Google Earth Voyager

Version 6.0

User Guide

1. Introduction

1.1. What is it?

Google Earth Voyager (GEV) is a program for automatically building a Google Earth cache file for a specified geographic area. GEV does this by controlling Google Earth, making it systematically scan over the area you want to cache.

1.2. How does it work?

Google Earth caches what you see on the screen. This means that the size, resolution and selected layers is saved in a file on your hard disk. The next time you look at the same area, Google Earth will first check to see if it can retrieve the data from the cache in order to save time and bandwidth. This also means you can use Google Earth offline as long as the area you want to look at is available in the cache.

You can scan an area into the cache by using your mouse to manually move the viewpoint in Google Earth over the area. Unfortunately this is not very practical when you want to scan larger areas with a detailed zoom-level. This is where GEV comes in: it can tell Google Earth to move the screen viewpoint around in a systematic fashion.

GE V can do this in three ways:

1. *Area*
   scans over a rectangle defined by the GPS coordinates of the North-Western-most point as well as the width and height.

2. *Multiple Areas*
   A list of areas defined as above.

3. *Scattered Points*
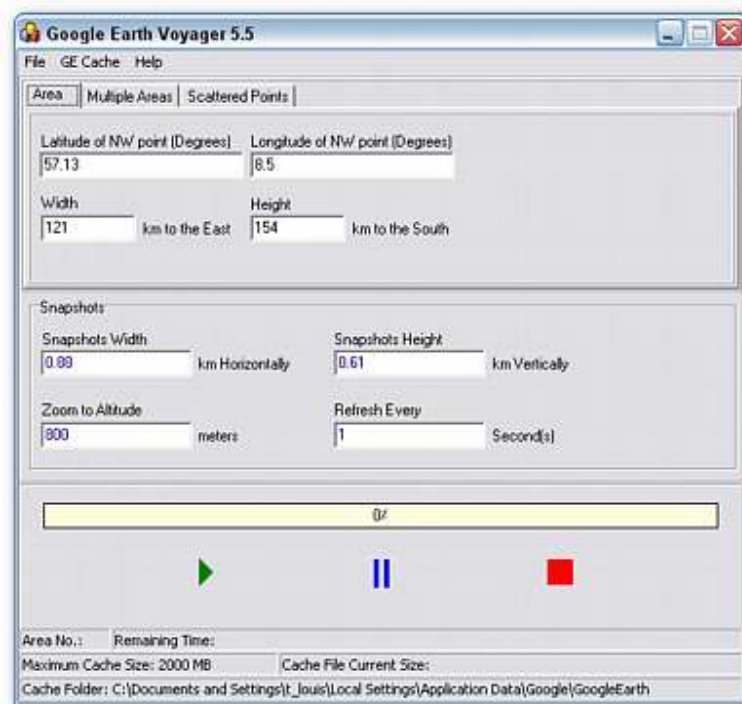   A list of GPS coordinates.

2. Installing GEV

GEV consists of the program itself (GEVoyager.exe), the data file used to integrate with Google Earth (GEVData.kml), and this user guide (GEVUG.pdf).

To install the software, create a directory on your computer and place the unzipped files in the directory. As an example, this could be C:\Program Files\GEV. You can now run GEV from this directory.

TIP FOR EASY PROGRAM ACCESS:

You may also create a shortcut to the executable file and place the shortcut on the desktop, on the Quick Launch toolbar, or in the Windows Start Menu . This way you will have easier access to starting the application.
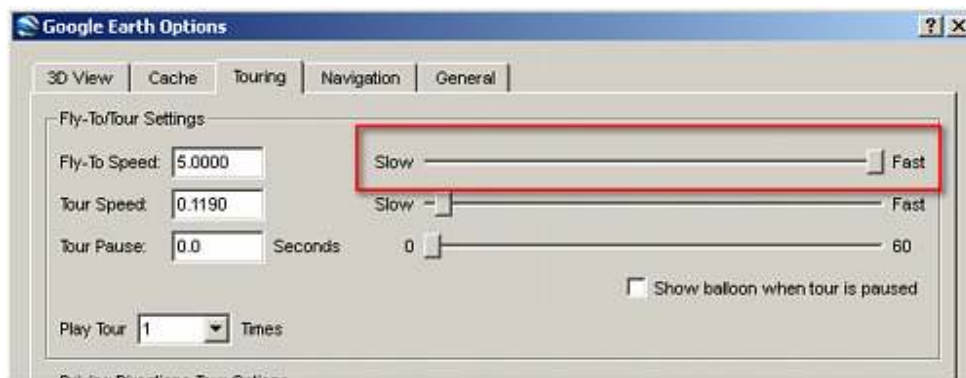
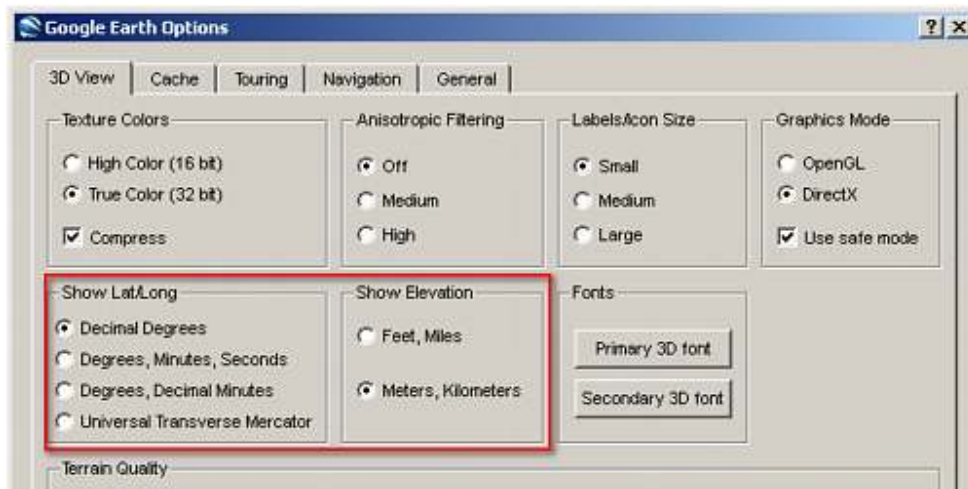When you start the application you will see this main window:

3. Preparing Google Earth

When you first want to use GEV, you have to go through the following steps in order to prepare Google Earth to work with GEV:
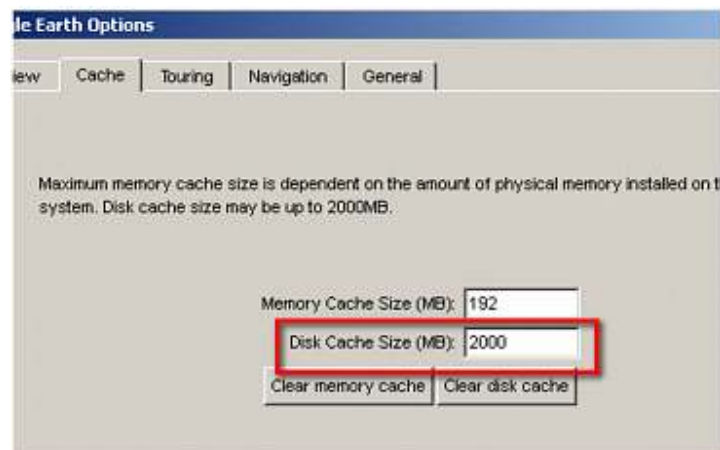
1. Start Google Earth.

2. Go to the 'Tools' menu and select 'Options'.

3. In the Options window that appears you can now do the following:

    a. Select the tab called 'Touring' and set the 'Fly-To Speed' to the maximum possible setting (move slider all the way to 'Fast').
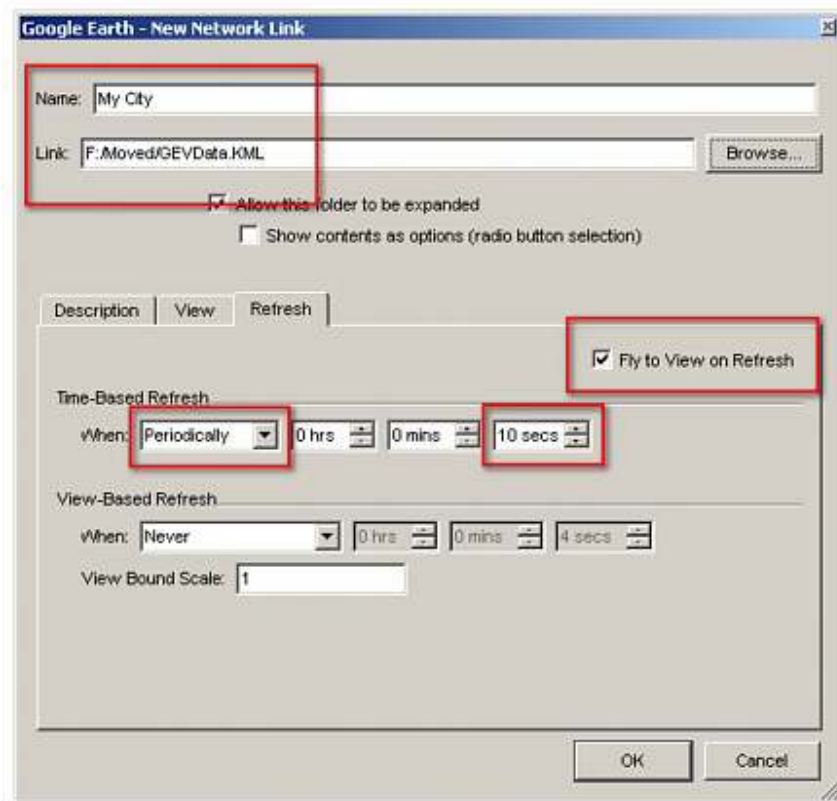

    b. Select the tab called '3D View". Set the 'Show Lat/Long' to Decimal Degrees and set 'Show Elevation' to Meters, Kilometers. Note that this step is optional but makes it easier since GEV uses these units of measurement.
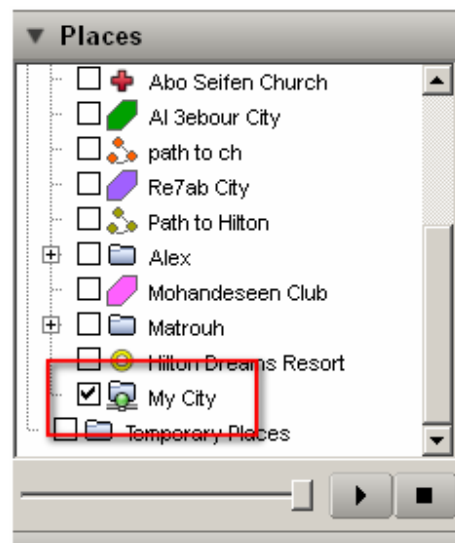
   c. Select the tab called 'Cache'. Set the 'Disk Cache Size (MB)' to 2000, which is the current maximum size.

4. Go to the 'Add' menu and select 'Network Link'. In the New Network Link window that appears you can now do the following:

    a. Provide a Name such as "GEV Link" or "My City" (optional).

    b. Find the Link by browsing for a file called GEVData.KML. This file can be found in the same directory as the GEV program.

    c. In the 'Refresh' tab, check the option 'Fly to View on Refresh'.

    d. Select a time-based refresh called 'Periodically' in the drop-down list.

    e. Set the refresh time to 10 seconds (see tip below).

    f. Press OK.

5. In Google Earth's sidebar under 'Places' you should now have a new item with the name you gave it before ("My City" in the example). Make sure that this item is selected before you start a scan. Unselect it when you are not using GEV.

TIP FOR SETTING REFRESH TIME:

The refresh time (10 seconds selected above) is the time that Google Earth will stay over one location before it moves on to the next one. If you halve the refresh time it will halve the scan time. On the other hand you want to select a refresh time that is long enough to allow Google Earth to retrieve the satellite imagery before the snapshot moves on to another location. If it moves too fast Google Earth will not have time to get all the data downloaded. You should of course try to get the best possible internet access while you do the scan. In addition to that, try to make note of how long it takes for Google Earth to retrieve all details in an image. It should be a screen view that is not yet in the cache and it should be at the level of detail (altitude) that you want to scan. If, for example, you can see that Google Earth can retrieve all details within 4 seconds you can then set the refresh rate at 5 seconds to be sure.

4. Scanning with GEV
4.1 Scanning a single area

Latitude of NW point (Degrees)   Longitude of NW point (Degrees)
57.13   8.5

Width   Height
121   km to the East   154   km to the South

1. Start Google Earth. Make sure the 'My City' item is selected under 'Places' in the sidebar. Activate the Layers you want to have included in the scan (such as Roads, Borders and Labels, Terrain, and selected layers with relevant points of interest).

2. Start GEV.

3. Define snapshot width, height, altitude and refresh time (see tips below).

4. Define the area you want to scan (see tips below).

5. Start scanning by pressing 'Start Voyage'. You will see that Google Earth is now refreshing the snapshots automatically.

6. To pause the scanning, press 'Pause'. To resume the scanning again, press 'Resume Voyage'. If you want to stop the scanning at any time, press 'Stop' and the program will stop and clear all values.

TIP FOR DEFINING SNAPSHOTS:

Defining the refresh rate: Set the 'Refresh Every' field to the same refresh rate as the network link inside Google Earth.

Defining the snapshot altitude: In Google Earth, go to the area that you want to scan and determine at what maximum height you still get all the detail you need. If you want the highest level of detail available then you should try to go closer and closer to the ground untill you can see that Google Earth no longer downloads additional detail.

Defining the snapshot width and height: GE Voyager's snapshots are really a definition of how much it moves the view each time. If it moves too little each time, the scan will take unnecessarily long to complete due to the many overlaps. If it moves too much each time, the scan will jump over areas that are then not included in the cache. To find the optimal size, first go the altitude you selected before. Go to the 'Tools' menu and select 'Ruler'. Use the ruler tool to measure the width and height of the area that is visible on your screen (note that this depends on your screen size and resolution). Now set the snapshot width and height to be a little less than this measure. As an example, at an altitude of around 800 meters you might measure a width of 0,45 km and a height of 0,35 km. If you set the snapshot width to 0,4 km and 0,3 km you will have a minimal overlap of 0,05 km on each side.

TIP FOR DEFINING AREA:

An 'Area' is a rectangle defined by the GPS coordinates of the top left (North-Western) corner, a width and a height. The Latitude and Longitude of the NW corner are entered and shown in the decimal degree format. It can be practical to set Google Earth to use the same format so you can read off coordinates in Google Earth and directly enter them in GE Voyager. In Google Earth you can see the latitude and longitude either in the status bar at the bottom of the screen (menu: View/Status Bar) or by turning on the grid (menu: View/Grid). When entering decimal degrees, note that GE Voyager uses the same decimal format (point or comma) as defined in the regional and language options of your operating system.

4.2 Scanning multiple areas

Scanning multiple areas resembles the scanning of a single area with the one exception that you define the data in a tabular format. Each row of data in the screenshot below represents an area to be scanned.

The snapshot definition is the same for any number of areas you define.

4.3 Scanning scattered points

In order to scan a number of scattered points you just define each point by its GPS coordinates (longitude and latitude). Each line in the screenshot below represents a single point to be scanned.
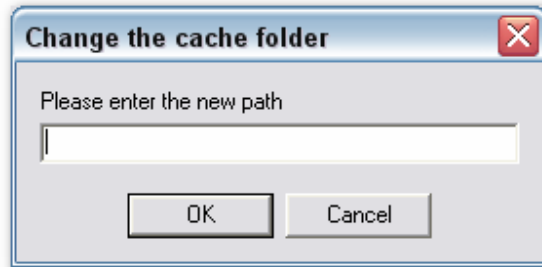

The snapshot definition is the same for any number of points you define.

5. Viewing the cache files

Go to the 'GE Cache' menu in GE Voyager and select 'Open Cache folder'. A file explorer window will open in the directory that contains Google Earth's cache files.
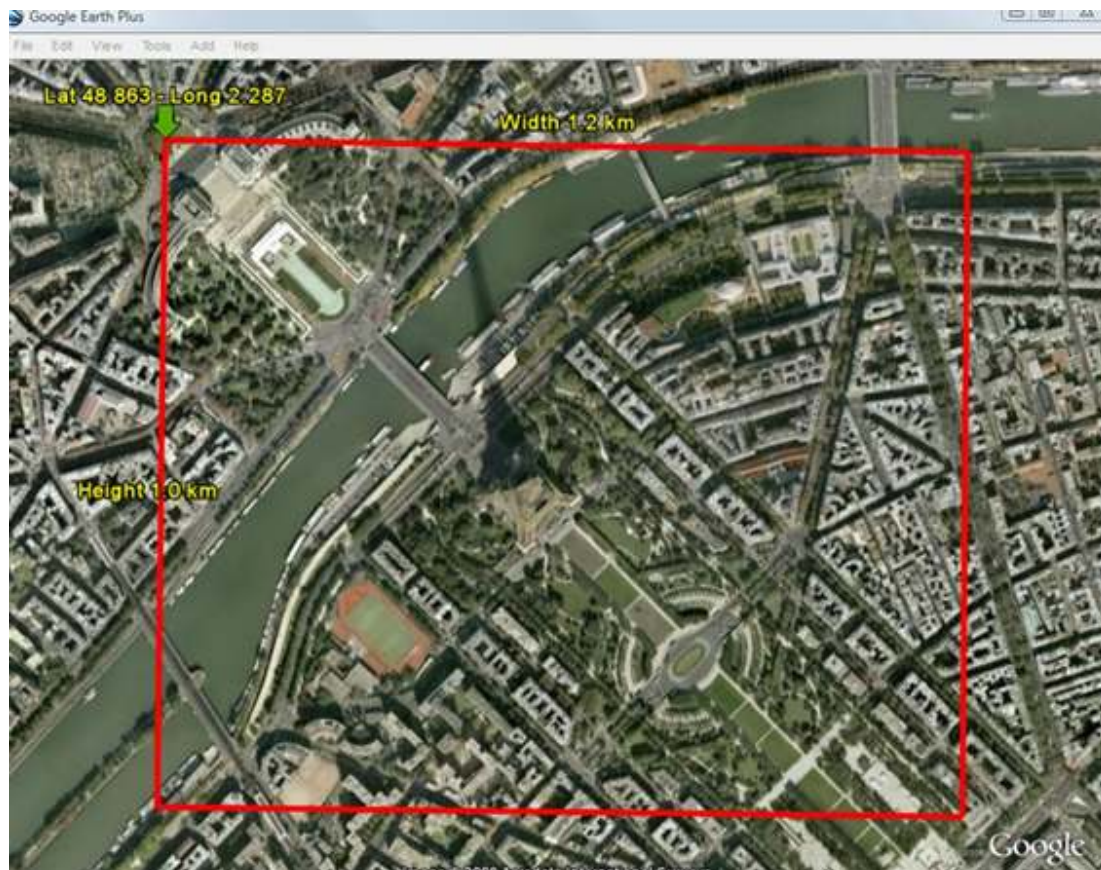
6. Changing the Cache Folder

Go to the 'GE Cache' menu in GE Voyager and select 'Change Cache folder'. A new dialog will appear to take the new path for the cache folder. Please use this functionality with caution because it may affect the caching procedure.

7. Example

Let's suppose that we want to scan the area immediately around the Eiffel Tower, at maximum detail. The red rectangle on the screenshot below shows the area we would like to scan.

The top left corner (North-Western-most corner) has the coordinates; latitude 48.863 and longitude 2.287. Using the ruler tool we can measure that the width of the area we wish to scan is 1.2 km (towards East) and the height is 1.0 km (towards South).

- **Latitude**:   48.863 degrees
- **Longitude**:   2.287 degrees
- **Area Width**:   1.2 km to the East
- **Area Height**:   1.0 km to the South

Next we want to determine what altitude we want to scan from. The area has a high resolution so it looks like we have to go somewhere between 150-250 meters to get all details included. We decide on scanning from an altitude of 200 meters.

- **Zoom to Altitude**:   200 meters

Finally we can determine a good width and height for GEV snapshots: We zoom Google Earth to the chosen altitude (around 200 meters) and maximize the window. Then, using the ruler tool, we can measure the height and width of the area shown on the screen. We measure the width to 0.23 km and the height to 0.17 km. To ensure slightly overlapping snapshots we set this to 0.22 and 0.16 km respectively.

- **Snapshots Width**:   0.22 km horizontally
- **Snapshots Height**:   0.16 km vertically

With a fast internet connection we chose to set the refresh rate to 5 seconds.

- **Refresh Every**:   5 seconds

Now that GEV is configured we make sure Google Earth is ready to perform the voyage. We set the refresh rate to 5 seconds for the network link. And we make sure that we have selected the network link, and the Layers that we want to include in the scan. We can now press Start Voyage in GEV and run the scan.

TIP FOR CALCULATING DURATION:

In the above example we scan a total area of (1200 x 1000) m2. Each snapshot has an area of (220 x 160) m2 so the entire area should be covered by (1200 x 1000) / (220 x 160) = about 35 snapshots. As each snapshot takes 5 seconds, the total duration of the scan will be approximately (35 x 5) seconds, or close to 3 minutes.

8. Donating to Google Earth Voyager 6.0

You have unlimited license of GEV 6.0. However if you like it and you want to make a donation for this software we will be happy to have your donation. Users are welcome to make a gift to Minerva to help towards development costs. Donations are taken in US$.

To get much detail about how to donate, please visit the following link:

http://www.geocities.com/tamatimo.geo/software/donation.html