UC LA   DIGITAL HUMANITIES

HOW TO USE
GOOGLE EARTH TIMESPAN

INTRODUCTION

Often times in Cultural Digital Mapping, the topic of study has associated dates. That is, the 3-D spatial information is also tied to the 4th dimension of time. A common example would be a picture of a map, which has been applied as an object layer.

Google Earth enables you to apply time periods to a project's layers. A timeline then appears at the top of the window with a range that corresponds to your data. The slider is fairly intuitive, inserting/removing layers in accordance with the desired time range.

Time spans are applied to layers via the .kml file, which is what references all of a project's information.

NOTE: .kml files contain text and shape information, but do not save images (the original file is simply called). This requires text-editing the .kml code, as seen below.

STEPS

1. MODIFYING .KML
      a. Locate file
      b. Use a text editor
      c. Insert code

2. View Timeline
   a. Controls
      b. Settings

MODIFYING .KML

.kml is the the file type associated with Google Earth's encoding. This human-readable document contains a set of features (placemarks, images, polygons, 3D models, textual descriptions). One such feature, which is hidden in Google Earth's user interface, is Time Span.

LOCATE FILE

.kml - If this is a newly created project, you most likely saved and named it logically

.kmz - If the project is downloaded, stored on a network, or contains images, it may be in a compressed .kmz file. If this is the case, you must first use a decompressor (e.g. WinZip) to extract the default-named "doc.kml".
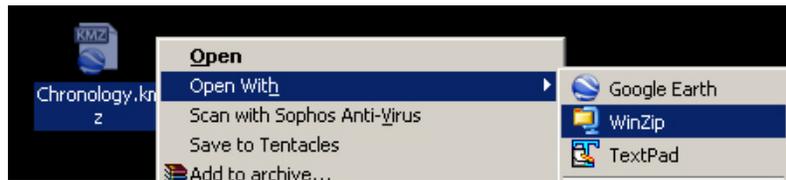
USE A TEXT EDITOR
The .kml format follows an XML language-scheme and is thus readable by certain text editors.

WORKS - Textpad, Wordpad, Office Word

DOES NOT WORK - Notepad

INSERT CODE
Once you have opened the file in an editor, you will notice the indented structure of the text. This layout matches the project's hierarchy and ordering of layers. As previously detailed, a .kml file identifies objects by their specific class: placemarks, polygons, image overlays, etc. All of an objects characteristics, such as its name and description, are placed between an opening (<...>) and closing (</...>) class label.

Once you have found the time-relative object, insert the following:

```
<TimeSpan>
  <begin>...</begin>
  <end>...</end>
</TimeSpan>
```

NOTE:

- If <begin> or <end> is missing, then that side of the period is unbounded
- <begin> and <end> values can be expressed as:
    - yyyy-mm-ddThh:mm:sszzzzzz
        y=year -> m=month -> d=day -> T=separator -> h=hour -> m=minute -> s=second -> z=time zone
    - yyyy (year only)
- BCE is represented by negative integers (year only)

EXAMPLE:

```
...
<GroundOverlay>
    <name>Jerusalem_First_Temple</name>
    <drawOrder>9</drawOrder>
    <Icon>
            <href>files/Jerusalem_FirstTemple.jpg</href>
            <viewBoundScale>0.75</viewBoundScale>
    </Icon>
    <LatLonBox>
            <north>31.7860110141924</north>
            <south>31.76705577618839</south>
            <east>35.24038893142339</east>
            <west>35.22314764774986</west>
    </LatLonBox>
    <TimeSpan>
            <begin>-1000</begin>
            <end>-586</end>
    </TimeSpan>
</GroundOverlay>
...
```
NOTE: To tag an object to a single moment in time, insert the following:

```
<TimeStamp>
    <when>...</when>
</TimeStamp>
```

NOTE: You can timestamp individual objects (like placemarks or ground overlays) or an entire folder (that contains multiple objects). To timestamp entire folders, insert the <TimeSpan> code before the </Folder> code (similar to </GroundOverlay> above).

VIEW TIMELINE

With your newly saved .kml, Google Earth will automatically detect that one or more objects contains time parameters. It will activate the timeline in the top-right corner of the window, and evenly distributes time from the earliest to latest date/time in the file.
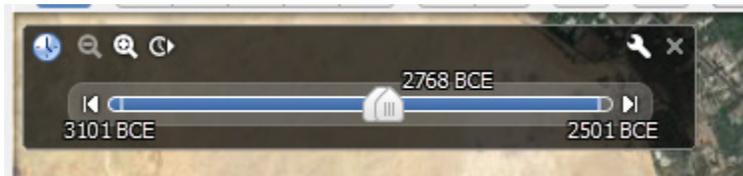
CONTROLS

ARROWS - Use to skip back/forward by an increment of time, or use the center arrow to play an animation of the time sequence

RANGE MARKERS - The two markers define the time span of interest. You can put them together to look at a single moment in time, or drag them out to cover a range.

ZOOM - Especially useful for time spans with both high level of time detail and span. Zoom out as far as the lowest/highest stored date, and zoom in as close as minutes and seconds.

SETTINGS - Discussed below.

SETTINGS

START/END TIME - Change the default time (min/max values from .kml) for the beginning and end of the timeline.
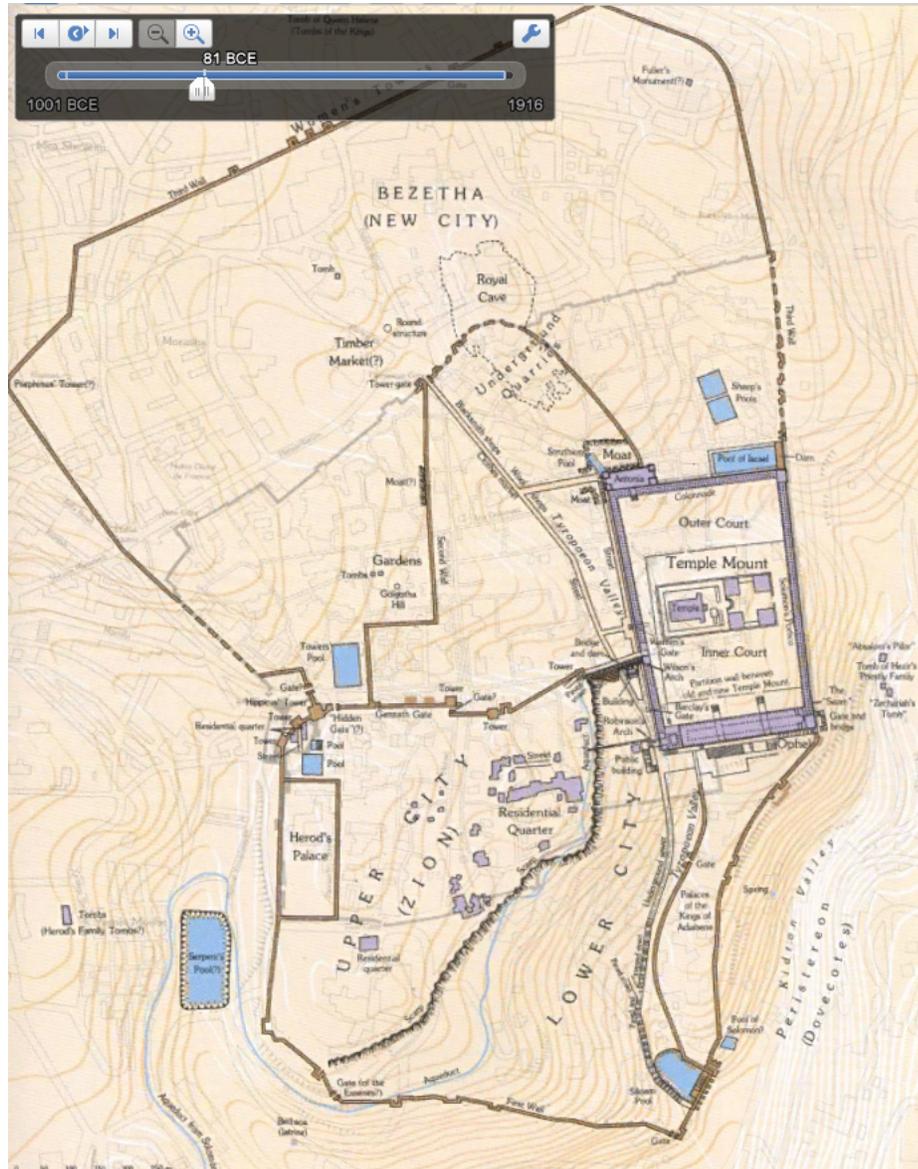
TIMEZONE - Options for setting time relative to a location; useful for data with [hh:mm:ss] format.

ANIMATION - Speed up or slow down the rate of change in time during the animated sequence (see Arrows)

LOOP - Select to play your animation continuously
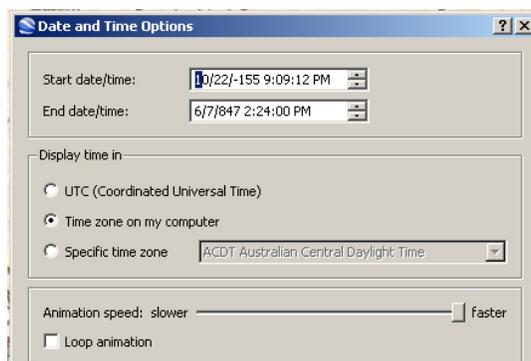
AND FINALLY...

Congratulations! You have successfully timestamped an object.