

Science Reading Selection: One Big, Bad Iceberg

After a quarter of a century with the British Antarctic Survey, Mike Thomson is not easily impressed by icebergs. But the one that show up in satellite photos in March 1995 was the biggest he'd seen in years. Floating slowly out to sea off the Antarctic Peninsula, the frozen slab was about 600 feet thick, 23 miles wide and 48 miles long. It was a megaberg roughly the size of Luxembourg.

Yet it was not until Thomson and his colleagues hopped aboard a plane for a closer look at the monster that they were truly shocked. The appearance of the iceberg was just one of several dramatic changes they could see along the Antarctic Peninsula. A part of the Larsen Ice Shelf- to which the iceberg had been attached- was broken up into rubble. And a huge tongue of ice that had connected the mainland with James Ross Island, just offshore, was gone. "For the first time in recorded history," said Thomson, "you could circumnavigate Ross Island. I was absolutely staggered by what I saw."

Icebergs have broken away from Antarctica for millions of years, as snow accumulates, new ice is constantly squeezing the old out to sea. But the disintegration of the Larsen Ice Shelf seems to be the result of a relatively recent - and perhaps ominous- change in Antarctica's climate. Over the past 50 years, the average temperature on the Antarctica Peninsula has risen 2.5 ° C, to - 3° C. That's a much greater increase than for anywhere else in the world. Not only are ice shelves turning to slush, but plant life is exploding, with vegetation in some spots increasing 25-fold.

It's natural to think that the greening of the peninsula might signal the much debated advent of global warming, caused by the accumulation in the atmosphere of carbon dioxide and other gases released by the burning of fossil fuels. As long ago as 1978, a paper in the journal *Nature* urged scientists to look to Antarctica for early indications of the so-called greenhouse effect- among them the breakup of ice shelves off the Antarctic Peninsula.

While the prediction is coming true, it isn't clear that global warming is the cause. There has been a half-degree rise in average temperatures over the past century or so, but that could be part of some sort of natural cycle, unrelated to human activity. Moreover, the Antarctic Peninsula is especially prone to temperature fluctuations because of the complex interactions of winds, ocean currents and ice. The five-times greater increase on the Antarctic Peninsula could thus have happened even without any worldwide warming.

Whether the new iceberg is a harbinger of the greenhouse effect, it is clearly a hazard for ships traveling the southern seas, and so satellites and planes will keep a careful watch on it. No one can say precisely what will happen to the ice, and a similar event in 1986 doesn't offer much of a precedent. At that time three megabergs broke loose into Antarctic waters, each bigger than the 1995 berg. Two grounded themselves in shallow waters, and are still there. The third went north, with some of it actually reaching the tropics before melting.

The 1995 superberg probably won't get that far and it might not even leave Antarctica. On the other hand, it may not be the only new peril in southern waters. Says Thomson, "The ice adjacent to where the iceberg broke away has big north-south cracks - we could see these when we flew over." So another country-size slab of ice could be heading out to sea at just about any time.

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PART I: Comprehension:

1. Write a simple sentence explaining each of the words below:

a. peninsula

b. rubble

c. circumnavigate

d. global warming

e. prediction

2. Why were scientists so concerned by the appearance of the megaberg?

3. What prediction about the Antarctic region was made in 1978?

4. Why are scientists hesitant to say that the breakup of the Antarctic ice sheet is being caused by global warming? _____

5. How does the temperature rise recorded in Antarctica compare to the rise for the rest of the world? _____

6. How has the temperature change there affected the biology of the region?

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7. Compute the volume of the March 1995 iceberg _____

8. What is being done to prevent any encounters between ships and the icebergs?

9. What similar event happened in 1986? What was the result ? _____

PART II: Drawing Conclusions:

1. A *harbinger* is a person or event that signals a major change in a generally stable situation. Why could the 1995 iceberg be considered a harbinger of global warming? _____

2. Use a flow chart format to illustrate the chain of events described in the article that would lead to an increase in global temperature.