

# **Investigating Land Use Change Environmental Issues with Google Earth and Satellite Imagery**

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## **Session Description:**

Learn about inquiry-based activities that incorporate Google Earth and NASA satellite imagery to investigate local and global environmental issues related to land use change.

## **Session Summary:**

This session presents **Environmental Issues: Land Use Change** - <http://www.ei.lehigh.edu/eli/luc/>, an interdisciplinary technology-embedded science unit that we have developed and used in middle school classrooms. This curricular unit focuses on how human activities influence environmental changes related to land use. Students use geospatial information technology tools including Google Earth and remotely sensed satellite images to investigate modern day land use issues and land use change over time. Session activities will highlight how to use Google Earth to analyze the spatial organization of places and environments on earth's surface. Session attendees will be introduced to the instructional activities, student resources (including GE files, remotely sensed images), student handouts, assessments, and teacher resources and support materials.

The investigations in this unit begin with an examination of the spatial and environmental aspects of a shopping mall in Huntsville, Alabama. Students learn to use basic elements of aerial photo interpretation (including tone, size, texture, pattern, shadow, site, and association) to aid in identifying objects in aerial photographs. They investigate how shopping malls change natural environments and alter its immediate surroundings to understand concepts involved in the formation of urban heat islands.

Next, comes a study of Atlanta's urban heat island and the consequences of urban deforestation. Students learn how communities can use certain heat island reduction strategies to reduce the impact of an urban heat island effect. They also interpret land use maps of the greater Atlanta area to understand environmental issues that are typically associated with sprawl.

Students investigations continue with a case study of the Lehigh Valley area. They examine the significance of the location of shopping malls in the Lehigh Valley area and compare the land use around five mall areas in the Lehigh Valley using Google Earth.

Students then use remotely sensed images to recognize land use patterns of diverse areas in our world. They examine and interpret time-sequenced satellite data and aerial photographs of urban areas to interpret geographic growth patterns. In addition, they examine landscape changes over time through analysis and interpretation of satellite data images and aerial photographs.

In the culminating activity, students recommend a plan for locating a new Wal-Mart Supercenter in the greater metropolitan Lehigh Valley area to have minimal impact on the environment. Students use Google Earth to analyze and evaluate features of different land areas for proposed development sites. They develop a proposal to apply "smart growth" principles to their planning decisions and communicate their plan in a simulated planning commission meeting.