

Submit your lab report

Lab 1 - Introduction to Google Earth

Estimated time to complete: 1 hour

GOALS

- Learn about the basic functions in Google Earth
- Understand map coordinates
- Use imagery to compare changes over time
- Share a map tour to communicate a theme

Requirements

- Microsoft Word
- A computer that can connect to the Internet
- Google Chrome web browser
- A Google account

Optional

- A computer mouse (separate from a laptop track pad) for easy map navigation

Lab Overview

There are six parts to this lab:

- Create a project and add new points
- Use map controls and save views
- Identifying points by coordinates
- Examine historical imagery
- Share your map tour on Google Earth
- Submit your lab report

Please complete each part *in order* and submit your lab report before the due date.

The lab will be graded based on these Key Performance Indicators (KPIs):

KPI	Description	Total Points Possible
//	COMPLETION OF THIS CHECKLIST	2
//	First and Last name written in the header of your lab report	2
//	Report document is professionally formatted	6
1	Produce a map of the five points of interest	10
2	Navigate camera to view 3D Model of Lincoln	10
3	Identify Points by their map coordinates	10
4	Use historical imagery to detect changes	20
5	Make a Map tour and share it	40
<hr/>		<hr/>
Total		100

Set up material

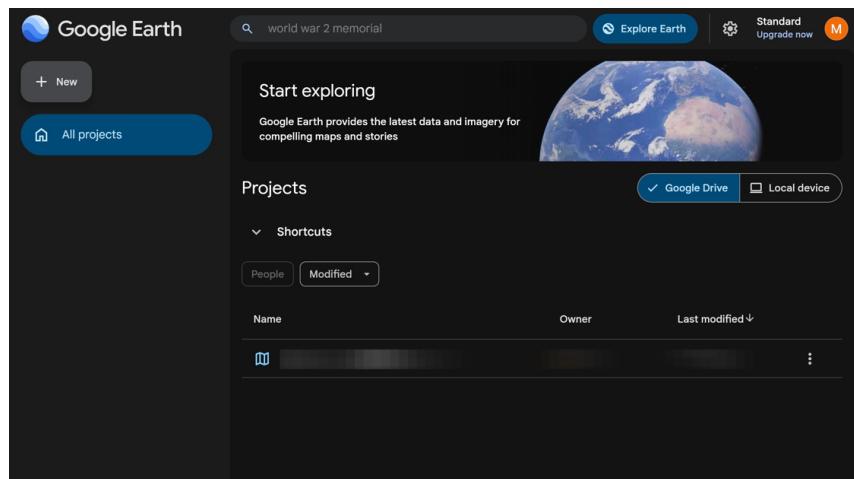
Before starting, make sure to download: - Lab01_Report.docx

Create a folder called **lab01** in your **digital-earth** folder on your computer and save the report to this folder.

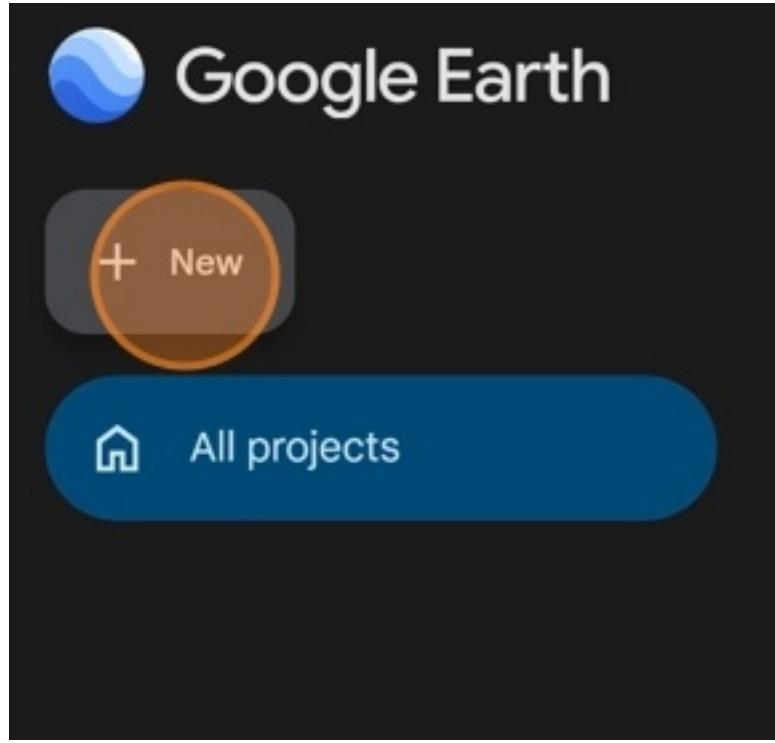
How to create a new Google Earth project

Before starting, make sure you have a Google account

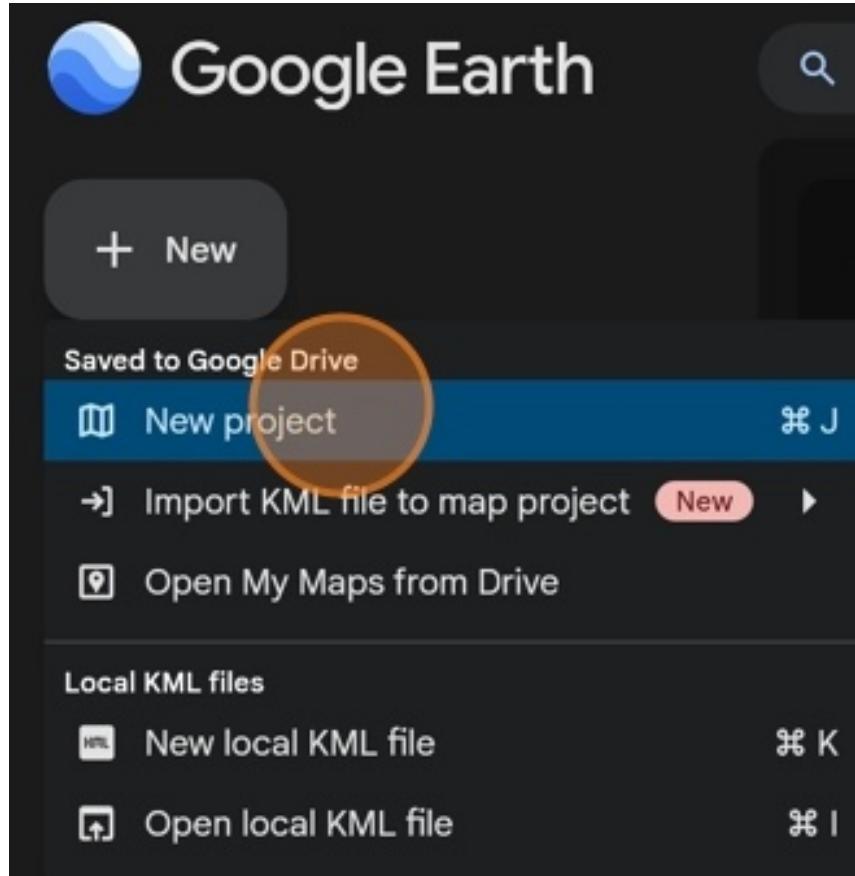
1. Navigate to https://earth.google.com/web{:_blank}. Sign in to your Google account if you haven't already.



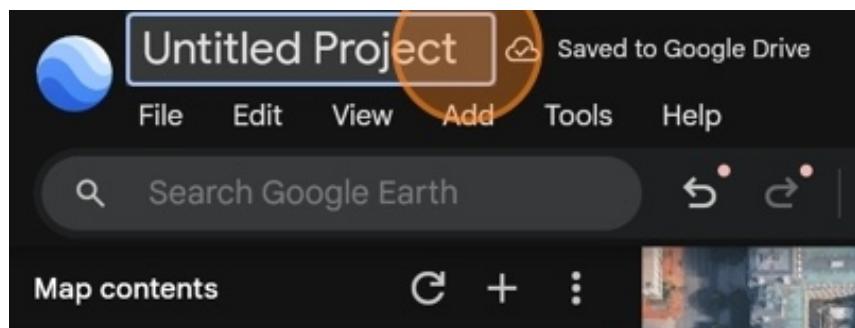
2. Click **New**



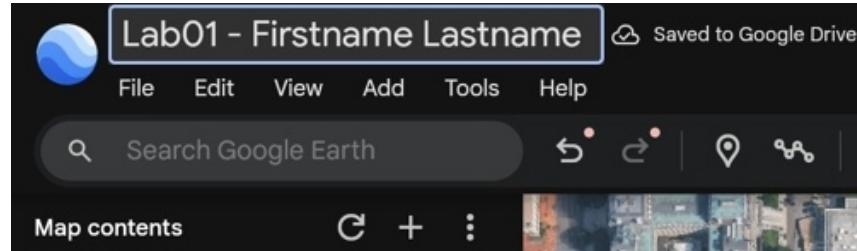
3. Click New project



4. Click the title field.

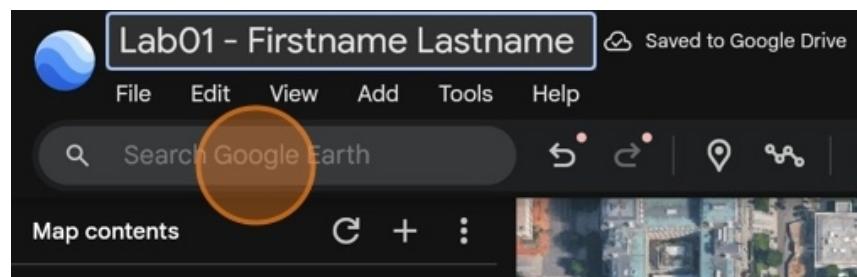


5. Type "Lab01 - Firstname Lastname". Replace *Firstname* and *Lastname* with your first name and last name.

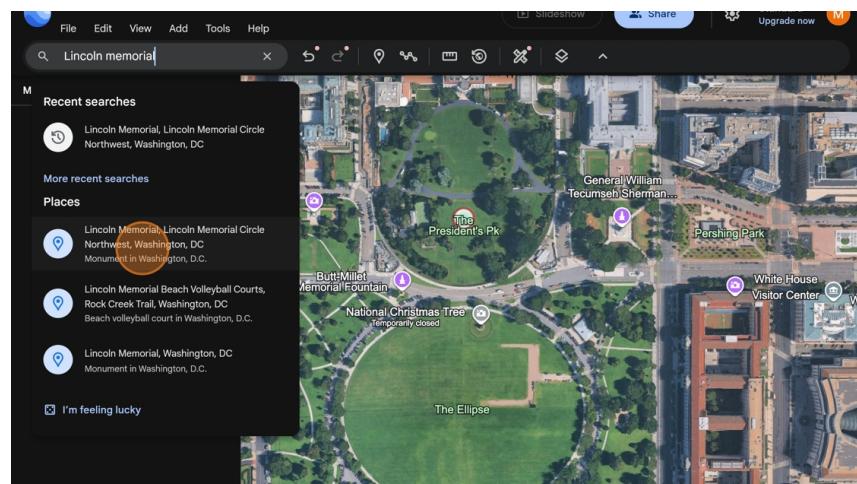


How to add points to your project

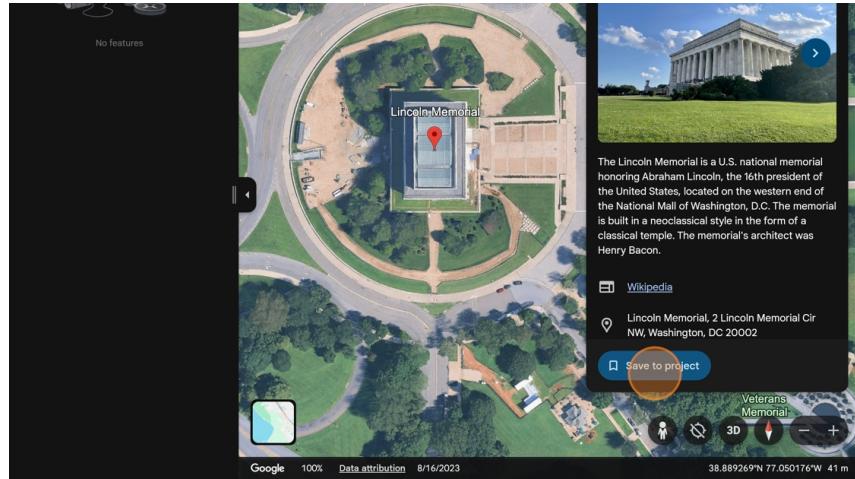
1. Click search Google Earth.



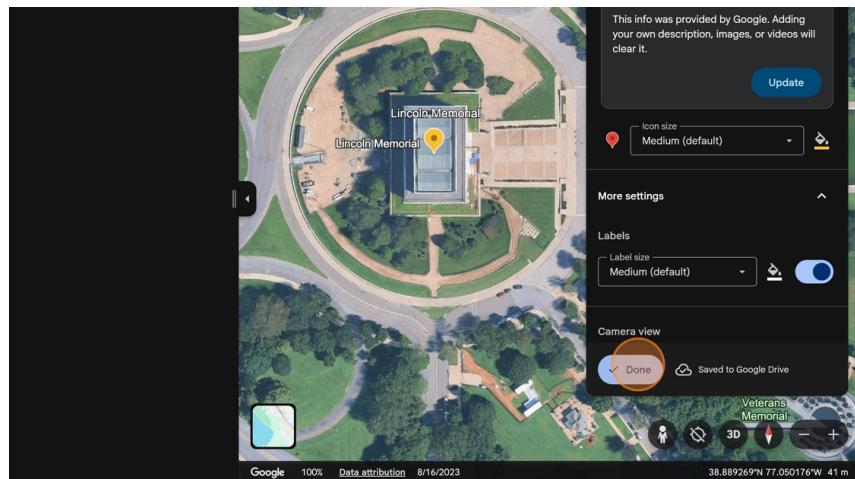
2. Type “Lincoln Memorial” and click the Monument in Washington, D.C.



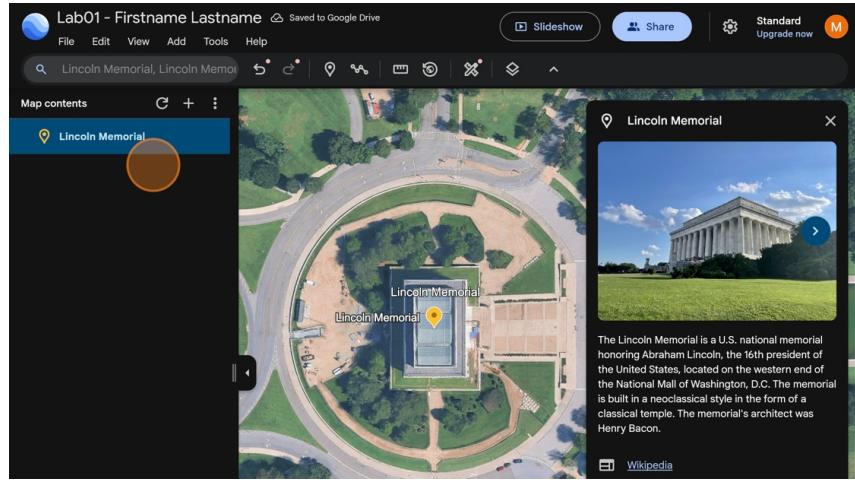
3. Click Save to project.



4. Click “Done” to save the point information.



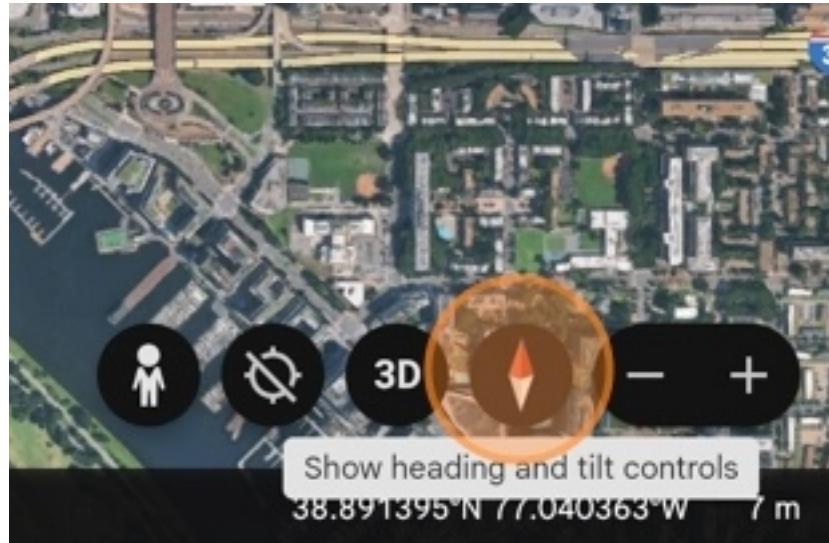
5. Now the Lincoln Memorial has been added to your map project



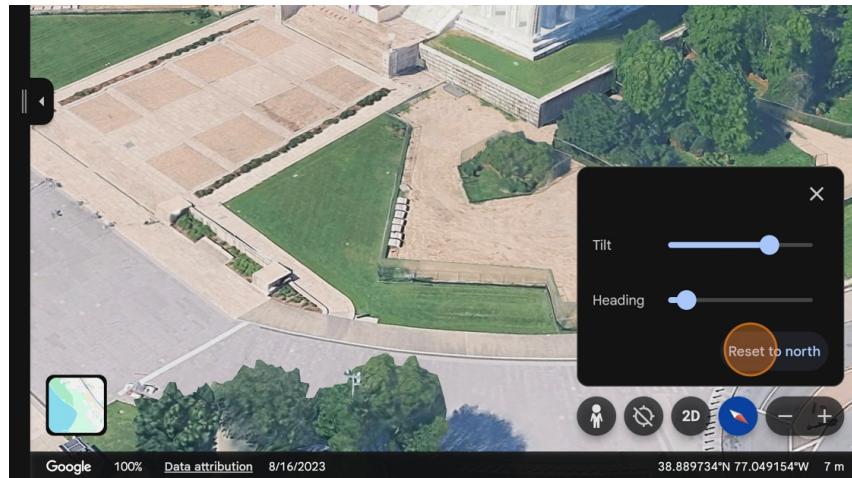
6. Add these five points located in Washington, DC to your map project:
 - Lincoln Memorial
 - The White House
 - Washington Monument
 - United States Capitol
 - Thomas Jefferson Memorial
7. Take a screenshot of your **map view** (not the Map Contents) showing the locations of all five points and add it to your report.

How to use map controls

1. Click the compass icon to show heading and tilt controls

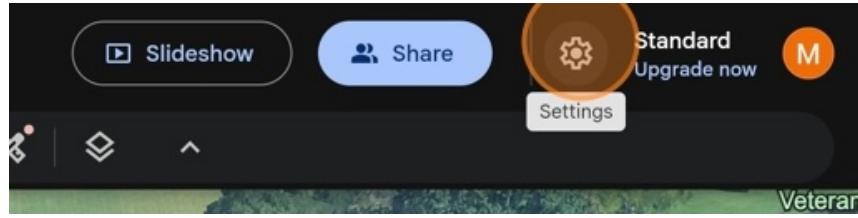


2. Drag the Heading and Tilt bars to adjust the camera's heading and tilt.
3. Scroll with your mouse to zoom in and out.
4. Click **Reset to north** to set the Heading to 0°

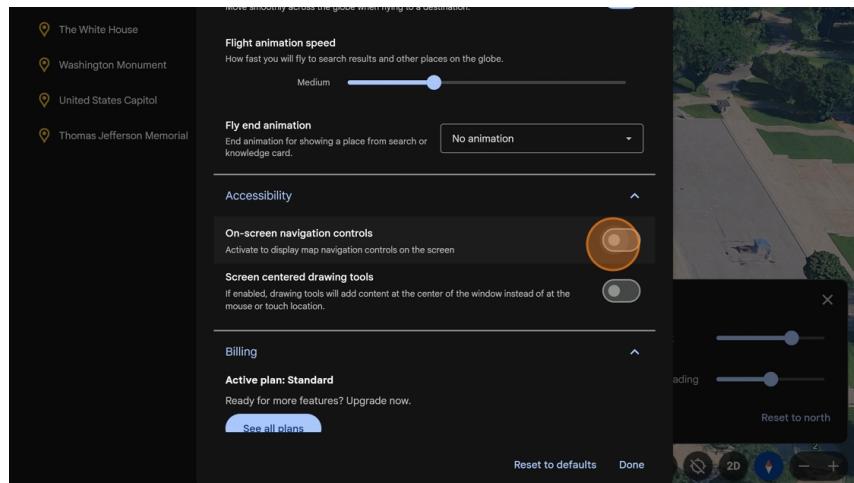


If you can't see the 3D models of buildings and trees, check that 3D buildings are turned on by going to View > Base map settings > 3D Buildings and make sure the toggle is on.

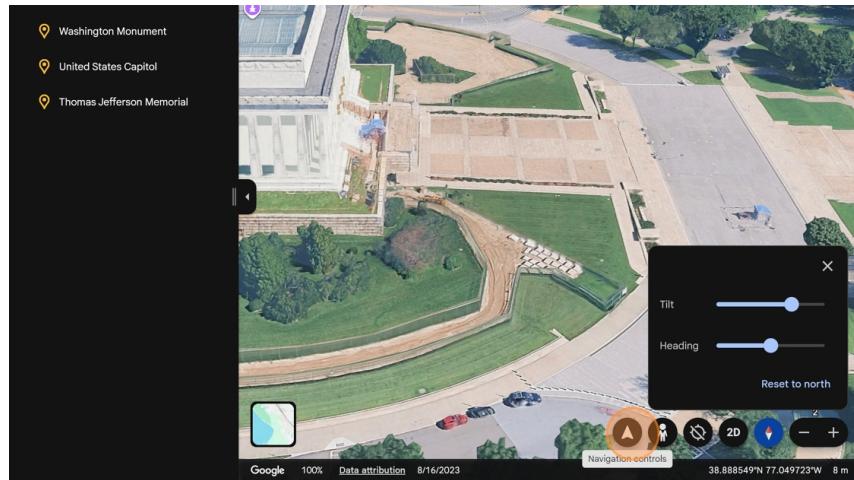
5. Click the **Settings** gear icon.



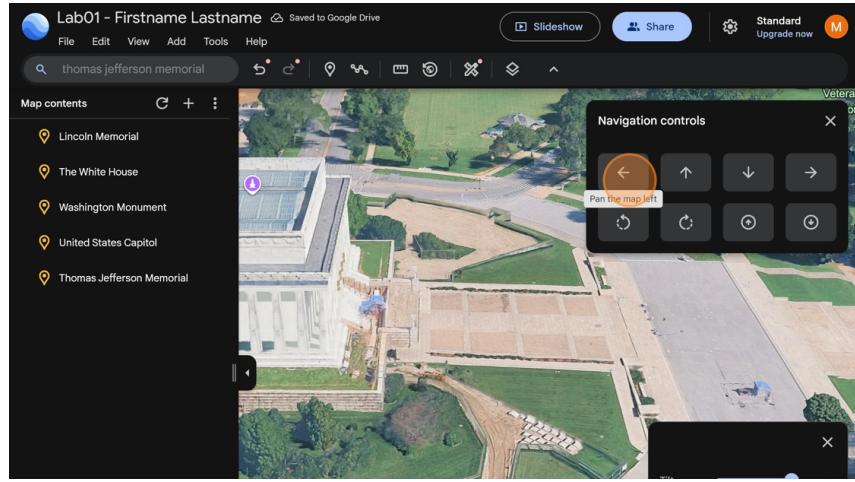
6. Turn on **On-screen navigation controls**, then click **Done**



7. Now, there's a navigation controls option on our screen. **Click it** to open the Nav Control Panel.

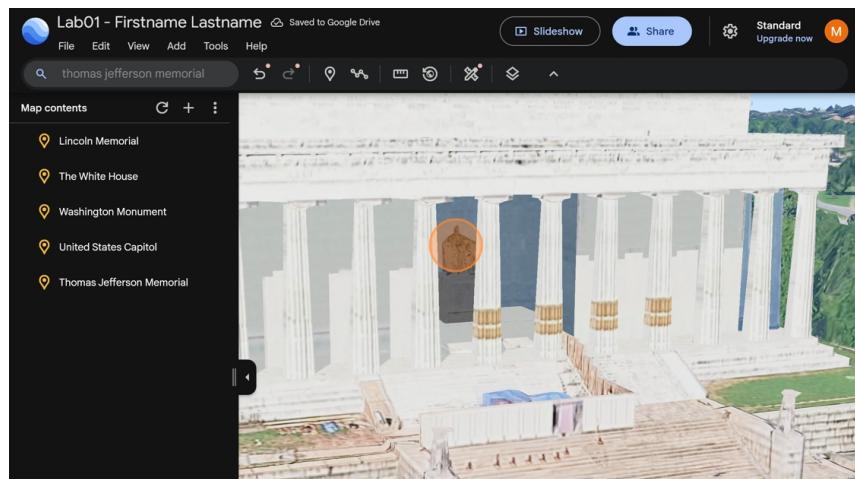


8. Practice using the controls to navigate the map.



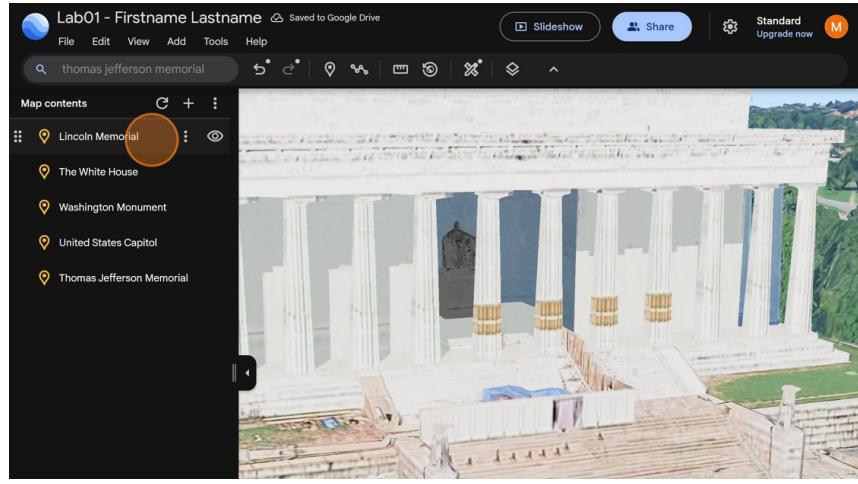
Tip! To control the camera without on-screen controls, hold the **control (ctrl)** key and drag your mouse. You can tilt the map by holding the **shift** key and dragging your mouse

9. Navigate the map so that you can see the 3D model of Abraham Lincoln inside the memorial.

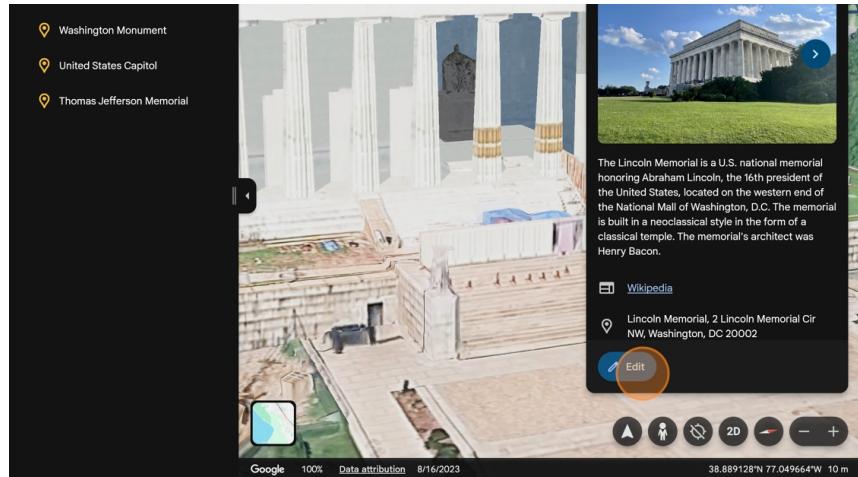


How to save a camera view to a point

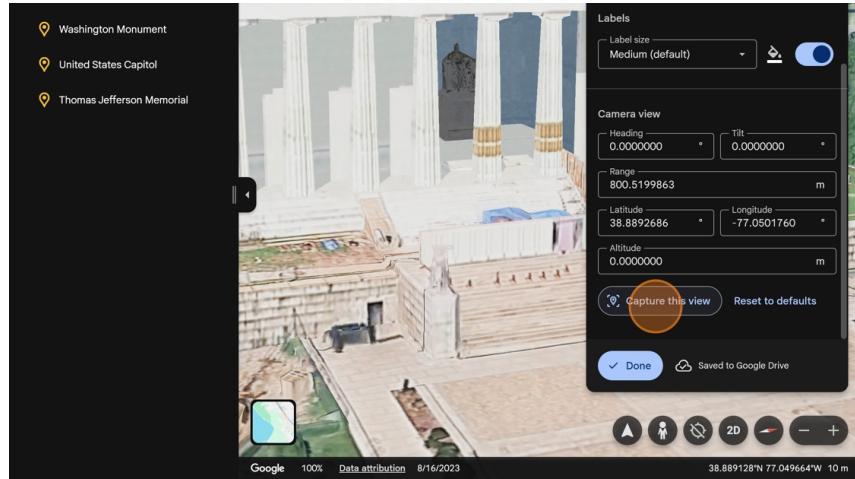
1. With your camera still pointed at the inside of the memorial, click the Lincoln Memorial point in the Map Contents.



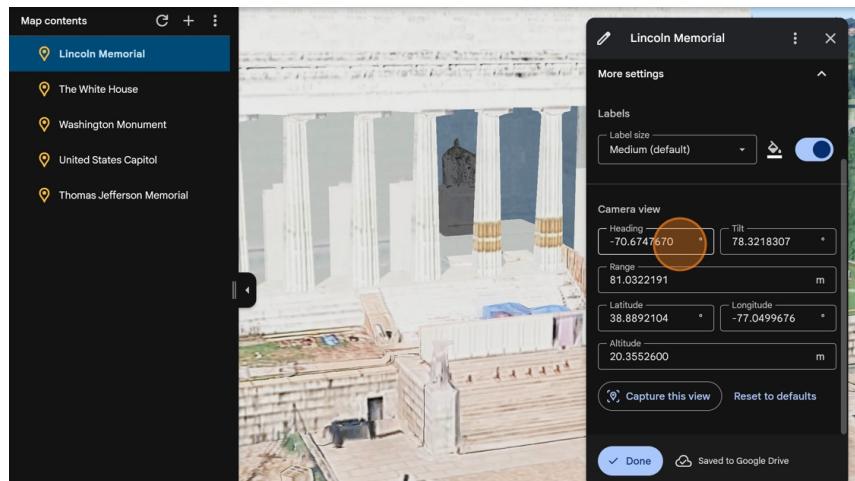
2. Click **Edit**.



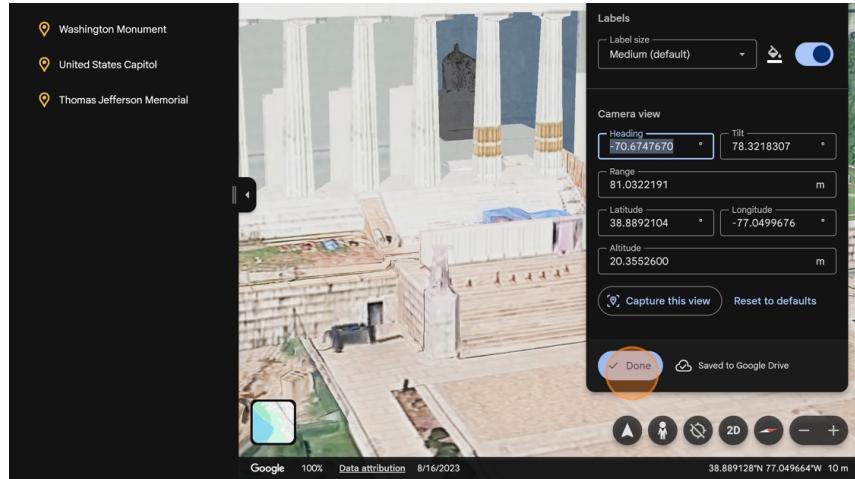
3. Scroll down in the options and then click **capture this view**.



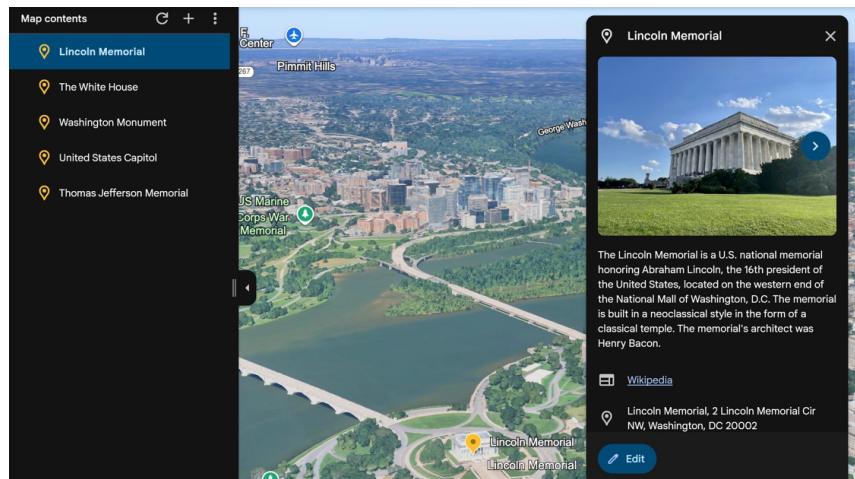
4. Notice the camera information has changed.



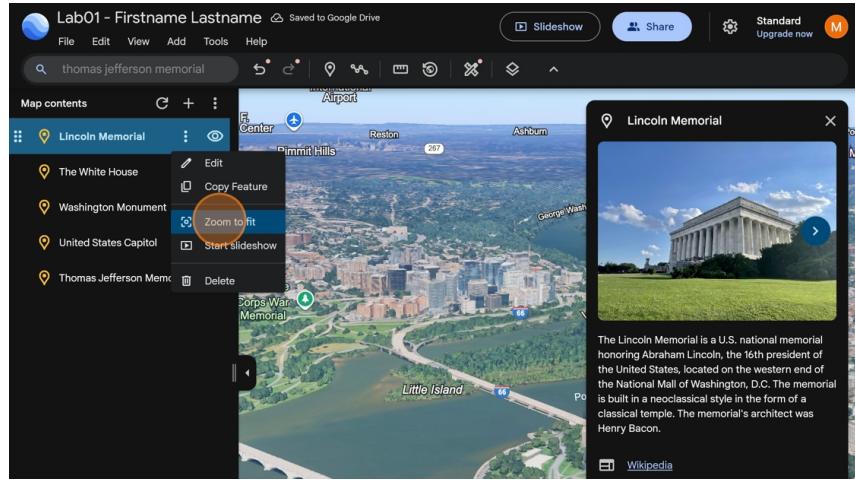
5. Click **done** to save the view



- Now zoom out to look at the wider city.



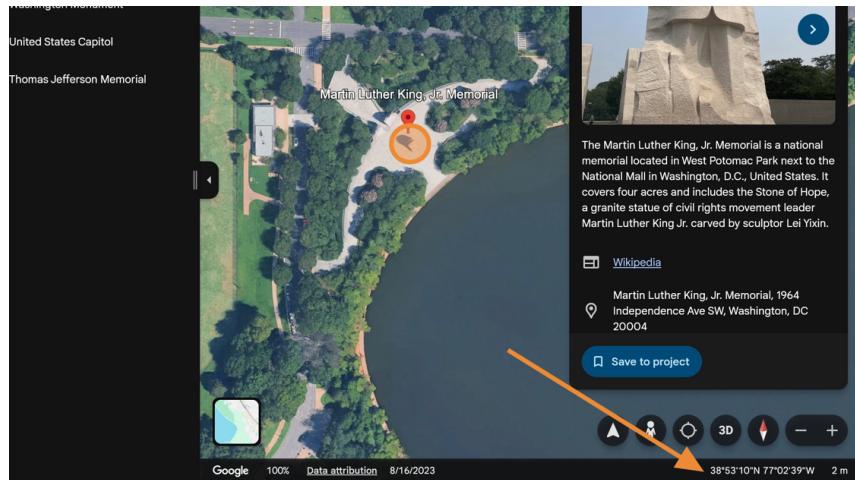
- Click the three dots next to the Lincoln Memorial point in the contents menu, and then click **zoom to fit**. The camera pans back to our original view that we saved just a minute ago.



- Take a screenshot of the Lincoln Memorial 3D model so that you can see the model of the statue inside. Paste this image in your lab report.

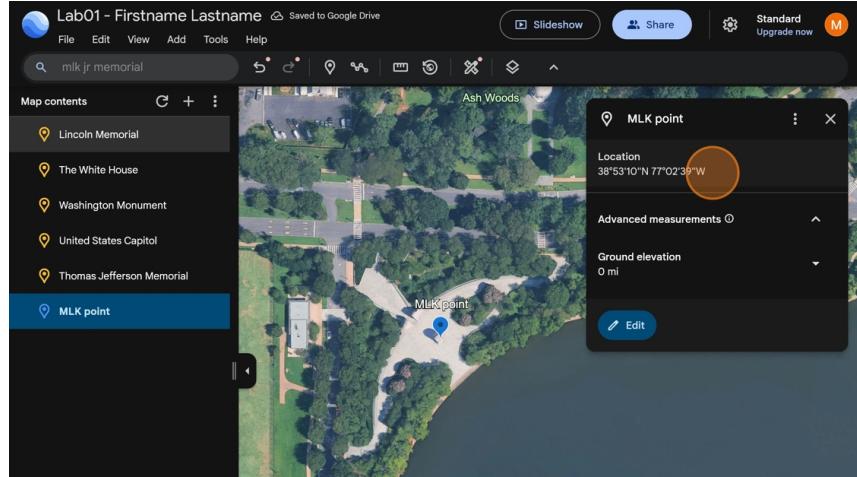
How to find the coordinates of a selected point

- In the search bar of your Google Earth project, search for **MLK Jr Memorial**
- When we hover over the memorial, we can see the coordinates in the bottom right of the screen.



- Click the **add place mark** icon (map pin icon) in the toolbar. Place the pin as close the monument as possible.
- Name your point and click done.

5. Click the location coordinates to copy them to your clipboard



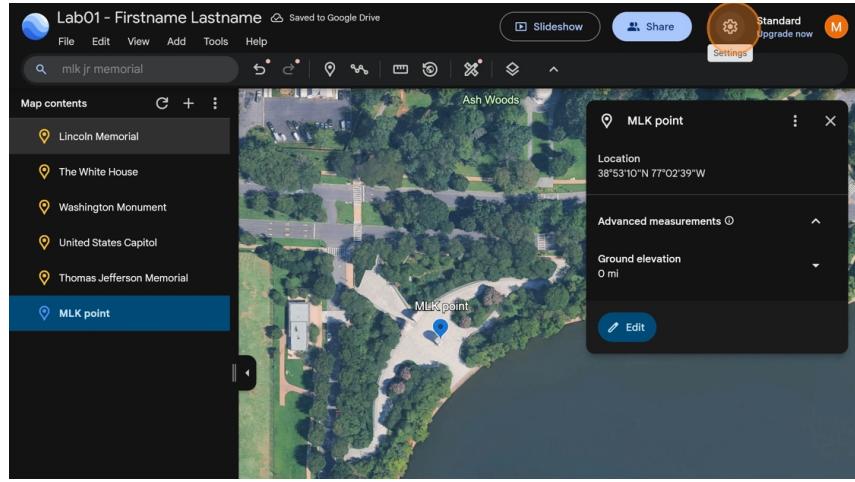
Pay Attention! Google Earth, like most navigational map systems, lists coordinates in the order of Latitude (y-value), then Longitude (x-value)

6. Add the Latitude and Longitude of the **MLK Jr. Memorial** and the **Watergate Hotel** to your lab report, using **Degrees, minutes, and seconds notation**

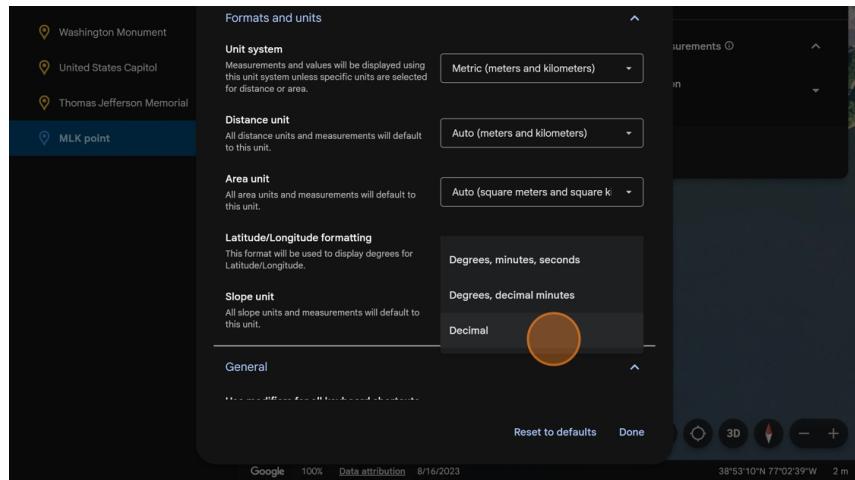
Watch Out! Before you **save** the point, the coordinates displayed in the edit menu will always be displayed in **decimal degrees**, regardless of your preferred units you have selected in settings.

How to change your preferred units

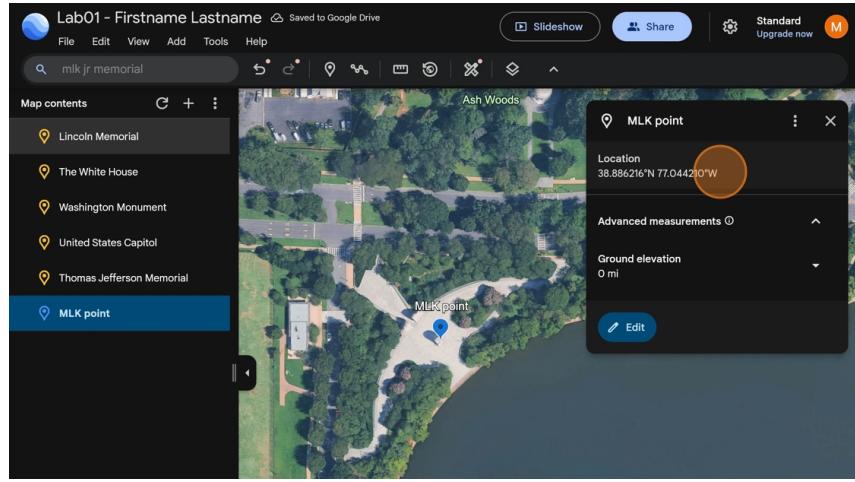
1. Click the settings gear.



2. Scroll down to Latitude/Longitude formatting and select **Decimal**. Click **Done** to save this setting. Now points will be displayed in **Decimal Degrees**.



3. Close and reopen the point to reset the coordinate display.



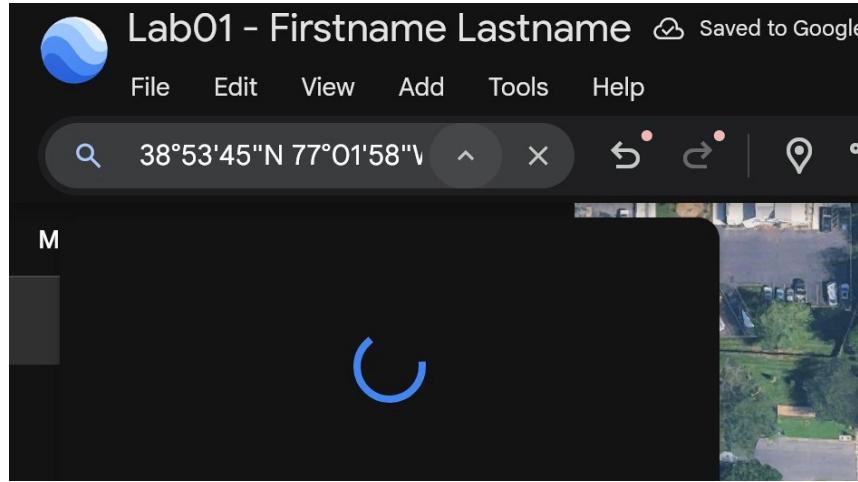
Pay attention! Google Earth displays decimal degrees with cardinal directions instead of signs (+/-). Remember that **North and East** correspond to **positive (+) signs** and **South and West** correspond to **negative signs (-)**

Tip! If you can't remember which sign corresponds with a direction, click the **Edit** button to see the raw values of the point coordinates which use +/- signs.

4. Add the coordinates to your lab report for the **World War II memorial** and the **Pentagon** in signed decimal degrees

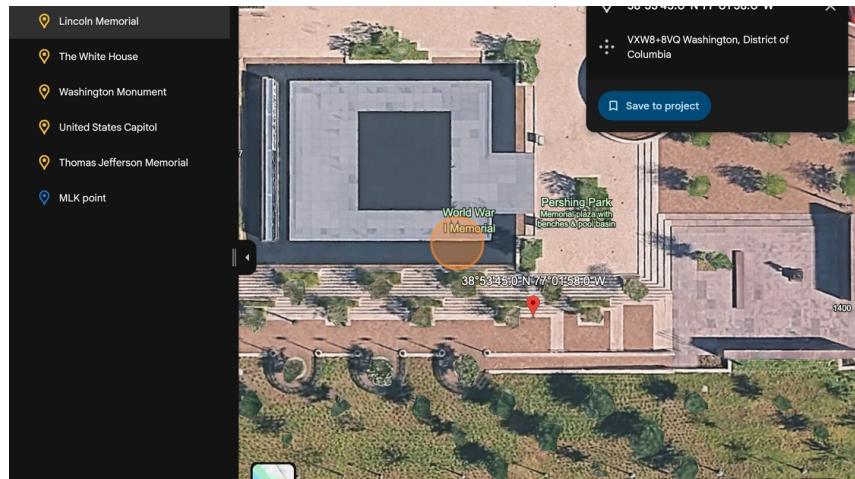
How to find a point using coordinates

1. You can also search directly by coordinates. Try searching **38°53'45"N 77°01'58"W**



Tip! If you are using a Mac, you can easily type the ° symbol by pressing **option+shift+8** at the same time on your keyboard.

2. Notice that Google Earth plots the point for us. We can see the nearest place name is the **World War I Memorial**



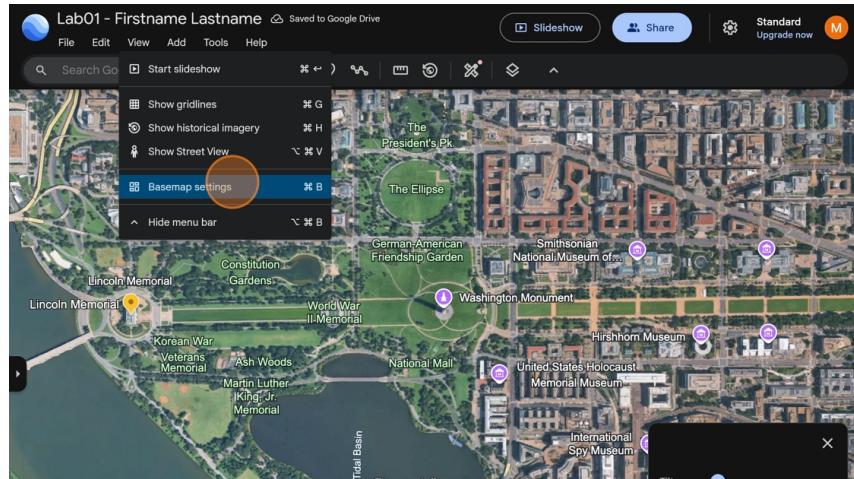
3. Add the place names for the below coordinates to your lab report:

- $38^{\circ}53'45"N\ 77^{\circ}01'58"W$
- $+38.887929^{\circ}\ -77.012898^{\circ}$

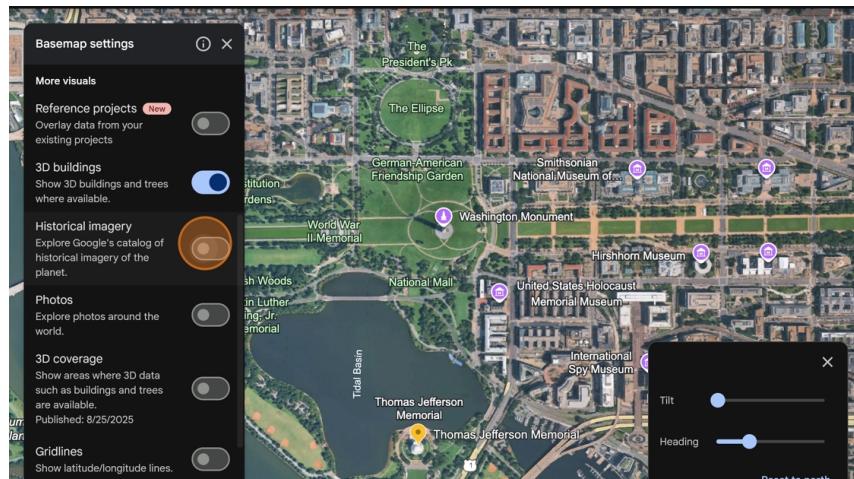
Both points are in the **Washington D.C. area**. If you end up in another part of the world, you may have copied the points incorrectly or in the reverse order.

How to Examine historical imagery

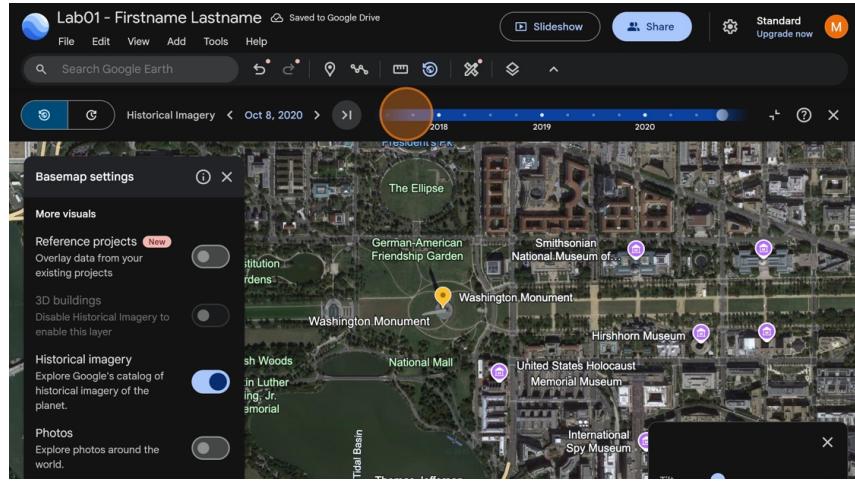
1. Click View then Base map settings



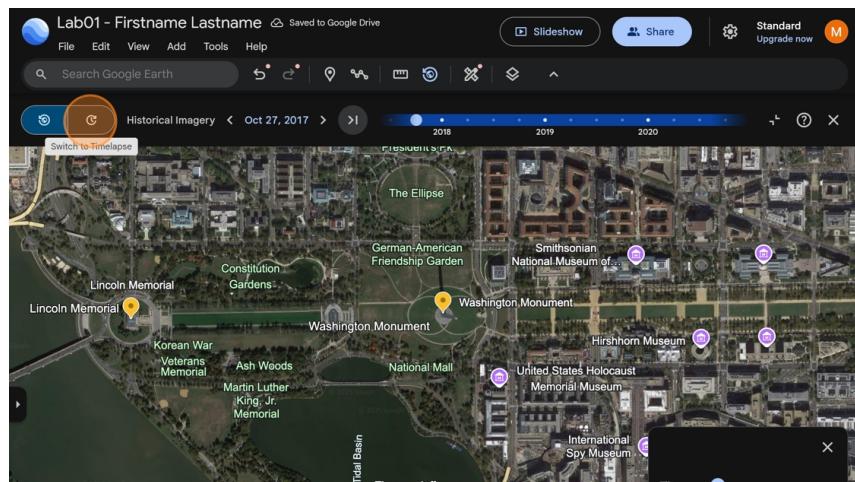
2. Turn on Historical imagery



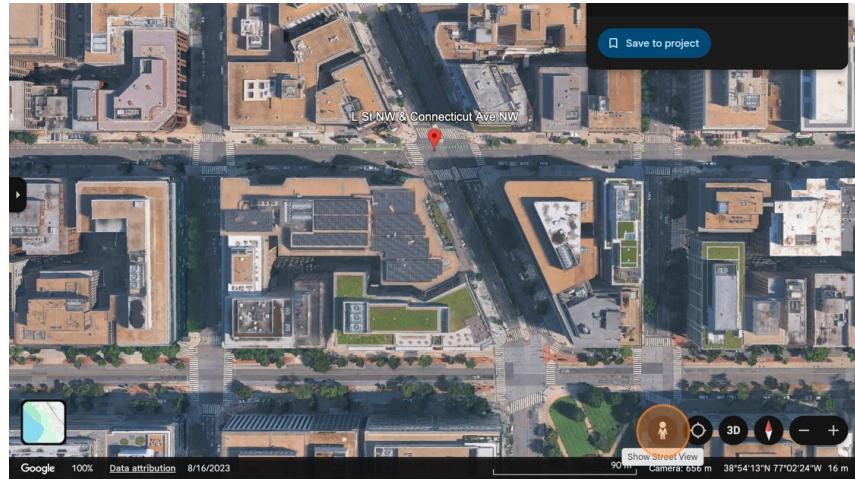
3. Use the timeline to select satellite images from different dates



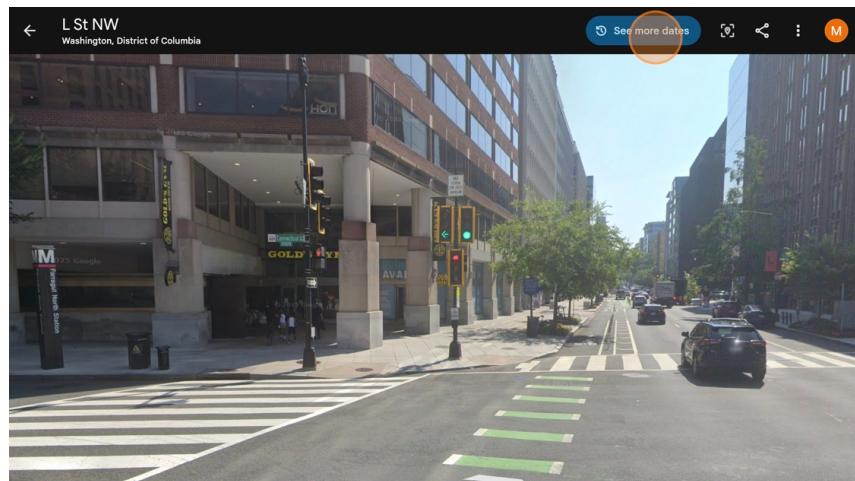
4. Click the **time lapse** button to automatically scroll through all historical images



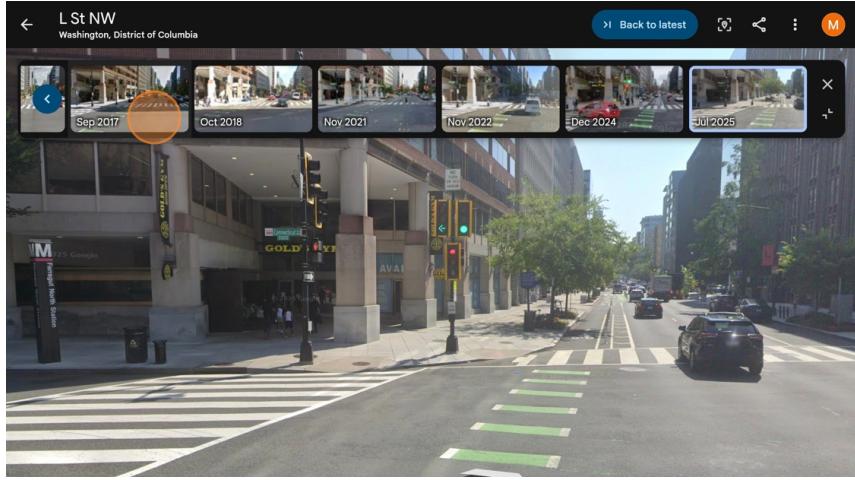
5. In the Google Earth search bar, type “Connecticut ave and L st”
6. **Turn on Street View** by clicking the person icon in the bottom right corner and select a highlighted location somewhere in the intersection.



7. Briefly explore the street view here. Then click **See more dates**



8. Explore how this area changed over time by selecting different Street View collection dates.

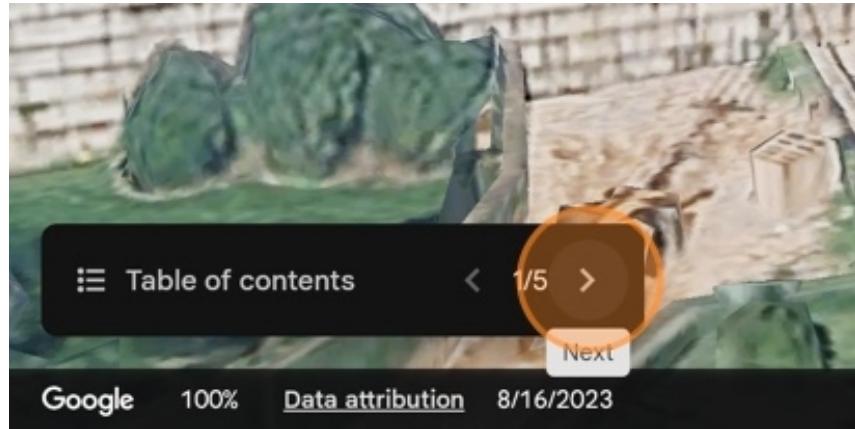


9. Show one angle of the street view of the intersection of L St. and Connecticut Ave. for 2021 and 2024. Briefly describe one or two changes you notice between the two images.

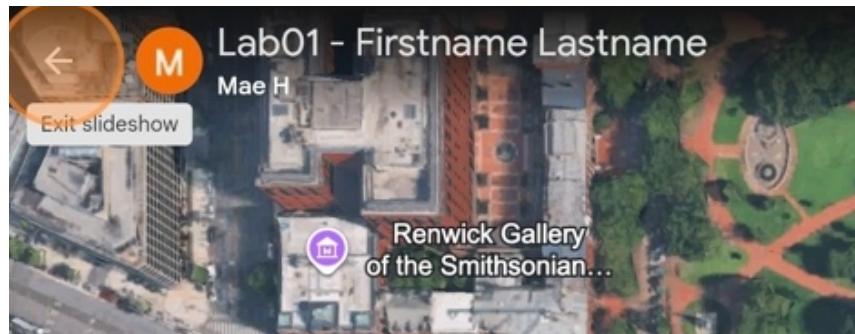
If you don't see any photos from 2021 or 2024, try moving around the intersection until these dates become visible

How to Share Your Map Tour on Google Earth

1. Make a **new** Google Earth Project
2. In an area different than Washington DC, **save 5 to 6 points** to your project that all fit a shared theme.
3. Name your project with an appropriate title that describes your collection of points (example: "Coffee shops I love", "Best vacation spots", "world capitals" etc.)
You should **NOT** use the same points used in this example. Each student should submit a different map tour based on their own points they selected
4. Make sure all the points you want to share are visible, and any points you don't want to share are removed from the **Map Contents**
5. Click **Slideshow** to see how your map tour will appear when shared.
6. The camera automatically pans to the last saved viewpoint for each point in **Map Contents**. Use the arrow buttons to scroll through each point.



7. Click the back arrow to return to your project



8. Click Share



9. Change the General access to “Anyone with the link” can view

10. Click “Copy link” to save the access link to your clipboard and paste this link in your lab report.

If you do not change the access permissions, no one else will be able to see your map tour, even with access to the link. It's always good to check your work by pasting the access link into a different browser where you are not logged in to Google, to see if you can access the project map tour.

Check your work

1. Review the checklist on your lab report to make sure you have completed each item and have placed your initials next to each completed item. *If*

there are items you were unable to complete, do not place your initials next to that item

2. Review the assignment rubric on eLearning to make sure you understand how the assignment will be graded

Upload & submit

1. Upload all required documents in the same submission. **Only the last submission will be graded:**
 - Lab01_Report.docx

Your lab report must be submitted as a .docx file. DO NOT submit a .pages file or a .pdf file
2. Submit the assignment
3. Check your email to make sure you received the submission confirmation receipt. Do not delete your confirmation receipt.