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# My NASA Data - Lesson Plans

## Explore Solar Orbiter

### Grade Band

- 9-12

### Time

- 50 minutes

### Overview

In this lesson students will explore the Solar Orbiter Mission. The lesson includes a brief mission overview, an introduction to the instruments aboard the spacecraft, and a data analysis activity.

### Procedure

#### **Introduce the Mission:**

An international cooperative mission between the European Space Agency (ESA) and NASA, Solar Orbiter is a Sun-observing satellite that takes close-up images of the Sun, observing the solar wind and the Sun's polar regions. This is the first mission to study the Sun's poles. Until now, spacecraft (and ground-based telescopes) have never been able to clearly see the Sun's poles, because none ever reached further than 7° from the Sun's equator.

Show students a short video with the mission overview:

[Solar Orbiter gets world-first views of the Sun's south pole](#)

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Credit: European Space Agency (ESA): License: ESA Standard Licence

### **Video Questions:**

1. Why is every image of the Sun you have ever seen of its equator?
2. What did the Solar Orbiter observe at the Sun's south pole in 2025?
3. What do the observations indicate about where the Sun is in its cycle?

### **Analyze Data:**

Use the [Explore Solar Orbiter slides](#) to have students analyze Solar Orbiter data. You can lead students through the slides or let them lead themselves. Use the [Explorer Solar Orbiter student sheets](#) for students to complete the hands on portion.

### **Share Observations:**

Just like scientists do, have students share their observations in small groups and then have them report out to the class about their findings.

## **NGSS Three Dimensional Learning**

### **NGSS Disciplinary Core Ideas**

- PS2B: Types of Interactions
- ESS1A: The Universe and its Stars
- ESS1B: Earth and the Solar System

### **NGSS Crosscutting Concepts**

- Patterns
- Cause and Effect

### **NGSS Science and Engineering Practices**

- Developing and Using Models

## **Learning Objectives**

- Learners will be able to describe how Solar Orbiter studies the Sun
- Learners will be able to analyze real Solar Orbiter data
- Learners will be able to make predictions about solar cycle 25

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- Learners will be able to explain why missions like Solar Orbiter use multiple remote sensing images from different types of instruments aboard the spacecraft

## **Essential Questions**

- Why is Solar Orbiter a unique mission?
- What is Solar Orbiter investigating?
- How do scientists learn about an object's temperature and composition from images?

## **Student Resources**

- [\\_Explore Solar Orbiter Student Sheets](#)

## **Google Slide interactive Files**

[Explore Solar Orbiter Slides](#)