

What Can Kesler Science Do for You?

4th - 8th grade science teachers love our Life, Earth, and Physical Science materials! With these easy and engaging materials, teachers can save planning time and put their focus back on the teaching that really matters.



5E LESSONS

Two-week lessons with over 100 topics



ESCAPE ROOMS

Engaging activities for review



INQUIRY LABS

Three different levels to fit every student



AMAZING ANCHORS

Anchoring phenomenon to book-end your lessons



SUB PLANS

Never worry about planning for a sub again.



WARM-UPS

Bellringers for the entire year



STATION LABS

Student-led exploration



INTERACTIVE NOTEBOOKS

Bring science journals to life.



WIKI TICKETS

Quick formative assessments



STEM CHALLENGES

Real-world STEM problem-solving



GRAPHING

Table and charts and graphs ... OH MY!



SCIENCE READING COMPREHENSION

Leveled reading passages with mini-activities



SPANGLER COLLABORATION

Exclusive Steve Spangler lessons and videos



WRITING PROMPTS

Writing activities covering 100+ topics

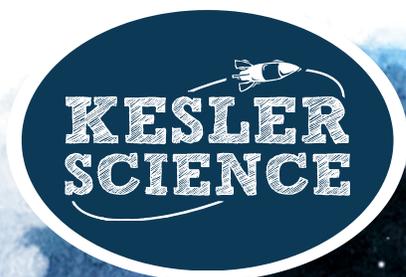


EXPLORIES

Story-driven units with integrated activities



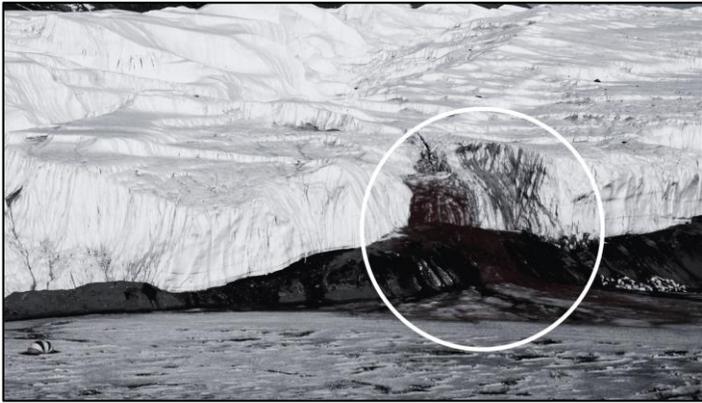
The Kesler Science Professional Learning Network (PLN) group on Facebook has a huge community of engaged and supportive science teachers - come join us!



Antarctica vs. Europa

Picture a spot that's pitch-black, packed with salt, almost devoid of oxygen, and freezing cold (-13°C). Doesn't sound too inviting, right?

You wouldn't expect to find life there, but that's exactly what's going on under Antarctica's Taylor Glacier, home to the bizarre "Blood Falls."



Blood Falls, Taylor Glacier, Antarctica

For the longest time, scientists were baffled by the red liquid oozing out of the glacier. They thought it was red algae at first, but it turned out to be iron oxides seeping from an ancient, super-salty lake.

When scientists studied the falls, they found hardy microbes that have been

trapped in the lake for millennia. These microbes - 17 different varieties of them! - likely don't use oxygen for respiration.

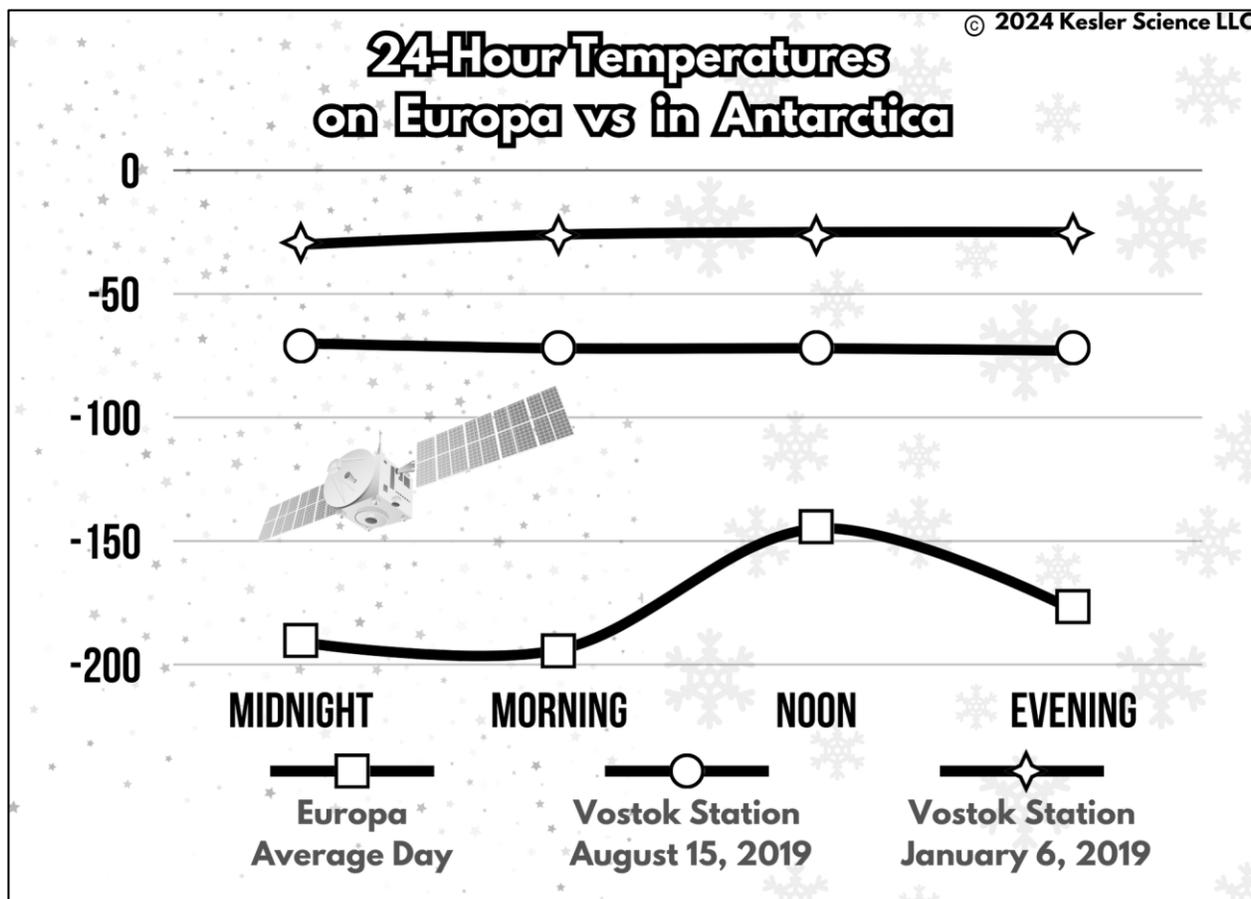
Scientists are excited by this find because it's more evidence that life can exist in places we would never consider habitable. What might we find on icy moons like Europa? Maybe space isn't as cold and lifeless as it seems.

Astrobiologists study life on our planet to understand if life could exist on other planets. They look for forms of respiration that don't need oxygen, for example, or ways that organisms get energy without sunlight.

Astrobiologists have also studied bacteria and other organisms to see at what temperatures they can live and grow.

It seems the coldest temperature at which bacteria can still grow is -20°C . Some plants and invertebrates can survive at -70°C , but they cannot grow properly below -2°C .

The graph on the next page compares the temperatures of a warm day in Antarctica, a cold day in Antarctica, and an average day on Europa (an icy moon orbiting Jupiter).



1. What is the warmest recorded temperature on Europa? At what time of day does this happen?

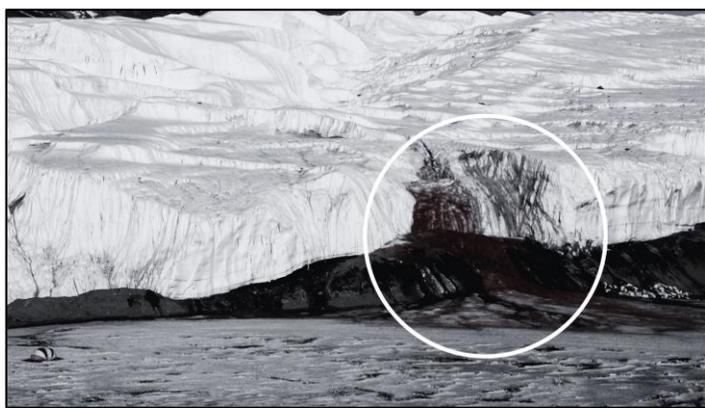
2. What is the temperature difference between midnight in Antarctica during August and midnight in Antarctica in January?

3. How do the temperatures in Antarctica in August compare to the temperatures in January? Why do you think this is? (Hint: think about Antarctica's position on planet Earth)

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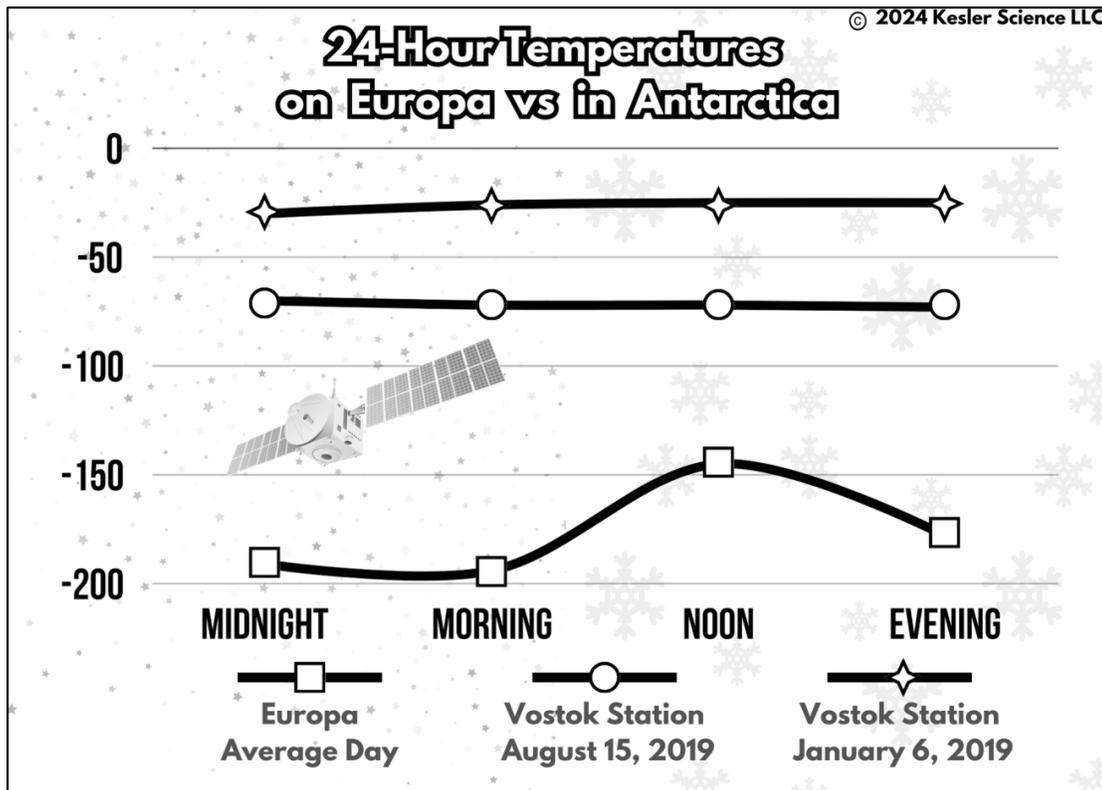
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The graph below compares the temperatures of a warm day in Antarctica, a cold day in Antarctica, and an average day on Europa (an icy moon orbiting Jupiter).



You can ask your students: based on the graph above and the research of astrobiologists, should we expect to find bacteria living on Europa that is similar to the bacteria on Earth? Why or why not?

Something else to think about: a day/night cycle on Europa takes a little more than three Earth days to complete. If this graph was created with actual hours instead of parts of a day, how would it look different?

1. What is the warmest recorded temperature on Europa? At what time of day does this happen?

The warmest recorded temperature on the graph is about -140 degrees C at noon.

2. What is the temperature difference between midnight in Antarctica during August and midnight in Antarctica in January?

In August, the temperature appears to be around -70 degrees C. In January, the temperature at midnight is around -30 degrees C. There is about a 40 degree temperature difference.

3. How do the temperatures in Antarctica in August compare to the temperatures in January? Why do you think this is? (Hint: think about Antarctica's position on planet Earth)

Antarctica is located in the Southern Hemisphere. During the month of August, Antarctica is pointed away from the sun. This would explain why the temperatures are colder in August compared to January.