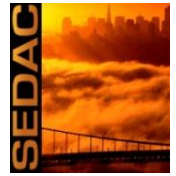




Center for International Earth
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Introduction to the 2011 TerraViva! SEDAC Viewer

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Teacher Workshop,

*Summer 2011 Meeting of the Federation of Earth Science Information Partners (ESIP),
Santa Fe, New Mexico, July 12, 2011.*

Overview of Activities

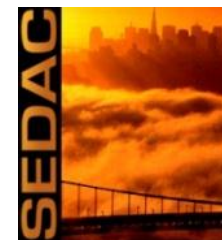
- Introduction to the TerraViva! SEDAC Viewer
- Using the Basemap: GPW Population Density 2015 V3 (SEDAC).
- Using Map Display Features
- Searching with the Gazetteer
- Conducting Spatial Query Analysis
- Visualizing Data in Multiple Maps
- Accessing Cartographic Maps

Introduction to the TerraViva! SEDAC Viewer

The 2011 TerraViva! SEDAC Viewer DVD contains satellite-based data, maps, socioeconomic data, and geographic information system (GIS) tools that enable easy integration and visualization for analysis and demonstration. Applicable to lessons in the physical sciences and the social sciences, the GIS tools foster global and regional data analysis. Session participants will each receive the DVD and have an opportunity to use the 2011 TerraViva! SEDAC Viewer to visually analyze satellite-based data along with socioeconomic data and maps to explore and demonstrate relationships between humans and the environment

About the 2011 TerraViva! SEDAC Viewer

The 2011 TerraViva! SEDAC Viewer is produced by ISCIENCES, L.L.C., and is available for free on DVD from the NASA Socioeconomic Data and Applications Center (SEDAC) at the following URL:
<http://sedac.ciesin.columbia.edu/>



SEDAC is operated by the Center for International Earth Science Information Network (CIESIN) of Columbia University with support received from NASA under contract NNG08HZ11C.

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Installing the 2008 TerraViva! SEDAC Viewer



- Installation requires Administrative privileges on a microcomputer running the Windows NT, 2000, or XP operating system.
- The Administrator account should be used when running TerraViva on a computer for the the first time.
- May be installed on multiple computers from the DVD.

Starting the 2008 TerraViva! SEDAC Viewer

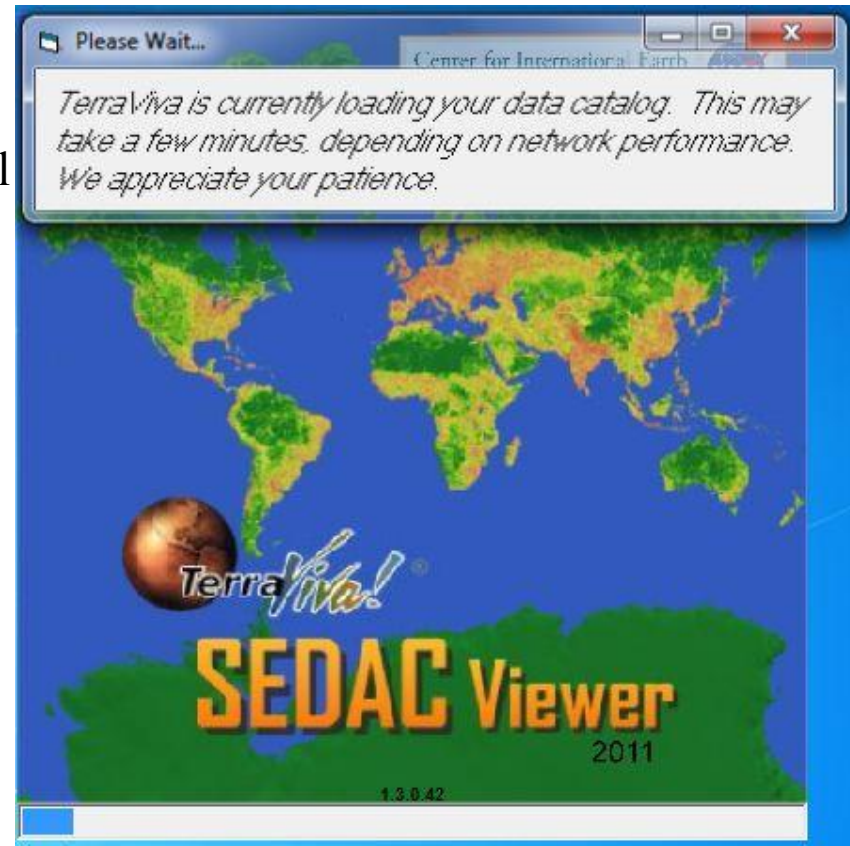
After installation, click **Start, Programs, TerraViva!, and TerraViva! SEDAC Viewer** to begin.

The 2011 TerraViva! SEDAC Viewer window will appear with the message: “TerraViva is currently loading your data catalog. This may take a few minutes depending on network performance. We appreciate your patience.”

A new window will display the TerraViva! Base Map: GPW Population Density 2015 V3 (SEDAC).

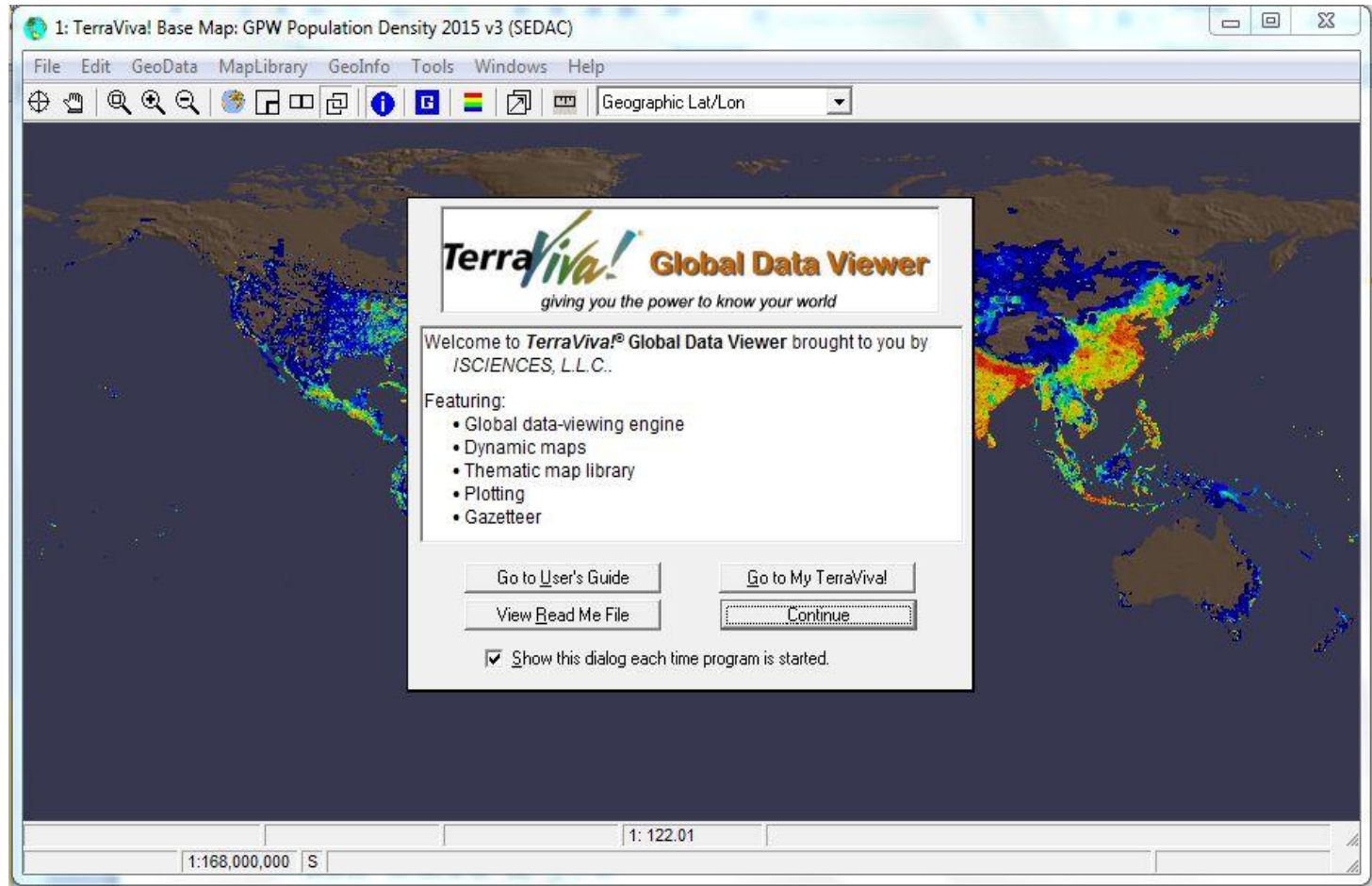
Click **OK** if message indicates using saved configuration.

Click **No** if asked whether you want to upgrade to the latest software.



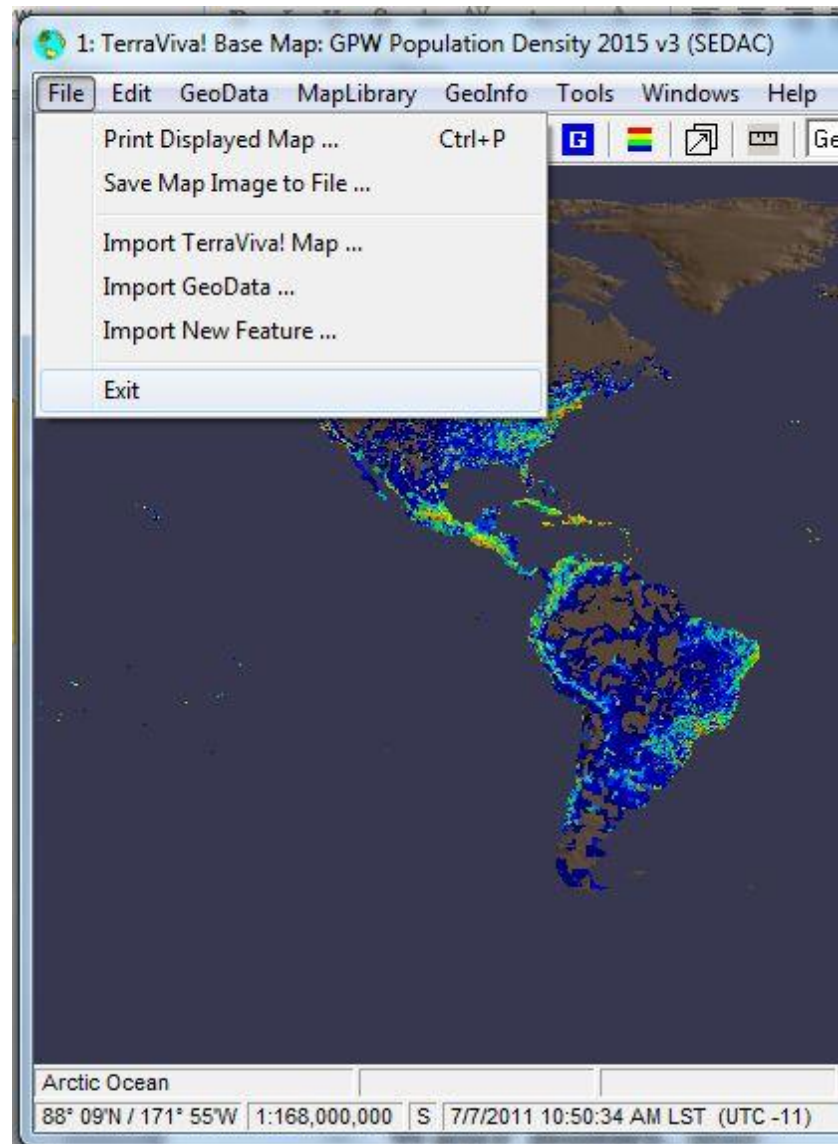
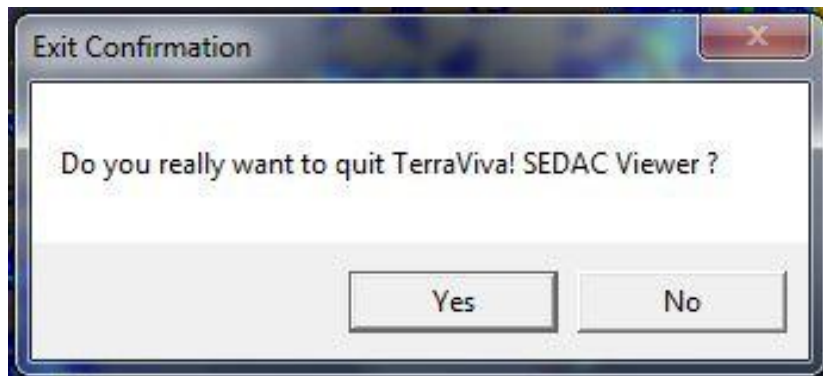
TerraViva 2011 Startup

- Choices:
- Users Guide
- My TerraViva
- Readme File
- Continue



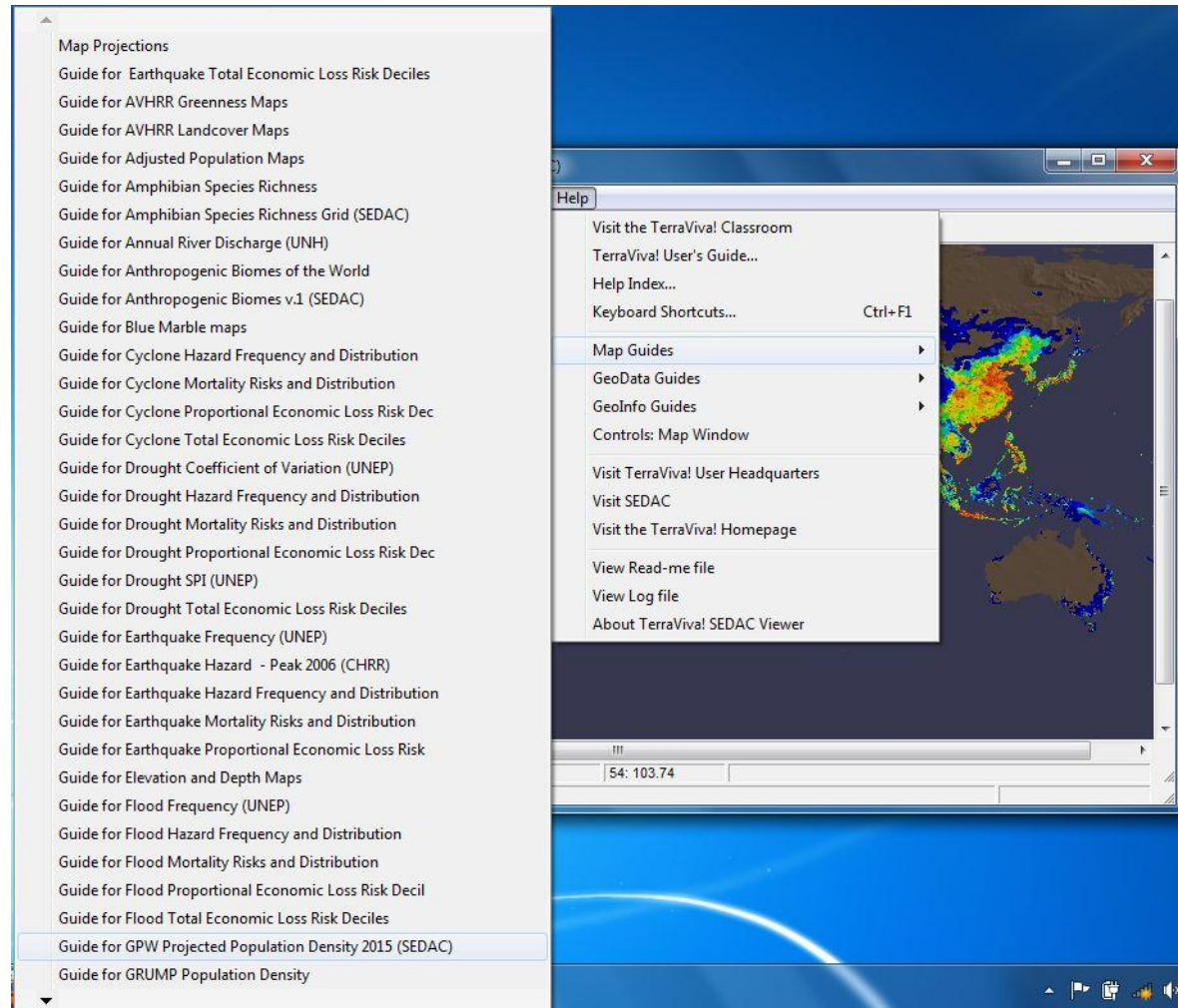
Stopping the 2008 TerraViva! SEDAC Viewer

- To quit using the 2011 TerraViva! SEDAC Viewer, click **File** in the top menu of the TerraViva! Base Map and click **Exit**.
- When asked if you want to quit, click **Yes**.



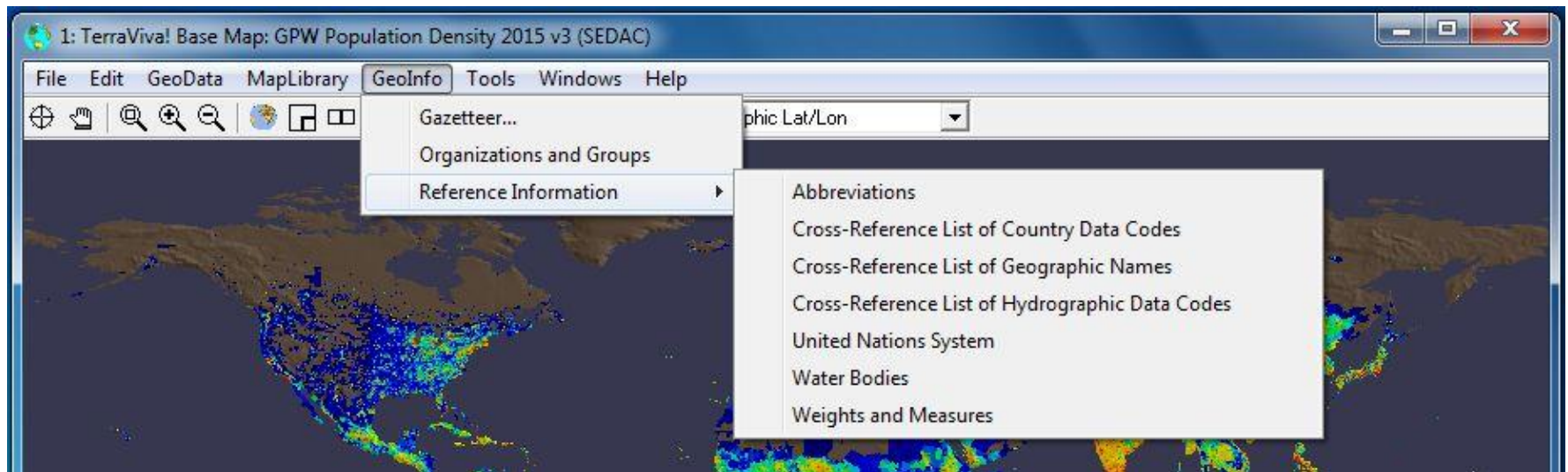
Introduction to Help in the 2008 TerraViva! SEDAC Viewer

- From the top menu of the basemap, click **Help**.
- Within the Help menu:
 - click **TerraViva! Users Guide** to view organized instructions on using features and tools.
 - click **Help Index** to quickly select TerraViva! Users Guide topics.
 - click **Map Guides** to view guides for maps.
 - click **GeoData Guides** to view guides for data sets.

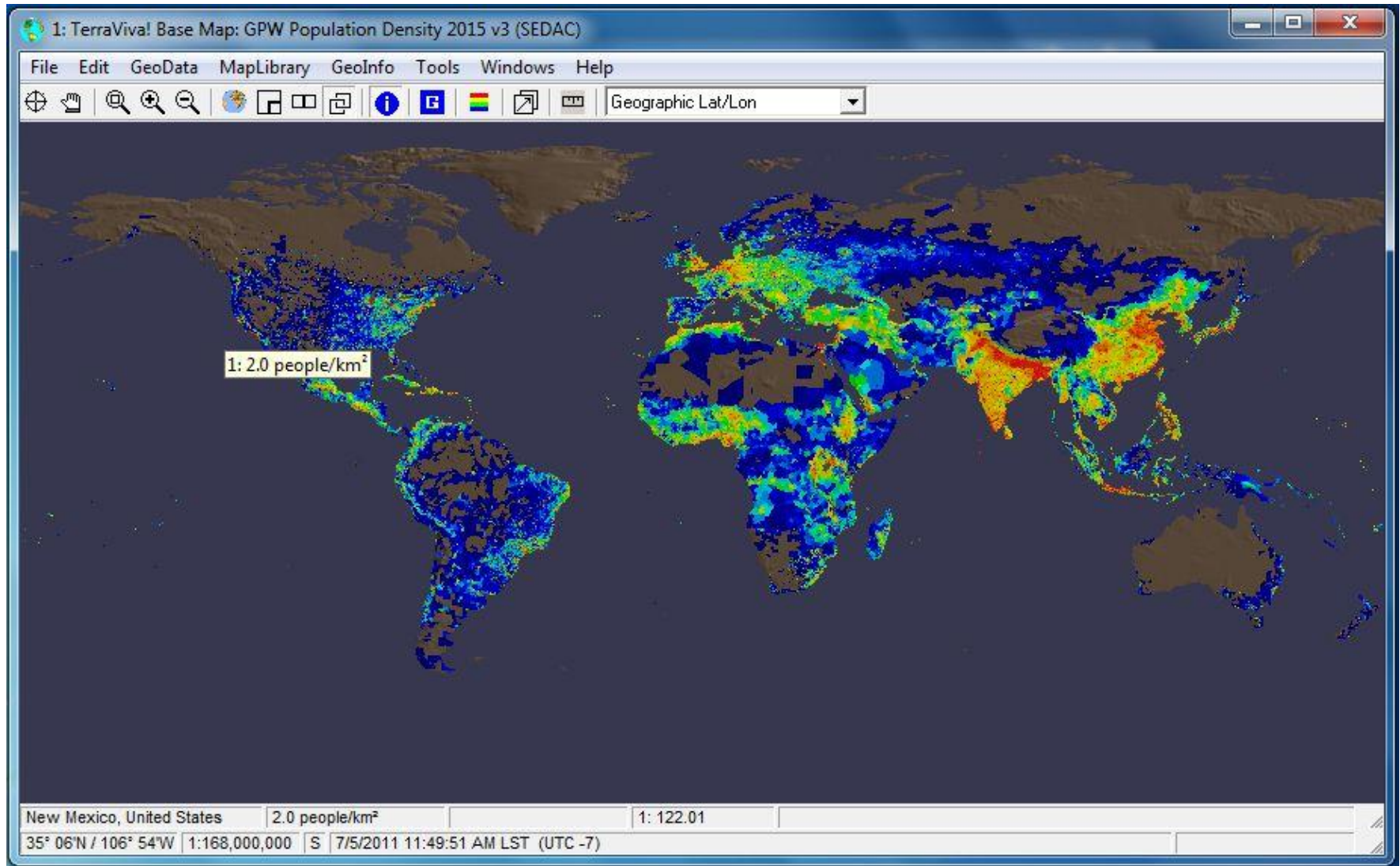


Reference Information for the 2008 TerraViva! SEDAC Viewer

- From the top menu in the Basemap, click **GeoInfo** and **Reference Information**.
- Click each of the following under Reference Information:
 - **Abbreviations,**
 - **Cross-Reference List of Country Data Codes,**
 - **Cross-Reference List of Geographic Names,**
 - **Cross-Reference List of Hydrographic Data Codes,**
 - **United Nations System,**
 - **Water Bodies,** and
 - **Weights and Measures.**

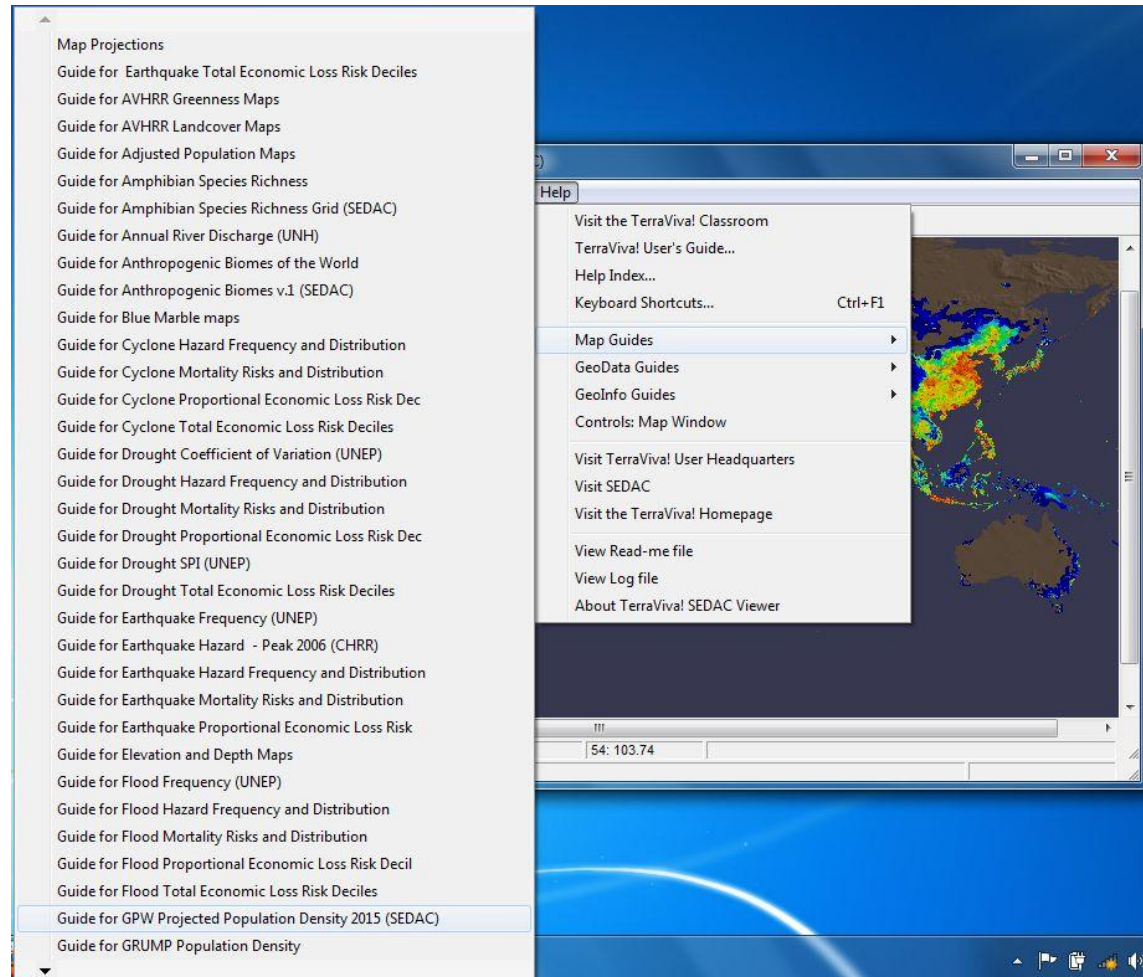


Using the Basemap: Gridded Population of the World (GPW) Population Density 2015 v3



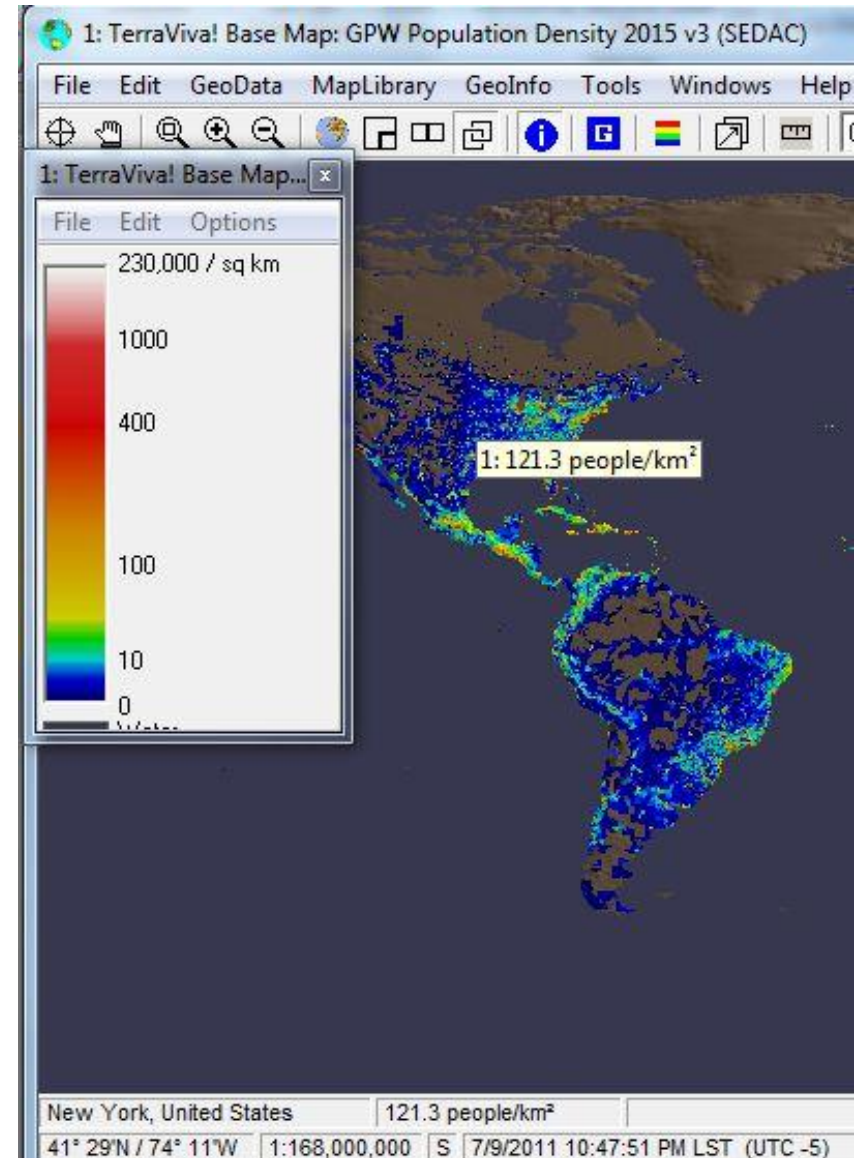
Introduction to the Basemap: GPW Population Density 2015 v3

- From the top menu of the Basemap, click **Help**, **Map Guides**, and **Guide for GPW Population Density 2015 v3**.
- Note that the “Gridded Population of the World: Future Estimates (GPWFE) consists of estimates of human population for the years 2005, 2010, 2015 by 2.5 arc-minute grid cells”.
- Within the *Map Guide for GPW Population Density 2015 v3*, click **File** and **Exit** to stop displaying the guide.



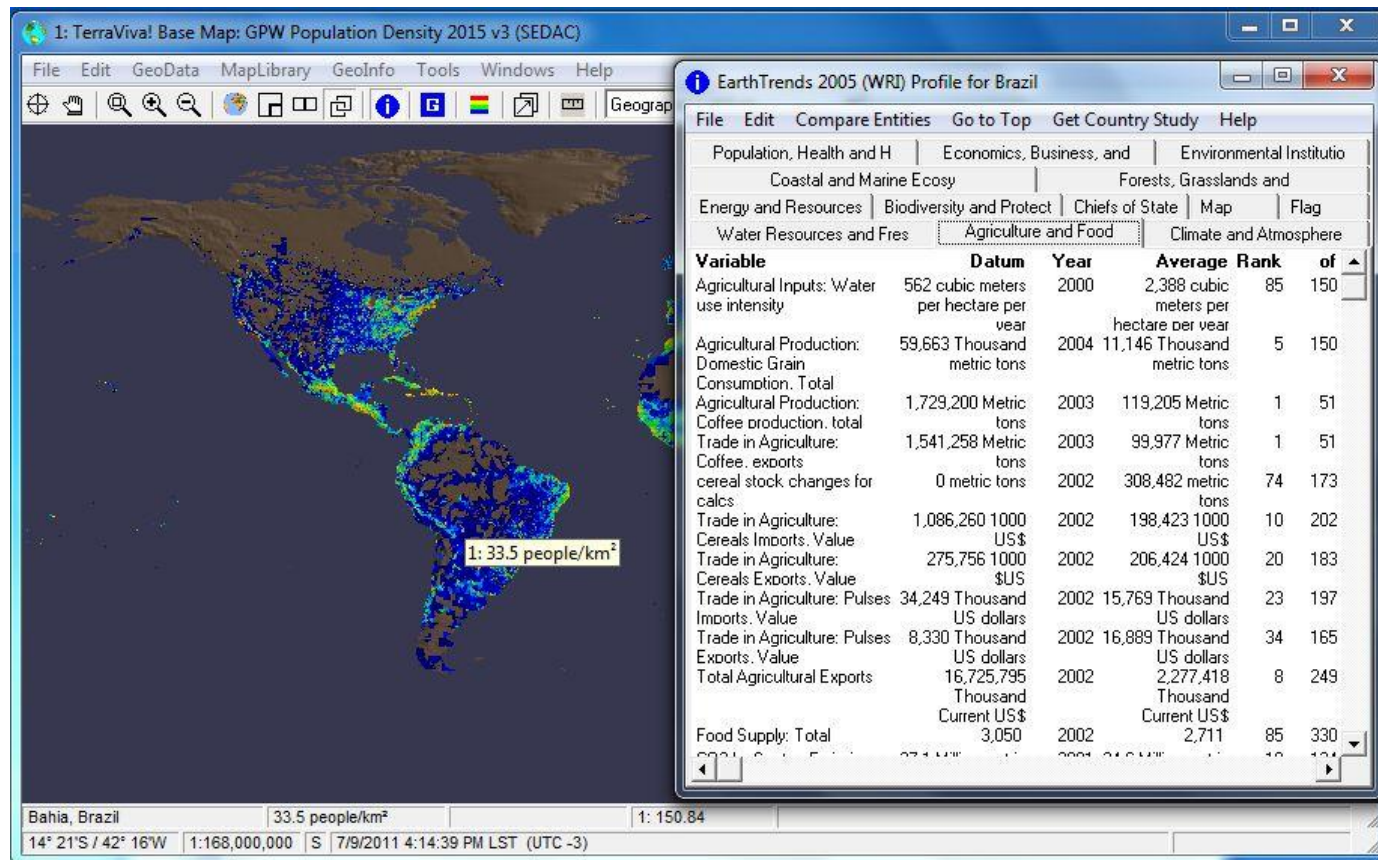
Exploring the GPW Population Density 2015 v3

- On the top menu, click the multi-colored bars to display the map legend.
- Position the cursor on locations within continents on the GPW Population Density 2015 v3.
- Note that the people/km² value (rounded to .1) displays for each location within continents.
- For a cursor position, the bottom Status Bar displays
 - Upper line: location (state, country), map value (people/km²)
 - Lower line: location (lat/lon), current map scale, status, standard time



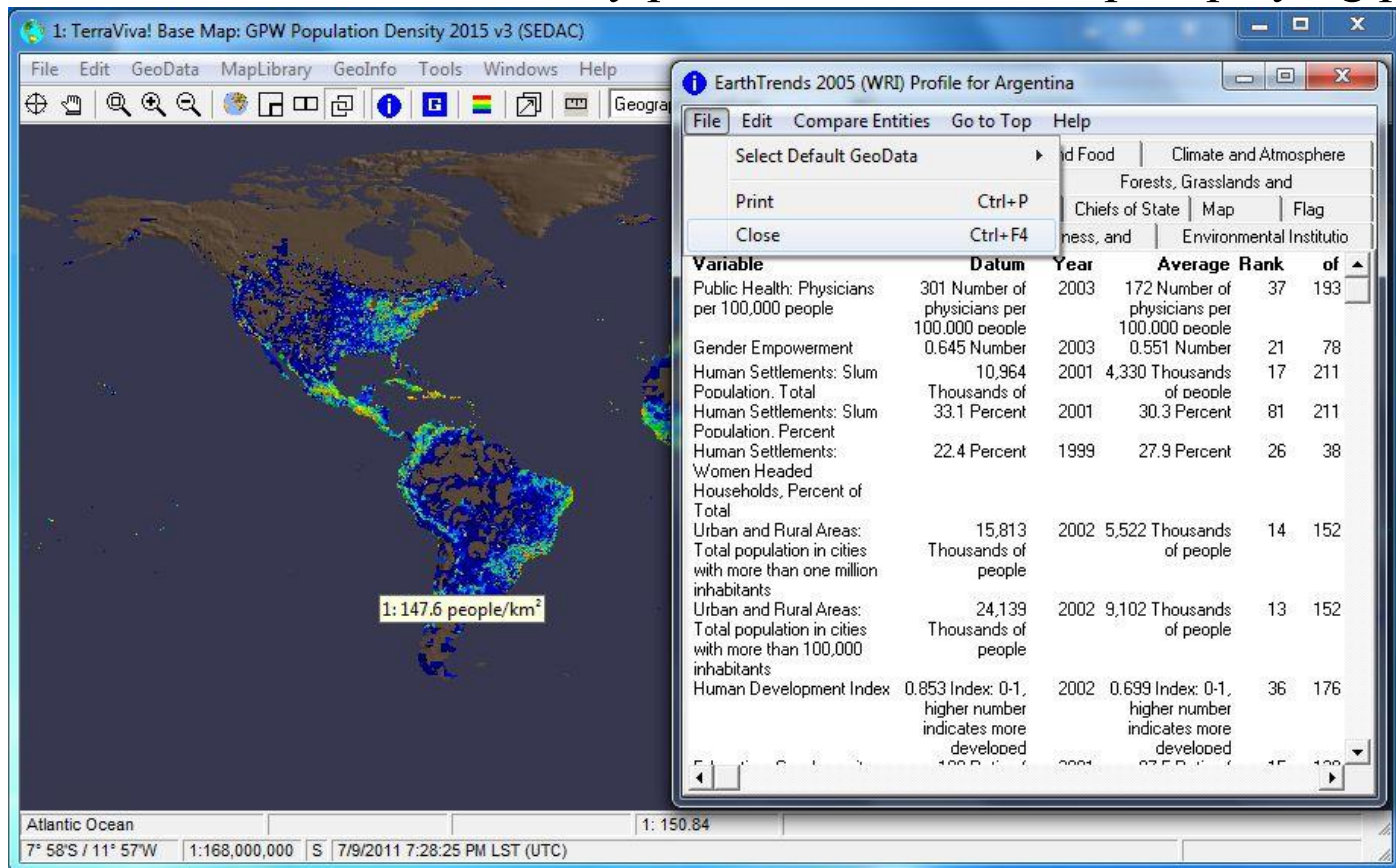
Display Country Profile in Human Footprint v2

- Move the cursor around the eastern part of South America and note that the country name displays on the bottom of the map.
- With the cursor on Brazil, left click to display the country profile window.
- Click each tap to display values for categories within the country profile.

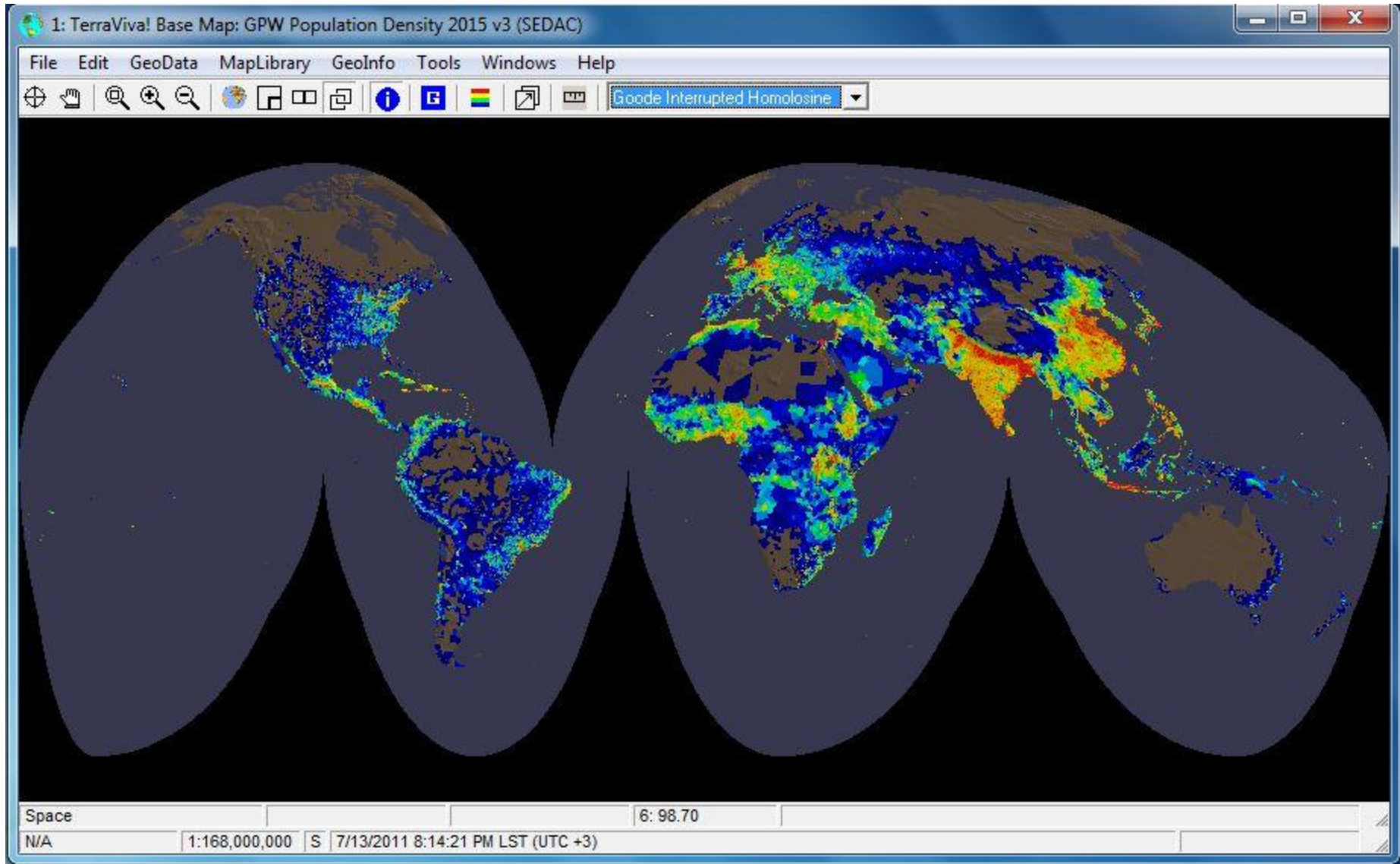


Displaying other Country Profiles

- While displaying the country profile window, click on another country in the GPW Population Density map to display its profile.
- Click other countries to display profiles.
- Click **File** and **Close** in the country profile window to stop displaying profile.

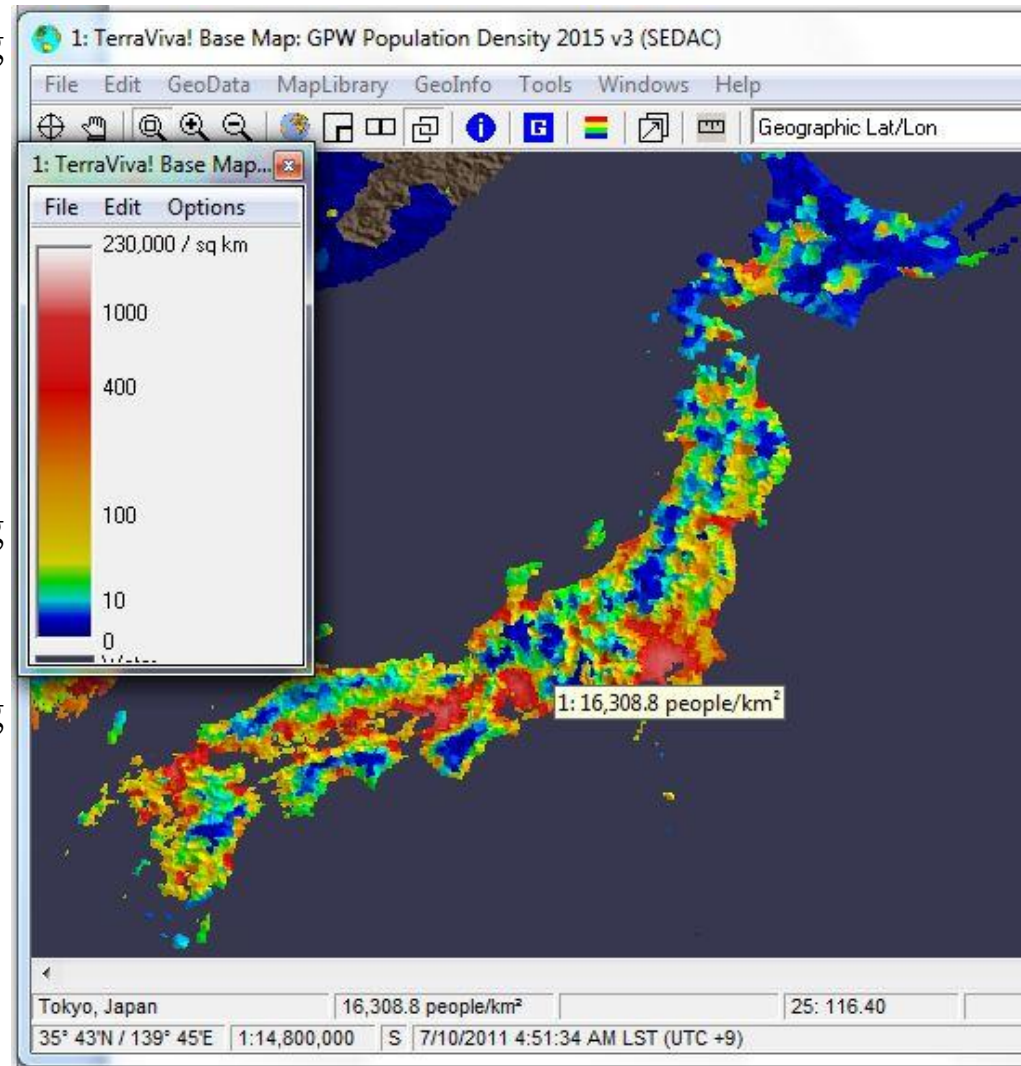


Using Map Display Features



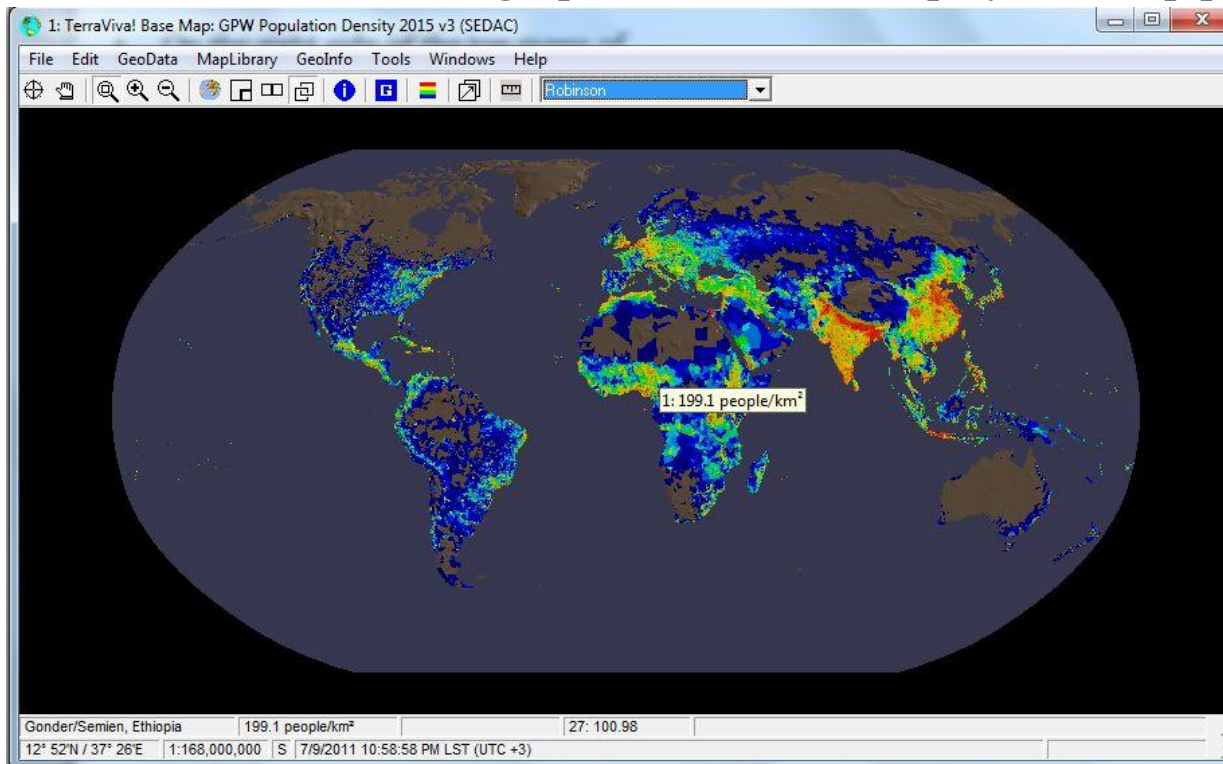
Options to Display the Map

- On the top menu, click the magnifying glass with a square in it and position the cursor over an area of the map, press the left mouse button, and move the cursor diagonally before releasing the button to magnify the area.
- On the top menu, click the globe to return to the world view of the map.
- On the top menu, click the magnifying glass with a plus in it to double magnification.
- On the top menu, click the magnifying glass with a minus in it to decrease magnification by two times.
- On the top menu, click the globe to return to the world view of the map.



Displaying Alternative Map Projections

- On the right side of the top menu of the basemap, click the pull-down menu to view map projection choices.
- From the pull-down menu, click *Robinson* to display that map projection.
- From the pull-down menu, click *Miller Cylindrical* to display that map projection (note size of Greenland).
- From the pull-down menu, click *Geographic Lat/Lon* to display that map projection.




Searching with the Gazetteer

1: TerraViva! Base Map: GPW Population Density 2015 v3 (SEDAC)

1: Gazetteer for TerraViva! Base Map: GPW Population Density 2015 v...

Click on the area to limit the search.



GeoRegion
World

Geographic Entity
Dams

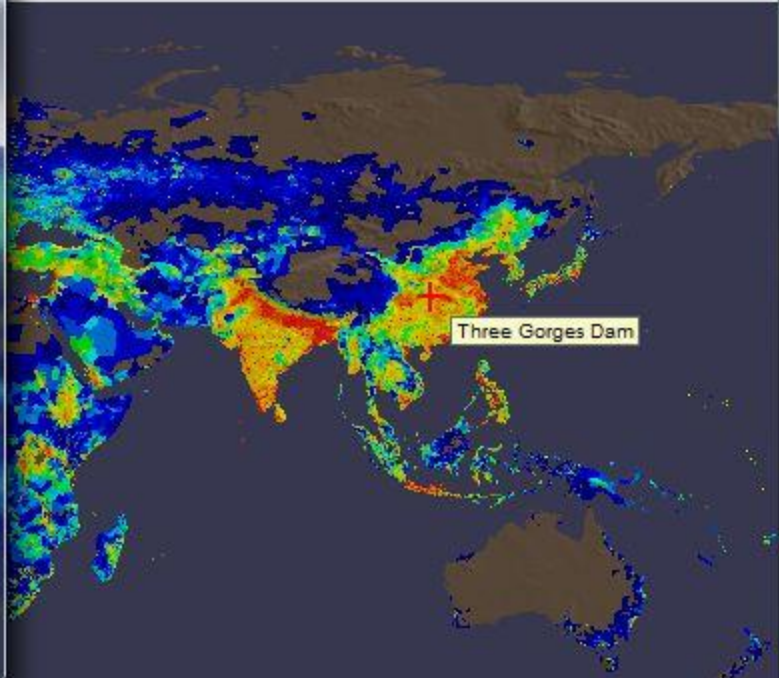
Name (Type first few characters)
three

First 50 names in alphabetical order

Name	Parent
Thein Dam	
Theodore Roosevelt	
Thermalito Afterbay	
Thermalito Forebay	
Thief Valley	
Thika	
Thiou	
Thirlmere	
Thirumoorthy	
Thissavros	
Thomas Hill Reservoir Dam	
Thompson Valley Reservoir	
Thonnur Tank	
Thorisos	
Thornville	
Thorpe	
Three Gorges Dam	

Stay on top
 Small size

Close



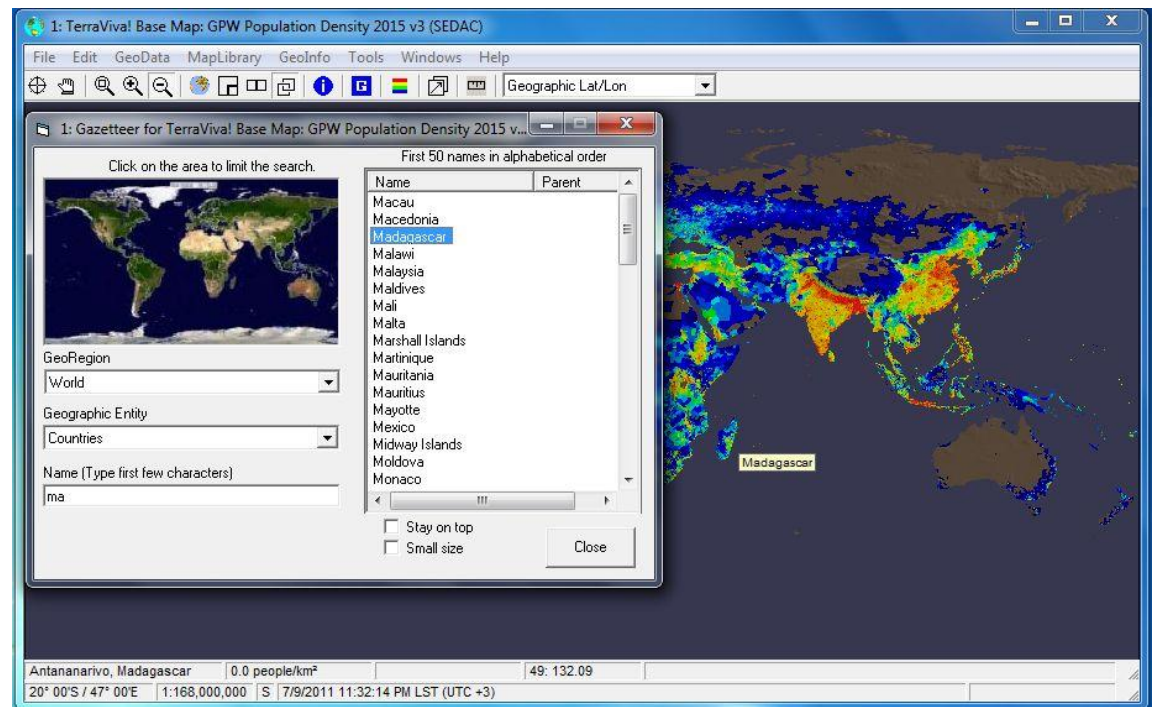
Three Gorges Dam

Hubei, China 0.0 people/km² 7: 136.20

30° 49'N / 110° 59'E 1:168,000,000 S 7/14/2011 1:35:22 AM LST (UTC +8)

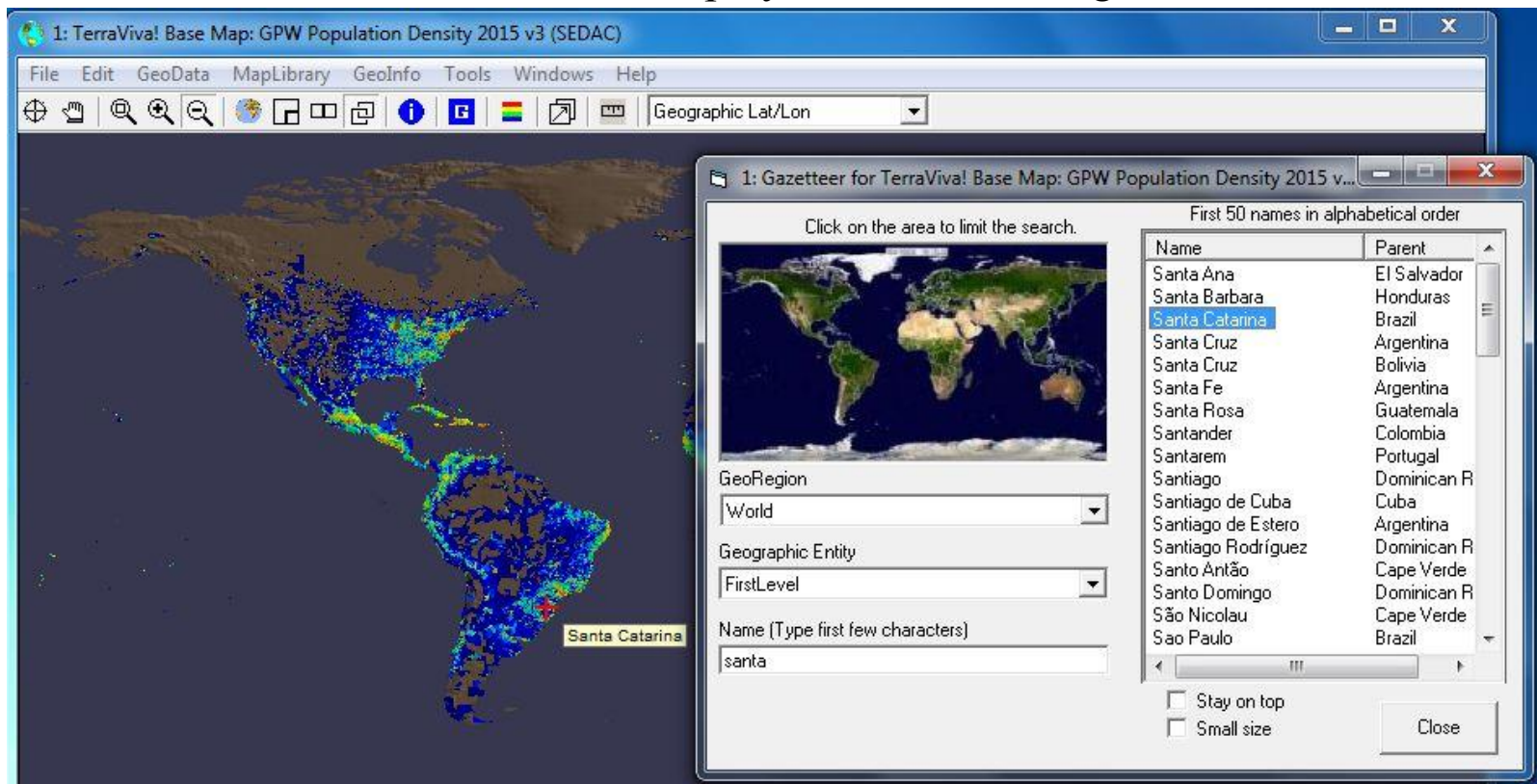
Search for a country

- On the top menu of the Base Map, click **GeoInfo** and **Gazetteer**.
- On the left side menu of the Gazetteer, labeled **Geographic Entity**, select “Countries”.
- Click in the left side text box, labeled **Name** and type “Madagascar”.
- The list on the right side will display “Madagascar” and similar names.
- Click “Madagascar” in the list to display the label locating the country on the Base Map.



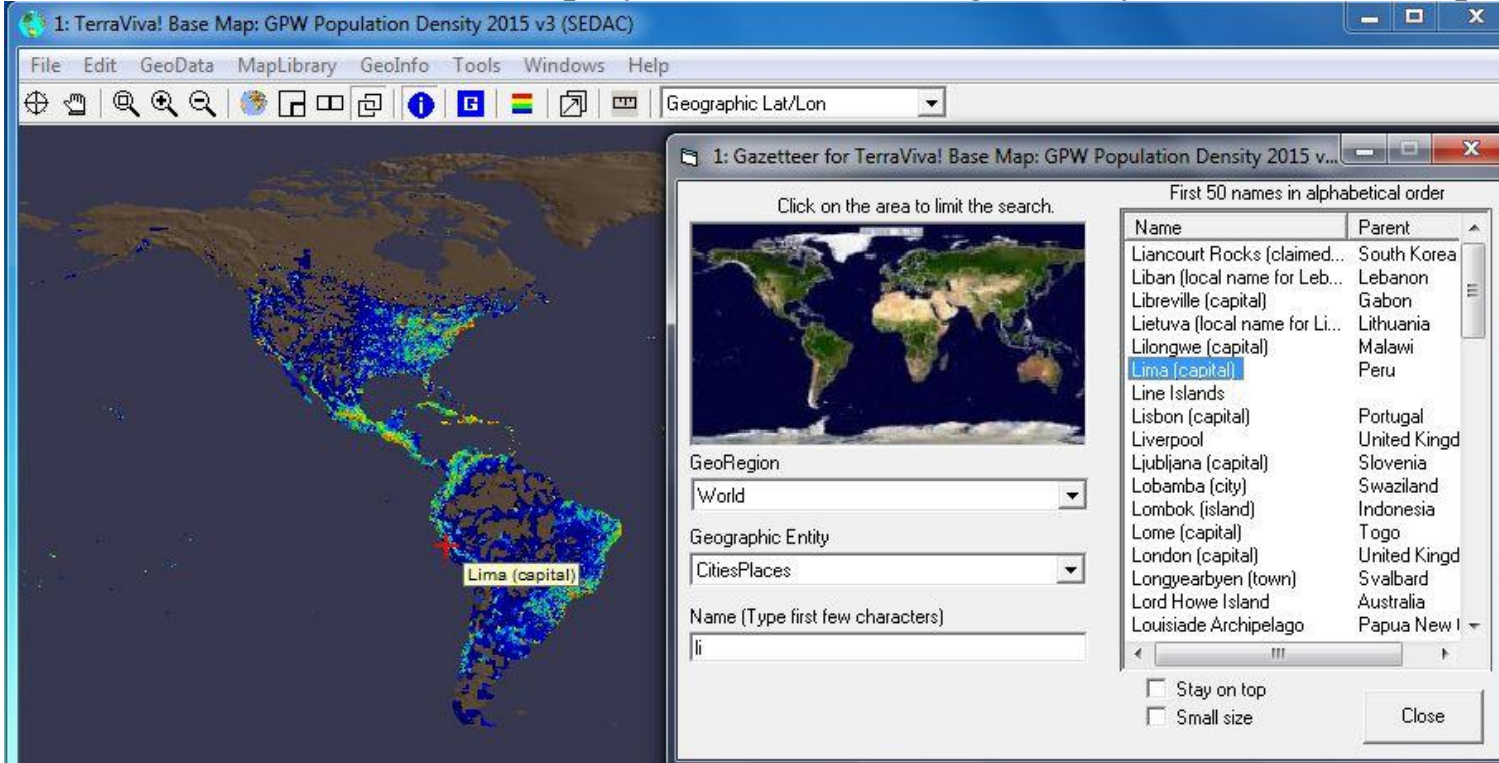
Search for a state

- On the top menu of the Base Map, click **GeoInfo** and **Gazetteer**.
- On the left side menu of the Gazetteer, labeled Geographic Entity, select “FirstLevel”.
- Click in the left side text box, labeled Name and type “Santa Catarina”.
- The list on the right side of the Gazetteer will display “Santa Catarina” and “Brazil”.
- Click “Santa Catarina” in the list to display the label locating the state on the Base Map.



Search for a city

- On the top menu of the Base Map, click **GeoInfo** and **Gazetteer**.
- On the left side menu of the Gazetteer, labeled Geographic Entity, select “CitiesPlaces”.
- Click in the left side text box of the Gazetteer, labeled Name and type “Lima”.
- The list on the right side of the Gazetteer will display “Lima” and “Peru”.
- Click “Lima” in the list to display the label locating the city on the Base Map.



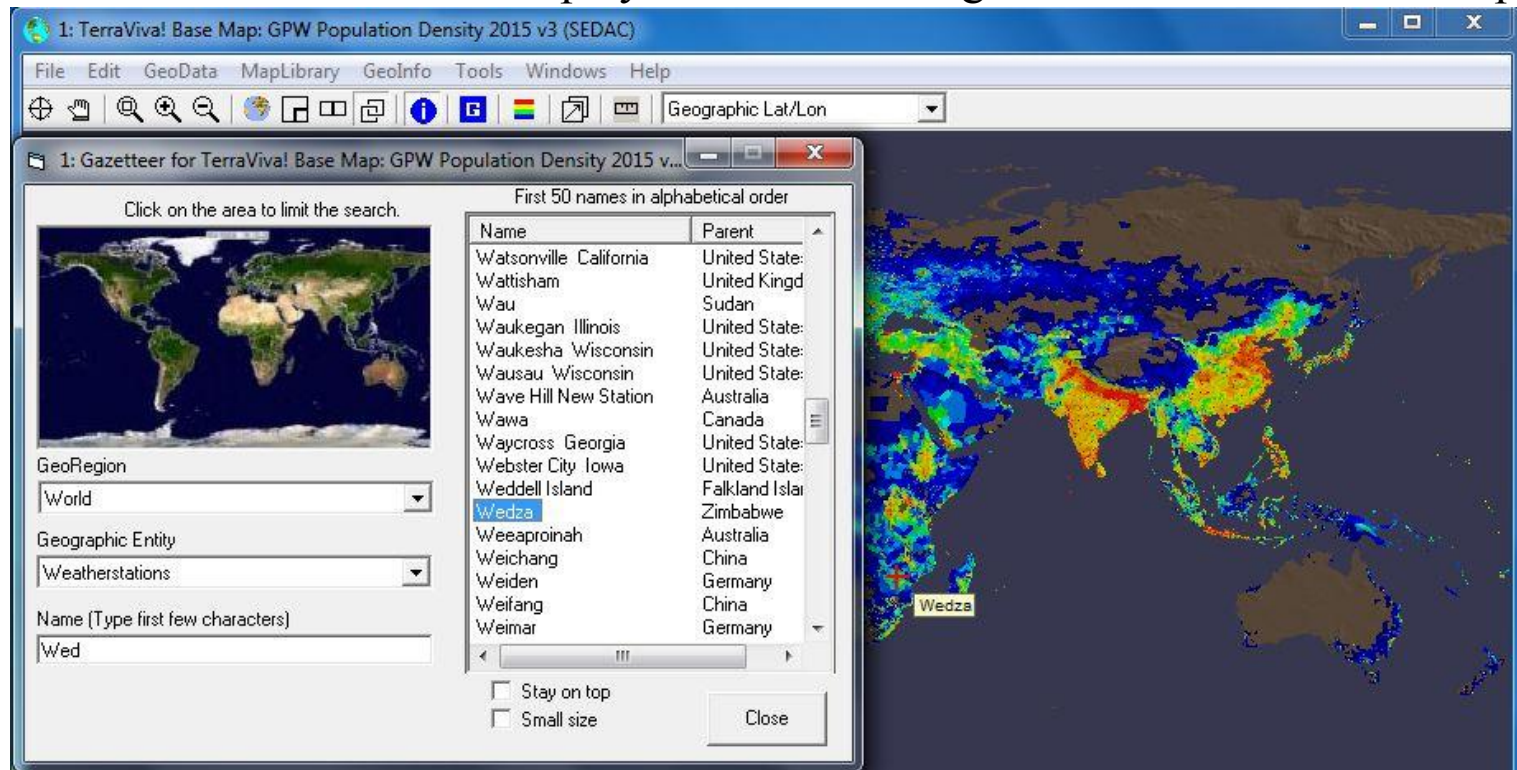
The screenshot shows the TerraViva! Base Map interface. The main map displays a population density map of South America, with Lima highlighted in red. A Gazetteer window is open, showing a list of cities. The list is titled "First 50 names in alphabetical order" and includes the following entries:

Name	Parent
Liancourt Rocks (claimed...)	South Korea
Liban (local name for Leb...)	Lebanon
Libreville (capital)	Gabon
Lietuva (local name for Li...)	Lithuania
Lilongwe (capital)	Malawi
Lima (capital)	Peru
Line Islands	
Lisbon (capital)	Portugal
Liverpool	United Kingd
Ljubljana (capital)	Slovenia
Lobamba (city)	Swaziland
Lombok (island)	Indonesia
Lome (capital)	Togo
London (capital)	United Kingd
Longyearbyen (town)	Svalbard
Lord Howe Island	Australia
Louisiade Archipelago	Papua New I

The Gazetteer window also includes a search box with the text "li" and a "Close" button.

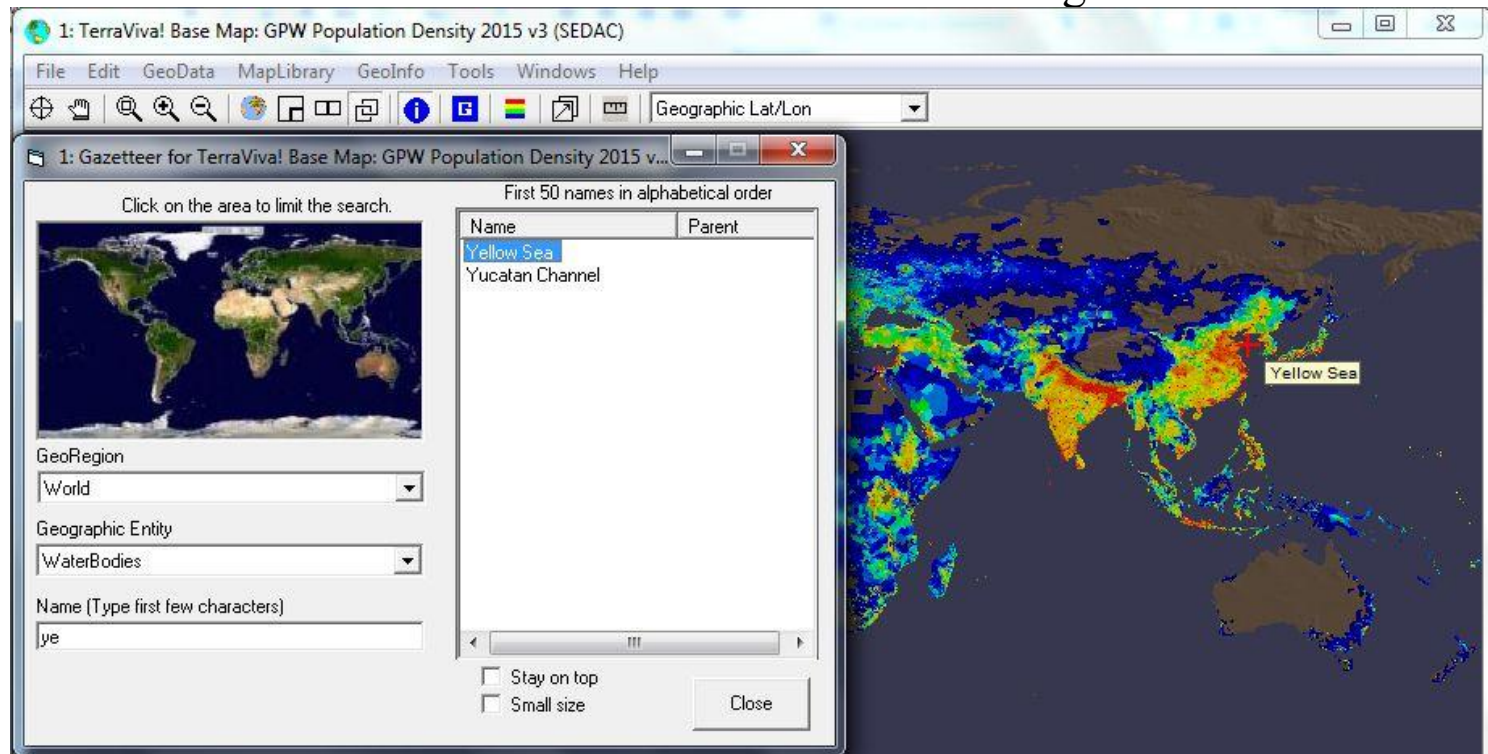
Search for a Weather Station

- On the top menu of the Base Map, click **GeoInfo** and **Gazetteer**.
- On the left side menu of the Gazetteer, labeled Geographic Entity, select “Weatherstations”.
- Click in the left side text box of the Gazetteer, labeled Name and type “Wedza”.
- The list on the right side of the Gazetteer will display “Wedza” and “Zimbabwe”.
- Click “Wedza” in the list to display the label locating the island on the Base Map.



Search for a Water Body

- On the top menu of the Base Map, click **GeoInfo** and **Gazetteer**.
- On the left side menu of the Gazetteer, labeled Geographic Entity, select “Waterbodies”.
- Click in the left side text box of the Gazetteer, labeled Name and type “Yellow Sea”.
- The list on the right side of the Gazetteer will display “Yellow Sea”.
- Click “Yellow Sea” in the list to display the label locating the island on the Base Map.
- Click the Close button in the Gazetteer when finished using the Gazetteer.

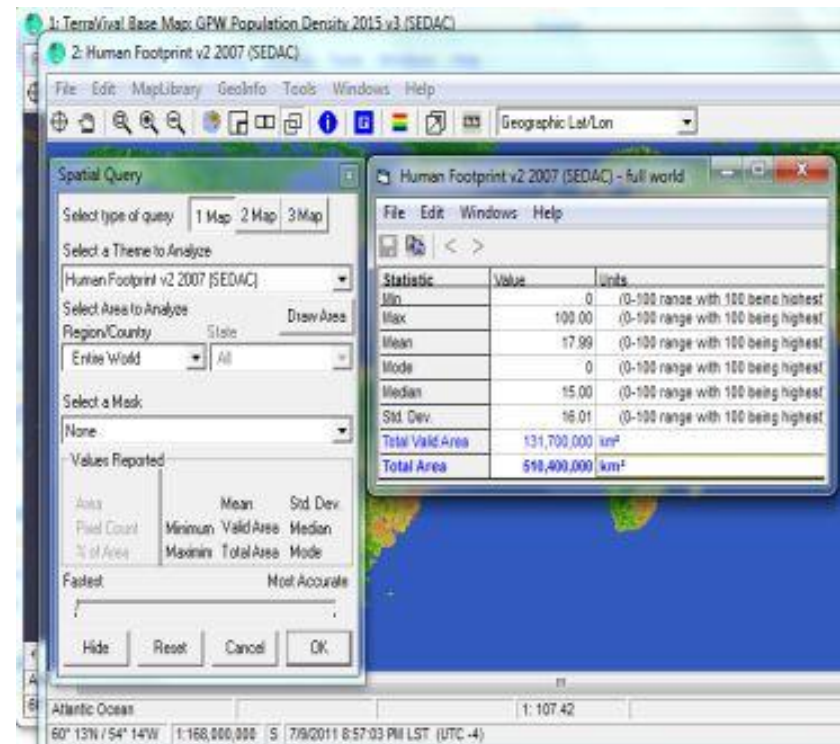


Conducting Spatial Query Analysis

The screenshot displays the TerraViva! Base Map software interface. The title bar reads "1: TerraViva! Base Map: GPW Population Density 2015 v3 (SEDAC)". The menu bar includes "File", "Edit", "GeoData", "MapLibrary", "GeoInfo", "Tools", "Windows", and "Help". The "MapLibrary" menu is open, showing a list of categories: "Create a Dynamic Map...", "Agriculture", "Biodiversity", "Climate", "Climate Change", "Elevation", "Human Impacts", "Land Cover", "Natural Hazards", "Population", "Poverty", "Satellite Composite", "Water", "Select Cartographic Map", "Map Options", and "Start Google Earth". The "Human Impacts" category is expanded, revealing a sub-menu with the following items: "Anthropogenic Biomes 2009 (SEDAC)", "Global patterns of NPP 2006 (SEDAC)", "Human appropriation % of NPP 2006 (SEDAC)", "Human appropriation of NPP 2006 (SEDAC)", "Human Footprint v2 2007 (SEDAC)", "Human Impact on Marine Ecosystems 2008 (NCEAS)", "Human Influence Index 2008 (SEDAC)", and "Soil Degradation 1990 (GLASOD) (Download)". The "Human Footprint v2 2007 (SEDAC)" item is highlighted. The main map area shows a global map with a color-coded overlay representing human footprint, with higher concentrations in North America, Europe, and East Asia. The status bar at the bottom displays "Pacific Ocean", "3: 103.48", and coordinates "19° 56'N / 148° 23'W" with a scale of "1:168,000,000". The date and time are "7/9/2011 2:37:31 PM LST (UTC -10)".

Spatial Query to Assess Human Footprint of the World

- In Window 2: Human Footprint v2, on the top menu of the basemap, click Help, Map Guides, Guide to Human Footprint v2.
- Note that the Human Footprint Map represents the “human influence on the earth’s land surface in terms of a Human Influence Index (HII) normalized by biome that includes forests, grasslands, shrublands, savannas, tundra, woodlands, and desert”.
- On the top menu of the basemap, click **Tools** and **Spatial Query**.
- Choose “Human Footprint v2 2007 (SEDAC)” under Select a Theme to Analyze.
- Choose “Entire World” under Region/Country.
- Click **OK** button to display statistics for chosen area.
- Note the values for Mean, Mode, and Median.



Spatial Query to Assess Human Footprint for United States

- In Window 2: Human Footprint v2, on the top menu of the basemap, click **Tools** and **Spatial Query**.
- Choose “Human Footprint v2 2007 (SEDAC)” under Select a Theme to Analyze.
- Choose “United States” under Region/Country.
- Click **OK** button to display statistics for chosen area.
- Note the values for Mean, Mode, and Median.

The screenshot shows the TerraViva software interface. The main window is titled "1: TerraViva Base Map: GPW Population Density 2015 v3 (SEDAC)". A secondary window titled "2: Human Footprint v2 2007 (SEDAC)" is open, displaying a map of the United States. The "Spatial Query" dialog box is active, showing the following settings:

- Select type of query: 1 Map
- Select a Theme to Analyze: Human Footprint v2 2007 (SEDAC)
- Select Area to Analyze: Region/Country: United States, State: All
- Select a Mask: None
- Values Reported: Area, Mean, Std. Dev., Pixel Count, Minimum, Valid Area, Median, % of Area, Maximim, Total Area, Mode
- Fastest to Most Accurate slider is set to the left.
- Buttons: Hide, Reset, Cancel, OK

The "Human Footprint v2 2007 (SEDAC) - United States" window displays a table of statistics:

Statistic	Value	Units
Min	0	(0-100 range)
Max	100.00	(0-100 range)
Mean	22.40	(0-100 range)
Mode	6.000	(0-100 range)
Median	16.00	(0-100 range)
Std. Dev.	19.09	(0-100 range)
Total Valid Area	9,135,000	km ²
Total Area	9,306,000	km ²

Spatial Query to Assess Human Footprint for Germany

- On the top menu of the basemap, click **Tools** and **Spatial Query**.
- Choose “Human Footprint v2 2007 (SEDAC)” under Select a Theme to Analyze.
- Choose “Germany” under Region/Country.
- Click **OK** button to display statistics for chosen area.
- Note the values for Mean, Mode, and Median.

1: TerraViva Base Map: GPW Population Density 2015 v3 (SEDAC)
2: Human Footprint v2 2007 (SEDAC)

File Edit MapLibrary GeoInfo Tools Windows Help

Geographic Lat/Lon

Spatial Query

Select type of query: 1 Map 2 Map 3 Map

Select a Theme to Analyze: Human Footprint v2 2007 (SEDAC)

Select Area to Analyze: Region/Country: Germany State: All

Select a Mask: None

Values Reported

Area	Mean	Std. Dev.
Pixel Count	Minimum	Valid Area
% of Area	Maximum	Total Area

Fastest: _____ Most Accurate

Hide Reset Cancel OK

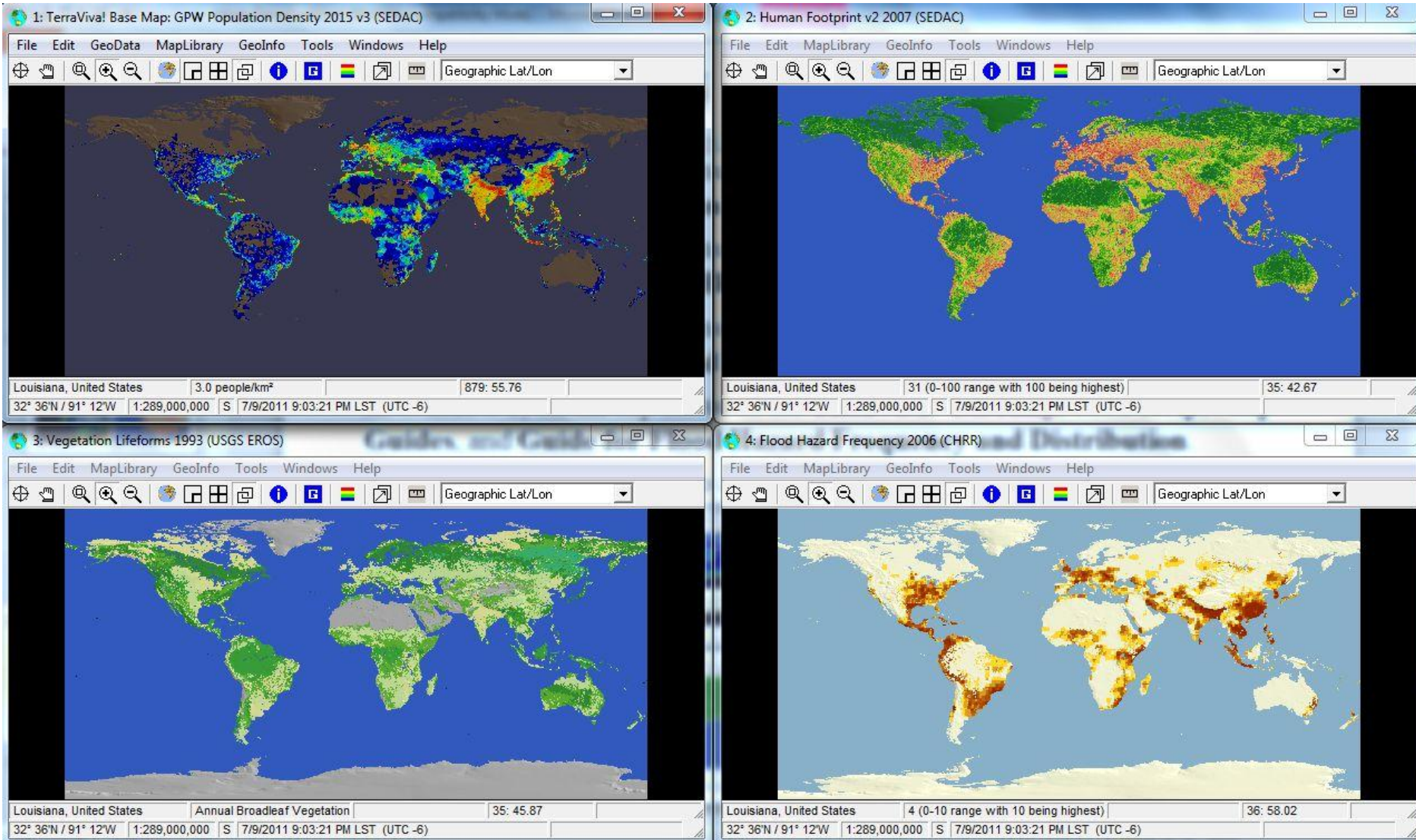
2: 43 (0-100 range with 100 being highest)
1: 99.0 people/km²

Human Footprint v2 2007 (SEDAC) - Germany

Statistic	Value	Units
Min	0	(0-100 range with 100 being highest)
Max	100.00	(0-100 range with 100 being highest)
Mean	45.14	(0-100 range with 100 being highest)
Mode	43.00	(0-100 range with 100 being highest)
Median	43.00	(0-100 range with 100 being highest)
Std. Dev.	16.26	(0-100 range with 100 being highest)
Total Valid Area	351,400	km ²
Total Area	356,200	km ²

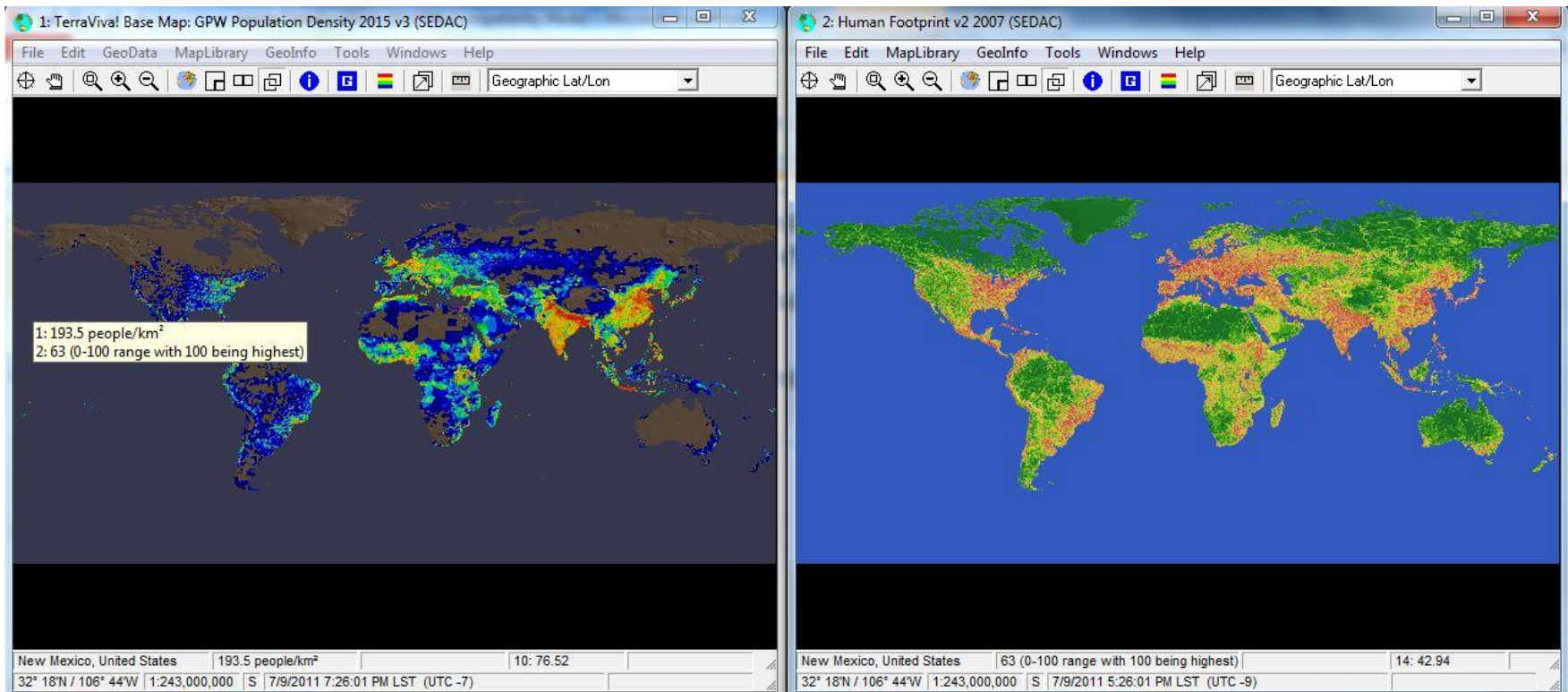
Bayern, Germany 43 (0-100 range with 100 being highest) 1: 107.42
49° 27'N / 12° 21'E 1:168,000,000 S 7/10/2011 2:19:42 AM LST (UTC +1)

Visualizing Data in Multiple Maps



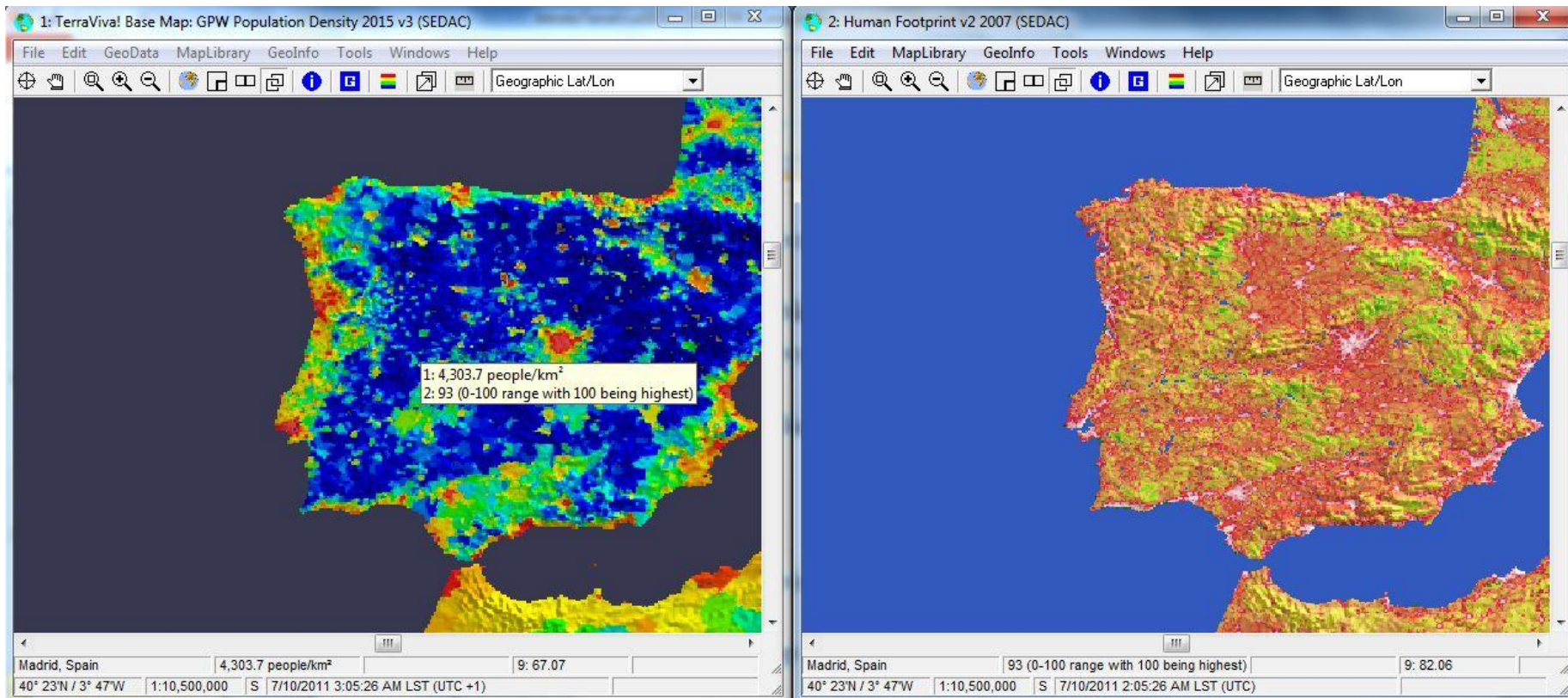
Displaying Multiple Maps

- On the top menu of the TerraViva! Basemap, click **MapLibrary**, **Human Impacts**, and **Human Footprint v2 2007 (SEDAC)**.
- On the top menu of the TerraViva! Basemap, click **Help**, **Map Guides**, and **Guide for Human Footprint v2**.
- On the top menu of the TerraViva! Basemap, click the two squares icon to arrange the windows so both are visible.



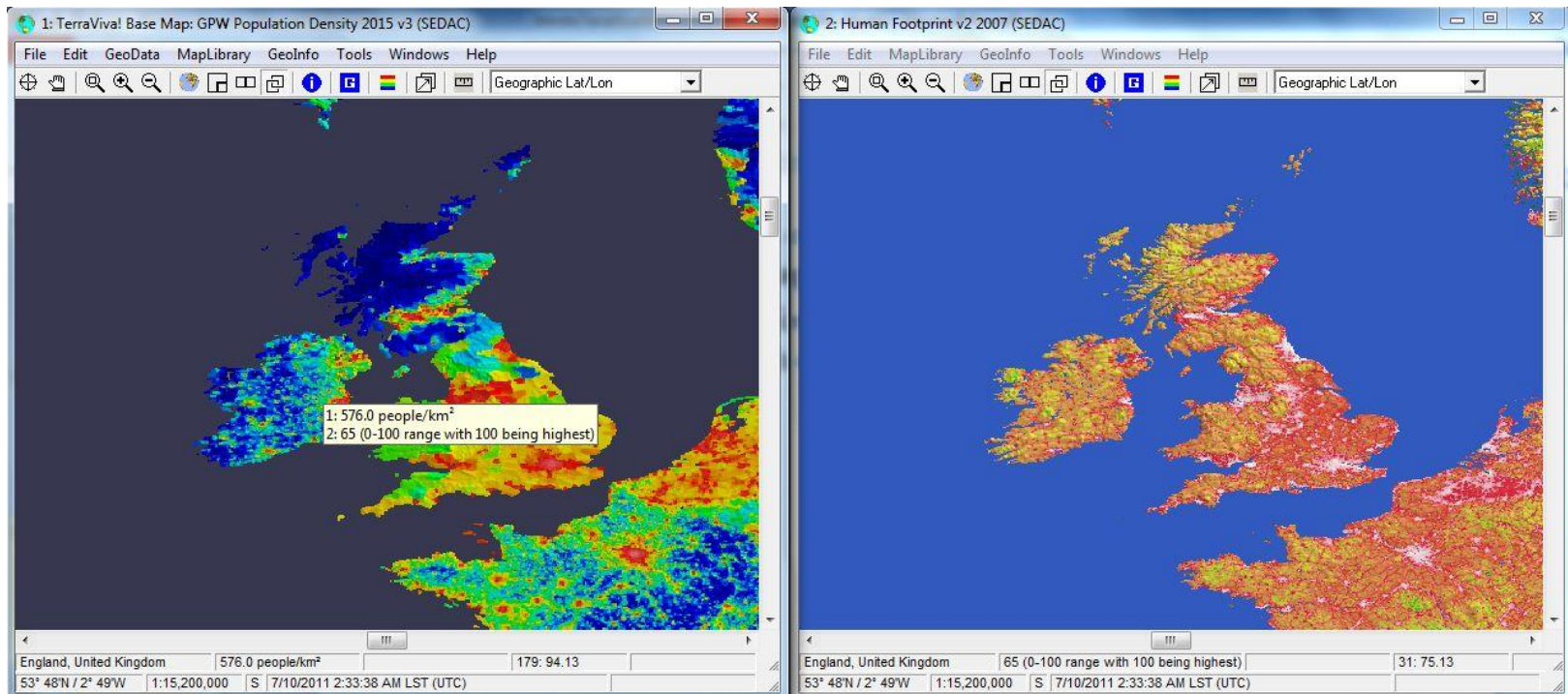
Integrating Multiple Maps

- On the top menu of the TerraViva! Basemap, click the magnifying glass with the plus inside and click Spain.
- Both maps should magnify Spain.
- On the top menu of the TerraViva! Basemap, click the magnifying glass with the plus inside to stop magnification.



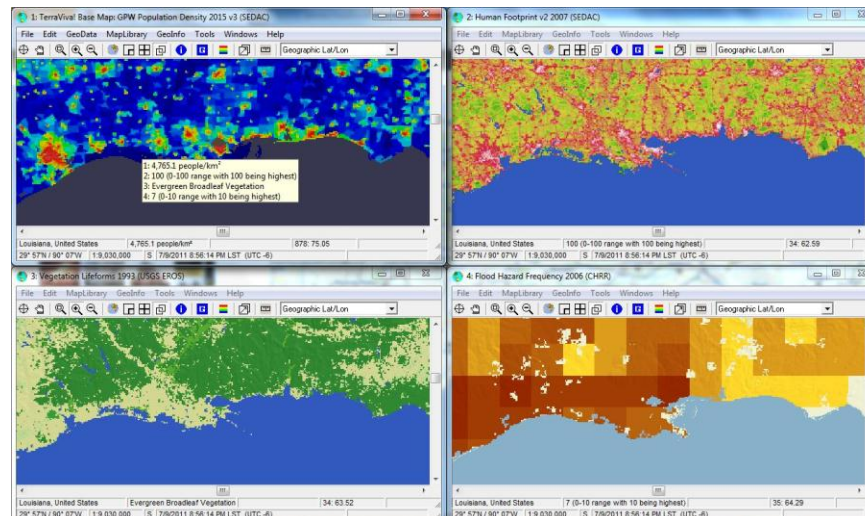
Analyzing Data on Multiple Maps

- Click the hand icon, then move the mouse along the map while pressing the left button to change the location displayed on the maps.
- Position the cursor on areas of interest within any of the maps.
- View the values displayed for the data represented by each of the maps.
- Compare the relationships between the data values displayed for locations of interest.



Visualizing Data in More Maps

- In Window 1, on the top menu of the TerraViva! Basemap, click **MapLibrary**, **Biodiversity**, and **Vegetation Lifeforms 1993 (USGS EROS)**.
- In Window 1, on the top menu of the TerraViva! Basemap, click **Help**, **Map Guides**, and **Guide for AVHRR Landcover Maps**.
- In Window 1, on the top menu of the TerraViva! Basemap, click **MapLibrary**, **Natural Hazards**, and **Flood Hazard Frequency 2006 (CHRR)**.
- In Window 1, on the top menu of the TerraViva! Basemap, click **Help**, **Map Guides**, and **Guide for Flood Hazard Frequency and Distribution**.
- Click the four squares icon to arrange all windows for simultaneous viewing.

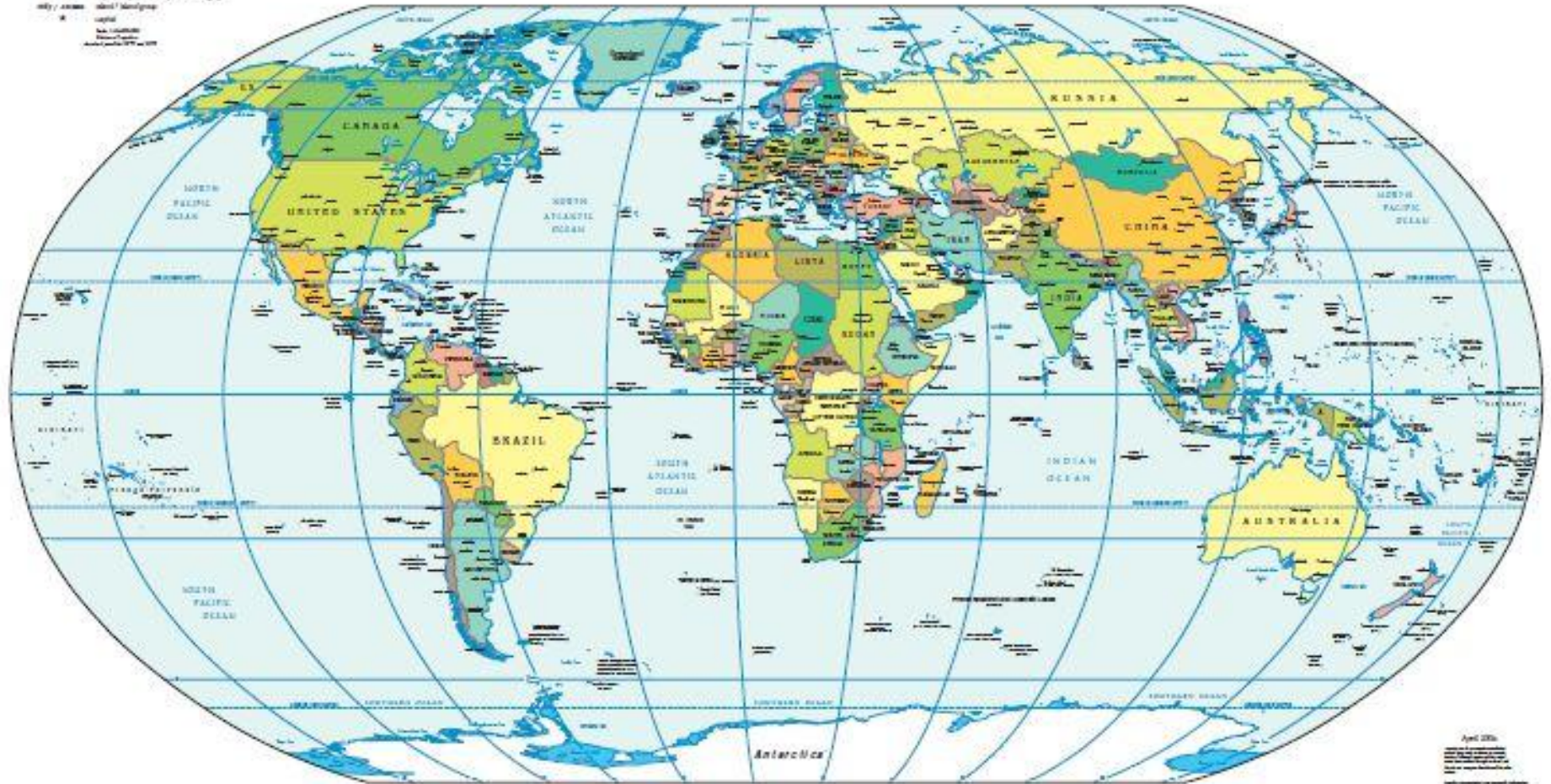


Accessing Cartographic Maps



Political Map of the World, April 2006

NOTES:
Country boundaries are shown in black.
City names are shown in black.
Capital cities are shown in red.
Sea level is shown in blue.
Map is based on the GRS 1996.




April 2006
Map of the World
© 2006 National Geographic Society

Accessing Cartographic Maps in Portable Document Format (PDF) files

- On the top menu of the Base map, click **MapLibrary**.
- From the pull-down menu, click **Select Cartographic Map** to display choices.
- Click the title of the world map to be displayed in PDF.
- Click **Select Regional Map** to display a list of map choices for continents and regions.
- While displaying a PDF map, click the + or - sign on the top to change the magnification.
- While displaying a PDF map, move the mouse over a menu symbol to view its function.
- To stop displaying a PDF map, click **File** from the top menu and click **Exit**.





For additional information about the
2011 TerraViva! SEDAC Viewer and other
data products and services, visit
<http://sedac.ciesin.columbia.edu>