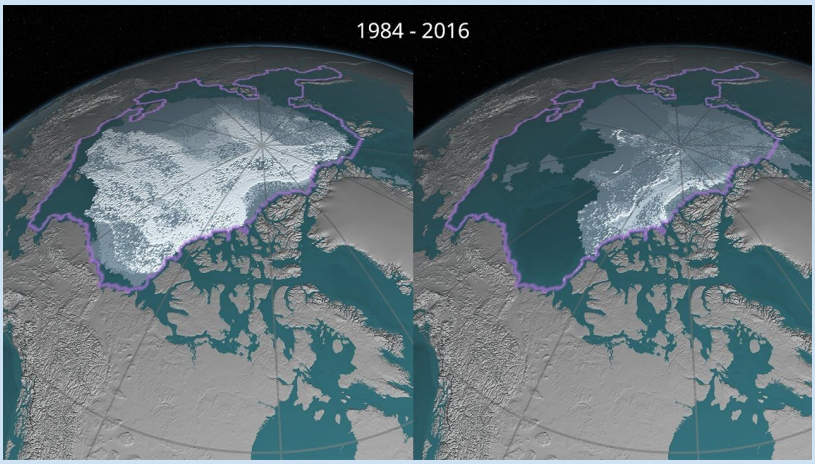
Impacts of Climate Change: Polar Sea Ice Loss

Introduction

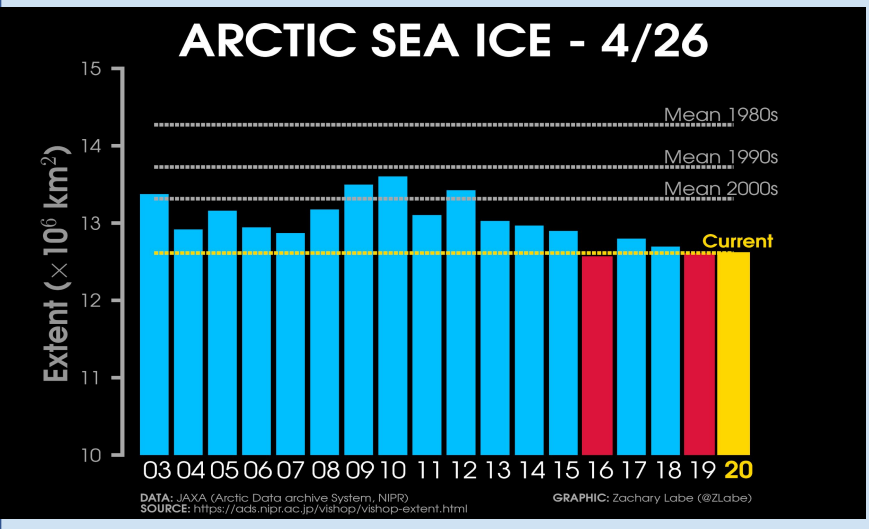
As the Earth warms, floating ice sheets in polar regions have begun to melt, this is result in several problems around the world.

- Sea ice loss is accelerating
- The melting ice causes the sea level to rise
- It destroys animal habitats and ecosystems
- The loss of sea ice is causing the global temperature to progressively rise
- Sea ice can be restored with human intervention



Display of the Arctic Sea ice loss within a span of 32 years
https://climate.nasa.gov/news/2510/see-how-arctic-sea-ice-is-losing-its-bulwark-against-warming-summers/

Current Arctic Sea Ice Expanse
https://sites.uci.edu/zlabe/arctic-sea-ice-extentconcentration/



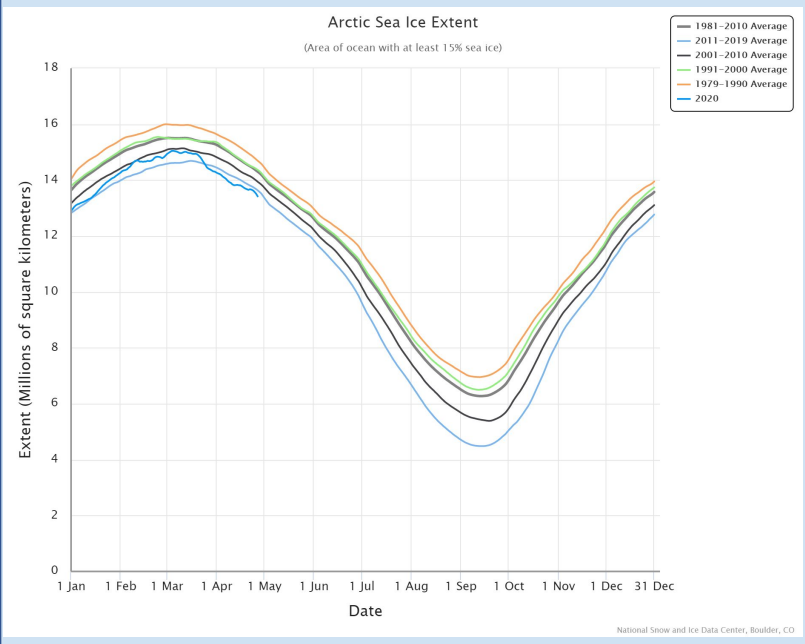
How Current Global Change is Making This Worse

Anthropogenic warming of the planet through greenhouse gases is melting vast quantities of ice sheets at both poles. The melting of these ice sheets reduces the freshwater quantity on the planet, it causes sea level rise that destroys coastal provinces, it tears down animal habitat, and it increases the amount of sunlight absorbed by the earth, as there is no ice to reflect the sun's rays, warming the earth further. This phenomenon is called the albedo effect.

CPSG101 Science & Global Change First Year Colloquium II, Spring 2020
Ethan Coates, Ruchir Raturi, Mikayla Lewis, Matthew Takacs

Sea ice extent throughout each decade from 1970 to 2020

http://nsidc.org/arcticseaicenews/charctic-interactive-sea-ice-graph/



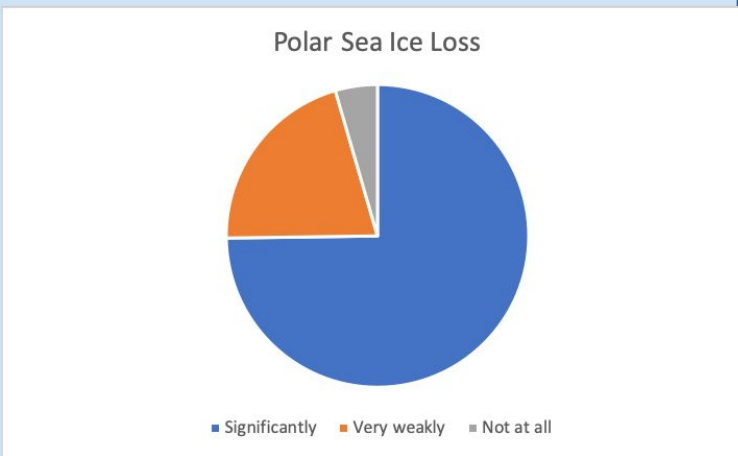
Many species of animals rely on Arctic sea ice as a habitat and a hunting ground, and loss of this habitat could result in devastating population loss. For example, the polar bear's numbers are predicted to fall by ⅔ and the number of bear attacks on humans is predicted to increase as the bears run out of places to hunt.

Malnourished Polar Bear on floating sea ice

https://inhabitat.com/photo-of-frail-polar-bear-illuminates-the-tragedy-unfolding-in-the-arctic/

Is the Sea ice loss irreversible?

No, but the sea ice loss dilemma is fixable in both the Northern and Southern Hemisphere. However with the current state of things, sea ice restoration is not in our near future. The amount of greenhouse gasses emitted by humans needs to drastically decrease to help restore sea ice extent, it is possible and there is still time to help prevent climate change.



Data from survey participants asked to what degree Polar Ice Loss has been affected by global climate change. Responses were mostly positive due to the direct correlation between heat and the loss of ice.

References

Amstrup, S., DeWeaver, E., Douglas, D. *et al.* Greenhouse gas mitigation can reduce sea-ice loss and increase polar bear persistence. *Nature* 468, 955–958 (2010). https://doi.org/10.1038/nature09653

Ridley, J, et al. "How Reversible Is Sea Ice Loss?" *The Cryosphere*, 8 Sept. 2011, d-nb.info/114279024X/34.

Stroeve, J. C., et al. "Changes in Arctic Melt Season and Implications for Sea Ice Loss." *AGU Journals*, John Wiley & Sons, Ltd, 22 Feb. 2014, agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2013GL058951.