

Arctic Photographs by Jenny E. Ross in 2009 Climate Change Exhibition

Presented in Seoul & Copenhagen by the Korean Ministry of Foreign Affairs & Korean Ministry of Culture

All Photographs and Text © Jenny E. Ross

Exhibition Photograph 1:



Adult female harp seal surfacing in a breathing hole she has maintained in the Arctic sea ice near where her young pup is resting. Gulf of St. Lawrence, Canada. © Jenny E. Ross

The Arctic is warming rapidly and sea ice is quickly shrinking due to climate change. The loss of reflective ice cover is causing increased warming of the atmosphere and ocean, which in turn is causing more rapid melting of ice. A crucial part of the Arctic ecosystem, sea ice is essential for the survival of polar bears, walruses, numerous species of seals, and other wildlife. Deterioration of sea ice due to climate change is posing a serious threat to the survival of these animals.

Arctic Photographs by Jenny E. Ross in 2009 Climate Change Exhibition

Presented in Seoul & Copenhagen by the Korean Ministry of Foreign Affairs & Korean Ministry of Culture

All Photographs and Text © Jenny E. Ross

Exhibition Photograph 2:



Polar bear swimming in the Arctic Ocean. Svalbard, Norway. © Jenny E. Ross

Polar bears are completely dependent on their Arctic sea ice habitat for survival. They must have sea ice for hunting seals, feeding, traveling, finding mates and breeding. Although polar bears are strong swimmers, they cannot catch seals in the open water and they cannot swim indefinitely, especially in rough seas. As Arctic sea ice shrinks due to climate change, polar bears must swim farther to find food and to reach maternity denning areas. Some polar bears have drowned as a result.

Arctic Photographs by Jenny E. Ross in 2009 Climate Change Exhibition

Presented in Seoul & Copenhagen by the Korean Ministry of Foreign Affairs & Korean Ministry of Culture

All Photographs and Text © Jenny E. Ross

Exhibition Photograph 3:

Young twin polar bear cubs inside a snow den near Hudson Bay, Canada. © Jenny E. Ross

Climate change poses a dire threat to the survival of polar bears. Due to warming temperatures and the melting of Arctic sea ice, in many areas polar bears must now endure long periods of food deprivation. The resulting deterioration in body condition of adult female bears is an especially grim effect because without sufficient body fat they are unable to support pregnancy or raise cubs. As a consequence, in many locations fewer cubs are being born, and fewer young bears are surviving.



Arctic Photographs by Jenny E. Ross in 2009 Climate Change Exhibition

Presented in Seoul & Copenhagen by the Korean Ministry of Foreign Affairs & Korean Ministry of Culture

All Photographs and Text © Jenny E. Ross

Exhibition Photograph 4:



Outlet of the Eqip Sermia glacier, Greenland. © Jenny E. Ross

Scientific study of glaciers has yielded important information about the effects of climate change. Glaciers are large perennial masses of land-based ice that form and are sustained where the rate at which snow and ice accumulate exceeds the rate at which snow and ice melt. Due to climate change, glaciers worldwide are receding. As the result of atmospheric warming, glacier ice is being lost from melting and calving more quickly than new ice is forming to replace it, and this imbalance is causing the glaciers to shrink.

Arctic Photographs by Jenny E. Ross in 2009 Climate Change Exhibition

Presented in Seoul & Copenhagen by the Korean Ministry of Foreign Affairs & Korean Ministry of Culture

All Photographs and Text © Jenny E. Ross

Exhibition Photograph 5:



Full moon rising at sunset behind a section of the Greenland ice sheet that has receded. Scars in the rock reveal where a glacier previously scoured a trough from the ice sheet to the sea. © Jenny E. Ross

Ancient inland ice covers more than 80% of Greenland's surface. This vast ice sheet contains about 2.85 million cubic kilometers of frozen freshwater, and is the largest body of ice outside Antarctica. The Greenland ice sheet is melting rapidly due to climate change, and its meltwater is flowing into the ocean. If the entire Greenland ice sheet were to melt, global sea level would rise by 7.2 meters (23.6 feet), coastal cities throughout the world would be inundated, and some entire countries would be completely submerged.

Arctic Photographs by Jenny E. Ross in 2009 Climate Change Exhibition
Presented in Seoul & Copenhagen by the Korean Ministry of Foreign Affairs & Korean Ministry of Culture

All Photographs and Text © Jenny E. Ross

Exhibition Photograph 6:



Icebergs from the Jakobshavn Isbrae glacier, at the Iceberg Bank (Isfjeldbanken), Ilulissat Icefjord, Greenland.
© Jenny E. Ross

Greenland's outlet glaciers are conduits that move ice directly from land into the ocean, where the ice then disintegrates and melts. One of the fastest moving glaciers in the world is the immense Jakobshavn Isbrae (Sermeq Kujalleq), which flows from the Greenland ice sheet into the Ilulissat Icefjord and produces about 10% of all icebergs in Greenland. Due to climate change, the Jakobshavn glacier has doubled its speed in recent years and has receded dramatically.

Arctic Photographs by Jenny E. Ross in 2009 Climate Change Exhibition Presented in Seoul & Copenhagen by the Korean Ministry of Foreign Affairs & Korean Ministry of Culture

All Photographs and Text © Jenny E. Ross

Exhibition Photograph 7:



A disintegrating iceberg containing blocks of intensely blue glacial ice within layers of compressed snow, near the Kangilerngata Sermia glacier, Greenland. © Jenny E. Ross

The Greenland ice sheet consists of layer upon layer of compressed snow and ice, along with small trapped air bubbles, that collectively constitute a significant natural record of past climates. By studying the composition of ice cores extracted from the Greenland ice sheet, scientists have obtained crucial data about Earth's climate history. The ancient ice of Greenland has yielded information concerning a wide variety of issues including past temperatures, precipitation, chemical composition of the atmosphere, solar variability, desertification, and volcanic eruptions.

Arctic Photographs by Jenny E. Ross in 2009 Climate Change Exhibition

Presented in Seoul & Copenhagen by the Korean Ministry of Foreign Affairs & Korean Ministry of Culture

All Photographs and Text © Jenny E. Ross

Exhibition Photograph 8:



An immense iceberg floats away from the Eqip Sermia glacier in Greenland. It will eventually melt and release a large amount of freshwater in the Atlantic Ocean. © Jenny E. Ross

The global ocean circulatory pattern, known as thermohaline circulation or the Great Ocean Conveyor, plays an essential role in the world's climate both globally and regionally. Thermohaline circulation is driven by gradients in water temperature and water salinity. Melting of the Greenland ice sheet is transferring huge quantities of cold freshwater from land into the Atlantic Ocean. There is concern that this large influx of meltwater might ultimately affect the global ocean circulation pattern and cause further changes in climate.

Arctic Photographs by Jenny E. Ross in 2009 Climate Change Exhibition
Presented in Seoul & Copenhagen by the Korean Ministry of Foreign Affairs & Korean Ministry of Culture

All Photographs and Text © Jenny E. Ross

Exhibition Photograph 9:



An Inuit sled used for hunting with dogs on the Arctic sea ice. Siorapaluk, Northwest Greenland. © Jenny E. Ross

For thousands of years the Inuit people have hunted marine mammals on the Arctic sea ice using dogsleds. Their ability to hunt in that manner is now being affected by climate change. Due to warming temperatures, the sea ice is freezing later in the fall and breaking up earlier in the spring, and it is thinner during the winter. Hunting by dogsled is possible for a much shorter period of time now than in the past, and it is much more dangerous due to unreliable ice conditions.

Arctic Photographs by Jenny E. Ross in 2009 Climate Change Exhibition
Presented in Seoul & Copenhagen by the Korean Ministry of Foreign Affairs & Korean Ministry of Culture

All Photographs and Text © Jenny E. Ross

Exhibition Photograph 10:



An Atlantic walrus, killed by indigenous subsistence hunters, being towed by boat in Northwest Greenland.
© Jenny E. Ross

Subsistence hunting of Arctic seals, walruses, and polar bears is an integral part of the Inuit cultural heritage. But climate change is now posing a threat to many of the animals that the Inuit hunt. As ice-dependent species decline due to warming temperatures and loss of sea ice, past levels of harvest may no longer be sustainable. Limitations on hunting of certain species have been implemented in some regions and are being considered for other areas. Hunting restrictions are often controversial, and are subject to particularly contentious debate when they apply to the harvest of marine mammals by indigenous people who still utilize such animals for food.

Arctic Photographs by Jenny E. Ross in 2009 Climate Change Exhibition

Presented in Seoul & Copenhagen by the Korean Ministry of Foreign Affairs & Korean Ministry of Culture

All Photographs and Text © Jenny E. Ross

Exhibition Photograph 11:



Unused sledges, marine mammal meat stored on an elevated platform, and a sled dog without any work to do. Siorapaluk, Northwest Greenland. © Jenny E. Ross

Greenland sled dogs are directly descended from the dogs brought to Greenland thousands of years ago by the first Inuit hunters to reach the region. These dogs are not pets; rather, they are working animals used by indigenous people for hunting of marine mammals on sea ice. As the result of climate change and the deterioration of Arctic sea ice, there is less work for sled dogs and less meat available to feed them. Many of the dogs are being euthanized because their owners cannot afford to keep them.

Arctic Photographs by Jenny E. Ross in 2009 Climate Change Exhibition
Presented in Seoul & Copenhagen by the Korean Ministry of Foreign Affairs & Korean Ministry of Culture

All Photographs and Text © Jenny E. Ross

Exhibition Photograph 12:



A young Inuit child (and father, in the shadows), Qaanaaq, Northwest Greenland. © Jenny E. Ross

The Inuit have thrived in the Arctic for several thousand years, but now they are struggling to hold on to their traditions and cultural identity. Significant social problems are affecting the indigenous people of Greenland, including alcoholism, poor education and a lack of strong role models for children, and a high suicide rate. As climate change affects the ability of Inuit families to continue their traditional ice-related way of life in the far north, these difficulties are worsening.