

Much back-and-forth, but the sea still rises

The plain evidence of global warming abounds.

By Orrin Pilkey and Rob Young
February 3, 2010
Philadelphia Enquirer

Polls indicate that an alarming number of Americans have doubts about global warming, even to the point of suspecting that scientists are lying about the data. Meanwhile, much of the bluster about climate change centers on whether it has been colder this year than last.

But instead of relying on short-term thermometer readings, we should be listening to Mother Earth. Let's take a trip around the northern half of the Western Hemisphere to see the real-world evidence that our planet is getting warmer.

Our first stop is the Outer Banks of North Carolina. As we fly toward our destination, we see a fringe of dead trees stretching for miles in the water along the shore of the Albemarle Sound - a clear indication that the rising sea is drowning the edge of the forest.

Flying over the Outer Banks, we also observe that islands are eroding on both their ocean and sound shores, another sign of the rising sea level. The islands are thousands of years old, yet they won't exist much longer with such erosion. In the town of Rodanthe, the island is so narrow and low that it can be washed over by something as slight as a lunar tide. The rising sea level has clearly changed this shoreline.

Once we've landed at the Wright brothers' airstrip, we drive to the Army Corps of Engineers' research pier in the town of Duck. Because the pier extends into the open ocean and is made of concrete, the tide gauge here may be the best record of the rising sea level on the East Coast. It tells us that the sea level here is rising at a rate of 1 1/2 feet per century. Satellites tell us this is very close to the global rate at which sea levels are rising.

Next, let's head to Shishmaref, Alaska, a small village of perhaps 550 Inupiat Eskimos located on an island just below the Arctic Circle. On the way up from the Lower 48 to Anchorage, we fly over the Canadian Rockies and their numerous mountain glaciers, all of which show clear signs of recent and rapid shrinking. That's no surprise, since perhaps 95 percent of the world's mountain glaciers are doing the same.

Flying over Shishmaref, we can see that there is a severe beach-erosion problem. Along one stretch of a few hundred yards of shoreline, there are at least five different sea walls, each of which cost millions of dollars, and each of which is giving way to the sea. The

erosion started suddenly a few years back, when warming temperatures began to melt the permafrost every summer, loosening the beach sand and making it easy for waves to carry it away.

Compounding the problem of the shrinking permafrost is the shrinking sea ice. Today, the sea around Shishmaref remains ice-free for a couple of months longer than it did 20 years ago. The village used to be surrounded by sea ice when the fall storms came, but now, because the waters are warmer, the ocean remains ice-free into the fall storm season, leaving the village unprotected from storms.

Plans are afoot to move Shishmaref to the mainland within a decade, but the cost is huge - more than \$100 million to save a tiny subsistence village.

For the final leg of our flight, we fly over the coast of southern Greenland to observe what is happening to one of the world's great ice sheets. Spectacular calving glaciers line the coast, dropping icebergs into the ocean. They have added to the level of the sea for decades, but the rate of melting began to accelerate sharply around 1995.

At the other end of the planet, the West Antarctic Ice Sheet began substantial melting around 2000, and the East Antarctic Ice Sheet began contributing to rising sea levels about 2006.

Clearly, the Earth has revealed undeniable evidence of rising sea levels - drowning shorelines, shrinking arctic sea ice, warming oceans, and melting permafrost and ice sheets. It's all there for anyone to see.

The point is that our fascination with whether the atmospheric temperature is rising or not is misplaced. Clearly the globe is warming. The scientific and political argument over who or what is causing this warming should not be allowed to obscure the fact that rising sea levels (in particular) will have a major impact on our coastal communities.

We need to immediately begin planning our response to the very real changes occurring now and in the future.