EDEN Data Viewer Tool (v. 1.2)
User's Guide
12/4/07, revised 02/11/10

What is EDEN Data Viewer?

The EDEN Data Viewer is a program for viewing the daily EDEN surfaces of water level and ground elevation from the ground surface digital elevation model and creates daily surfaces of water depth and days since last dry. The user can view all or a selected area of the EDEN domain and the surfaces can be animated over time. Data values for each surface are reported for user-selected UTM-coordinate locations.

The daily surface of water depth is created by subtracting the ground elevation for the EDEN grid cell (400 meter by 400 meter cells) from the water level surface indicate the number of consecutive days that an EDEN grid cell surface has had a depth value greater than zero. The count of "0" indicates that the cell is dry (water depth is equal or less than zero) for that day. When the cell becomes wet (water depth is greater than zero), the count begins and increases each wet day until a dry day is encountered. When the cell dries, the count returns to zero and remains at zero until the cell is wet again (see example below).

At the beginning of the user-specified time period, the value of the days since last dry at all grid cells is set to null or 'no data'. Once the grid cell becomes dry for the first time, the computation of days since last dry starts, therefore it is feasible that some grid cells may never become dry during the period and have no value for the days since last dry computation.

All water level and ground elevation data are output in units of North American Vertical Datum of 1988 (NAVD88).

Days Since Last Dry Calculations

The daily surface of water depth is created by subtracting the ground elevation for the EDEN grid cell (400 meter by 400 meter cells) from the water level surface. The days since last dry indicate the number of consecutive days that an EDEN grid cell surface has had a depth value greater then zero. The count of "0" indicates that the cell is dry (water depth is equal or less than zero) for that day. When the cell becomes wet (water depth is greater than zero), the count begins and increases each wet day until a dry day is encountered. When the cell dries, the count returns to zero and remains at zero until the cell is wet again. Note that in the "days since dry" window of the Data Viewer a considerable portion of the graphic may appear blank as there is no data yet available. It is not until the cell is dry that the count begins (at "0"), and data is present.
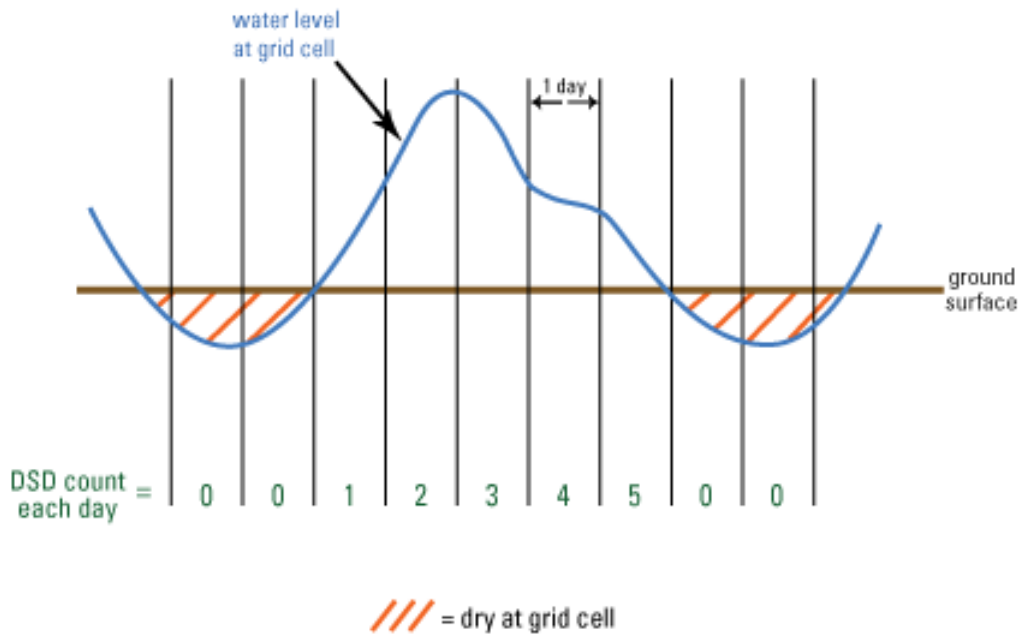
For example, a count of 3 means that the cell has been wet for the last 3 consecutive days or, said another way, the cell was dry 3 days ago.

Installation Instructions

Required for execution of the program:

1. **EDEN DataViewer.exe** (currently at v. 1.1)
   Available for download at
   http://sofia.usgs.gov/eden/edenapps/dataviewer.php
   Executable file can be copied to any location on your computer.

2. **netCDF dll (NetCDF data library files)**
   Extract files from http://sofia.usgs.gov/eden/edenapps/programs/netcdf-3.6.1-win32.zip.
   Extract all files in the .zip and copy them to c:\windows\system32.

3. **.NET Framework 2.0**
   EDEN Transect Plotter requires the .NET Framework 2.0. If you receive an error message telling you that it is missing, you will need to download it from http://www.microsoft.com and install it. Accept the default settings.

User Input

Required files:

1. **EDEN digital elevation model (DEM) file for ground elevation**
   a. NetCDF file format (.nc)
   b. Units of centimeters
   c. Available for download at http://sofia.usgs.gov/eden/models/groundelevmod-edenapps.php.

2. **EDEN daily water level surfaces**
   a. NetCDF format file(s) (.nc) containing daily water level surfaces
   b. Multiple one-quarter-year files can be used for requested time series (be sure that continuous data files are present for accurate time series calculations)
   c. Available for download at http://sofia.usgs.gov/eden/models/watersurfacemod.php.

User Instructions

1. Open the application. To do this, navigate to the application and double-click on the icon.
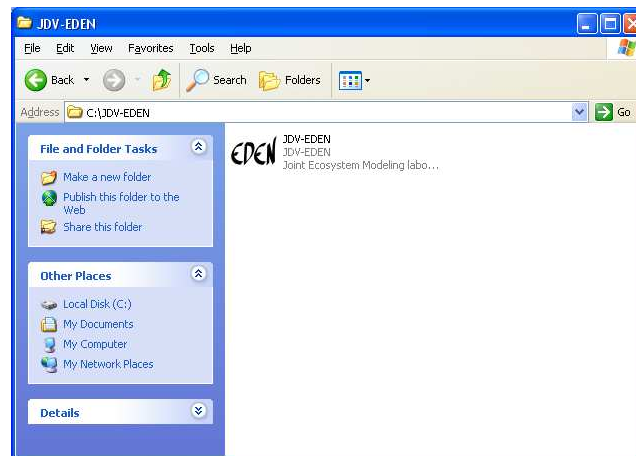
   The application will open to the **Data Loading** window.

2. Type the path to the file containing the EDEN DEM for ground elevation (netCDF, .nc).
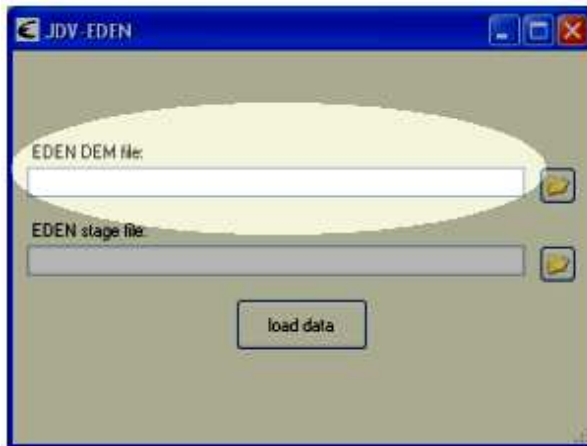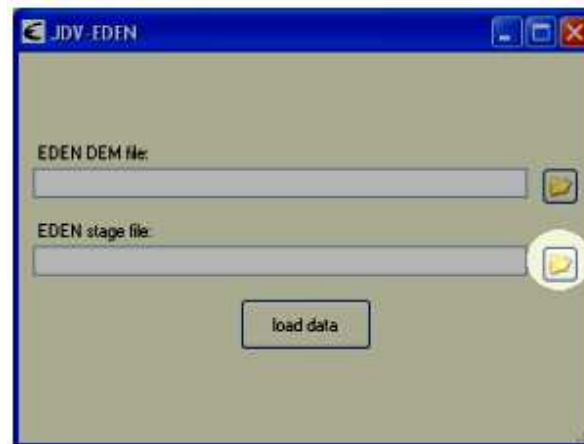

Alternatively, you may click the browse button and browse to the appropriate file.
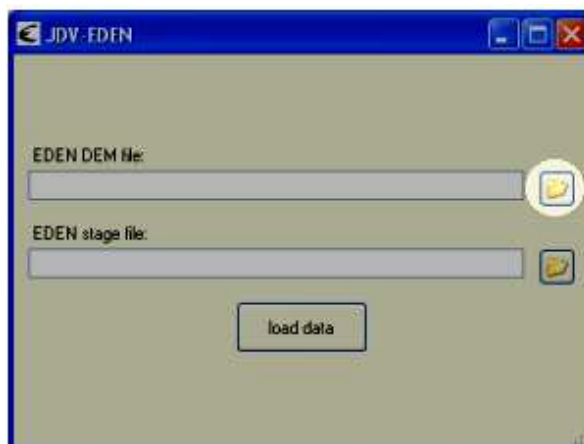
3. Type the path to the file containing the EDEN daily water level surfaces (netCDF, .nc).

Alternatively, you may click the browse button and browse to the appropriate file.

Once you enter a water level file, a second **EDEN stage file** input text box will appear. If you wish to enter a second water level file, type the file path or browse to the file. Adding additional water level files is optional; only one water level file is required to run the application. Tab past the final input text box to finish entering water level files.

4. To view the EDEN surfaces, click the **load data** button.

If any information is incomplete, a box will notify you to make the necessary correction. The Data Loading window will reappear, allowing you to re-enter the files.

A window will keep you apprised of the program's progress.

5. When the data have loaded, the **Data Viewer** window will display.

Animation controls

UTM coordinates

Date currently viewed

Stage map panel

DEM map panel

Map thumbnail

Days since dry map panel

Depth map panel

Data Viewer Features

1. The **maps currently loaded in memory** label displays the number of maps entered into the Data Viewer this session. This includes one map for each day of water levels, water depth, and days since dry, plus one map for the ground elevation
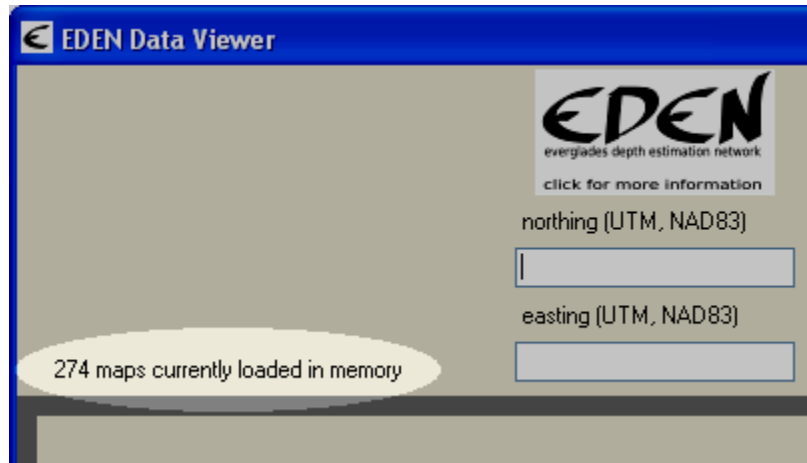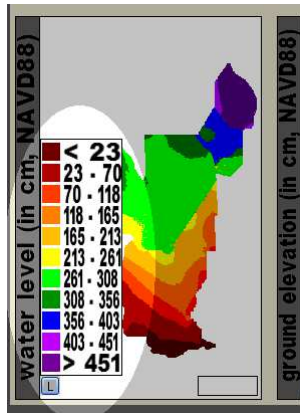

2. The data type on each map is indicated on the left-side banner with the units of the data and datum, if appropriate. To view a map legend, click the ⬜ button located in the bottom left of that map panel.
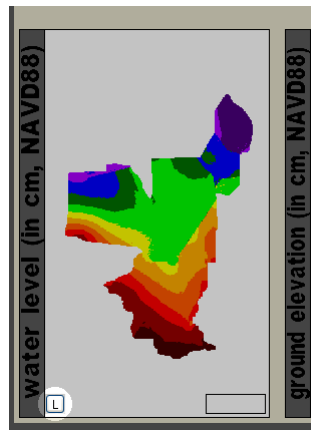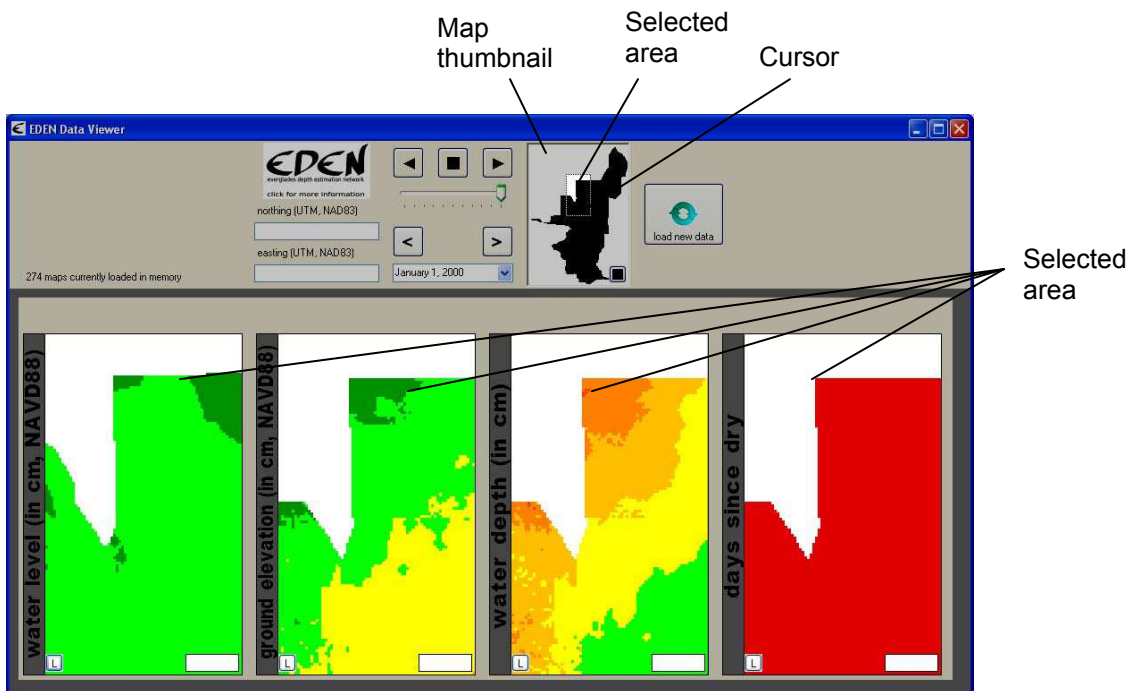

The legend box for that map panel will open.

To close a legend box, click the ⌑ button. The legend will close.

3. To zoom into an area of the map, use the cursor to draw a box in the **map thumbnail**. All four map panels will zoom to the selected area.
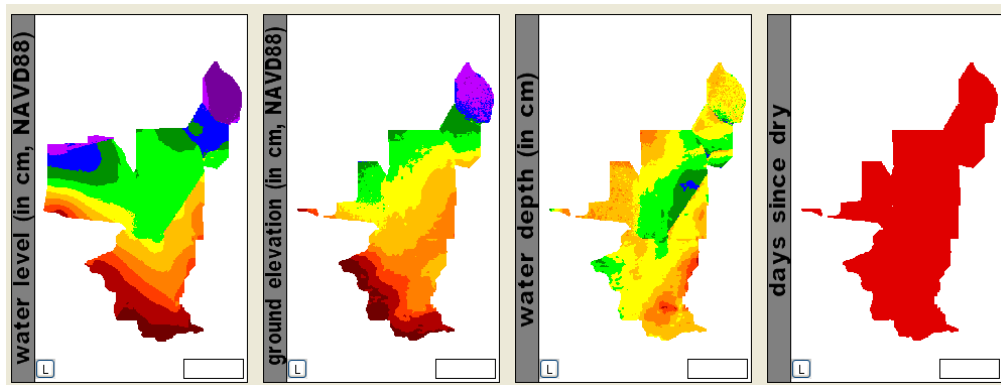

To view a different area, use the cursor to draw a new box in the **map thumbnail** and the map panels will display the newly selected area.
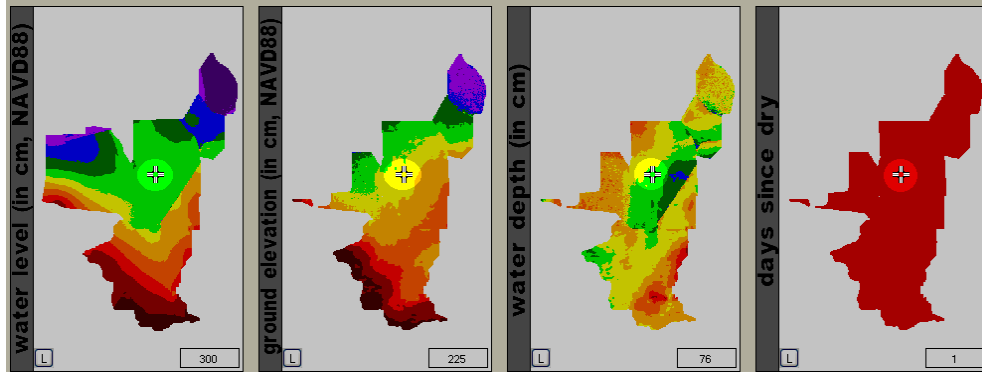
To return the map panels to the view of the entire EDEN domain, click the ■ button located in the bottom right of the **map thumbnail**.

The map panels will display the entire EDEN domain.

4. To view data values at a specific location, click on that location in any one of the map panels or on the map thumbnail. A ✛ symbol will appear in all of the map panels at the selected location.
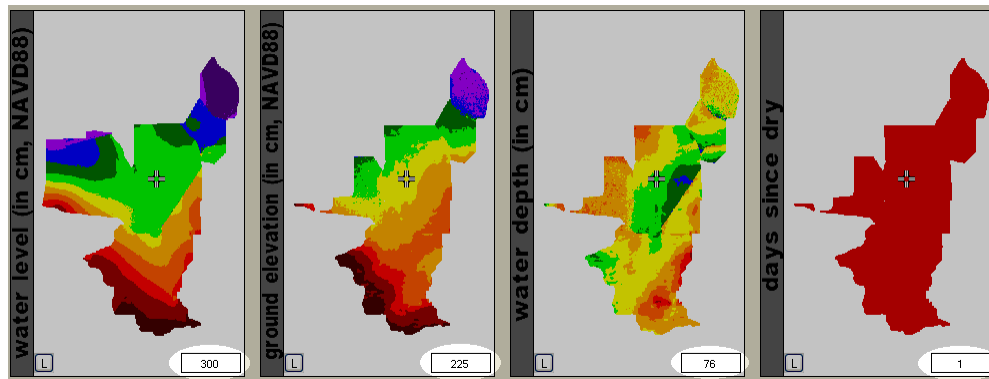

The UTM northing and easting coordinates (NAD83) for the selected location will be displayed in the **northing** and **easting** text boxes.
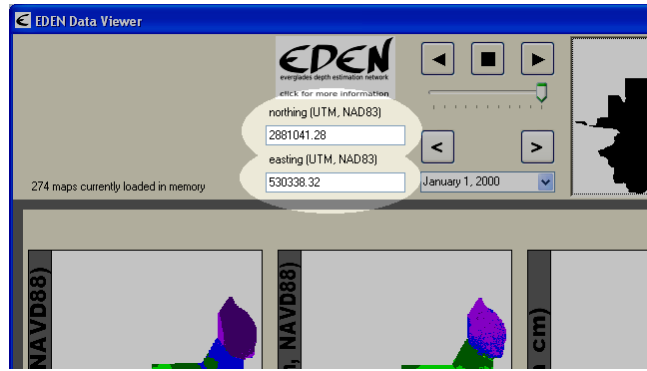
Alternatively, you may type UTM northing and easting coordinates into the **northing** and **easting** text boxes. The ⊹ symbol will appear in the map panels at those coordinates.

The data value boxes in the bottom right of the map panels will display the data values for the selected location.

To view data values for a new location, click on the desired location in any one of the map panels or type its northing and easting coordinates into the **northing** and **easting** text boxes.
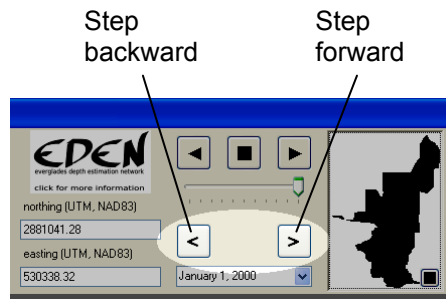
The data value boxes will display the data values for the new location.

5. To view data from a particular date, select the desired date from the **date currently viewed** drop-down menu.
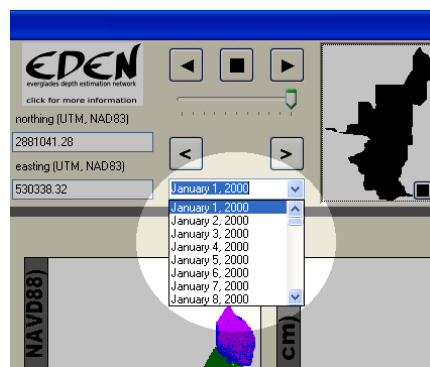
The map panels will display EDEN daily surfaces for that date.

6. To step the date forward or backward in one-day increments, click the **step forward** or **step backward** button.

Step
backward

Step
forward

The date will move forward or backward in one-day increments, depending on the button pressed.

If the **step forward** button is pressed when the end of the time series is reached, the first date in the time series will be displayed. Likewise, if the **step backward** button is pressed when the beginning of the time series is reached, the last date in the time series will be displayed.

7. To view animation of the time series, click on the **animate forward** or **animate backward** button.

Animate
backward

Stop
animation

Animate
forward
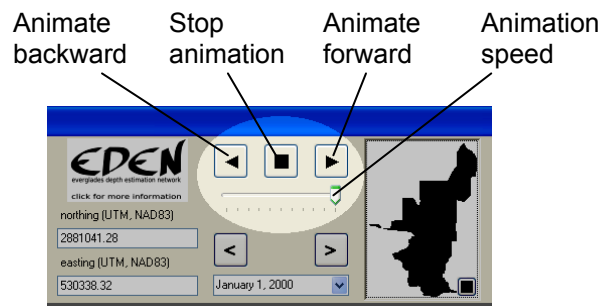
Animation
speed

The animation will play, beginning at the date currently viewed, in the direction determined by pressing the **animate forward** or **animate backward** button and will continue forward to each successive day or backward through each previous day until reaching the final date for which data are available.

When the final date in the animation is reached (which is either the first or the last date in the time series, depending on the direction of animation), the animation will loop and will continue to loop until it is stopped manually.

To increase the animation speed, slide the animation speed track bar to the right. To decrease the animation speed, slide the animation speed track bar to the left.

To stop the animation, click on the **stop animation** button.

8. To save the **Data Viewer** window graphic, press Alt PrntScrn to copy the image to the clipboard, then paste the image into the program of your choice (such as Word, Excel, or Photoshop).

9. To end the current session and view data contained in different files, click the **load new data** button.
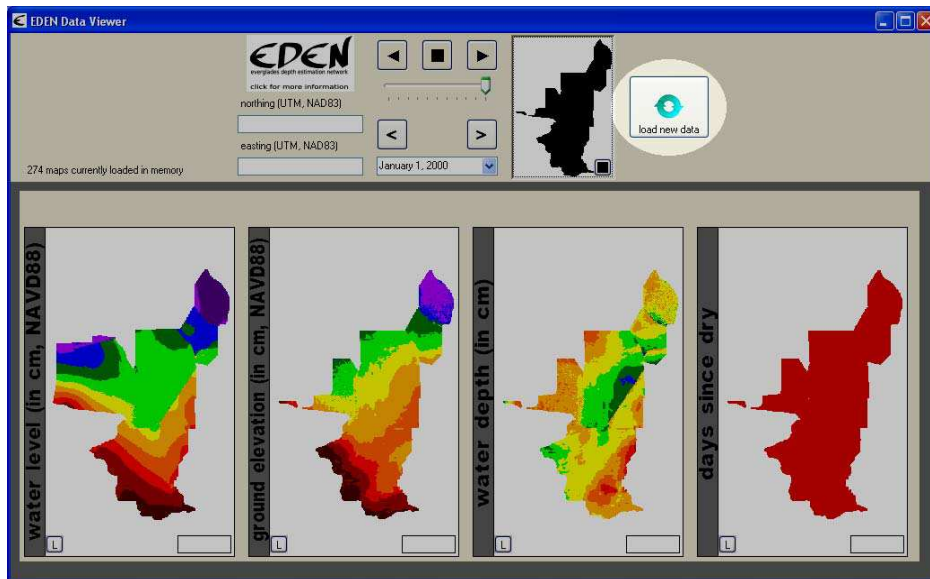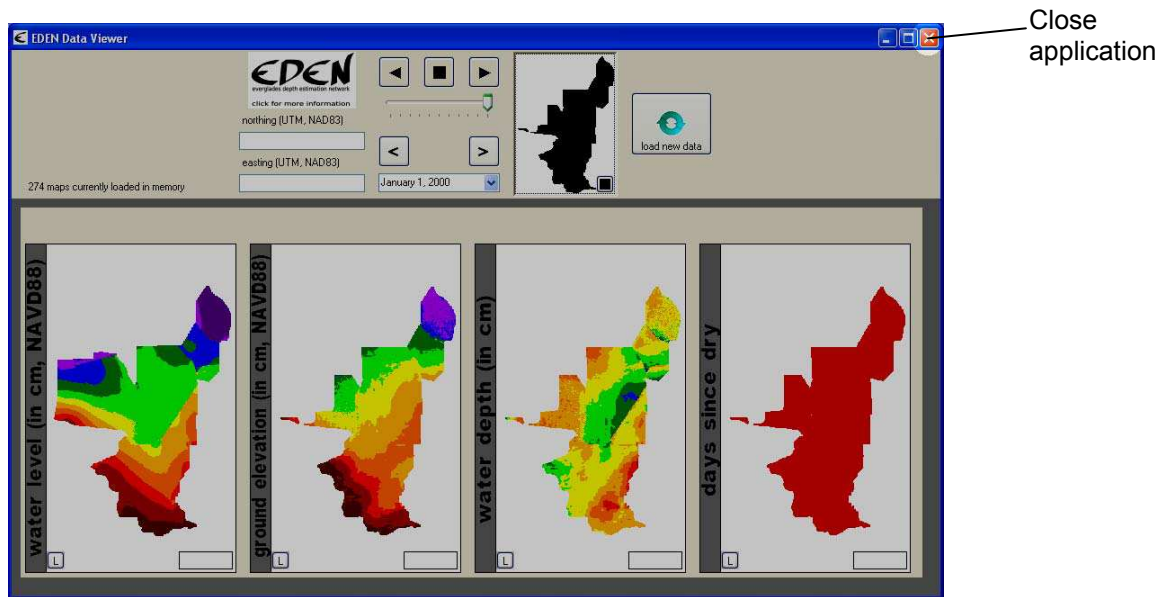

The **Data Loading** window will be displayed. Enter the EDEN DEM for ground elevation and one or more files containing the EDEN daily water level surfaces.
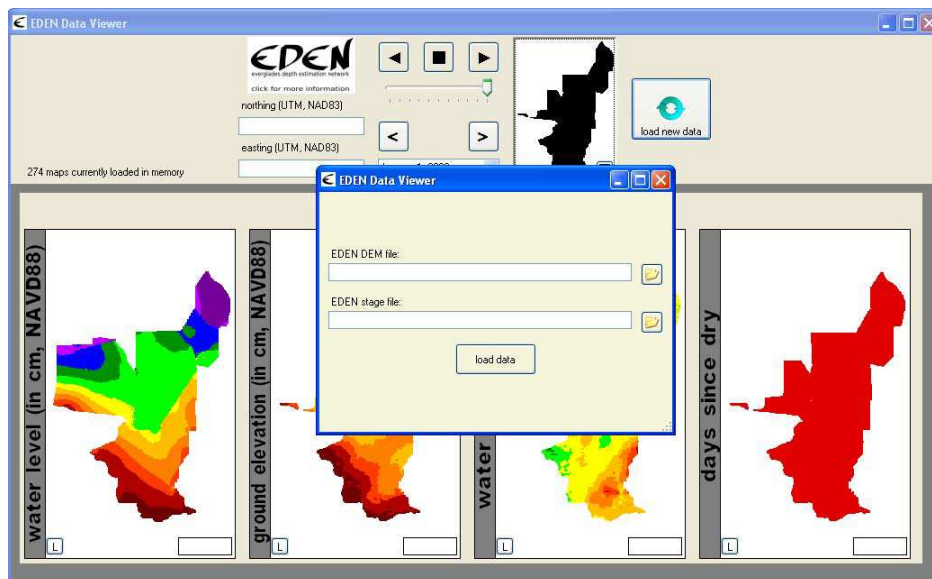
The **Data Viewer** window will display the data contained in the newly entered files only.

10. To close the application, click on the close button in the upper-right corner of the **Data Viewer** window.

Close application

Developed for Everglades Depth Estimation Network (EDEN).
Joint Ecosystem Modeling, A DOI (USGS/USFWS/NPS)/ Universities/others Partnership based at IFAS, University of Florida, Fort Lauderdale Research Center.

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http://sofia.usgs.gov/eden