My NASA Data - Interactive Models

Exploring the Tradeoffs of Surface Temperature Models

Grade Band

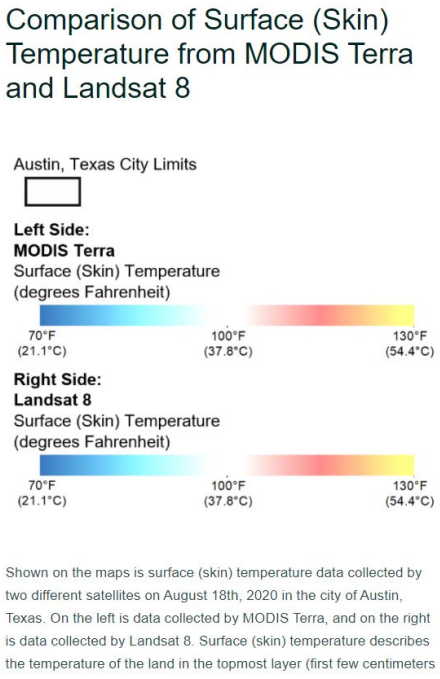
- 6-8
- 9-12

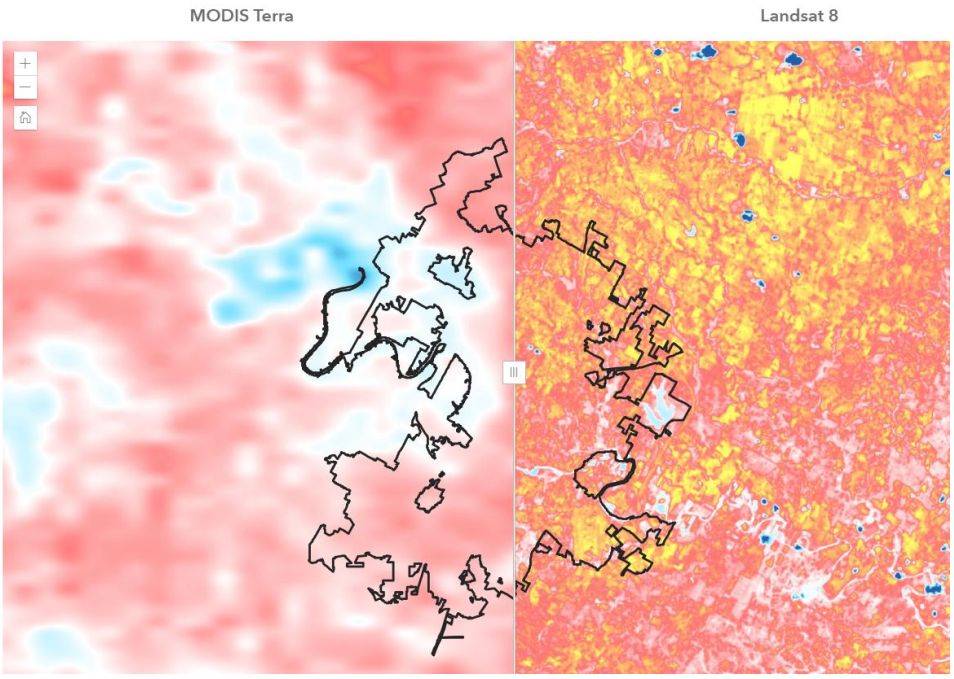
Time

- 30 minutes

Directions

1. Using an internet accessible device, students open the link to Exploring the Tradeoffs of Surface Temperature Models to begin their exploration of this phenomenon.
2. Distribute the Human Impact and the Exploring the Tradeoffs of Surface Temperature Models Student Sheet (optional). Have students navigate on their own through the interactive model to answer the questions and complete the activities on their student sheet.





CLICK HERE

Teacher Note

Heat islands form as vegetation is replaced by asphalt and concrete for roads, buildings, and other structures necessary to accommodate growing populations. These surfaces absorb—rather than reflect— the sun's heat, causing surface temperatures and near-surface air temperatures to rise near these surfaces. Displacing trees and vegetation minimizes the natural cooling effects of shading and evaporation of water from soil and leaves (evapotranspiration).

To learn more, visit:

- The **Urban Heat Island Phenomena** page for background information.

Virtual Teachers: Make a copy of the Google Form of your choice so that you may assign it directly from your Google Drive into your Learning Management System (e.g., Google Classroom, Canvas, Schoology, etc.). Do you need help incorporating these Google Forms into your Learning Management System? If so, read this **Guide to Using Google Forms with My NASA Data**.

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.

NGSS Three Dimensional Learning

NGSS Disciplinary Core Ideas

- ETS1B: Developing Possible Solutions

Crosscutting Concepts

- Scale, Proportion, and Quantity
- Interdependence of Science, Engineering, and Technology

Science and Engineering Practices

- Developing and Using Models
- Analyzing and Interpreting Data
- Constructing Explanations and Designing Solutions

Learning Objectives

- Students will list and describe the different characteristics of satellite data.
- Students will describe the advantages and disadvantages of using two different satellites to study the Urban Heat Island Effect.

Essential Questions

1. What are the advantages and disadvantages to using MODIS Terra or Landsat 8 to study the Urban Heat Island Effect?
2. Why might a scientist use two different satellites to study the same phenomenon?
3. How does pixel size influence the scale at which you can study a phenomenon?

Google Docs Interactive Files

Guide to Using Google Forms with My NASA Data

Google Forms Interactive Files

Student Form