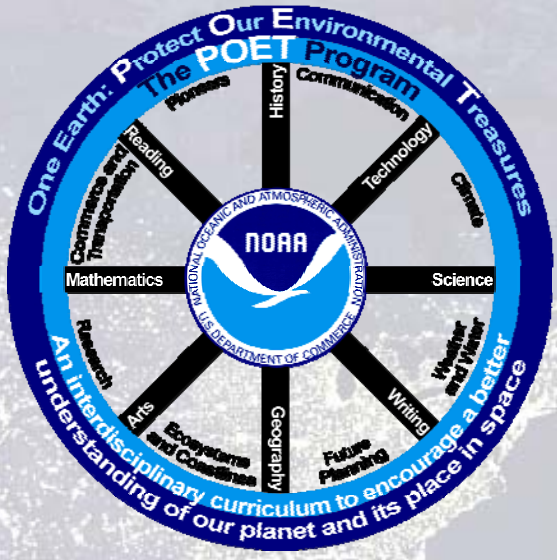
Nighttime Lights of the World

Category

Geography, Science

Real World Connection

Ecosystems, Research, Future Planning



Materials

Political World Map (Included)

NOAA Map – "Nighttime Lights of the World" (Included)

Problem Question

What observations and inferences about Earth can we make from a satellite view of Earth's nighttime sky?

Prior Knowledge What I Know	Conclusion What I Learned
Based on your prior knowledge, answer the problem question to the best of your ability.	*Answer the problem question after completing the activity. Include an example in your answer.*

Background

The "Nighttime Lights of the World" contains the first satellite-based global view of places on Earth where people live, work, and play at night.

A color version of "Nighttime Lights of the World" shows fires, gas flames, and fishing boats, as well as lights from cities, towns, and villages.

Originally in black and white (Figure 1-2), this revealing picture of the world is assembled from many images over a one-year period.

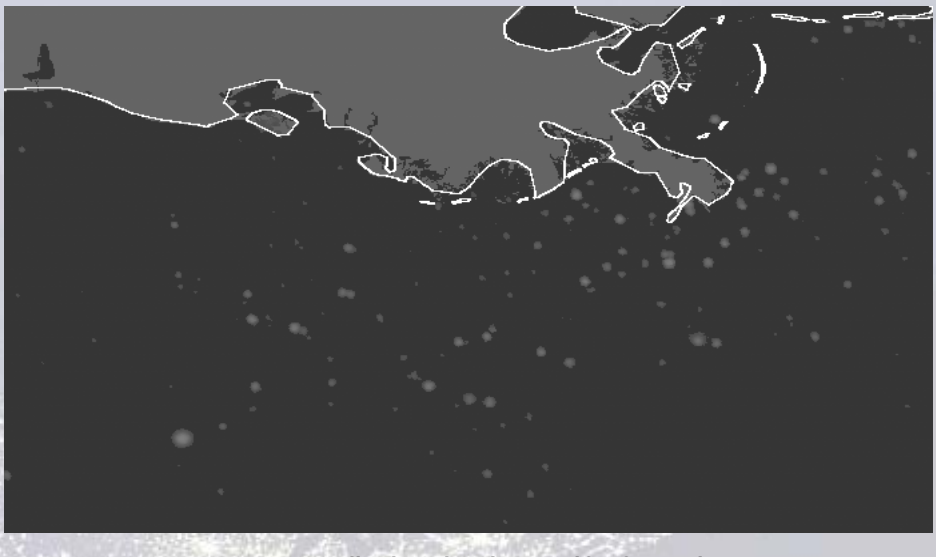
More recent color pictures of the "Nighttime Lights" show light coming from different sources with various colors for each source.

For example, light generated from electricity may be white, light from fires may be orange, yellow could indicate light from squid fishing boats, and red might be gas flares from oil rigs.

Areas of high population and economic development are generally covered with white lights. Also, areas along coasts tend to be well populated.

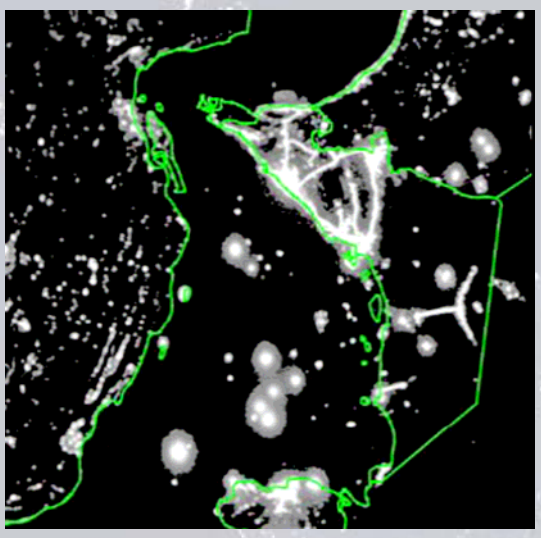
The Nile River can be easily traced from the string of lights that outline it. Major interstates in the United States can be traced by the lights of the towns along the roads.

The fishing lights are most dense near Japan. Fishermen shine bright lights into the seas to attract squid to the surface in order to catch them.

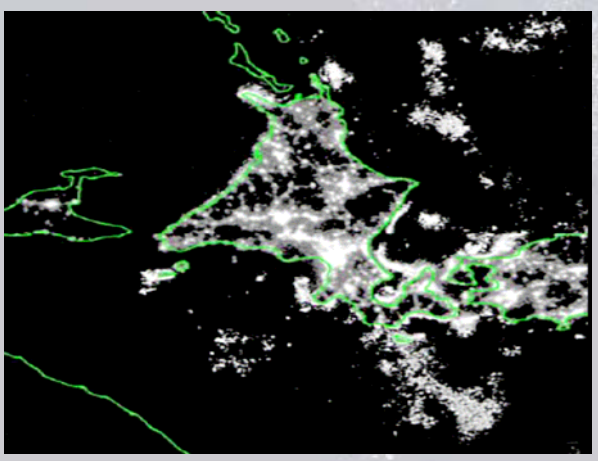


USA gas flaring in the Gulf of Mexico

Burning excess natural gas, called gas flaring, is a procedure used in petroleum (oil) producing areas world-wide. In this nighttime photo, the string of white shows light from electric power on land and the points of white light on the dark background show gas flaring in the Gulf of Mexico.



City lights and powerful lights from fishing boats off the coast of Japan



Gas flares and Persian Gulf fishing lights off the coast of Africa

Procedure - Part 1

Using Figure 1-1, "Political Map of the World", review your knowledge of world geography. Then identify the following locations on the map, "Nighttime Lights of the World" (Figure 1-2), by writing the name from the following list on the line next to the arrow that points to the location.

1. Australia
2. Cape Town, South Africa
3. Denver's Front Range
4. Europe
5. Florida
6. Galapagos Islands
7. Himalayan Mountains
8. Honolulu, Oahu
9. Indonesia
10. Las Vegas, Nevada
11. New York, New York
12. Nile Valley
13. Rio de Janeiro
14. Salt Lake City, Utah
15. Southern California
16. South Korea
17. Uzbekistan, Afghanistan, Turkmenistan

Procedure - Part 2

Use the map, "Nighttime Lights of the World" (Figure 1-2) to answer the following questions.

1. What can you infer about the economic prosperity and/or population of North vs. South Korea? How do you know?

2. Where is most of Europe's population located? How do you know?

3. Do many people live in the Himalayas? How do you know?

4. In Australia, where do most people live? How do you know?

5. What Asian countries probably use the most electric power? Explain.

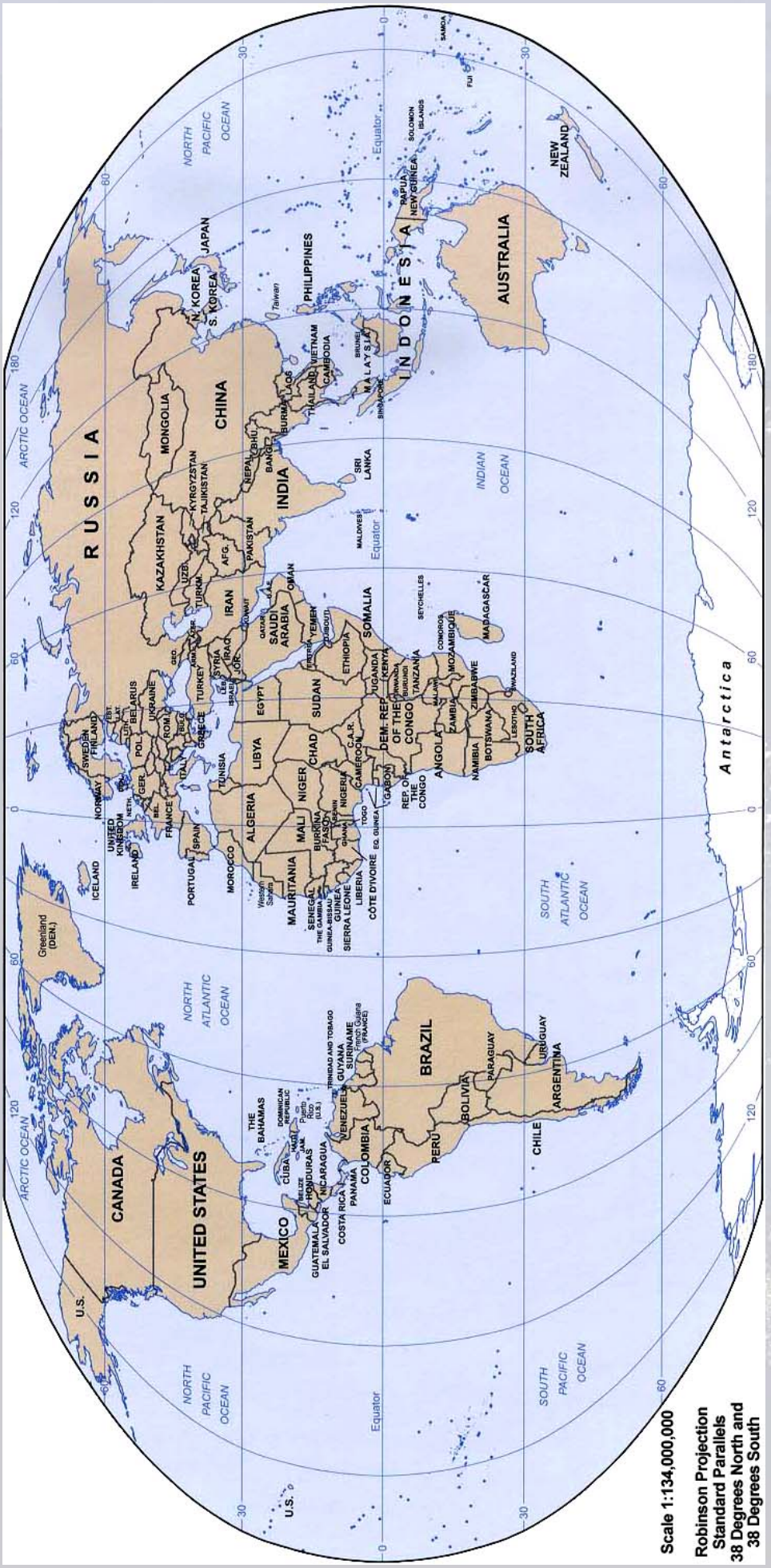


Figure 1-1. Political Map of the World.

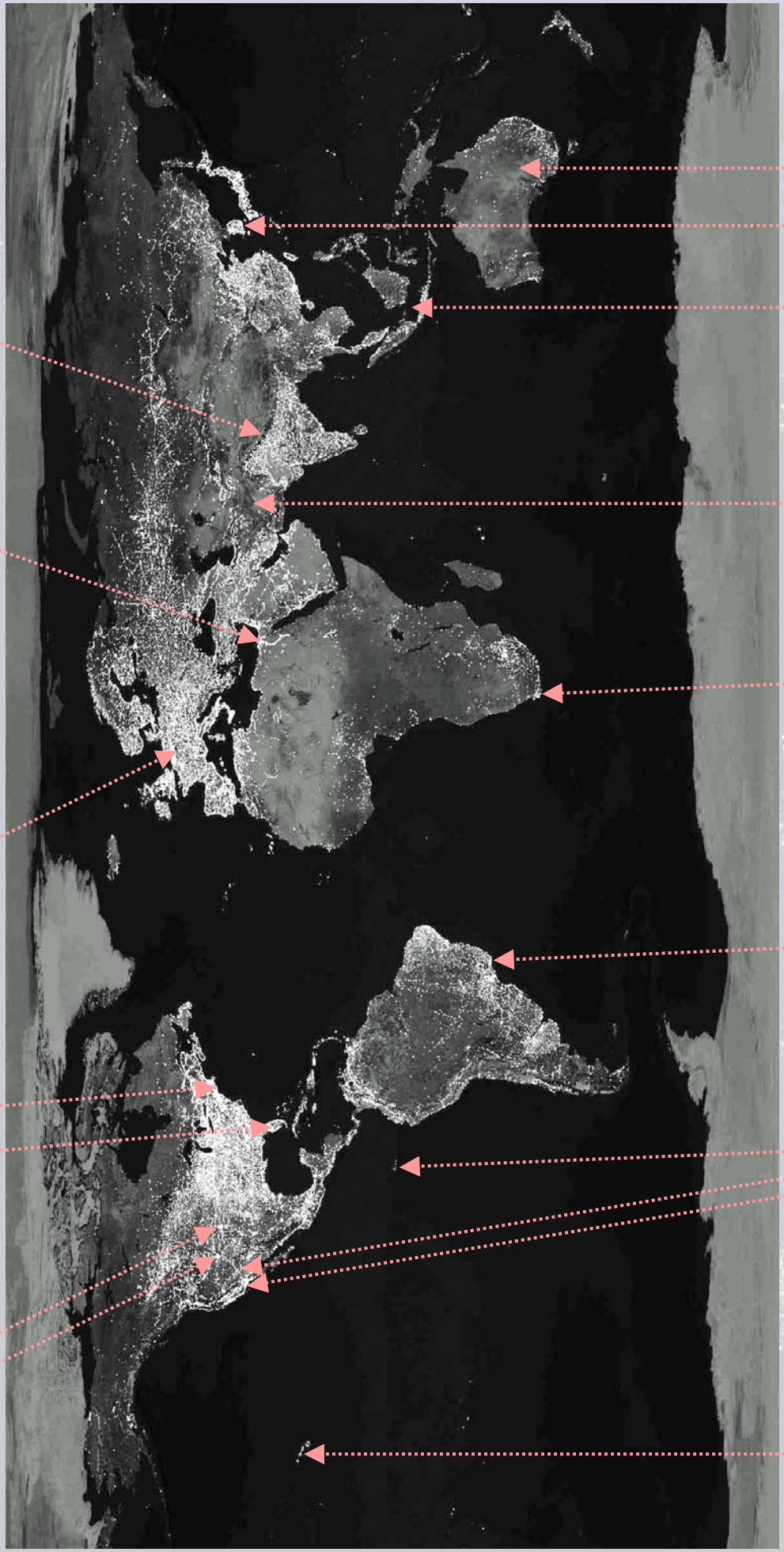


Figure 1-2. Nighttime Lights of the World.
NOAA/National Environmental Satellite, Data, and Information Service (NESDIS)/National Geophysical Data Center (NGDC)