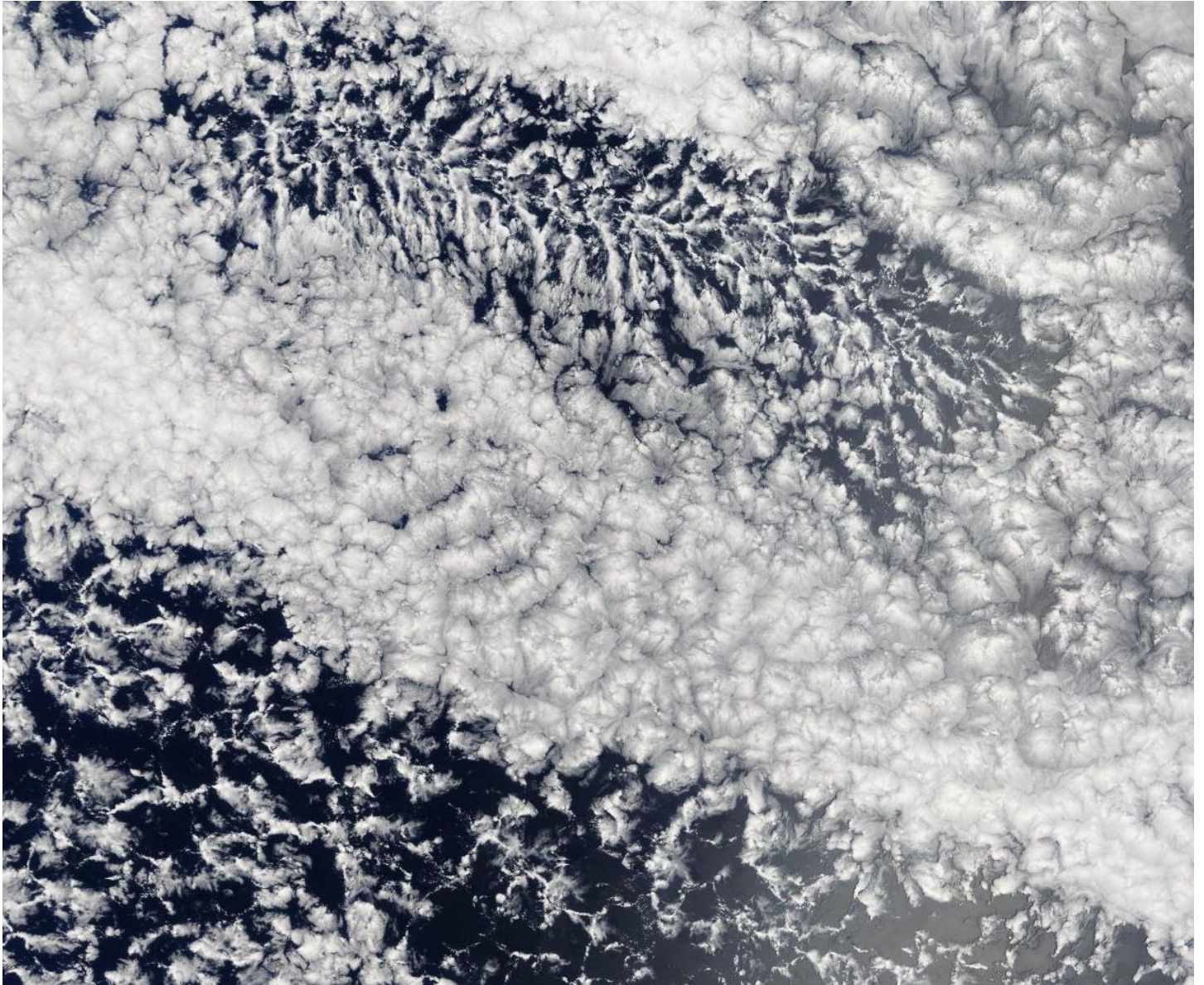

My NASA Data - Mini Lesson/Activity

Clouds & Earth's Climate with Dr. Patrick Taylor Video



Student Directions

This video, [Clouds & Earth's Climate](#), introduces Dr. Patrick Taylor, an Atmospheric Scientist from NASA Langley Research Center. He discusses his role in studying clouds and Earth's Energy Budget by analyzing data from low Earth orbit satellites. He also discusses the different effects of clouds on the energy budget.

Complete the questions as you watch the video.

Steps:

1. Check with your instructor on how to submit your answers.
2. How much has Earth's mean surface temperature warmed over the last 130 years?
3. How does the CERES (Clouds and the Earth's Radiant Energy System) project produce global climate data records of Earth's energy budget and clouds over many decades?
4. Why is Earth's energy budget important for climate?
5. If less sunlight is absorbed than infrared energy is emitted to space, what will the effect be on Earth's temperature?
6. If more sunlight is absorbed than infrared energy is emitted to space, what will the effect be on Earth's temperature?
7. According to the animation of CERES data showing where Earth cools by losing infrared energy to space, which regions lose the **most** energy to space?
8. Where is the **least** infrared energy lost to space?
9. According to the animation showing CERES observations of reflected sunlight from Earth, where are the areas with the **least** reflected sunlight?
10. According to the animation showing CERES observations of reflected sunlight from Earth, where are the areas with the **most** reflected sunlight?
11. What are two possible effects that clouds have on the energy budget?
12. Why does NASA study clouds and their role in Earth's energy budget?

Optional: [Learn how Dr. Taylor found his passion for weather when he was in fourth grade at Greenwood Elementary School in Millerstown, Pennsylvania.](#)

Teachers, these mini lessons/student activities are perfect "warm up" tasks that can be used as a hook, bell ringer, exit slip, etc. They take less than a class period to complete. Learn more on the "[My NASA Data What are Mini Lessons?](#)" page.

Teachers who are interested in receiving the answer key, please complete the [Teacher Key Request and Verification Form](#). We verify that requestors are teachers prior to sending access to the answer keys as we've had many students try to pass as teachers to gain access.

Access and Explore Data

- [Monthly Flow of Energy into Surface by Longwave Radiation \(Watts per square met...](#)
- [Monthly Flow of Energy into Surface by Shortwave Radiation \(Watts per square me...](#)
- [Monthly Flow of Energy out of Surface by Longwave Radiation \(Watts per square m...](#)
- [Monthly Flow of Energy out of Surface by Shortwave Radiation \(Watts per square ...](#)