

HEAT

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As Arctic Sea Ice Melts, Experts Expect New Low



A polar bear seen in waters off the Alaska coast this month. Some have swum north, apparently trying to reach the polar ice.

WASHINGTON (AP) — The National Snow and Ice Data Center has reported that sea ice in the [Arctic](#) now covers about **2.03 million square miles**. The lowest point since satellite measurements began in 1979 **was 1.65 million square miles**, last September. With about three weeks left in the Arctic summer, this year could wind up breaking that record, scientists said. Arctic ice always melts in summer and refreezes in winter. But over the years, more of the ice is lost to the sea with less of it recovered in winter. While ice reflects the sun's heat, the open ocean absorbs more heat, and the melting accelerates warming in other parts of the world. Sea ice also serves as primary habitat for threatened polar bears. "We could very well be in that quick slide downward in terms of passing a tipping point," said Mark Serreze, a senior scientist at the data center, in Boulder, Colo. "It's tipping now. We're seeing it happen now." Five climate scientists, four of them specialists on the Arctic, told The Associated Press that it was fair to call what was happening in the Arctic a "tipping point."

Introduction: Assume the Arctic ice is a meter thick. $1.62 \text{ Km} = 1 \text{ mile}$, $2.6244 \text{ Km}^2 = 1 \text{ mi}^2$, latent heat of fusion of ice is $= 80 \text{ Kcal/Kg}$, water density $= 1 \text{ g/cc}$ or 10^{12} kg/ Km^3 . Question: (a) Convert $2.03 \times 10^6 \text{ miles}^2$ to Km^2 ? (b) Convert $1.65 \times 10^6 \text{ miles}^2$ to Km^2 ? (c) Find the amount of heat(Calories) needed to just melt the difference between $2.03 \times 10^6 \text{ miles}^2$ and $1.65 \times 10^6 \text{ miles}^2$ of ice which is 1 meter thick? Answer: (a) 5.32 M Km^2 (b) 4.13 M Km^2 (c) $\sim 3.04 \times 10^{19}$ calories

