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A cool experience

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Teacher headed to Arctic Circle for research trip with PolarTREC, NASA

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COAL TOWNSHIP — By March, when most people are wishing for warmer temperatures, Kelly McCarthy, science and math teacher at Our Lady of Lourdes Regional School, will be traveling over the freezing Arctic Circle as part of a polar research expedition with PolarTREC and NASA.

McCarthy was one of 15 teachers chosen from more than 300 applicants for the opportunity to participate in Polar- TREC, which, according to a press release, is an educational research experience in which K-12 teachers participate in polar research, working closely with scientists as a pathway to improving science education.

Through a program she participated in last summer called NASA Airborne Experience for Educators, McCarthy learned about the PolarTREC program. Due to her prior teaching program connections with NASA, she chose to join NASA's Operation IceBridge expedition.

Interest in earth sciences grew when she taught eighth-grade science and environmental science classes. Those classes allowed her own knowledge to grow and inspired a desire to experience an earth science field activity to expand her own learning.

"It's just exciting in general and I want to show the kids that this is possible for someone that doesn't have a background in polar science," she said this week at her classroom. "Maybe they'll think, 'Oh, maybe I can explore these huge adventures later on.'"

Her upcoming expedition is already inspiring junior Charlie Aurand, who gained interest in applying to a similar program for students after reading information from McCarthy.

After a planning meeting in Washington, D.C., and safety and logistics preparation in Alaska, she will fly to the Arctic Circle, where she will spend 3 1/2 weeks flying over Greenland. Lidar and radar will be used to measure the ice. Lidar sends out light waves to the ice and measures the topography of it over the whole Greenland ice-sheet. The radar measures the depth of the ice at that point.

The same track is flown every year in an attempt to construct a model of the changing ice sheet. This work was previously done by a satellite named ICESat. She said, “It was doing all this research as a climate change initiative, and it failed, so they started doing this airborne science with a plane and started tracking this same area just by plane instead of with a satellite in space.”

McCarthy said that in 2017, a ICESat-2 will be launched. Researchers will continue to fly the tracks to ensure there will be no gap in the data of the melting process and how quickly it is happening.

McCarthy’s expedition will be experienced in her classroom by her students. PolarTREC provides online learning resources through PolarConnect, which allows teachers and scientists to share their work throughout the expedition.

Pre-made video lessons by McCarthy and researchers will be shared with the classes, as well as interactive chats while they are in flight over the Arctic Circle. Updates can be shared between McCarthy and her students about her expedition, as well as what is happening in the classroom.

“I’ll be sharing images, a digital mapping system that takes GPS attached satellite quality images, and giving them actual number data on the thickness and height of the ice at a specific spot,” she said.

The research from the expedition does not end when McCarthy returns to the classroom. She said, “When I come back, I’ll change some of the labs so they meet the same standards, but they meet some of the research that I’m experiencing.”

Prior to the trip, students will get to experience “lunch with the researchers,” something McCarthy requested be done at Lourdes. Researchers will either meet with students at the school or Skype in during lunch hours.

An independently funded summer camp is also being planned by McCarthy upon her return. A summer festival will accompany the camp, with booths and vendors. The community will have the chance to learn about the research that is happening from the expedition.

Administrators, students and parents have reached out with support for McCarthy’s expedition.

Senior Kendall Krebs said they were excited for her when they learned what she would be doing. “We thought it was cool, especially that we can interact with her while she’s there,” she said.

Senior Maya Khanna is already relating the work her teacher will be doing with their current lessons. “We recently learned about glaciers, so this will give us some hands on experience through her,” she said.

McCarthy said, “I’m most looking forward to being there and while being there, connecting back with the school. I’m excited to live the experience and be able to show it to the kids while I’m doing it.”

Any classroom teachers from local schools interested in having students speak with McCarthy and the research team while they are in the air can email McCarthy at kmccarthy@lourdes.net.

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