Background

The Arctic Ocean, also referred to as the Arctic Sea, is the smallest of the five oceans in the world. It covers 14.056 million km$^2$ and for the most part is surrounded by land, with a coastline of 45,389 km$^2$. Its terrain is made of perennial icepack with an average thickness of 3 meters. The salinity of the Arctic is the lowest of all the oceans due to low evaporation and freshwater inflows from surrounding rivers.

Ocean currents provide an inflow of water from the Atlantic Ocean via the Norwegian Current and from the Pacific Ocean via the Bering Strait. The major route of outflow is through the East Greenland Current. Temperatures in the Arctic region remain fairly constant year-round, nearing the freezing point of saltwater (below zero Celsius, but dependent on salt concentration).

The Arctic Ocean contains many resources; some of the mineral resources include petroleum and gas fields and polymetallic nodules. The Oxford Institute for Energy Studies states that the Arctic potentially holds a quarter of the world’s natural gas and oil resources. The region is also host to a variety of wildlife such as seals, polar bears, walruses, and whales. A possible dilemma in the Arctic is that the Law of Sea declares that countries have few rights or responsibilities beyond their exclusive economic zones (200 nautical miles from the shores). Today, many countries are organizations to help
protect the region’s assets and reduce damage to the environment and the people of the Arctic.

**Environmental Issues**

There are numerous threats to the environmental integrity of the Arctic Region. These problems range from radionuclide pollution to declining ice cover. NASA observed a dramatic change during 2004-2005 when they measured the largest decline of sea ice in the Arctic, shown in Figure 2. They also claimed that the wintertime level of sea ice was nowhere near the average; it failed to reach the 1979-2000 average by an area about twice the size of Texas.³

During the Cold War, the former Soviet Union used the Arctic as a dumping ground for its radioactive waste. One study found that they disposed of sixteen nuclear reactors at five different locations in the Kara Sea, which is connected to the Arctic Ocean. Six of these still contained nuclear fuel. To prevent further damage and remEDIATE existing pollution, the Declaration of Arctic Military Environmental Cooperation was formed by Russian, American, and Norwegian defense ministries in 1996.⁴ This framework is a forum of communication between the parties, rather than a solid plan. Nevertheless, the framework encourages exchange of information on research and technology, environmental assessments, and remediation strategies. While its goals are noble and ambitious, its success has been limited by lack of funding.

![Figure 2. Decline in Sea Ice of the Arctic](http://earthobservatory.nasa.gov/Newsroom/NewImages/images.php3?img_id=17047)

Another organization, the Arctic Council, was also established in 1996. This council oversees several other denominations of environmental initiatives, including: the Arctic Monitoring and Assessment Program (AMAP); the Conservation of Arctic Flora and Fauna (CAFF); the Emergency Prevention, Preparedness and Response (EPPR); and Protection of the Arctic Marine Environment (PAME).⁵ The Arctic Council does not have a solid jurisdiction over nations and cannot enforce laws, though they can strongly suggest practices. The council’s soft laws were designed that way to hasten ratification
and bypass the scrutiny given to hard laws. One key characteristic of this council is that it includes indigenous peoples and gives them the same consideration it gives to governments. The flexibility of these soft laws also allow for changes and improvements.

**Territorial Claims**

Because of the United Nations Convention of the Law of Sea of 1994, no country has a claim to the Arctic Ocean. Water at a distance greater than 200 nautical miles from the shores of surrounding countries—Canada, Denmark, Finland, Iceland, Sweden, Russia, the United States, Denmark, and Norway—is considered international water.

Canada was the first country to extend its borders toward the North Pole in 1925, though that claim is not universally recognized. The other bordering countries followed suit but none enforced their claims. The United States is among the countries that do not recognize Canada’s claims, going as far as sending nuclear submarines into “Canada’s waters” without notification. Recently, the icepack of the North Pole has been rapidly decreasing and the surrounding countries are either making new claims or reinforcing their previous ones.

Greenland (a province of Denmark) has the north border nearest to the North Pole, yet now countries such as Denmark and Russia are claiming that underwater ridges should be included as parts of their respective countries. Russia, for example, claims that the North Pole and Siberia are linked and submitted a proposal in 2001 to extend its claims, though the proposal was neither approved nor rejected. Denmark submitted a similar proposal in 2006. Much to the dismay of Canada’s prime minister, Russia sent a submarine beneath the Arctic ice to plant a Russian flag and take soil samples. Similarly, a U.S. Coast Guard icebreaker, the USCGS Healy, was sent to the Arctic region to map the bathymetry; the U.S. claims the voyage had nothing to do with Russia’s expedition. No country has successfully extended their territory, but these claims will be an increasing concern as more and more of the icepack melts away.

**Conclusion**

The Arctic Ocean is a region filled with unique ecosystems and vast resources. It is also a fragile region, and steps are already being taken to ensure the area’s people and wildlife continue to improve. There exist numerous frameworks, councils, and organizations that are working toward the improvement of the state of this region. These organizations, however, require circumpolar cooperation in order to succeed.

**Required Reading**


**Recommended Reading**

1 www.cia.gov

2 Oxford Institute of Energy


