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In this Jan. 23, 2016, file photo, members of the Lehigh Rowing team attack a fellow rower with snowballs on the front lawn. Pennsylvania is experiencing climate change resulting in warmer weather later in the year. (Kelly McCoy/B&W Staff)

## Pennsylvania experiencing warming climate



BY KARLI WACHTEL — READ TIME: 6 MINUTES; PUBLISHED NOVEMBER 29, 2017, 11:27 PM NEWS

When the United Nations declared 2015 to be the hottest year on record, it topped 2014, which previously held the record.

One year later, in 2016, the global average temperature was 1.69 degrees Fahrenheit above the 20th century average, and 0.07 degrees above the average temperature in 2015.

Dork Sahagian, a professor of earth and environmental science, said this was the first time the global temperature set a new high record three years in a row.

Changes have been specifically noticeable in the Northeast, in states like Pennsylvania.

"It's irregular to be so warm in October," Sahagian said. "It wasn't that particularly hot this summer either. In July, it was on the cooler side in the Northeast."

Among his many areas of study surrounding climate change, Benjamin Felzer, an associate professor of earth and environmental science, researches the regional impacts of climate change.

"You can't often pin a weather event on climate change, but you can say the fact that we're getting certain weather patterns may be making it more likely because of the climate change that we're experiencing," he said.

Felzer pointed to Pennsylvania's particular change in climate over the past 30 years, a typical block of time experts use to analyze climate.

"You really don't want to get lost in the weather, which is going to be shorter time periods," he said. "Only the fall has seen a significant increase in daytime temperature at 1.4 degrees Celsius."

Kate Semmens, the science director at the Nurture Nature Center in Easton and a doctoral graduate from Lehigh's earth and environmental sciences department, said there is a



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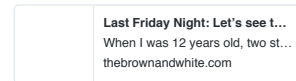
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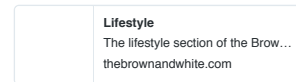


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Christmas lights expose divide between North and South Bethlehem

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difference between weather and climate. She said weather fluctuates daily, even hourly, and climate is the average over a long period of time.

"The past couple of years, 2016 and 2017, have been much warmer than the 20th century average... partially because of climate change," she said.

Robert Taylor, the mountain manager at Blue Mountain Resort, has been working at the mountain for more than 30 years. He said the Northeast ski resort relies on man-made snow to open trails for skiers and snowboarders.

Taylor said he has noticed a gradual change in the weather.

"For the most part, I think the cold weather is coming later and later into the year... I just believe that everything is changing, but the cold air is still there," he said.

Felzer said recently, every year has been warmer than the year before. He said this October was unusually warm.

In addition to warmer temperatures, there were also a number of natural disasters this year.

In particular, 2017 was rated the second most costly hurricane season in the United States and the 17th most deadly since 1990. Hurricanes Harvey, Irma, Jose and Maria resulted in 103 casualties and caused \$200 billion in damages.

Felzer said in this year's hurricane season, there was an increase in category four and five hurricanes and a decrease in category one and two hurricanes. He said warmer sea temperatures are an energy source for hurricanes.

"Hurricanes happen with or without climate change," Sahagian said. "But hurricanes are driven by the heat evaporation of the water — hot water supplies a lot more latent heat into the tropical storm. So as the surface ocean water warms up more, which it's doing, it drives hurricanes to be more intense. Not more frequent, just more intense."