodchain

Antarctica sea ice is destabilising and dispersing, no longer creating a solid surface. Scientists predict that Emperor penguins could be extinct by 2100. “As sea ice decreases, their habitat also decreases,” says Philip Tratham, a penguin specialist. “Krill seems to be the crux of everything in the southern ocean,” adds Kit Kovacas, biologist. Phytoplankton — tiny pieces of algae that float around the ocean — Make up the pillar for the southern oceans food chain. A study by the University of Exeter found that, since the rapid decline in sea ice. Phytoplankton levels have ‘increased from very low concentrations... to more moderate levels’. However, the Antarctic ecosystem cannot thrive without the sea ice that traps this phytoplankton in its ‘diatoms’. Diatoms are what secure algae in pockets of ice to be used as a food source. Without it, the algae that Krill feeds on is cut off from advancing up the food chain. Whales, penguins and seals do not get fed, and so their populations drop quickly. Today, this whole ecosystem is at a high risk of being destroyed.



Antarctic food chain diagram. ([Discovering Antarctica](#))

Global Impact

Not only will the melting of Antarctica affect the Southern Oceans ecosystem, it will also impact ecosystems around the world. A study published by Nature Geoscience, found that global warming in the last century has affected the winds that blow over the southern ocean. This creates a more unstable and unpredictable sea side environment; eroding ice with the above freezing waters. “If we carry this pattern forward, we may move to a situation where we’re flipping between warm and very warm,” says Paul Holland and Eric Steig. “[West Antarctica ice sheet] melting will affect everyone.” As greenhouse gases are continuously pumped into the earth’s atmosphere by us humans, “The effects will be global because sea level will rise globally”. 230 million people live within three feet of sea level. Seaside towns and cities will be flooded, leaving humans to face what they have created.



The summer comes round again. Scientists ecstatic to see the new generation of whales and penguins; grinning as they walk out their tent doors. It's another pleasant sunny morning. Perfect for field work. As they trudge up a ridge of soft snow, they spot a penguin colony in the distance. A scientist yells and holds an arm out to stop their companions. Below them is the sea, violent and tumultuous. The smiles fade, crackling into deep shock as the scientists gaze at it. They tilt their heads up to see a large ice berg, floating away hundreds of oblivious baby penguins. Heading into the wide Southern Ocean. All humans can do is watch. If only they had done something to prevent this.



Antarctic ice in summer. (Australian Antarctic Program)

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