


Google Earth and Sky

- What is Google Earth?
 - How does it compare to Google Maps?
- Examples of Google Earth and Google Maps applications at Princeton and elsewhere
 - Navigating Google Earth
- Adding Data to Google Earth and Google Maps
 - What are KML and KMZ files?
 - A look at Google Sky

What are Google Earth, Sky and Maps?

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- Google Earth is a Virtual Globe or Geobrowser
 - Displays images of the earth on a globe
 - Gives the illusion of manipulating a globe on-screen
 - Allows users to access point, line and polygon data
 - Allows users to generate content for publishing
 - Google Sky runs within Google Earth
 - Identifies significant features in the solar system and nearby galaxies
 - Links to astronomical sites and information
 - Google Maps is a two-dimensional 'flat' map with images, features, links to places

A bit of history


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- Keyhole began developing the virtual globe application in 2001
 - Purchased by Google in October, 2004
 - Multi-terabyte database of information and images served quickly to the user
 - Simple interface
 - Available free, as Plus (\$20), and Pro (\$400)
 - Google Sky introduced in August, 2007

Google Earth vs. GIS



- Google Earth is a visualization tool
- GIS is a spatial analysis tool
 - Models
 - Procedures
 - Spatial statistics
 - Data management and conversion
 - Multiple visualization modes (maps, tables, graphs, movies, etc.)
- GIS services can be viewed within Google Earth and Google Maps

Google Earth vs. Google Maps

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- Google Maps is a two-dimensional, top-down view
 - Viewable within browsers on any operating system
 - Requires no 'plug-in' of additional software
 - Google Earth renders in three dimensions, and the tilt and distance from the surface can be changed
 - As a stand-alone application, runs on any operating system
 - After installing a plug-in, runs within browsers on Windows
 - Use Google Earth when a perspective or oblique view of the surface is needed (elevations or buildings)
 - Use Google Maps when horizontal distances are more important, want to avoid having the user load software

Examples at Princeton



- Venice and the Mediterranean

- <http://nolli.princeton.edu/faculty/crete/>
- <http://nolli.princeton.edu/faculty/crete/sites.kml>
- <http://nolli.princeton.edu/faculty/venice/>

- Sorcerers of the Fifth Heaven

- <http://mcis2.princeton.edu/sorcerers/>

- Félix Candel

- <http://mcis2.princeton.edu/candela/works.html>

- The Excavation at Balis, Syria

- <http://www.princeton.edu/~syria/>

- Alumni Council trip to New Zealand

- <http://nolli.princeton.edu/newzealand/>

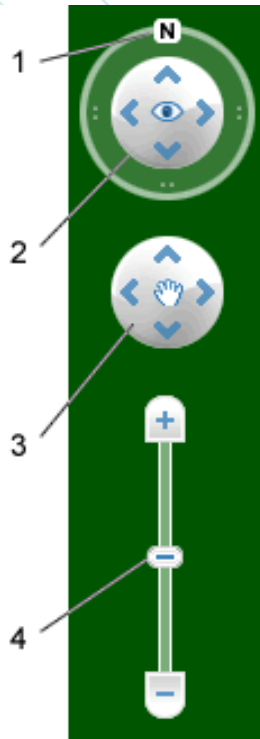
Examples outside of Princeton

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- Google Books - Geographia Americae
 - <http://books.google.com/books?id=dLeekBAUGngC>
 - Atlas of Fiction
 - <http://www.atlasoffiction.com/>
 - Gutenkarte
 - <http://gutenkarte.org/>
 - Jack Kerouac's *On the Road*
 - http://www.geocities.com/Athens/4209/maps/kerouac_map.htm
 - Patrick O'Brian Voyages
 - <http://cannonade.net/aubrey.html>

Navigating Google Earth

- User guide at


<http://earth.google.com/userguide/v4/>



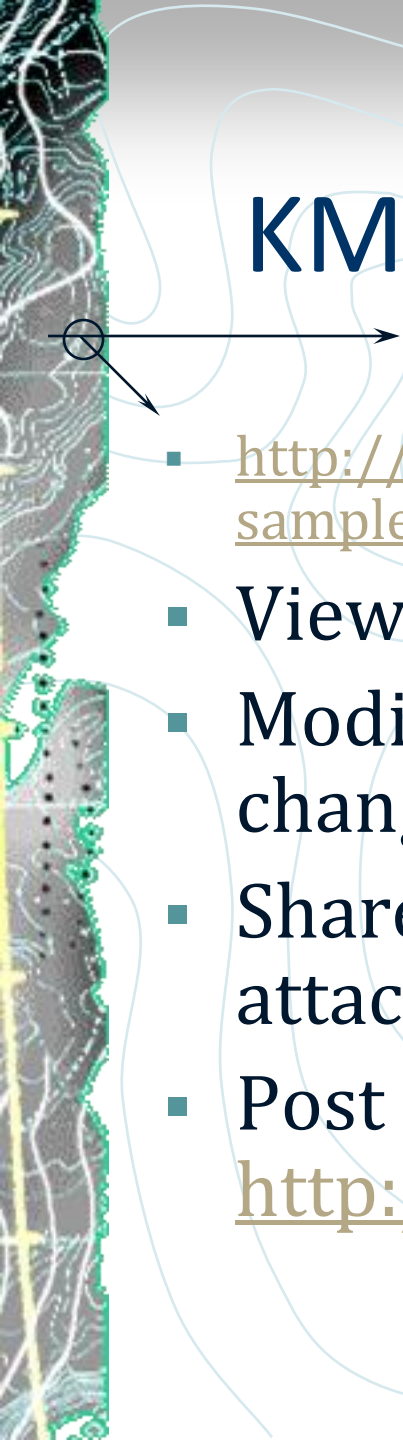
- 1. Rotate the view to adjust where North is located.
- 2. Look around from a single vantage point.
- 3. Move from one place to another.
- 4. Zoom in and out.

Source: www.google.com

Adding Data

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- Google makes Application Programming Interfaces (APIs) available for both Google Earth and Google Maps
 - Keyhole Markup Language (.kml) files
 - Zipped .kml files are .kmz files
 - .kml and .kmz files are directly accessed by Google Earth
 - Google Maps accesses these files from a web site

KML Interactive Sampler

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- <http://kml-samples.googlecode.com/svn/trunk/interactive/index.html>
 - View code while viewing Google Earth itself
 - Modify the code and see how the application changes
 - Share .kml and .kmz files as e-mail attachments
 - Post files to sites such as <http://www.googleearthhacks.com>