A Canadian astronaut said that he observed more melting glaciers on his trip into space this year than he had on his pervious trip in 1996.

Photos (1 of 1)

Is it a result of climate change or something else? Part 1.

By Moises Velasquez-Manoff | **07.29.09**

This week, the Web is abuzz with climate-related news: An astronaut commented that humankind's impact on Earth was visible from space; the UN climate chief visited Mongolia, a semiarid country undergoing rapid desertification, to talk about climate change; and the New Scientist magazine reported that the Fertile Crescent "will disappear this century."

Maybe it's worth stepping back for a second to ask: How many of the changes we see happening around us are really attributable to climate change?

To preface: I'm not denying that human-released greenhouse gases are changing Earth's climate. At this point, the science points overwhelmingly in that direction.

But climate change is, by definition, a long-term trend, and, as scientists are often at pains to explain, while long-term trends are derived from multiple data points, it's hard to attribute any single data point to the trend itself.

In other words, the climate may be warming and the cherry blossoms may have come early this year, but it's impossible to say with certainty that this year's early cherry blossoms are due to human-induced climate change. There are too many other confounding factors.

And yet, that's often what happens. There are myriad possible reasons why, but in the end, the "blame climate change" tendency may simply be the result of how our minds work.

Climate change is weighing heavily on the collective mind right now, and with good reason: We've got one planet; better not mess it up. But the saturation of our awareness by climate change may also cause certain errors of judgment. Psychologists call it a "confirmation bias." They've repeatedly documented that people tend to see what they expect to see.

Science Daily gives this definition:

In psychology and cognitive science, confirmation bias (or confirmatory bias) is a tendency to search for or interpret information in a way that confirms one's preconceptions, leading to statistical errors.

So, do some of those who accept climate change as a reality have a climate-change confirmation bias, a tendency to attribute too much of what they observe to a warming world?

As an informal test, I did some cursory fact-checking on the stories mentioned at the outset. First, the astronaut. His name is Bob Thirsk. He's at the international space station. The Reuters story begins: "A Canadian astronaut aboard the International Space Station said on Sunday it looks like Earth's ice caps have melted a bit since he was last in orbit 12 years ago."

Mr. Thirsk says, "Most of the time when I look out the window, I'm in awe. But there are some effects of the human destruction of the Earth as well."

He adds, "This is probably just a perception, but I just have the feeling that the glaciers are melting, the snow capping the mountains is less than it was 12 years ago when I saw it last time."

The long-term trend of diminishing ice in the Arctic is well-documented. But the valley-and-peak nature of the trend, evident in this graphic, raises the possibility that during past summers, there was less ice compared with today.

During the summer of 2007, for example, Arctic ice reached the lowest extent so far recorded. So if you view photos of only today's ice and 2007's, you might conclude that ice was increasing. But it's not.

In this case, however, I'm asking, could Thirsk have seen what he thinks he saw?

According to his NASA biopage, Thirsk was last in space in June and July of 1996.

Here are graphics of ice extent and thickness from June 1996 and June 2009 on the same page, courtesy of the National Snow and Ice Data Center. (July data for 2009 aren't yet available.)

Yes, there's less ice now than then. In June 1996, there were 12.1 million square kilometers of ice; in 2009, 11.5 million. While not minuscule, the changes aren't great either. There is a larger change in sea ice thickness, but that's not, presumably, discernible with the naked eye from space.

(For sticklers, here's the orbital path of the space station and the shuttle. Yes, they seem to travel within viewing range of both the Arctic and Antarctic, but not directly over.)

So, again, could Thirsk have seen what he says he saw? Hard to say. He mentions mountain glaciers, which, given the contrast with brown earth, have probably shrunk much more obviously since his last space trip. And yet, if these images of the Upsala Glacier in 2001 and '04 are any indication, even that would be a difficult assessment to make. Only a yellow line painted on the photo makes the extent of the retreat obvious. (Here's another comparison of the San Quentin Glacier in Patagonia in 1994 and 2004.

To be fair, Thirsk, a highly trained astronaut, probably has a highly trained eye, one capable of noting subtle changes in ice coverage. The question is: Were global warming not on his mind, and did he not know what to look for, would he have?

~~Come back tomorrow~~ Click here to read the second part of this post, where the writer looks at threats of desertification and "permanent drought" in Mongolia and the Fertile Crescent.