Sea Ice Melting as Arctic Temperature Rises

By Cassandra Sweet

Updated Oct. 21, 2010 7:30 pm ET

The Arctic has continued heating up, causing summer sea ice and glaciers to shrink and changing weather patterns and ecosystems in the most populated parts of the Northern Hemisphere, the National Oceanic and Atmospheric Administration said Thursday.

In their annual snapshot of conditions in the "planet's refrigerator," NOAA scientists concluded that changes in climate that have caused higher Arctic temperatures are affecting wildlife, weather and humans in the Arctic, as well as contributing to weather changes in northern mid-latitudes. Much of the U.S. is in the mid-latitudes of the Northern Hemisphere.

The annual mean Arctic temperature in 2008 was the fourth warmest since 1990, according to scientific studies reviewed by NOAA.

"Beyond affecting the humans and wildlife that call the area home, the Arctic's warmer temperatures and decreases in permafrost, snow cover, glaciers and sea ice also have wide-ranging consequences for the physical and biological systems in other parts of the world," NOAA Administrator Jane Lubchenco said in a statement.

The report suggests that survival of Arctic marine mammals, such as polar bears and walruses, are at risk from extreme loss of sea ice, and that such animals could be even more imperiled in the event of a catastrophe "such as oil spills or disease outbreaks."

Reduced sea ice has already been shown to cause weaker body condition and reduced survival for polar bears in western Hudson Bay, according to a summary of studies. The situation is likely to get worse, the agency predicted, "as sea ice breaks up earlier and bears are forced to fast on shore longer."

Record-low sea ice in 2007 forced Pacific walruses to haul out in new locations in Alaska and Russia, where disturbances caused more trampling deaths as walruses stampeded, according to the report. The redistribution of walruses and other species could result in changes in migration patterns, NOAA said.

Species that migrate with the sea ice edge or make forays to the ice edge from coastal areas may have to travel farther and expend more energy as the summer sea ice edge retreats farther from the coast and from the location of the winter ice edge, the agency said.

Several studies have found that extreme loss of summer sea ice is contributing to higher atmospheric temperatures into the winter season, NOAA reported.

Satellite measurements showed summer sea-ice cover in 2009 was more than a quarter below the average amount between 1979 and 2000, scientists in one study concluded. Arctic summer sea ice shrunk to its lowest levels in 2007, 2008 and 2009, respectively. In addition, ice that is older than a year and more resilient against warmer temperatures, has been shrinking at triple the rate of reduction during the three previous decades, scientists reported.

In Greenland, winter temperatures have reached record highs, which has led to greater loss of ice due to melting and loss of glacier areas. Last year's warm, dry winter and this year's very warm summer resulted in the highest melt rate since 1958 and the largest recorded glacier area loss in Greenland at Petermann Glacier, where 290 square kilometers of ice broke away, according to one study by scientists from research centers in the U.S. and Europe.

Write to Cassandra Sweet at cassandra.sweet@dowjones.com