



Reconnect with your environment

Learn about environmental issues, their effect on your community and actions for your involvement.



CONTRIBUTED PHOTO/Anna McCartney

The Great Lakes regional climate forecast includes lake-effect snowstorms. It's not a matter of if, but when the weather forecast will include snow.

Check forecast to determine accuracy

By ANNA MCCARTNEY
Contributing writer

The distinction between weather and climate is an important one. Weather forecasts can be fairly specific but only can predict a few days into the future.

At 3:30 p.m. on Friday, the National Oceanic and Atmospheric (NOAA) provided this weather forecast for the Erie region for this week. These weather conditions may change by the time you read this, but the report reflects the climate we expect this time of year.

Tuesday: Snow showers likely. Cloudy and windy, with a high near 24. Chance of precipitation is 60 percent.

Tuesday night: Snow showers likely. Cloudy and windy, with a low around 19. Chance of precipitation is 60 percent.

Wednesday: A chance of snow showers. Mostly cloudy and

breezy, with a high near 23. Chance of precipitation is 40 percent.

Wednesday night: A chance of snow showers. Mostly cloudy and breezy, with a low around 20. Chance of precipitation is 40 percent.

Thursday: A chance of snow showers. Mostly cloudy, with a high near 23. Chance of precipitation is 30 percent.

Thursday night: Mostly cloudy, with a low around 23.

Climate predictions, on the other hand, focus on expected changes in average conditions, while recognizing that individual days, weeks, months or years will always buck the longer-term trend. That explains the record highs and lows for a region.

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CONTRIBUTED PHOTO/Anna McCartney

People living near the Great Lakes might yearn to live in a tropical climate, but they don't expect it. Anyone who has lived here knows that our region has four distinct seasons, including long winters. Weather forecasts often predict temperatures that are cold enough to produce snow and form ice on the surface of Lake Erie.

Cold enough for you?

Our current weather isn't the same as long-term climate

By ANNA MCCARTNEY
Contributing writer

The climate change debate includes plenty of confusion, misinformation and divisiveness.

Skeptics point to the unusual snowstorms and unexpected cold weather in some parts of the world to deny climate change. In fact, many are using the record cold temperatures in Cancun, Mexico, where world leaders are currently meeting to address accelerated global warming, to argue that it's all a hoax.

One way to deal with this controversial topic is to know the facts. Distinguishing between weather and climate is a critical starting point.

Although weather and climate are related, they are not the same. Mexico's current weather may be record cold, but it is not Mexico's climate.

Meteorologists describe the atmospheric conditions at a particular time and place, such as temperature, rainfall, wind, and humidity. Weather includes cold fronts or warm fronts, record cold, snow, sunshine, rain, cloud cover, winds, hail, sleet, freezing rain, flooding, blizzards, ice storms, thunderstorms, steady rains, excessive heat, heat waves and more.

Because the atmosphere behaves like a fluid, these conditions can change rapidly, making weather especially difficult to predict more than one week in advance.

Climatologists don't try to predict weather on such a short time frame at any single location. They consider average patterns of weather for a particular region over long periods of time. The National Weather Service uses weather data to determine climate by taking the averages of recorded precipitation, temperature, humidity, sunshine, wind velocity, phenomena such as fog, frost and hail storms, and other measures of the weather.

For example, by using the sum of these weather records, lake and reservoir levels and satellite data, climate scientists can tell if an area was drier or warmer than average during a summer. If it continues to be drier and warmer than normal over the course of many summers, then it would likely indicate a change in the climate. What you get is weather, while what you expect is climate.

We didn't expect Mexico to have its current cold snap, because Mexico's climate or its long-term pattern of weather is usually warm at this time of year. We also don't expect record warm weather in the north, which is known for



CONTRIBUTED PHOTO/Anna McCartney

Cancun Mexico has a tropical climate. The recent record-cold weather there does not prove that the global climate is not warming. Climate is based on the average of weather conditions over years, not short spells.



CONTRIBUTED PHOTO/Anna McCartney

Mike Campbell, professor of biology at Mercyhurst College, far left, points out spring plants at a wildflower walk. Tonight Campbell will talk about climate change in Pennsylvania (see Learn more for details).

cold climates, but sometimes we are lucky enough to have record highs that reach 70 in January or February.

Places with similar year-round weather are described as having the same climate. Mexico and Hawaii are both, on average, warm with high humidity. Therefore, these places are said to have tropical climates. But their weather can differ at any given time.

People living in tropical regions experience very different climate than people living in the Great Lakes area. Regional climate is the average weather over many seasons and depends on many factors, including how windy it is, the yearly amount of rain or snow, the amount of sun-

light received, height above sea level, shape of the land, proximity to an ocean or large body of water such as the Great Lakes and distance from the equator.

We cannot deny that the Earth is warming just because there is a particularly bitter cold period or cold snap in Mexico, any more than we could support global warming based on one summer of sweltering heat or a warm spell in the middle of winter.

Scientists don't draw conclusions about global climate change from any single year or any particular extreme event. The combination of data for all the regions of the world over time helps determine the average global climate and acceler-

ating changes.

Understanding the difference between weather, climate variability and climate change can also explain why all parts of the globe will not warm at the same rate, or that warming won't be permanent.

While periods of warming and cooling are expected, the rate of warming is completely unexpected. The National Academy of Sciences, a lead scientific body in the U.S., determined that the past century alone has seen the Earth's surface temperature rise by about 1 degree Fahrenheit. The scientists' concern is the accelerated warming, especially during the last two decades. This warming is capable of raising sea levels, and changing precipitation and other local and regional climate conditions. These changes could alter forests, crop yields and water supplies and affect human health, animals and permanently alter many types of ecosystems.

Mike Campbell, professor of biology at Mercyhurst College, has researched climate change to understand these issues and will share his findings at the Regional Science Consortium Visiting Scientist Speaker Series tonight at 7 p.m. at the Tom Ridge Environmental Center.

Next week we will examine the causes and effects of climate change globally and locally.

To extend today's learning, teachers can find lessons at www.goerie.com/nie.

ANNA MCCARTNEY, a communications and education specialist for Pennsylvania Sea Grant, can be reached by e-mail at axm40@psu.edu.



LEARN MORE

What: "Is Climate Change Precipitating a Biological Meltdown in the Lake Erie Basin?" presented by J. Michael Campbell, Ph.D., Mercyhurst College as part of the Regional Science Consortium Visiting Scientist Speaker Series. Learn about long-term climate-related physical changes in the Great Lakes.

Where: Tom Ridge Environmental Center, Room 112

When: Tonight at 7 p.m.

For more information, visit: www.regsciconsort.com

What: Special showing of action film, "Wintervention" by Warren Miller. All attendees will receive a free issue of SnoWorld Magazine and be entered for door prizes donated by local sponsors and a chance to win national prizes and a grand prize for a 7-day heli-skiing trip for four in British Columbia and a skiing trip to Chile.

Where: Tom Ridge Environmental Center, Big Green Screen Theater

When: Jan. 7 and 8 at 7 p.m.

Cost: Advance tickets for \$10 or \$15 at the door. Tickets are available at Peek'n Peak Ski Resort, Tom Ridge Environmental Center Big Green Screen Theater, Erie Sport Store Peach Street location, Elements Board Shop and Erie Ski Club or by contacting the Big Green Screen at 838-4123 or Scott Cable at (814) 873-3071 or scable6934@yahoo.com.



Rachel Leone



Zack



Luke



Gavin

Students protect environment

"If you want the Earth to have satisfaction, be part of a group called Earth Action."

Rachel Leone

Blessed Sacrament School
sixth-grade

Leone was one of 83 students who attended the Earth Action Youth Training Day sponsored by the Pennsylvania Department of Environmental Protection Coastal Resource Management Program on Nov. 30 at the Tom Ridge Environmental Center.

"The Lorax" by Sr. Seuss was used to shed light on the benefits of trees and to stimulate the students' imaginations to write rhymes with messages to get others to

take action.

Trees improve our watersheds, our water quality and the health and quality of our lives. Protecting them is the message of the rhyme written by home-school students Zack, Luke and Gavin.

We can use our heads
To make cleaner watersheds
And give our community
pollution immunity
We can use our BMPs
To help save the trees
So don't be like the Once-ler
Who polluted the trees, air
and water
Instead be like the Lorax
Who tried to stop the polluting
ax

Zack, Luke and Gavin
home-schooled

This page brought to you by:



Check out these websites to learn more:

www.noaa.gov
www.climate.gov/#understanding
Climate
<http://climate.nasa.gov/>
www.pewclimate.org/

Every day you can find the weather in section B of the Erie Times-News. Use it to compare the winter regionally, nationally and internationally. How does our weather differ from other regions in the country? In the world? Record the temperature and precipitation every day for a month and plot the results on a graph. What is the average temperature for the month? How will it differ from a summer month? If you recorded the weather every day for 30 years you could use the information to determine regional climate change.

