

# Super Computers Make Global Warming Visible

Machine Predicts Rising Temperatures as Escaping Gas Bubbles Up Through the Sea



By BILL BLAKEMORE, ABCNews.com

(Aug. 5) - Whatever climate scientists may currently disagree about (and good scientists are always disagreeing about something) virtually all of them have long since agreed that human activity -- burning fossil fuels -- has been making the global temperature go up. And now they have two very sobering, visual ways to explain how.



The first is in the basement of a futuristic building in the foothills of the Colorado Rockies and requires a special pass, the other is down on the sea floor off the coast of California, requiring SCUBA gear and a waterproof map.

The gigantic super-computer in the basement of the National Center for Atmospheric Research in Boulder, Colo., is so big you can walk down the aisles inside it, the walls of the sleek black servers at either elbow, wrapped in the constant hum of air coolers and countless trillions of silicon chip operations working day and night to calculate the climate future over the next several decades of the only home we've got: Earth.

"These super computers are getting more and more powerful every year," scientist Jerry Meehl told us as he gave us the tour. "It makes the computers we were using for global warming predictions back in the 1980s look primitive."

And even those computers, we now know from events such as the double heat wave just past, were predicting accurately.

Scientists at the National Oceanic and Atmospheric Administration in Boulder have now figured out how to project the computer predictions -- which used to be just rows of numbers -- in the form of changing colors on a 5-foot sphere with the continents outlined on it.

A number of these spheres are now being installed in museums around the United States and the world, so the world can see what it's in for.

With green and blue for cooler temperatures, scientists and regular folks can watch the digitized projectors paint the globe, starting in 1870. Along about 1990, the globe grows yellower -- warmer -- and is entirely yellow by 2001.

Then comes the sobering part. Red, for much warmer, starts to appear in North America -- and other continents -- and by 2051 the United States is almost entirely red.

That's only 45 years from now, when today's toddlers will barely be in middle age.

The leading climate scientists now generally agree that earth in the coming decades will warm another 2 degrees Fahrenheit no matter what we do -- partly because carbon dioxide, the major manmade greenhouse gas, stays in the atmosphere about a hundred years.

That's in addition to the average of 1.4 degrees Fahrenheit the Earth has already warmed from manmade causes -- which though it doesn't sound like much (remember, it's a single-number average for the entire planet) has already, say most scientists, given us disappearing glaciers worldwide, drought and famine, increasingly frequent and more intense heat waves and millions of species in ecosystems everywhere scrambling for cooler ground but often running into uncrossable highways and ever-expanding human development.

Even scarier is the other sight, about 20 meters down off the coast of Santa Barbara, Calif.: bubbles, millions of bubbles of methane -- 20 times more powerful as a greenhouse gas than carbon dioxide.

The methane is bubbling up naturally from some of the enormous natural undersea reservoirs of the gas mostly locked into the frozen mud under the sea floor.

Scientists have just released video showing how, for the first time, they have been able to measure these natural up-wellings to tell whether, if large amounts of this methane ever thawed out from its deep sea beds, it would reach the atmosphere, rather than being absorbed in the water, and thus make the earth even hotter.

The findings of oceanographer Ira Leifer et al, published in a strictly peer-reviewed scientific journal, are that it would do just that.

In other words, all that undersea methane is a potential "positive feedback" of catastrophic proportions.

If warming currents, such as those already detected by scientists at depth, begin to thaw these methane beds, it will make the atmosphere, and consequently the sea currents, even warmer, and melt out more methane.

A number of scientists tell me that would take the Earth up into temperatures humankind has never experienced -- and probably could not survive.

They believe it's happened for natural reasons before -- before, for example, the Jurassic age, when dinosaurs, but no humans, roamed the earth.

That's why they insist we must stop the unnatural burning of fossil fuels -- oil, coal and gas -- which risks giving such a methane mega-burp an artificial kick that could -- hard as this is to take in -- end civilization.

Small doses are the best way to take in such news.

Psychologists tell us that a little denial when facing truly frightening news can, at first, be a good thing. It helps us hold ourselves together in face of the threat, helps keep our "meaning systems" intact.

As long as we keep working back towards reality.

No child wants to think it can harm the basic wellbeing of a protective parent who provides its only world.

They can't even believe they could do such a thing.

Climate scientists are telling us we are doing just that to our own Mother Earth, and we should believe it.