My NASA Data - Mini Lesson

A Mini Urban Heat Island

Mini Lesson

What you need for each student/group:

- infrared thermometer (available from hardware stores for about $15)
- pencil
- data table
- five different types of materials found outside: grass, pavement (driveway, road), sidewalk, plant (tree or bush), and bare soil

Experiment:

1. Using the infrared thermometer, measure the temperature of each material during the day when it is in direct sunlight. Record the temperature for each object in the first row of the data table.

DATA TABLE

plant	**grass**	**soil**	**pavement**	**sidewalk**
temperature in the sunlight (°C)				
temperature in the dark (°C)				
difference in temperature (°C)				

2. Wait for the Sun to set.
3. Measure the temperature of each surface an hour after sunset. Record the temperature for each object in the second row of the data table.
4. Subtract the temperature of each material after dark from the temperature observed during daylight. Record this temperature difference in the bottom row of the data table.

Conclude:

1. Which three materials retained the most heat (changed the least)?
2. Which two materials radiated the most heat (were warmest) at night?
3. Which two materials absorbed heat the most readily (warmest daytime temperatures)?

Conduct this EO Kids mini-lesson with your students to explore the phenomenon of Urban Heat

Island Effect.

Why do you think grass feels cooler than pavement? And how are materials in a city different from those you find in rural and wild areas? The answer is that the materials in our neighborhoods retain, absorb, and radiate heat differently.