

# **The Impact of Climate Change on Arctic Wildlife**

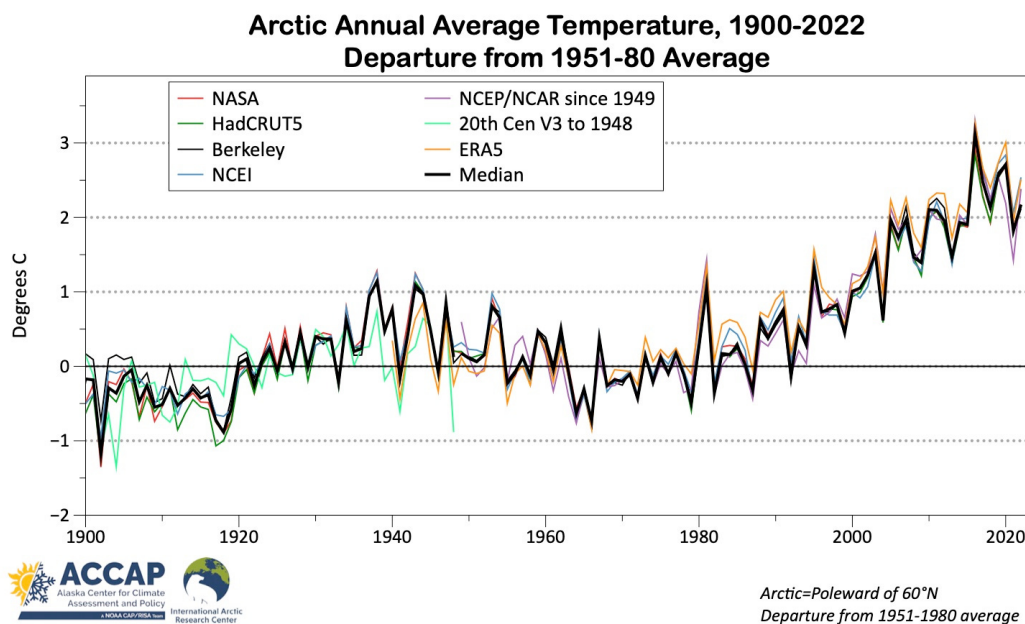
Over the past decade, the Arctic region has emerged as a powerful symbol of the global climate crisis. While all regions of the planet are experiencing changes due to anthropogenic climate forcing, the Arctic is warming at more than twice the global average rate, a phenomenon commonly referred to as Arctic amplification. This rapid warming has triggered a cascade of environmental changes that are not only altering the landscape and climate of the far north, but also challenging the survival and behavior of the species that have evolved to live in one of the planet's most extreme environments.

One of the most visible consequences of Arctic warming is the significant reduction in sea ice extent and thickness, which has been particularly pronounced during the summer months. The loss of multi-year ice—a type of ice that survives more than one melt season—is especially concerning because it is thicker, more stable, and plays a key role in regulating global temperatures by reflecting sunlight. The decline in reflective ice surfaces leads to the absorption of more solar radiation by the darker ocean waters, creating a feedback loop that further accelerates warming.

These physical changes in the Arctic environment are having profound effects on wildlife populations, many of which are uniquely adapted to thrive under cold and icy conditions. For example, polar bears (*Ursus maritimus*) rely heavily on sea ice platforms to hunt for seals, their primary prey. As the ice-free periods lengthen each year, bears are forced to swim longer distances or move inland in search of food, resulting in lower body condition, decreased cub survival, and increased human-wildlife conflicts. Similarly, walrus are finding it harder to find resting areas on drifting ice floes and are increasingly congregating on coastal haul-out sites, which can lead to deadly stampedes.



The chart below illustrates the long-term trend in Arctic Annual Average Temperature anomalies from the year 1850 to 2024, based on multiple independent scientific datasets. These datasets include records from NASA, HadCRUT5, Berkeley Earth, NCEI, and ERA5, among others, offering a comprehensive overview of temperature departures from the 1951–1980 average baseline. The temperature anomaly has increased steadily, particularly after 2000, with values peaking at approximately  $+3^{\circ}\text{C}$  above the 1951–1980 average in recent years. Such an unprecedented warming trajectory is a strong indicator of the profound impacts of anthropogenic climate change.



The Arctic region is experiencing a period of unprecedented and rapid transformation, largely driven by the escalating impacts of climate change. Over the past few decades, this once-stable and remote environment has become a focal point of scientific concern due to the magnitude and pace of its changes.

Visual data, including satellite imagery, long-term temperature graphs, and wildlife tracking maps, provide compelling evidence of this transformation. One of the most prominent indicators is the significant rise in average annual temperatures. In many parts of the Arctic, temperatures have increased by nearly  $3^{\circ}\text{C}$  above pre-industrial levels—a rate of warming more than double the global average. This phenomenon, known as Arctic amplification, has wide-reaching consequences, including accelerated ice melt, thawing permafrost, and changing oceanic patterns.

In addition to rising temperatures, changes in wildlife behavior and adaptation strategies offer critical insight into the region's shifting ecological balance. Species such as polar bears, arctic foxes, walruses, and migratory birds are altering their hunting, mating, and migration patterns in response to the changing availability of ice, food sources, and shelter. Some species are being forced to migrate further south, while others are showing signs of stress and population decline.