

GE Lesson 1
NAVIGATION IN GOOGLE EARTH: VIRTUAL SCAVENGER HUNT
TEACHER INFORMATION

Lesson Summary: Students learn how to navigate in Google Earth (GE) through a virtual scavenger hunt/tour. They first get familiar with navigation using both the search bar and the navigational bar. Next students learn how to enable layers in Google Earth and investigate the information available with these layers. This exercise provides students an introduction to virtual globes.

Objectives: Students will understand how to navigate in Google Earth and will become familiar with several key features and data layers.

Estimated Time: 30 minutes

Correlation to Alaska Standards:

Cultural E-2	Understand the ecology and geography of the bioregion they inhabit
Geography A	Make and use maps, globes, and graphs to gather, analyze, and report spatial (geographical) information
Geography B	Utilize, analyze, and explain information about human and physical features of places and regions
Technology A	Operate technology-based tools
Technology B	Use technology to locate, select, and manage information
Technology C	Use technology to explore ideas, solve problems, and derive meaning

BACKGROUND FOR THE TEACHER

Google Earth (GE) is one of a number of 'virtual globes' that are freely available. These tools allow Earth to be viewed in its three-dimensional form. Google Earth's advantage over many of the others is its accessibility and ease of use. Some of the features provided by GE include: searching for locations, obtaining information about distant geographic areas, linking to waypoints from a handheld GPS, and adding photos to locations and viewing historical imagery. Using these tools to explore and search Earth will help the students to understand the geography around them give them a better sense of the whole planet and their place in it. Google Earth is not a true GIS tool but does provide a way to display and analyze the data from MapTEACH activities.

Google Earth needs a permanent Internet connection and undergoes constant updating. You will need to be aware of the most recent version to determine whether the update alters some of the features and options available.

MATERIALS

- Computers – One for each student is best or two students can share a computer. The computers must meet the minimal requirements to be connected to the Internet and be able to run Google Earth. Requirements available at: <http://support.google.com/earth/bin/answer.py?hl=en&answer=166096>
- Google Earth Version 6.1.0.5001 installed on each computer. (Note that previous versions of Google Earth will work, but as each new version is added, there are subtle changes and this lesson is written to use all the features in 6.1.0.5001.)
- Internet connection with moderate bandwidth
- Copies of the Student Exercise

INSTRUCTIONAL PROCEDURES

Getting Ready

Prior to beginning this activity:

- Check the student computers to assure that they are loaded with Google Earth Version 6.1.0.5001. You can download this version from: <http://www.google.com/earth/download/ge/>
- If your school has limited bandwidth, check with the OIT office or individuals responsible for network services because it may be still be possible to have students use Google Earth on a limited basis.
- Since students will be required to capture and save images, it is highly recommended that a designated folder be set up where these images and other related files can be saved:
 - Set up a user account called “student” that does not have administrative privileges
 - Make a new folder for the “student” user named MapTEACH_Work as Users/student/MapTEACH_Work
- Prepare materials for the lesson and try out all the activities well before the students work through them

Gear Up

- Prompt student discussion of their experience using Google Earth by asking questions such as: “Who has used Google Earth before?” “Who knows how to turn on the weather layer?” or “Who has created placemarkers before?”
- Hand out and review the Student Exercise and explain that it is self-paced with built-in stopping points where they show you their progress.

Explore

- Students work through exercise and provide written answers to questions as they go.

Generalize

Although this lesson is intended as a basic “how to” in Google Earth, many of the tasks students perform may well prove useful in their daily lives. As a wrap up to this lesson, ask students which functions might be of use to them and discuss why. (For example – how might the weather layer, street view, or ability to save images from Google Earth prove useful in daily life?)

TEACHER RESOURCES

Google Earth provides additional tutorials on navigation, changing views, place, and layers. It is highly recommended that these be explored so that students can gain additional depth and familiarity in Google Earth.

- Navigation – This feature is shown in a variety of different ways. The Google Earth website provides tutorials on how to use the mouse and the navigation controls, tilting and viewing hilly terrain, navigating the ocean, resetting to default view, and setting the start location. The link to the website is provided below.
<https://support.google.com/earth/bin/answer.py?hl=en&answer=148186&topic=2376154&ctx=topic>
- Changing views
 - Ground level view
<http://support.google.com/earth/bin/answer.py?hl=en&answer=1067429&topic=2376155&ctx=topic>
 - Street view
<http://support.google.com/earth/bin/answer.py?hl=en&answer=1067358&topic=2376155&ctx=topic>
 - Terrain
<http://support.google.com/earth/bin/answer.py?hl=en&answer=148129&topic=2376155&ctx=topic>
 - Displaying the sun
<http://support.google.com/earth/bin/answer.py?hl=en&answer=148187&topic=2376155&ctx=topic>
 - Viewing Mars and Moon
<http://support.google.com/earth/bin/answer.py?hl=en&answer=148187&topic=2376155&ctx=topic>
- Places
 - Creating a new placemark/Saving places data
<http://support.google.com/earth/bin/answer.py?hl=en&answer=148142&from=148150&rd=1#>
 - Reposition placemarkers
 - How to reposition on the earth
 - Use of Edit Placemark box
<http://support.google.com/earth/bin/answer.py?hl=en&answer=148074&topic=2376990&ctx=topic>
 - Retrieving and moving placemarks files
 - For both PC and Mac users on how to find myplaces.kml file
<http://support.google.com/earth/bin/answer.py?hl=en&answer=166438&topic=2376990&ctx=topic>


- Setting icons for places and folders
 - How to change icons size, style, type and image
<http://support.google.com/earth/bin/answer.py?hl=en&answer=148077&topic=2376990&ctx=topic>
- Changing labels
 - Change color, size, and opacity of label in icons/places/placemarks, etc
<http://support.google.com/earth/bin/answer.py?hl=en&answer=148076&topic=2376990&ctx=topic>
- Emailing Places data
 - How to email place directly as KMZ to other users.
 - On the Mac, can only email through the Mail, Eudora, and Entourage applications
<http://support.google.com/earth/bin/answer.py?hl=en&answer=148160&topic=2376990&ctx=topic>
- Layers
 - Borders and labels
 - Explains the layer within Google Earth; details each icon and level of information
<http://support.google.com/earth/bin/answer.py?hl=en&answer=148130&topic=2376749&ctx=topic>
 - Weather
 - Provides details on the layer on the weather and snapshot view
<http://support.google.com/earth/bin/answer.py?hl=en&answer=181050&topic=2376749&ctx=topic>
 - Places of Interest (POIs)
 - Provides tips on using different pre-made places such as Businesses, Transit stations
<http://support.google.com/earth/bin/answer.py?hl=en&answer=180709&topic=2376749&ctx=topic>
 - Geographic web layer
 - Q and A on the Geographic web layer
<http://support.google.com/earth/bin/answer.py?hl=en&answer=2395280&topic=2376749&ctx=topic>

Name: _____

GE Lesson 1 NAVIGATION IN GOOGLE EARTH STUDENT EXERCISE

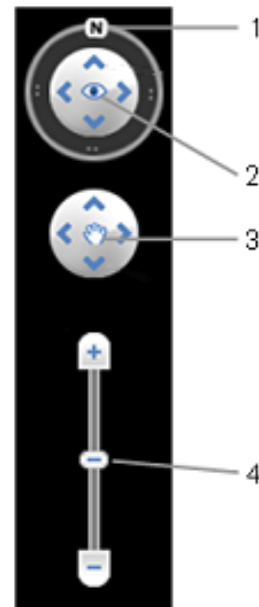
Directions: In this lesson, you will learn how to navigate Google Earth through a virtual scavenger hunt/interactive tour. This activity will take you around the state of Alaska investigating places of interest, weather/temperature measurements, information and symbols while highlighting some key tools and features in Google Earth.


Explore 1: Navigational Tool and Search Bar

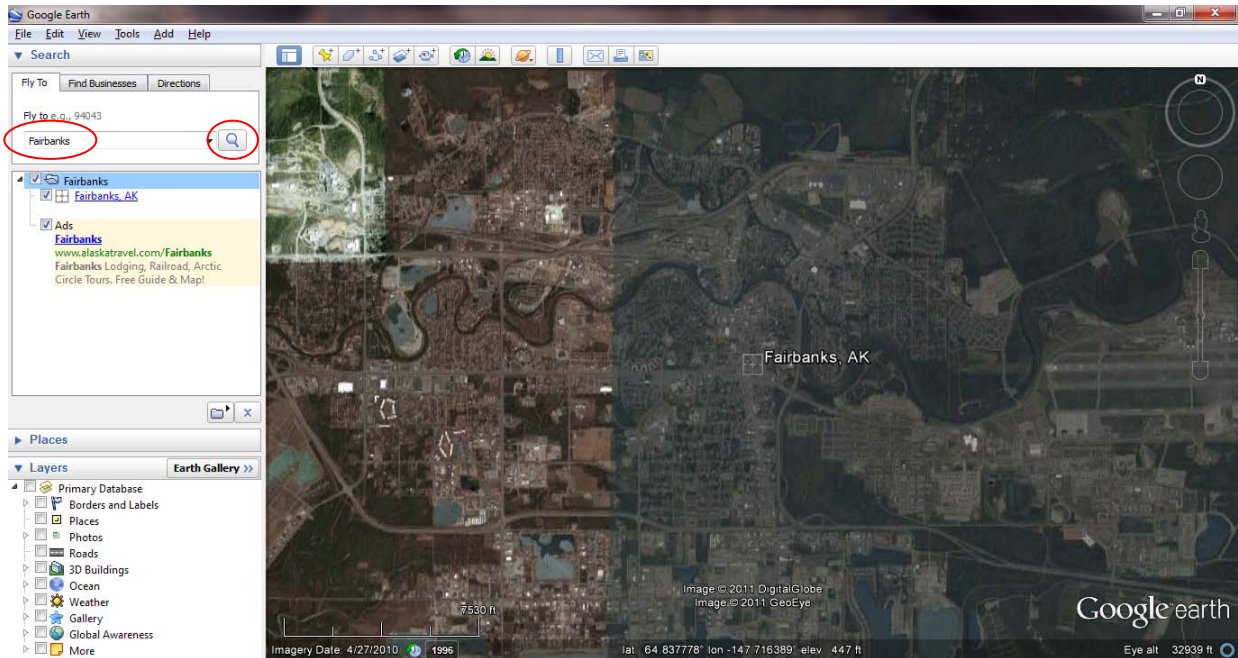
1. **Start** up Google Earth by clicking 
2. At the top right hand corner of the main screen is the navigational bar (see below)
3. **Locate** your community by using the **navigational tools ONLY!!**

Can you **describe** each function on the Navigational Tool Bar?

1. _____
2. _____
3. _____
4. _____



4. The other way to navigate in Google Earth is through the **search bar**, located on the top left screen. **Type the name of your community** in the search bar and **select** the magnifying glass  to begin the search. You might need to type in the state as well if the name of your community is a common place name (**e.g. Fairbanks, AK**).



5. Cities, geologic features, and place names also can be searched by entering coordinate information.

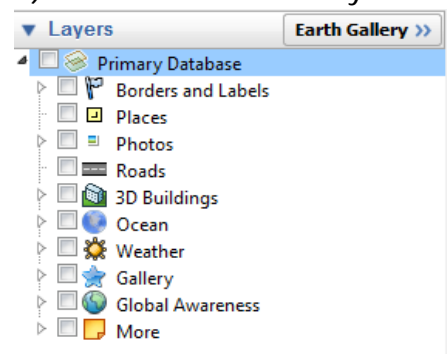
In the **search bar**, enter: **58.301892, -134.419749**

What city are you taken to? _____

Explore 2: Layers and Information

Layers are located at the bottom of the menu bar on the left side of the Google Earth window. This version of Google Earth (6.1.0.5001) should contain ten layer folders; name 2 or 3 that you will most likely use and explore.

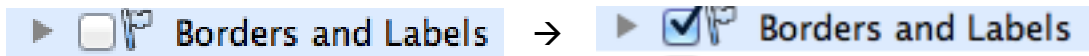
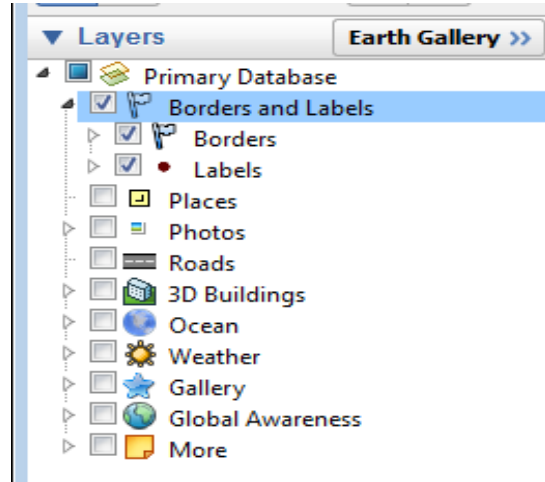
1. _____
2. _____
3. _____



Borders and Labels Layer

This layer displays information that includes country borders, country names, coastlines, and names of major places around the world.

1. Turn on the “**Borders and Labels**” layer as shown below:



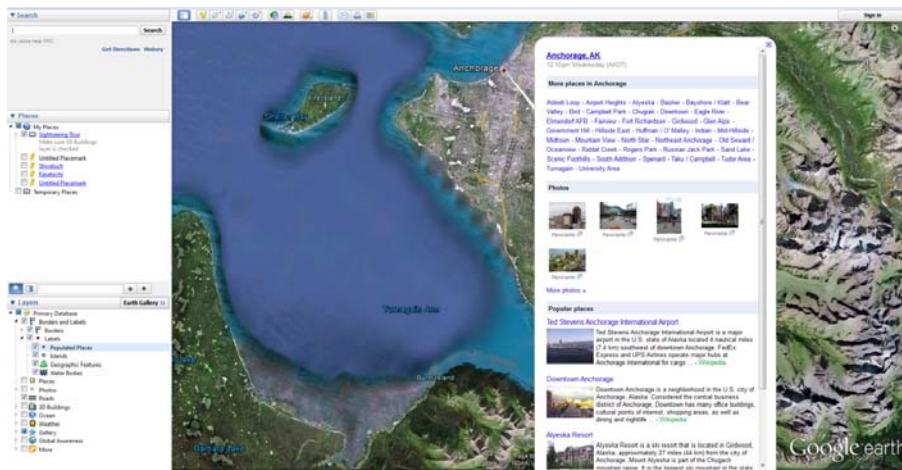
2. **Zoom out** so that you can view the whole state of Alaska. Can you see the border between Alaska and Yukon Territory? What color is the border? Are the labels for both present?

Border color: _____

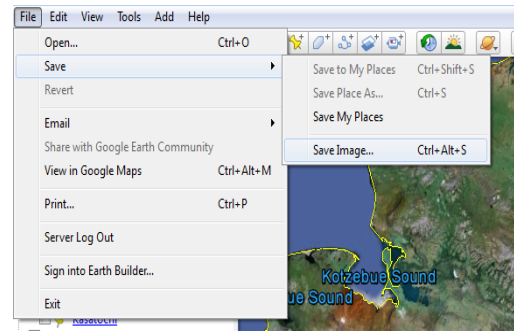
Labels present: _____

3. **Locate Anchorage.** With borders and labels still enabled, locate the Anchorage label. **Select the red dot**; a new window should appear. According to the records, how far is it from downtown to the airport?

Number of miles: _____



4. **Save an image** that captures the border between Alaska and the Yukon Territory. To save an image, locate the **"File"** menu at the top left screen, select **"Save/Save Image"** and then save image as a jpeg in your MapTEACH_Work folder.



Show your instructor that you have made the jpeg and placed it in the appropriate folder


Places Layer

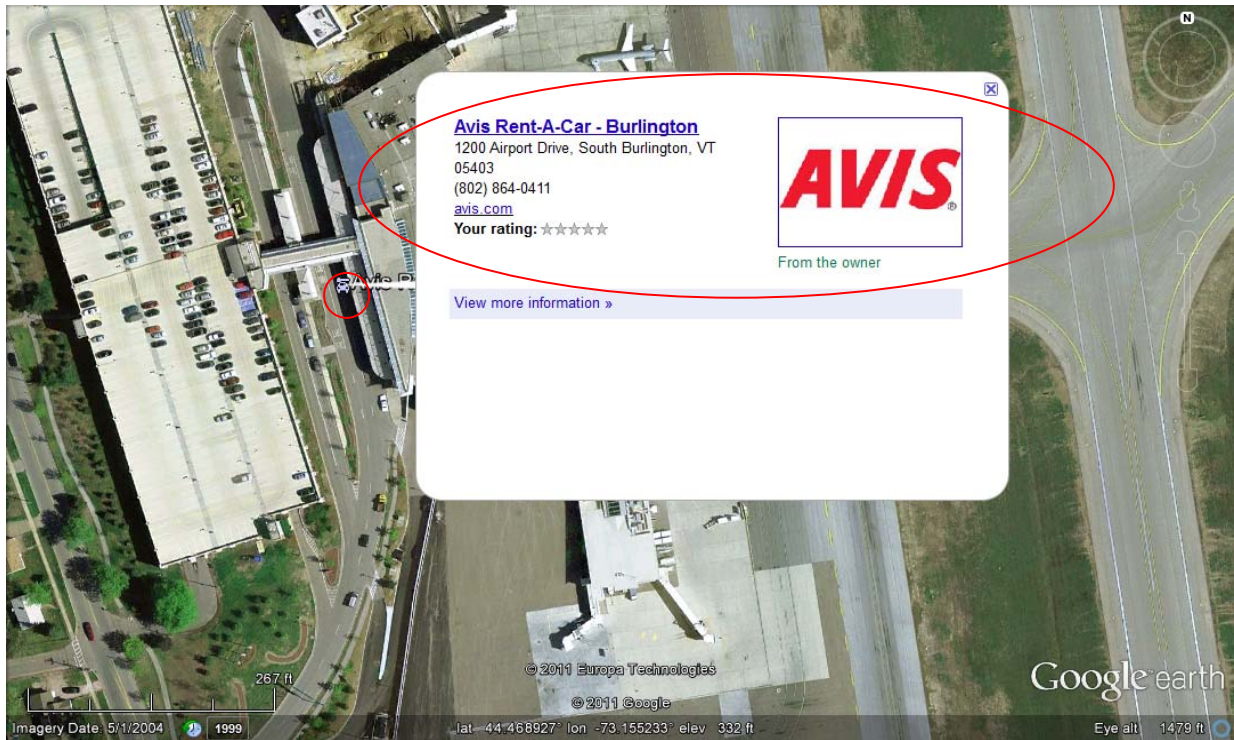
The **"Places of Interest"** layer includes places, businesses, transit stations, mountains, and parks categories in one non-expandable layer.

1. Turn on the **"Places"** layer.



2. **Fly** to an Alaskan city (like Anchorage or Fairbanks) and open some of the places that are marked.
3. **List** 7 places within your city of choice, **write** a brief description about the information contained in each, and **draw** the symbol used to illustrate the type of place (See example below).

Name	Description	Symbol
Car Rental Company	Provides the name of the rental company, with address, phone number, website with a few photos	



4. Can you **find** these symbols in your city? What “place” does each of these symbols represent?

a) _____



b) _____



c) _____



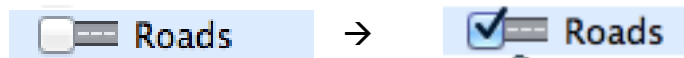
d) _____



Roads Layer

The roads layer displays road map information, including major highways, roads, and streets. This layer includes U.S., Canadian, and many international roads.

1. Turn on the “**Roads**” layer as shown below



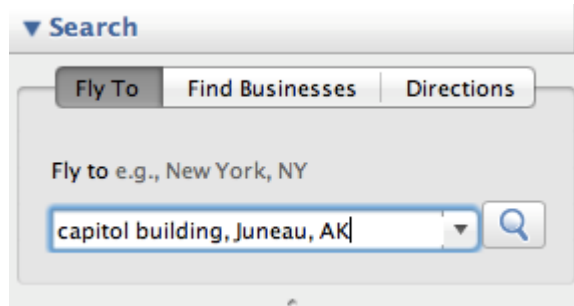
Roads will not appear until the scale is reasonable. When you zoom out to the fullest extent, you will notice that roads are not visible.

2. **Select Alaska, zoom in**, and see what happens as a result.

Name a major highway in Alaska: _____

Name a major street in Juneau: _____


3. Using the **"Search"** bar, type in the capitol building, Juneau, AK, as below, and locate the street the capitol building is on.



What is the address of the state capitol building? _____

Street View

The street view feature allows you to see what the surrounding town or city looks like from the perspective of a citizen on an afternoon stroll.

1. Find **Seward, Alaska**, and then **find 3rd Avenue**. **Follow** it south to the junction of Railway Avenue.
2. In your navigational tool bar is a street view icon represented by a yellow man on a green platform, . **Drag** the icon to the **end of 3rd Avenue**.

What color is the large building at the end of the avenue? _____

3. **Save an image** of your view using the same "save image" protocol as before.
File > Save > Save Image
4. **Save** the file as a jpeg to your MapTEACH_Work folder.

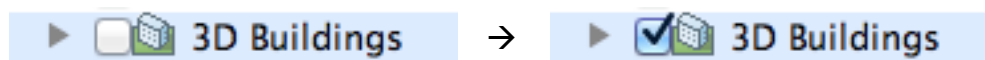
Show to your instructor after the exercise.

To go back to a bird's eye view, select "**Exit Street View**" in the upper right corner, highlighted below.



3D Buildings Layer:

Turn on the "3D Buildings" layer as shown below.



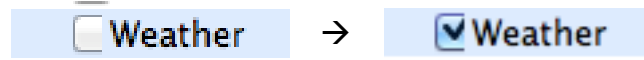
Similar to the roads layer, buildings won't appear until the view is at a reasonable elevation/perspective.

1. **Locate** Anchorage in Google Earth with the 3D building layer turned on.
2. **Save** an image using the same "save image" protocol as before.
File > Save > Save Image
3. **Save** the file as a jpeg to your MapTEACH_Work folder.

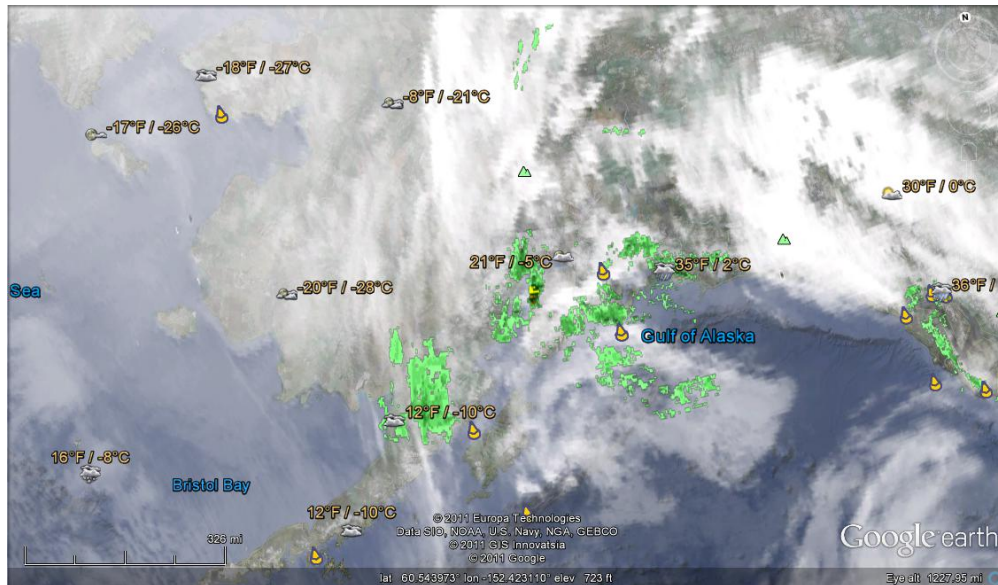
Show to your instructor after the exercise.

Weather Layer

1. **Turn on** the “**Weather**” layer as shown below



2. **Zoom out** so that you can **view** the radar throughout the state of Alaska (see below).



3. **Find your city/village** and record the current temperature. If your city/village does not have a given temperature shown, find the nearest temperature gauge.

Name of City/Village _____ Temperature _____

4. You will see ‘green’ patches and the weather clouds. The green patches represent the radar data and show regions of high levels of rainfall.
5. **Name several other areas** and **report the weather** using the current data; if there is none, report the low temperature.

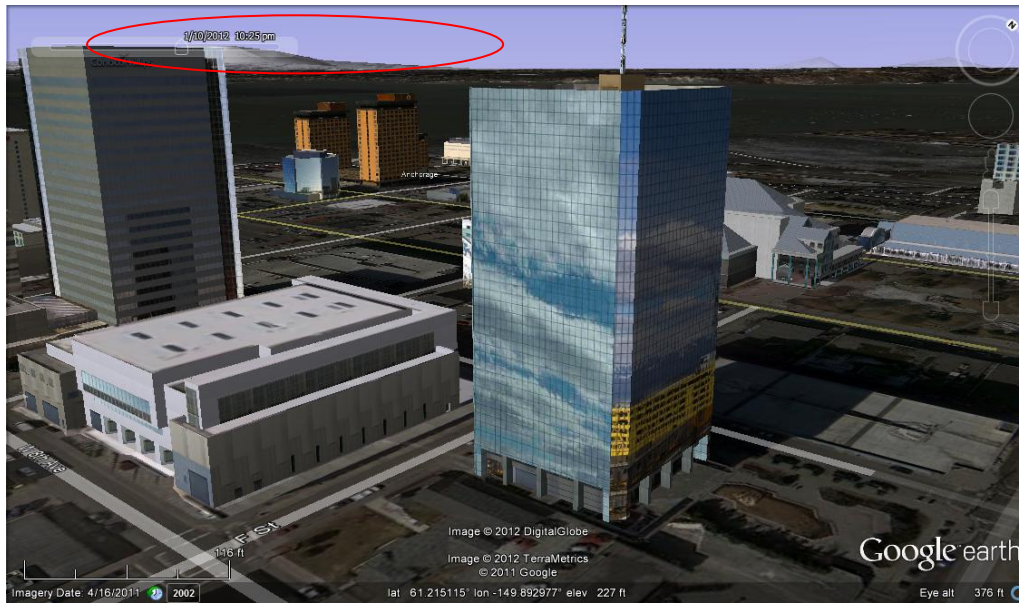
Location	Weather	Low Temperature

Diurnal Cycle

There is a function on the menu bar, which allows you to see the daily or “diurnal” cycle of the sun for the previous 24 hours. This is represented on the top of your screen by a sun rising from a cloud, as shown below.



If you select this tool, the buildings will become illuminated or dimmed depending on season and time of day (only if the 3D buildings layer is enabled). Highlighted below in the red oval is the time bar for the daylight. This might appear shaded-out at first. Move your mouse over it to move the slider.



Once complete, show your answers to your teacher.