

Don't confuse weather, climate

By David M. Bush and Rob Young
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Our very young new year certainly has gotten off to a frigid start. Atlanta experienced below-freezing temperatures every night of 2010 through Jan. 12. Snow and ice made a mess of the roads, forced businesses and schools to close, and strained state, county and municipal budgets. It sure seems that we could use a little global warming right now, huh?

There is a lot of confusion about global warming. How can it be occurring when it is so cold? The answer, in part, lies in separating "weather" from "climate." What we just experienced was weather: short-term, day-to-day occurrences, major air masses from the North bringing arctic air to the normally more temperate South. Climate is the longer-term, bigger-picture setting.

Along with confusing weather patterns, there are many commentators who seem to be intent on creating as much confusion and doubt as possible around the scientific discussion of global change. A recent Rasmussen poll suggests that an alarming number of Americans believe that scientists have falsified their data in order to sell global warming to the public. Add this to some embarrassing (and inappropriate) comments made in e-mails stolen from the Climate Studies Unit at East Anglia University, and 2009 was a long, hot year for climate scientists.

Why is there so much confusion and consternation surrounding the simple question of whether or not the planet is warming? A big part of the problem centers on the use of Earth surface temperature data as a direct measure of global warming. A side note: While Atlanta has been experiencing below-average low temperatures so far this year, Rio de Janeiro has been experienced slightly-warmer-than-average high temperatures. Remember, it's summer in the Southern hemisphere right now — again, weather vs. climate.

We would hate to be part of any team charged with measuring temperature trends over the last few years or decades. Where do you stick the thermometer? What matters most? Daytime highs? Nighttime lows? Summer temperatures? Winter temperatures? Trying to determine if the planet is warming (or cooling) in this fashion seems fraught with peril.

One doesn't need to measure thousands of temperatures to find conclusive evidence that the planet is warming. The Earth does the averaging for us. There are many physical and biological characteristics of our planet that clearly indicate the Earth is warming, and has been for decades.

Studies from both hemispheres indicate that 95 percent of the world's alpine glaciers are retreating. Glacier National Park in Montana is down to 26 named glaciers from 150 in

1850. If this trend continues, the park is expected to be ice-free by 2030. Glaciers in the Himalayas are shrinking so rapidly that the summer flow of the major rivers (Indus, Ganges, Mekong, Yellow, Yangtze) they feed may eventually be seriously affected.

Permafrost regions are thawing in high northern latitudes, causing buildings to sink, roads to crumble, and a variety of other troubles for human infrastructure. The great ice sheets are retreating. The Greenland ice sheet melting began to accelerate in the 1990s. Now the margin of the entire ice mass is melting even in its northernmost reaches. The West Antarctic ice sheet has begun extensive melting, mostly since 2000, and the rate of melting has increased since then.

Sea level is rising, and the rate of rise has accelerated over the last century. A tide gauge on a concrete, open-ocean pier in Duck, N.C., indicates the sea level is now rising at a 1 1/2-foot-per-century rate. In the Pacific, atoll nations such as Tuvalu already are being abandoned because of the rising sea. Soon the Maldives must follow.

The summer sea-ice cover of the Arctic Ocean is shrinking and thinning, and may disappear altogether.

So, one can argue for hours regarding whether this year was warmer or colder than last. It really doesn't matter. We should be reading the planet, not thermometers. The Earth is clearly warming and sea level is clearly rising.

The scientific and political debate over who is causing this global warming should not be used as an excuse to avoid dealing with the warming that is happening today, or planning for the impacts of future warming. This is particularly true on the coast, where cities such as Savannah and all the resort communities along Georgia's barrier islands must begin planning for the inevitability of rising sea level — regardless of what we decide to do as a nation regarding potential causes of global warming.

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