Christine Cote   9-16-2018   Nature of Science and Math

On September 15, 2018, NASA launched a satellite to help retrieve data on the rising sea levels believed to be attributed to ice melt from the ice sheets on Greenland and Antarctica. This is according to the Boston Herald article, "NASA satellite launched to measure Earth's ice changes"http://www.bostonherald.com/business/technology/2018/09/nasa_satellite_launched_to_measure_earths_ice_changes).   This satellite named ICESat-2 is a secondary mission to gather data. According to the article, "NASA Earth Science Division director Michael Freilich says that the mission in particular will advance knowledge of how the ice sheets of Greenland and Antarctica contribute to sea level rise. The melt from those ice sheets alone has raised global sea level by more than 1 millimeter (0.04 inch) a year recently, according to NASA."

Reading through the article, I was immediately struck by how strongly this occurrence integrated math and science together. Firstly, it relates to how science addresses questions about the natural or material world. The concern of ice melt has been discussed in many debates over global warming. This debate brings attention to the concept that science knowledge indicates what can happen in a natural system. The launch will provide more data and signify any patterns in the melting regions. The data will connect to another tenant which explains how scientist use hypothesis to develop and test theories and explanations. Since this mission is a follow up to the Ice, Cloud, and Land Elevation mission which operated from 2003 through 2009, it will provide a new insight to the developments in the water levels of the oceans. It will be using a technique that is more advanced than its predecessor. The article explains the technology in this excerpt : "Built by Northrop Grumman, ICESat-2 carries a single instrument, a laser altimeter that measures height by determining how long it takes photons to travel from the spacecraft to Earth and back. According to NASA, it will collect more than 250 times as many measurements as the first ICESat.
The laser is designed to fire 10,000 times per second, divided into six beams of hundreds of trillions of photons. The round trip is timed to a billionth of a second."
This demonstrates the correlation to the ideology that science uses a variety of methods in its investigations.

Lastly, NASA is highly dependent on mathematicians with its programs. This particular mission provides data to construct viable arguments in regards to how much has changed in water levels and critique the arguments set forth by other studies. Scientists will learn valuable information that may be used to reason and create a plan or strategy.

The research will require the appropriate use of tools and techniques to verify information and compare it to other sources. Most importantly, as with each launch the attention to precision and details is crucial.

This is an excellent opportunity to share with my students. The amount of data collected each day by NASA is astounding. I hope to follow its discoveries in the coming months.

Citation - Press, Associated. "NASA Satellite Launched to Measure Earth's Ice Changes." *Boston Herald*, 15 Sept. 2018.

http://www.bostonherald.com/business/technology/2018/09/nasa_satellite_launched_to_measure_earths_ice_changes