



# The Climate



## THE WEATHER IS *LITERALLY* A KILLER.

The National Weather Service reports 64 people have died in 15 states as a result of the heat wave that gripped the nation last month and spilled into this month. A scorching July 2011 set 9,000 record temperatures across the nation. It was enough to get the Golf Course Superintendents Association of America to issue a weather-related press release for the second year in a row, asking golfers to try to understand what superintendents were going through.

But what, exactly, are superintendents going through? Is this just another hot summer, with more flooding and wider droughts, or is this climate change in action?

There are few topics as controversial as climate change and whether man has a hand in rising worldwide temperatures.

On one side of the debate there are the deniers, who see a sinister plot involving virtually every institution of higher learning and governments across the globe conspiring to point the finger at man, and thus calling for vast reductions in greenhouse gases, primarily CO<sub>2</sub>.

On the opposite end of the spectrum are advocates of greenhouse gas reduction. They see big business, especially multinational corporations and oil companies, ignoring sound science and its conclusion that mankind is responsible

for changes in the weather as a way to avoid costly changes to emission outputs and searches for alternate energy sources.

Where do superintendents stand on the issue? And what are they seeing at the golf course to support or oppose climate change?

### **An unpopular opinion?**

David Sexton has been the Director of Grounds at the Meadow Club in Fairfax, Calif., for the past 25 years. He's been keeping weather records since he first started working at the course 29 years ago. Those records have led him to a stark conclusion.

"I absolutely believe we are affecting the climate," he says.

It's a view he believes isn't shared by a majority of his colleagues. The issue can be so volatile that Sexton avoids talking about it when it comes up. Instead, he

Armed with ample weather knowledge and experience, superintendents share their insights on the controversial topic of climate change.

# Change Conundrum

BY ANTHONY PIOPPI

says, “We talk about our golf games.”

Sexton didn’t keep weather data to make a point or bolster his conclusions; he did it out of pure enjoyment.

“I’ve had a lifelong fascination with the weather,” he says. “I’m not looking at the numbers to prove or disprove.”

Since the mid-1990s Sexton has seen a trend. The high temperature for each month is rising about .9 degrees Fahrenheit annually while the low temperature is rising about .2 F degrees annually. Also, he says the record high temperatures for each month have occurred in the last 15 years, while the record low temperatures were all prior to that time period.

Sexton, an avid birder as well, has seen a change in nature as a result of the temperature rise.

“Some birds that used to come down this far to the Bay Area, don’t come anymore,” he says.

## President’s doubts

The Golf Course Superintendents Association of America has stayed out of the wrangle by taking no official stance. The current GCSAA president, however, has an opinion.

Robert Randquist, CGCS, the head superintendent at Boca Rio Golf Club in Boca Raton, Fla., doubts climate change. Randquist says his degree in engineering makes him question the methods used to come up with their predictions.

“I have great reservations about the (computer) modeling,” Randquist says. “Weather modeling is 60 percent accuracy rate and it’s based on the same type of modeling.”

Randquist says he has yet to see incontrovertible proof that the rise in temperatures worldwide is caused by pollution and is not just a natural weather pattern.

He adds that climate change is a highly politicized topic.

“There are huge social and economic issues around it,” he says. “It depends on who’s in power. Our Congress can’t even make up its mind.”

## Frequent fairway flooding

Four miles off the coast of New London, Conn., Fishers Island Club superintendent Donnie Beck has seen weather patterns evolve, and his 14th fairway is the indisputable proof.

Now in his 18<sup>th</sup> year at Fishers, 11<sup>th</sup> as superintendent, Beck has detected a change in the frequency, intensity and time of flooding. He used to have to deal with a high tide once a year.

“Now it’s four or five times a year and they’re getting bigger every season,” he sighs.

As a result, he has begun an intense topdressing program to add three quarters of an inch a year to the fairway.

*Continued on page 20*



*Continued from page 19*

The timing of the flooding is also moving. Beck remembers when the wind, moon and high tides only drove water up onto his 14<sup>th</sup> in early December, occasionally in late November.

"It used to come when the grass was dormant. What it seems like lately is it's coming in late October," he says.

After repeated instances of fairway turf being killed by the saltwater in recent years, he has sodded part of the hole with Paspalum.

While Beck is sure the weather is in a state of flux, he is not convinced of the cause, not since talking with Herb Stevens, owner and sole employee of Grass Roots Weather, a Rhode Island-based forecasting service for superintendents.

"Two years ago I would have sworn by it," Beck says of man's role. Now he's not sure if it's human effect or cycles.

### The Skiing Weatherman

Herb Stevens, known for 23 years on television as "The Skiing Weatherman," started Grass Roots Weather in 2003.

Stevens rejects the notion that rising temperatures have anything to do with carbon emissions in the atmosphere. He even dismisses the computer modeling used for conventional weather forecasting. For his service, Stevens relies on a two-prong method to aid superintendents who he says get no benefit from

**THE AMOUNT OF CO<sub>2</sub> PRODUCED IN ONE YEAR, STEVENS SAYS, WOULD EQUAL THE THICKNESS OF ONE FLOOR TILE IF THE ATMOSPHERE WAS THE HEIGHT OF A 100-STORY BUILDING.**

the point-and-click overnight forecasts on which many rely.

His first method is what he calls pattern recognition, using the knowledge he's acquired from 30 years in the business.

"I've seen a lot of cold fronts come and go," he says.

The second technique for Stevens is what he calls "analogue forecasting."

"You go back in time and find situations where global indicators set up to what is going on now," he says.

For him, sun spot activity and ocean temperatures are important parts of the equation.

When it comes to climate predictions, Stevens refutes the methods used by those who say emissions are altering the weather.

"The globe has been warming since the end of the little Ice Age, but man had nothing to do with it," he says. "The computer models do not take into account, to any great extent, the fluctuations of the oceans and sun

as far as temperature."

Stevens calls the concern over CO<sub>2</sub> a "non-starter," stating that the amount of the gas produced in one year is equal to the thickness of one floor tile if the atmosphere was the height of a 100-story building.

Stevens also says there is a conspiracy among institutions of higher learning to perpetuate the myth of man being behind the elevating temperatures.

### One Mann's opinion

One of those members of the academic community drawing Stevens' ire is Professor Michael Mann, director, Earth System Science Center at the Penn State Meteorology Department.

Mann was part of the Climate Research Unit email controversy, known as "Climategate," that occurred in 2009. Thousands of emails and documents from the University of East Anglia's Climate Research Unit were stolen and illegally made public. They were purported to show that climatologists around the world were manipulating data to bolster their conclusions that mankind is causing temperatures to rise. Investigations into the accusations showed the information in emails were manipulated to falsely portray the conversation of scientists.

Penn State launched an investigation into Mann. He was cleared by

*Continued on page 22*

At the Meadow Club in Fairfax, Calif., David Sexton, Director of Grounds, says he's seen a change in climate and wildlife in his 29 years at the course.



*Continued from page 20*

Penn State off all charges in July of 2010.

Mann tells *Golfdom* that he has heard all the refutations of the science he says proves that man is negatively affecting the world's climate. To the point that computer modeling is ineffective, he chuckles.

"That's silly because the seasons are predictable and that's climate," he says.

On a longer-term scale, he says some of the 20 super-computers around the world that focus on climate change predictions have forecasted the rising temperatures years in advance using data that shows man is the cause.

According to Mann, some computer models were run using just manmade factors, such as the increased CO<sub>2</sub> production, to make projections. Other programs disregarded the CO<sub>2</sub> output and calculated natural factors, such as sun spot activity, ocean temperatures and volcanic eruptions.

Neither accurately predicted the warming.

"When we put natural and human factors together, it's like Goldilocks," Mann says — just right.

Mann disagrees with those who argue the Earth's rising temperatures are part of a natural cycle.

"The great irony is that if it's ruled by natural forces it should have cooled down over the last few decades," Mann says, because sunspot activity has flattened and more than 50 volcanoes have erupted, all which should have led to de-

creased temperatures.

There is a misconception, Mann says, about why climatologists view CO<sub>2</sub> as a pollutant.

"The pollution is the effect on the climate," he says.

Rising temperatures caused by increased levels of CO<sub>2</sub> cause an increase of water vapor that "acts as an amplifier," Mann states in an email. "As we increase the concentrations of other greenhouse gases like CO<sub>2</sub>, more CO<sub>2</sub> warms up the atmosphere. That warmer atmosphere, in turn, holds more water vapor."



**"WE DON'T CALL THEM SKEPTICS... SKEPTICISM IS A GOOD THING IN SCIENCE. THEY'RE DENIERS OF THE REASONS OF CLIMATE CHANGE."**

— MICHAEL MANN, DIRECTOR, EARTH SYSTEM SCIENCE CENTER, PENN STATE UNIVERSITY

PHOTO COURTESY: JON GOLDEN

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*Continued from page 22*

As a result, the increased water vapor in the atmosphere holds more heat and the Earth's temperature rises further.

According to Mann, prior to the Industrial Revolution, there were 280 parts of CO<sub>2</sub> per million parts of air. That level stands now at 390 and the increase is accelerating so that the addition of two parts per million per year will soon become three parts. At that rate, the parts per million will reach 560, a doubling of the 280, by the middle of the century.

Mann said those who ignore the science bring to mind the famous saying of U.S. Senator Daniel Patrick Moynihan: "Everyone is entitled to his own opinion, not his own facts."

Mann sees many of the doubters creating their own facts, or ignoring facts, or jumping on a truth then manipulating it for their own end.

"We don't call them skeptics," Mann

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says of the doubters. "Skepticism is a good thing in science. They're deniers of the reasons of climate change."

### No matter which side

GCSAA president Randquist rightly points out that the sheer volume and highly technical aspects of the research makes it nearly impossible for the average person to tell fact from fiction. Instead, the general public must rely on scientists who conducted the experiments to interpret the data for them.

"It's tough to weed through and deter-

mine what's out there. It's a very complex equation," he says. "I think we get into problems when we make absolute statements about it. I'd like to see better science before accepting it."

Randquist sums it up best when he adds that no matter which side superintendents stand on the climate change issue, they still need to take care of the environment. "I'm for doing what we can to reduce emissions," he says. ■

*Pioppi is a contributing editor to Golfdom.*

PHOTO COURTESY: GCSAA

A white Dakota Electric Turf Tender, a small utility vehicle with a large hopper for spreading material, is shown on a grassy field. The hopper has "Electric" and "DAKOTA TURF TENDER" written on it. The vehicle has a single large rear tire and a smaller front tire. A battery box with a yellow warning label is visible on the side.

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