

CHANGE Viewer Guide - Windows

About:

NASA World Wind serves as the core technology of CHANGE Viewer (Climate & Health ANalysis for Global Education). CHANGE Viewer is a version of NASA World Wind that provides teachers and students quick and easy access to spatial datasets related to climate change and human health. CHANGE Viewer allows for investigations, exploration and examinations of climate and socio-economic related data at the global scale to discuss the impacts climate change will have on humans.

Launch CHANGE Viewer from: www.climatechangehumanhealth.org/changeviewer

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Installation:

Computer Requirements

In order to run CHANGE Viewer on your Windows or Macintosh OSX, your computer must meet certain requirements:

- a modern graphics card with an up-to-date driver
- Java Runtime Environment 1.6.0 (required to run any Java Application)
- at least 2GB RAM
- 30MB available hard disk space
- an internet connection

The most common deployment issue is an out-of-date graphics driver. To get an updated driver, visit your graphics card manufacturer's web site. This will most likely be either [Nvidia](#), [ATI / AMD](#) or [Intel](#). The drivers are typically under a link named "Downloads" or "Support". If your computer is a laptop, then updated drivers are probably at the laptop manufacturer's web site rather than the graphics card manufacturer.

Saving CHANGE Viewer

The CHANGE Viewer will launch from Internet Explorer, Firefox, Chrome, and Safari internet browsers. To launch the CHANGE Viewer from your desktop again in the future, it is best to save the connection to your desktop, or a folder that you will have access to in the future. To do this, follow the steps according to the browser of your choice:

- *Chrome*: Right click on the Launch button and select Save Link As.
- *Firefox*: Right click on the Launch button and select Save Link As.
- *Internet Explorer*: Right click on the Launch button and select Save Target As.

Save the Beta_WMSLayerManager-1.jnlp to your desktop or a folder location you will have access to in the future.

Launching CHANGE Viewer

Launch the CHANGE Viewer from the Beta_WMSLayerManage.jnlp file you saved to the computer, or directly from the Climate Change Human Health website. You will encounter a Warning- Security Message. You want to Run this application.

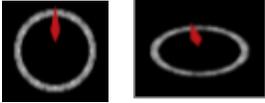
To avoid this message in the future, check the box for "Always trust content from this publisher" first and then click Run.



Navigation Controls

Becoming comfortable with the navigation controls of CHANGE Viewer is easy and will ensure that you have access to all the resources available.

To move around, zoom or change the perspective, you can use a computer mouse or the buttons in the upper right hand corner of the Map View.

	<p>Pan the globe while maintaining the same altitude.</p> <p>Mouse: Left-click and hold, and move the mouse. A single left-click will also pan the earth around.</p> <p>Keyboard: Navigate with the arrow keys on your keyboard.</p>
	<p>Zoom in or out</p> <p>Mouse: use the scroll wheel on the mouse</p>
	<p>Rotate the orientation of the globe, either facing north, south, east, or west.</p> <p>Mouse: Right-click and hold, and move the mouse side to side.</p> <p>Keyboard: Rotate with the right or left arrow keys. Click N to reset the orientation to North as up.</p>
	<p>Change the perspective of the earth. Perpendicular provides a bird's eye view, or looking straight down at the surface. Parallel provides a 3-D perspective allowing mountains and valleys to become visible.</p> <p>Mouse: Right-click and hold, and move the mouse up and down.</p> <p>Keyboard: Hold Shift while you use the up or down arrow keys. Shift + R will reset the perspective to directly overhead.</p>
	<p>This icon shows the orientation and angle viewing the globe. The red arrow points North.</p> <p>When the icon is a perfect circle, the view is 90⁰ perpendicular to the globe. A flattened icon, or oval, demonstrates the globe is displaying 3-D.</p>
	<p>This icon on the left top of the globe draws a circle or a cross indicating what you are looking at in relation to the entire globe.</p>

A scale bar is located at the bottom right of the globe. The scale bar changes based on your level of zoom.

Latitude and longitude, Elevation, and Altitude (height above the earth from your view), is provided along the bottom of the window. This information is based on the location of the cursor and changes when the cursor is moved.

CHANGE Viewer Tabs

Map

The Map tab lists all active datasets. For a dataset appear on the Map, it must be checked, or turned on, from the Activity or Data Library tabs. Once a dataset is in the Map tab, a legend is displayed below the layer name.

The transparency of each layer can be changed by using the slider bar under the name. The transparency updates once you have moved the slider to the transparency value and released the cursor.

Information about the layer can be found under Help in the Data Reference link.

Activity

The Activity tab contains sub-tabs that correspond to the Climate Change and Human Health themes that are addressed in this project. All activities will reference the Activity tab for data.

Each CHANGE theme: Food Security, Natural Disasters, Disease, etc., has a tab that contains only the datasets used in the lessons developed under this project. If certain themes have more than one lesson, not all the datasets will be used for a particular activity.

Adding Activity data layers to the Map

Select the tab theme that corresponds to the activity of interest. To add a data layer first click on tab of interest and check the box of the data layer you desire. The data should now load on the globe as a layer on top of the 3D surface. If the data is not loading immediately red text stating “Downloading” will flash on the bottom right side of the globe. The data layer will also be added to the Layers tab. You can add multiple layers on the globe at the same time. These data layers will be stacked on top of each other in the order that you originally checked them in the Data Library and they will be placed in the Layers tab of the globe window. Within the Layers tab you can easily turn on and off various layers in order to compare and contrast the data.

Data Library

The Data Library tab contains all spatial datasets related to climate and change and human health used in the CHANGE Project plus additional data hosted by CIESIN and IAGT. The idea of the Data Library is to provide users who wish to expand on the project activities and investigate the relationships between other socio-economic datasets and the climate change data.

Adding Data Library datasets to the Map

In order to add a data layer first click on tab of interest and check the box of the data layer you desire. The data should now load on the globe as a layer on top of the 3D surface. If the data is not loading

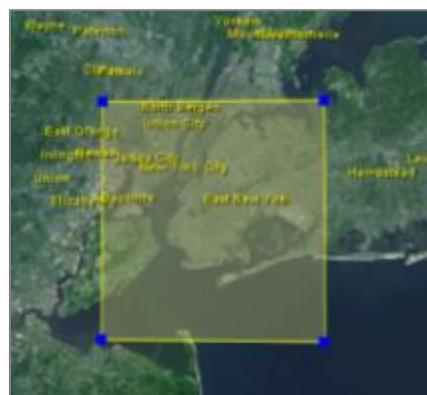
immediately red text stating “Downloading” will flash on the bottom right side of the globe. The data layer will also be added to the Layers tab. You can add multiple layers on the globe at the same time. These data layers will be stacked on top of each other in the order that you originally checked them in the Data Library and they will be placed in the Layers tab of the globe window. Within the Layers tab you can easily turn on and off various layers in order to compare and contrast the data.

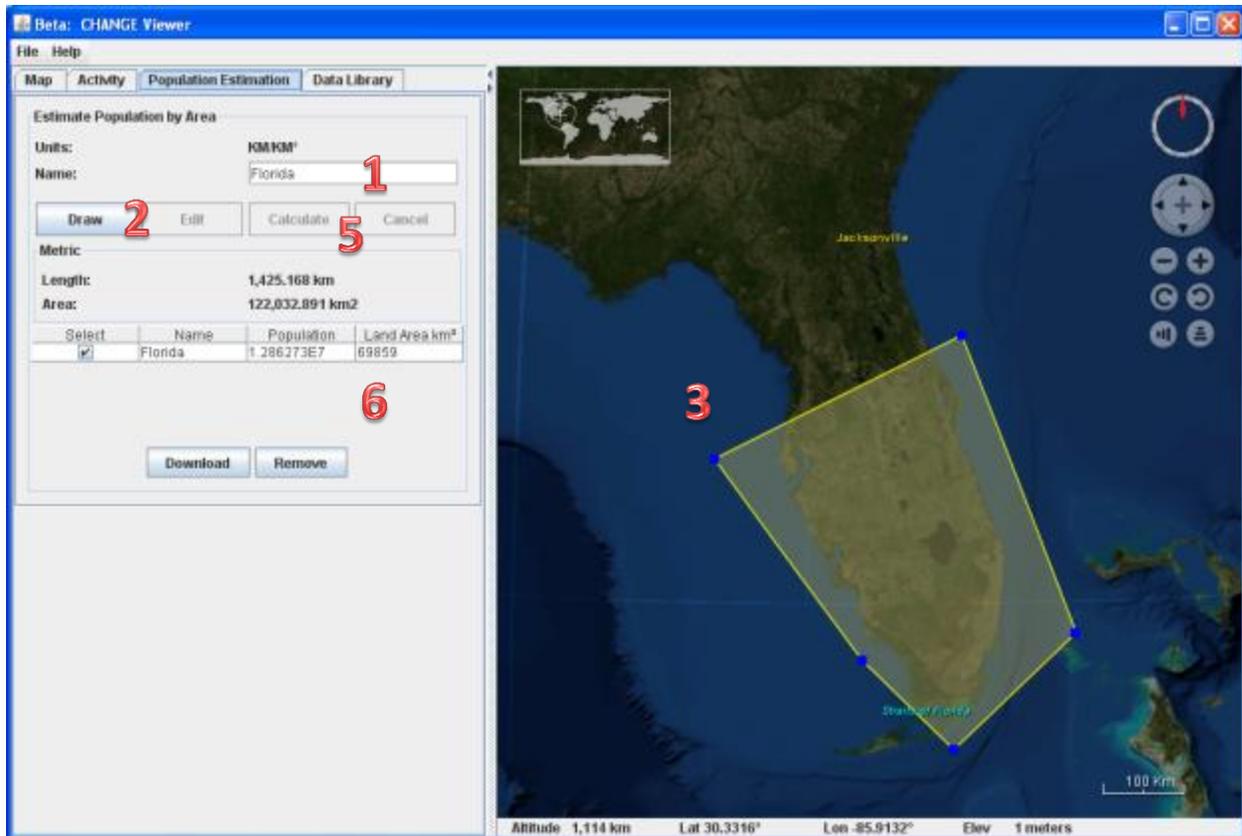
Population Estimation

The Population Estimation Tool provides an estimation of the population and land area based on a polygon you draw on the globe. These estimates are based on the 2005 Gridded Population of the World (GPW) version 3 dataset developed by the NASA Socioeconomic Data and Applications Center operated by CIESIN.

To calculate the population and land area, a Population Estimation Polygon (PEP) must be drawn around an area of interest.

The Population Estimation Tool will not return population and land area estimates if the polygon drawn is smaller than 50 cells. The area of 50 cells is approximately 730 km². The image to the right provides a reference for what the minimum size of a Population Estimation Polygon.

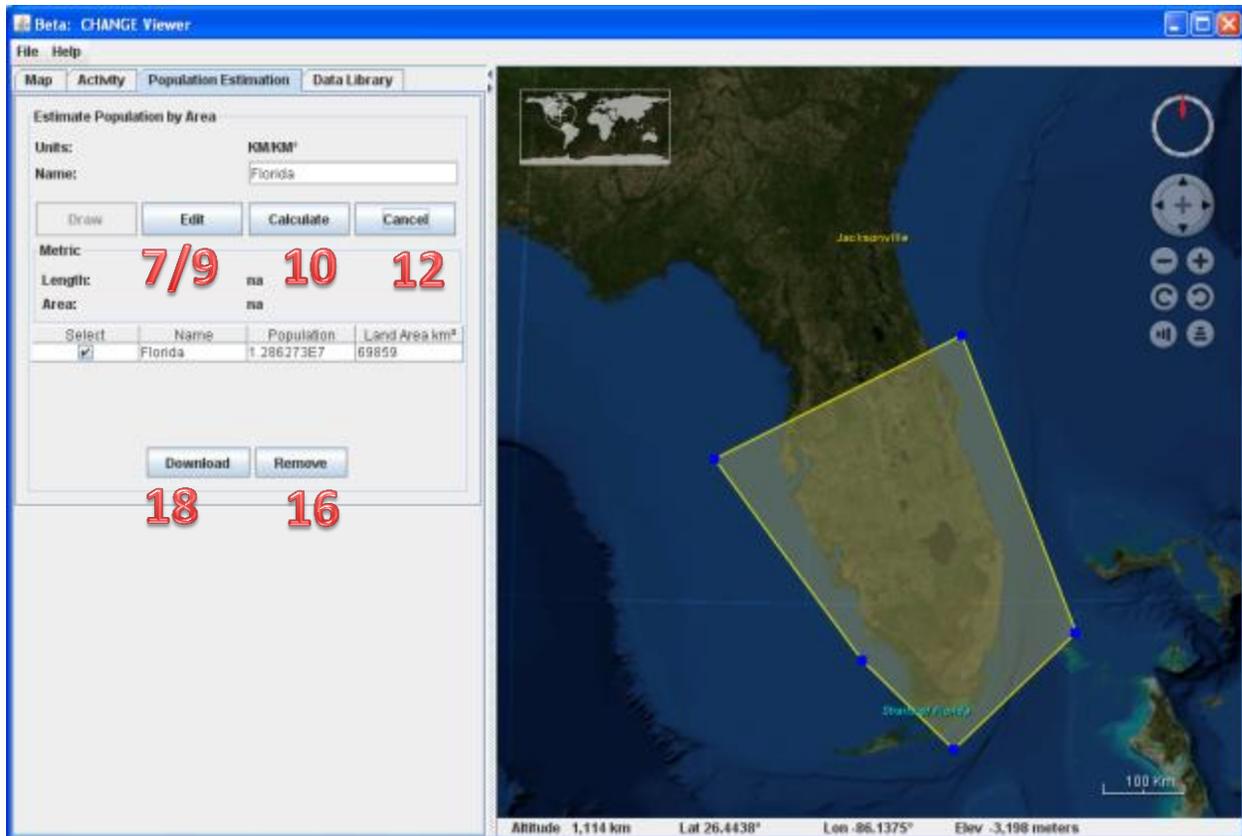




Calculate Population and Land Area

1. Enter a **Name** for the polygon that will be created.
2. Click **Draw**.
3. Click on a location that will be one of the vertices of the polygon. *Note: the first point clicked will contain the Latitude and Longitude results returned for the entire polygon.*
4. Continue to click around the area of interest, adding a vertex with each click.
5. Click **Calculate** once you are satisfied with the polygon created to receive the population estimate and area calculations for the area of interest. A progress bar will appear indicating that the computer is processing.
6. The Population and Land Area results are returned in the table. *Note: Population values are returned in scientific notation and will require conversion (e.g. 1.06734E7 to 10,673,400).*

Multiple Population Estimation Polygons can be created. To create multiple polygons simply repeat the process described below using a different name.



Change a vertex location while drawing

7. Click **Edit** to move any vertex.
8. Place the cursor over the vertex that needs moved. Click on the vertex and hold while moving it to a new location.
9. Click **Resume** when done editing vertex locations.
10. Click **Calculate** once you are satisfied with the polygon you have created to receive the population estimate and area calculations for the area of interest. A progress bar will appear indicating that the computer is processing.
11. The Population and Land Area results are returned in the table. *Note: Population values are returned in scientific notation and will require conversion (e.g. 1.06734E7 to 10,673,400).*

Delete a polygon before calculating

12. Click **Cancel** to delete a polygon while in the drawing phase.
13. This removes all vertices and starts back at step 1 for drawing a polygon.

Delete a polygon after calculating

14. Population Estimation Polygons (PEPs) results are listed in the table. As a default, all PEPs are selected.
15. Check/Select only the Names of the PEPs which should be deleted.
16. Click **Remove** once you have the PEPs selected.

Download Population Estimation Results to a table

The Population Estimation results can be downloaded and saved as a .csv file for a future use or for analysis in another program.

17. Select the records you wish to download. Uncheck any you wish to exclude from downloading.
18. Click **Download** to save the population estimation results as a .csv file.
19. Locate the directory to save the file.
20. Name the file with a name you will recognize in the future.

You can select which Population Estimation results to download if you have more than one. Those Population Estimation Polygons (PEPs) that are checked under Select in the table, will be downloaded. As a default, all PEPs are selected. Uncheck those PEPs which you do not wish to download.

When opening a .csv file in another program, a warning will come up because the .csv is in a text format and not as a recognized format of the external program. Most programs have a Text Import Wizard. Follow the Text Import Wizard directions. Choose Delimited as the separator. Select Comma as the delimiter. Press Finish to view the Population Estimation Results in a table format.

Viewing Population Estimation Polygons

Population Estimation Polygons (PEP) created using the Population Estimation Tool will appear as a layer that can be turned on or off (made visible or not shown) in the Map tab. The Polygons will be listed with the name that was assigned to them when creating the polygons. Check the box to display a PEP.

Additional References

NASA World Wind: <http://worldwind.arc.nasa.gov/manual.html>

Population Estimation Service Tool: <http://sedac.ciesin.columbia.edu/gpw/wps.jsp>