

Steps for data acquisition- tutorial

This document provides a step-by-step tutorial for downloading pre- and post-event landslide image pairs from Google Earth. By following the tutorial, readers should be able to obtain landslide image pairs similar to those used in our study.

The corresponding records for the identified space-visible landslides based on USGS landslide inventory are provided in the spreadsheet ‘Coordinates for images used in figures.csv.’ The spreadsheet stored key information for each landslide record, such as location, event date, and corresponding ecoregion.

- The spreadsheet can be imported into Google Earth using ‘Data Import Wizard’ by clicking ‘Import’ under ‘File.’ After importing the spreadsheet in Data Import Wizard, click ‘Next’ and go to the next page (see Figure 1).

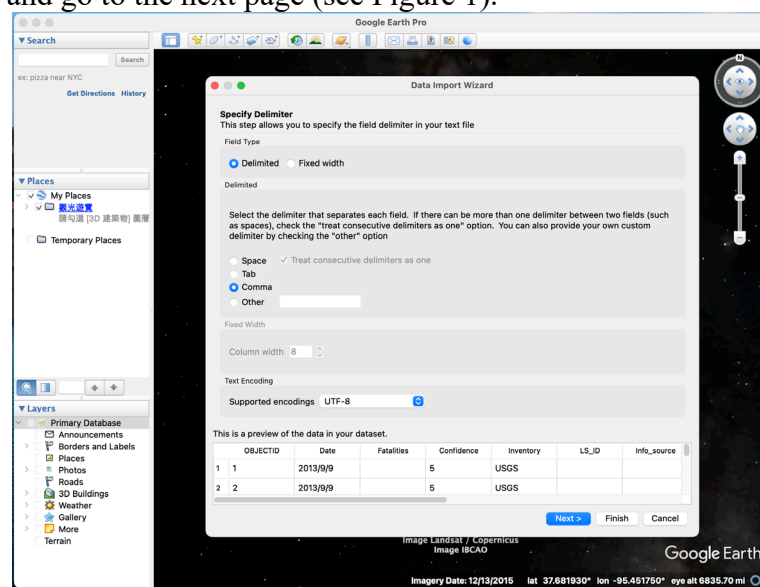


Figure 1.

- On this page, select ‘Latitude’ for the latitude field and ‘Longitude’ for the longitude field, then click ‘Next’ (see Figure 2).

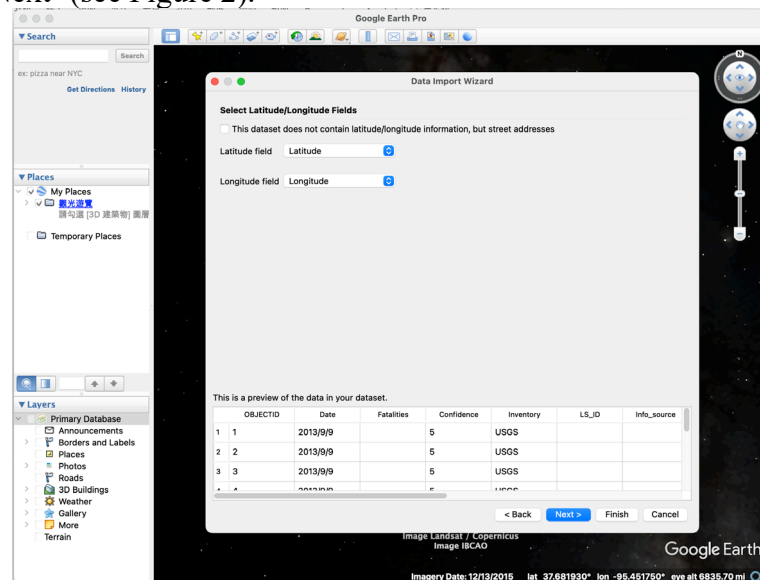


Figure 2.

- This page asks you to select the data type for each column; typically, you can use the default setting and skip this step by clicking ‘Finish’ (see Figure 3). A pop-up window will show up after you have clicked ‘Next.’ In the pop-up window, click ‘Yes’ to create a style template (see Figure 4).

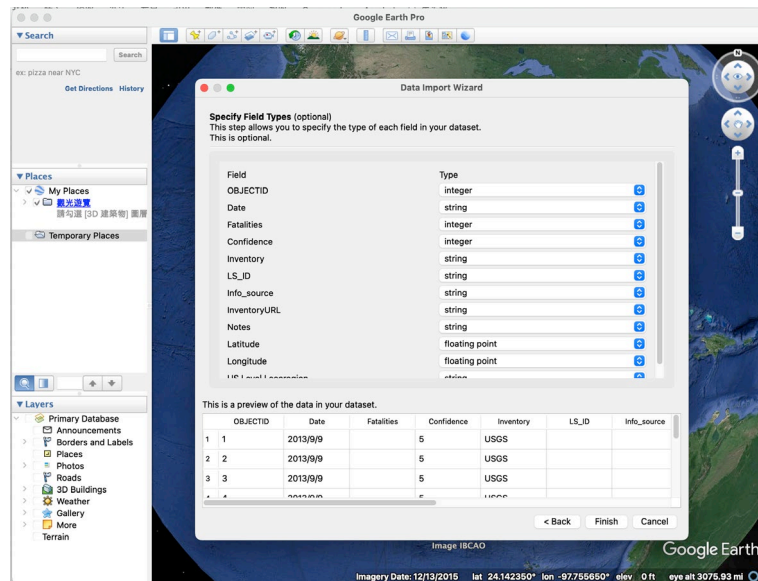


Figure 3.

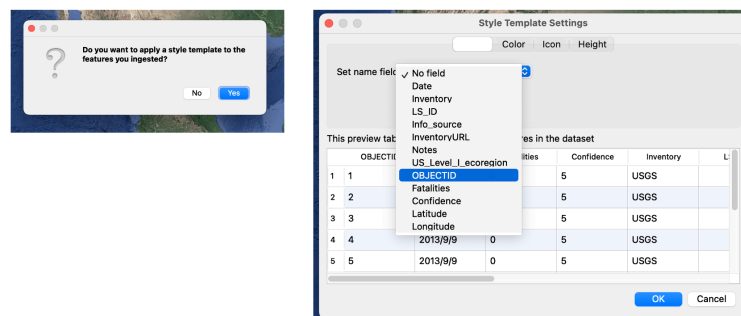
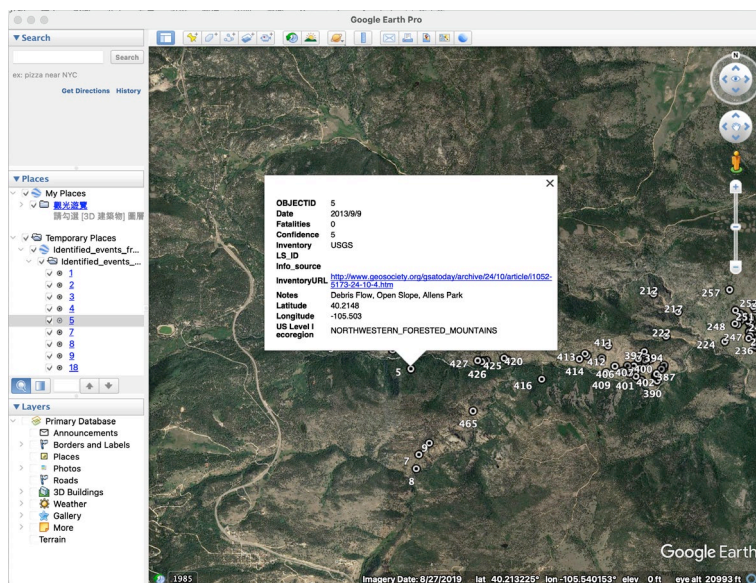
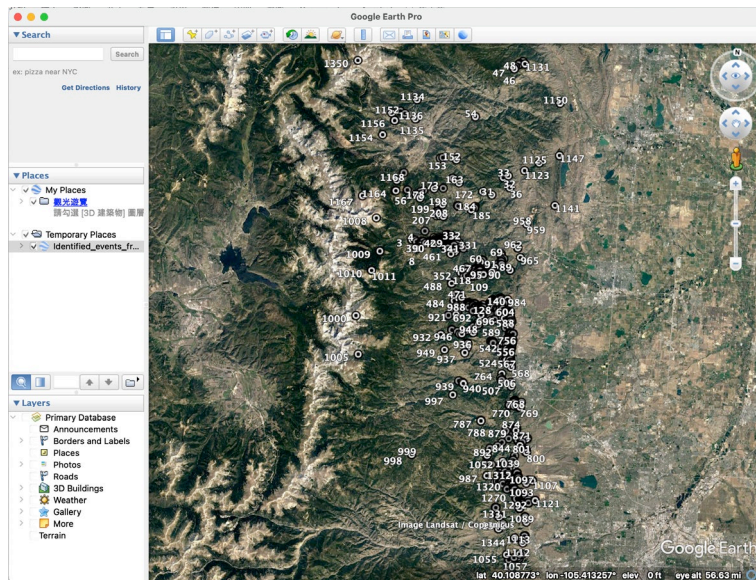


Figure 4.

- If all procedures are correct, you should be able to see imported data points in Google Earth (see Figure 5). Click any point, and a window showing its information will appear (see Figure 6).



- In the window, you can see the date of the event. Use the time-lapse function in Google Earth (see Figure 7) to see if there are images that spot the events around the date. You can find an appropriate view of landslides by zooming in/out using scroll wheel. Remember to click 'R' on the keyboard to reset the view angle after each time you zoom in or out so that the current view will always face north.

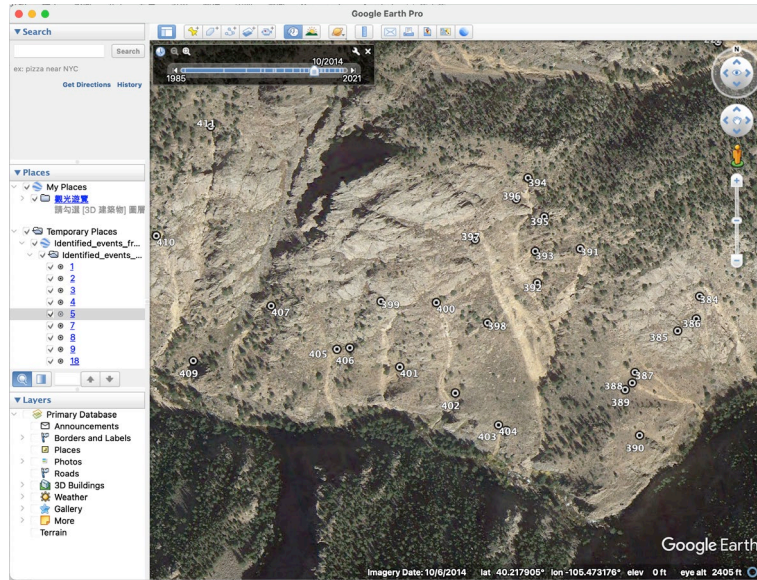


Figure 7.

- Before you save the image, be sure to unselect the location points on the map and unselect all the layers. Also, remove map elements and set scaling to 1% in map options to remove any watermarks and labels from the image (see Figure 8). Please select the current resolution to avoid Google Earth cropping the current view when saving the image.

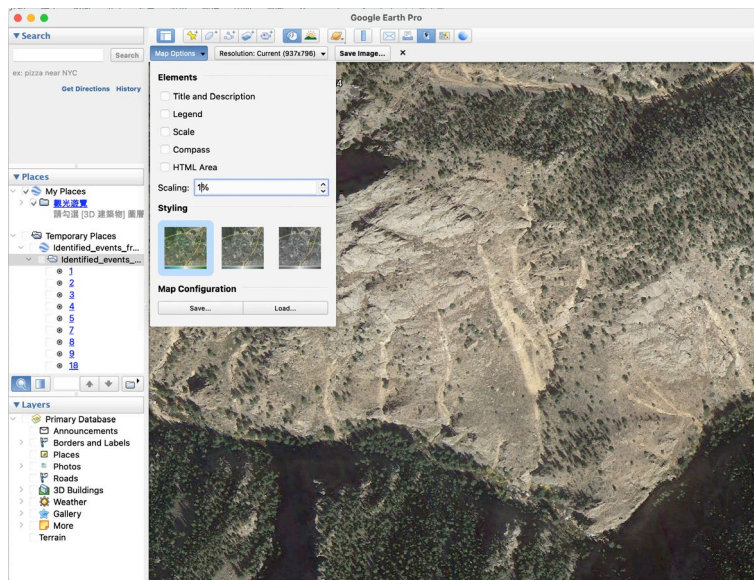


Figure 9.

- The naming format for images is as follows:
 GE_LAT(LL)_LONG(LL)_LAT(UR)_LONG(UR)_LS_ID_imageDate_PREorPOST
 The meaning of each entry is as follows:
 GE: Google Earth.
 LAT(LL): latitude for the lower left corner
 LONG(LL): longitude for the lower left corner
 LAT(UR): latitude for the upper right corner
 LONG(UR): longitude for the upper right corner
 LS_ID: landslide id for the landslide event from the spreadsheet
 imageDate: data of the image from Google Earth

PRE: pre-event image

POST: post-event image

For example, the two image names below correspond to one landslide image pair

GE_43.309023_-122.966736_43.310900_-122.963295_LS_354_US_20110729_POST.jpg

GE_43.309023_-122.966736_43.310900_-122.963295_LS_354_US_20070730_PRE.jpg

- Note that we need to record image coordinates for filenames manually; this can be done using the image overlay function by setting the bounding box for the image overlay to cover the current view (see Figure 10).

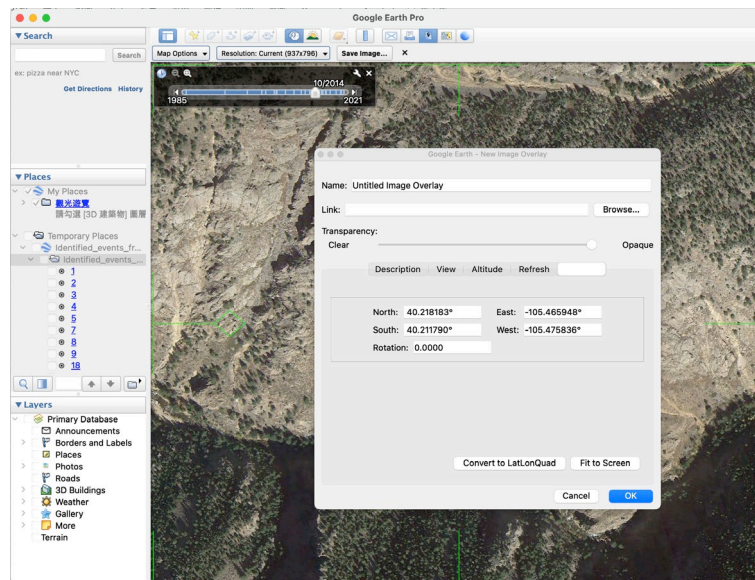


Figure 10.