

EASTWeb (v3) Manual

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1. Installation tutorial

This tutorial walks through the steps required to install and configure the EASTWeb software.

1.1 Recommended system

The EASTWeb software is very resource intensive. The following hardware or better is recommended for running the software:

- 2.8GHz quad core
- 6.00GB RAM

EASTWeb has not been tested on systems slower than the recommended system and may function poorly or incorrectly in such a system. EASTWeb was designed for a Windows 7 environment and may not function correctly in Windows XP or other environments.

1.2 Installing dependencies

The following software needs to be installed for the EASTWeb software to run.

- Java 32bit
- PostgreSQL 9.3

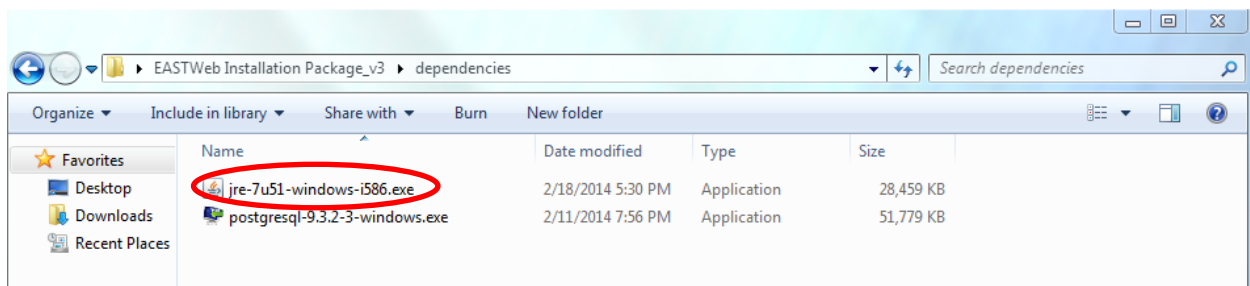
Java 32-bit, PostgreSQL are provided in the download package for easily installation.

Administrative privileges will be required to install the dependencies.

1.2.1 Installing Java 32-bit

Navigate to the “dependencies” folder included in the EASTWeb installation package and double click on “jdk-6u26-windows-i586”.

The following installation wizard will appear:



The following installation wizard will appear:

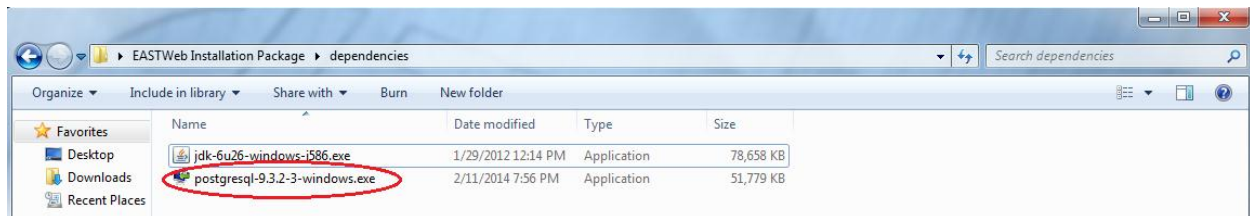


Click “Next” until the wizard displays a progress bar. Wait for the progress bar. When the progress bar completes, click “Finish”.



1.2.2 Installing PostgreSQL

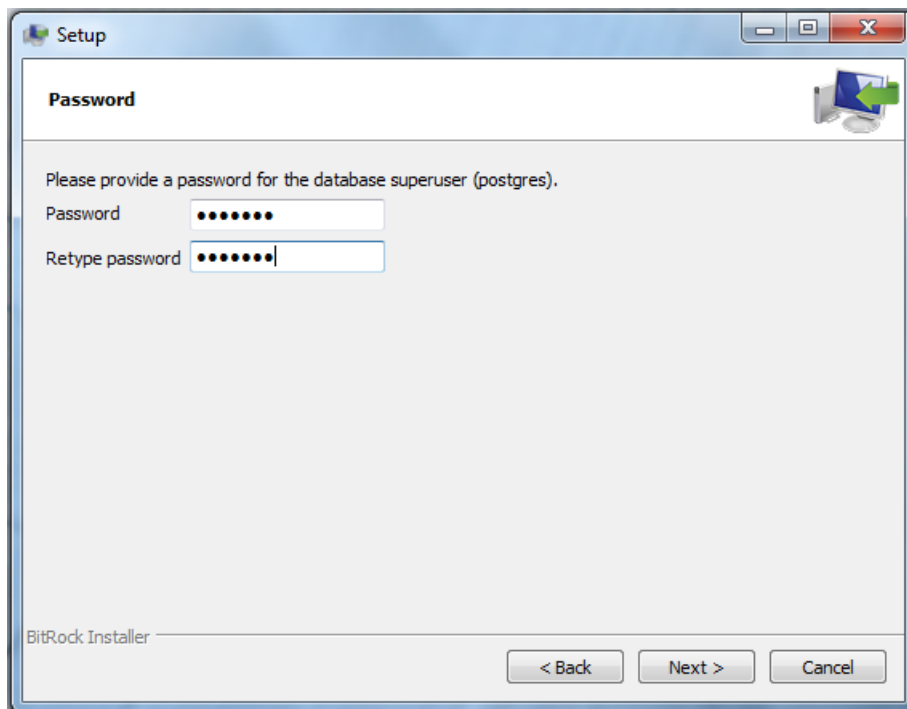
Navigate to the “dependencies” folder included in the EASTWeb installation package and run “postgresql-9.3.2-3-windows”.



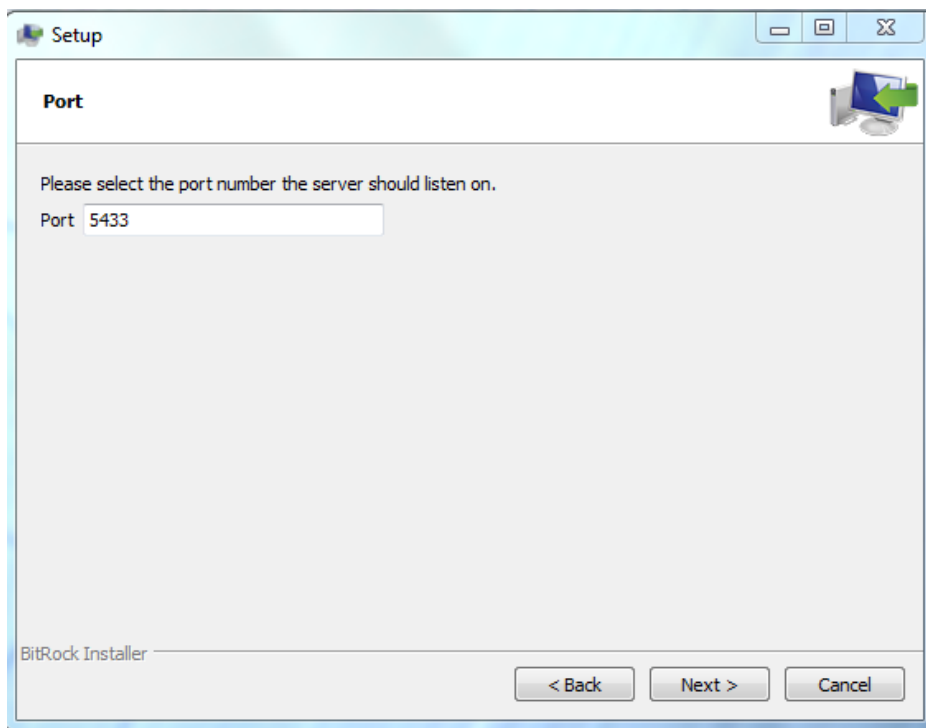
The following installation wizard will appear:



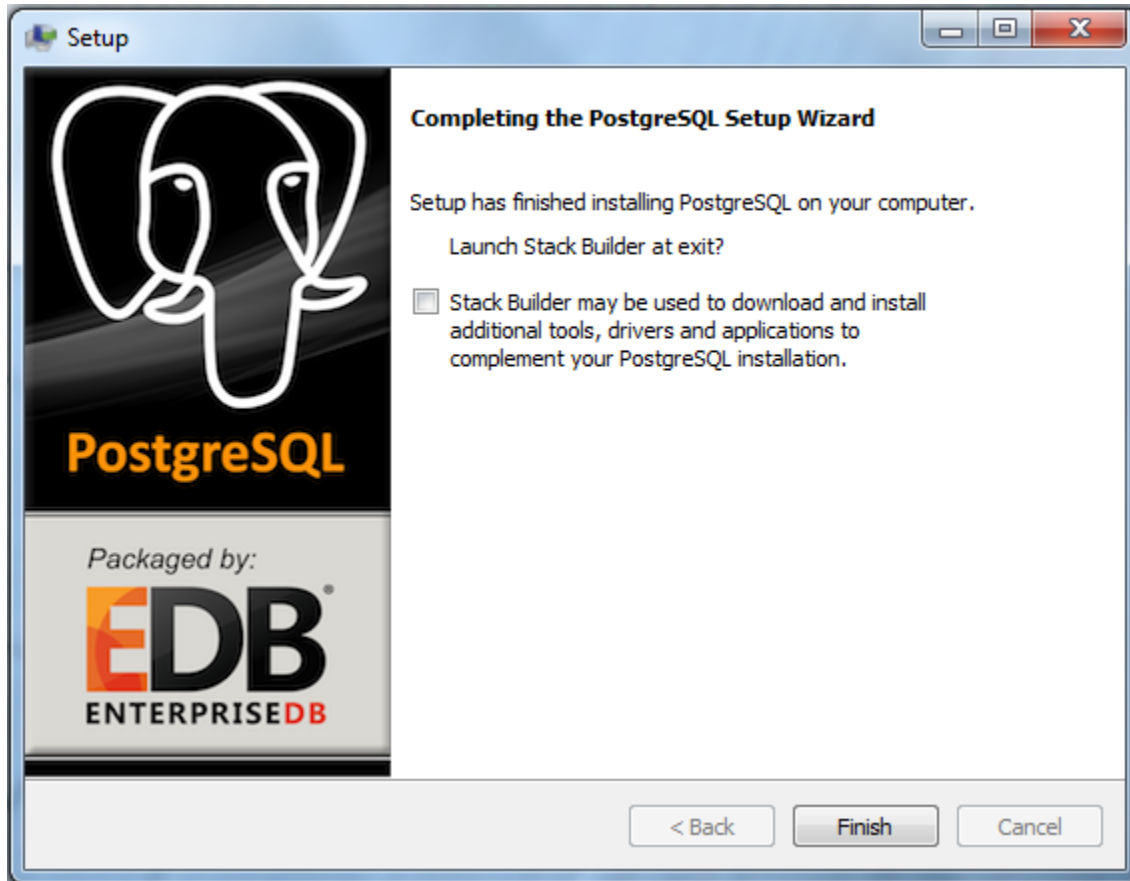
Click the “Next” button until the “Password” step is reached. Set the password to “eastweb”. This is the password that the software will need to use to access the database.



Click the "Next" button. If not already present, type "5432" in the "Port" text entry. This is the port the software will attempt to communicate with the database on. If you already installed a lower version of postgresQL, use port number "5433".



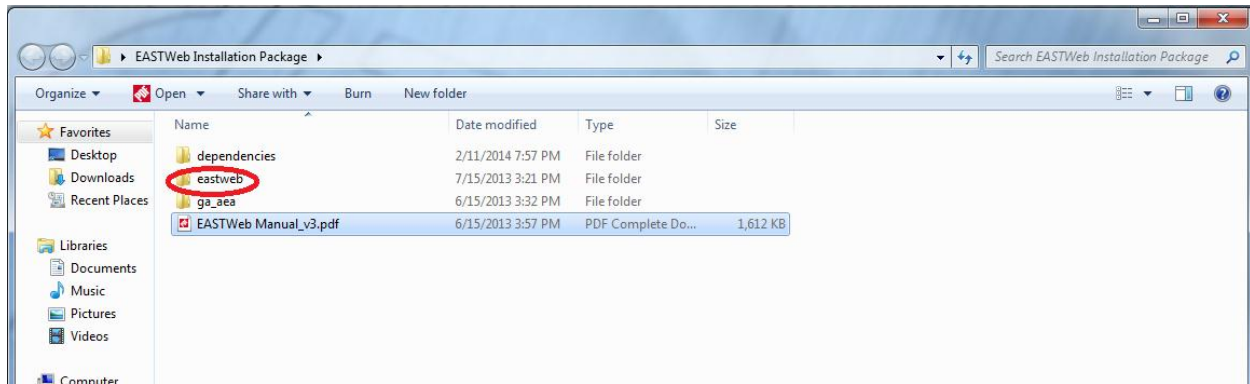
On the last page of the installation wizard uncheck the “Launch Stack Builder at exit?” checkbox and press finish.



1.3 Placing the installation folder

For this tutorial, we assume that the EASTWeb software will be placed in “C:\eastweb”. Avoid placing the EASTWeb installation folder in a location with a long file path. Long file paths may cause some ArcGIS functions to fail.

Navigate to the installation package and select the “eastweb” folder.

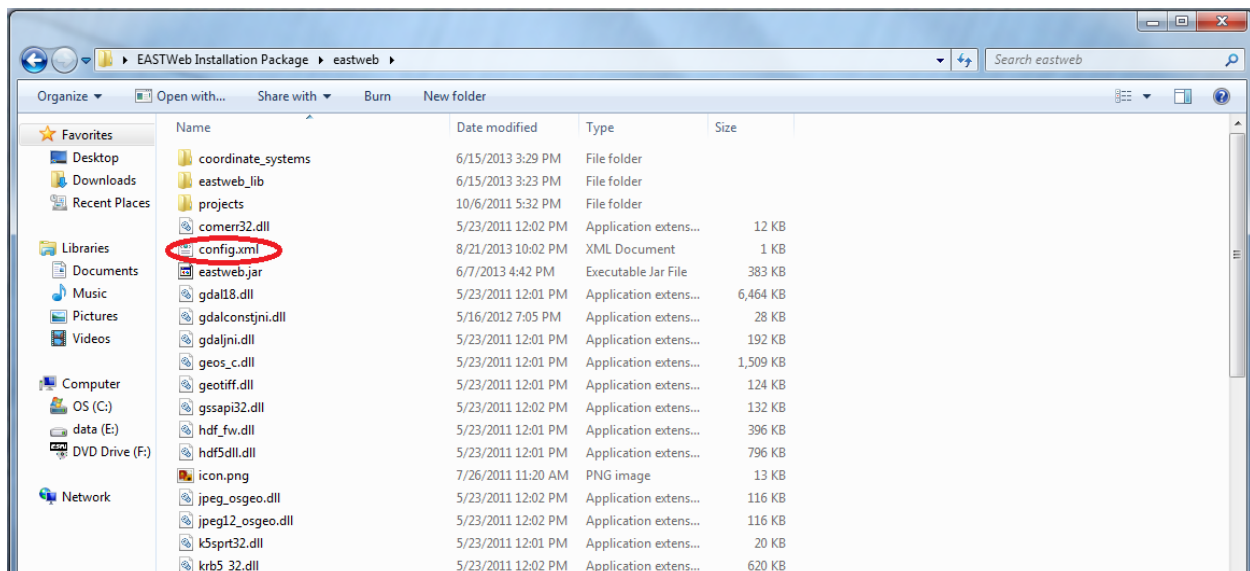


Right click on the “eastweb” folder and select “Cut” from the context menu. Navigate to the desired installation location then right click on the location and select “Paste” from the context menu.

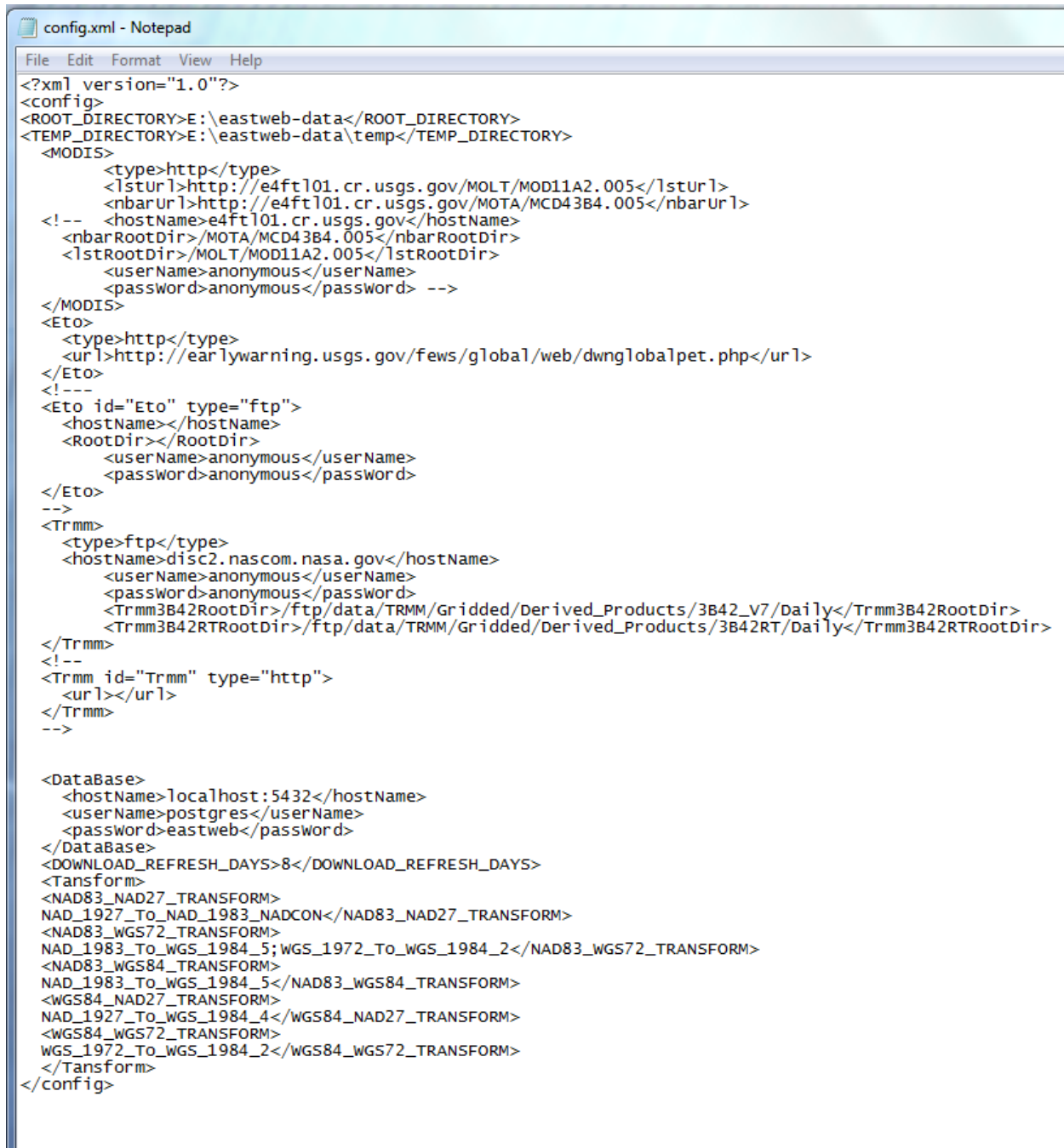
1.4 Configuring the software

The software may need to be configured before use. A configuration file located within the EASTWeb installation directory specifies the location of resources, values needed to use the resources, and advanced EASTWeb settings.

Navigate to the installation directory. Locate the “config” xml document.



Open the “config” in Notepad.



```
<?xml version="1.0"?>
<config>
<ROOT_DIRECTORY>E:\eastweb-data</ROOT_DIRECTORY>
<TEMP_DIRECTORY>E:\eastweb-data\temp</TEMP_DIRECTORY>
  <MODIS>
    <type>http</type>
    <lsturl>http://e4ftl01.cr.usgs.gov/MOLT/MOD11A2.005</lsturl>
    <nbarurl>http://e4ftl01.cr.usgs.gov/MOTA/MCD43B4.005</nbarurl>
    <!-- <hostname>e4ftl01.cr.usgs.gov</hostname>
    <nbarRootDir>/MOTA/MCD43B4.005</nbarRootDir>
    <lstRootDir>/MOLT/MOD11A2.005</lstRootDir>
    <userName>anonymous</userName>
    <password>anonymous</password> -->
  </MODIS>
  <Eto>
    <type>http</type>
    <url>http://earlywarning.usgs.gov/fews/global/web/dwnglobalpet.php</url>
  </Eto>
  <!--
  <Eto id="Eto" type="ftp">
    <hostname></hostname>
    <RootDir></RootDir>
    <userName>anonymous</userName>
    <password>anonymous</password>
  </Eto>
  -->
  <Trmm>
    <type>ftp</type>
    <hostname>disc2.nascom.nasa.gov</hostname>
    <userName>anonymous</userName>
    <password>anonymous</password>
    <Trmm3B42RootDir>/ftp/data/TRMM/Gridded/Derived_Products/3B42_V7/Daily</Trmm3B42RootDir>
    <Trmm3B42RTRootDir>/ftp/data/TRMM/Gridded/Derived_Products/3B42RT/Daily</Trmm3B42RTRootDir>
  </Trmm>
  <!--
  <Trmm id="Trmm" type="http">
    <url></url>
  </Trmm>
  -->

  <DataBase>
    <hostname>localhost:5432</hostname>
    <userName>postgres</userName>
    <password>eastweb</password>
  </DataBase>
  <DOWNLOAD_REFRESH_DAYS>8</DOWNLOAD_REFRESH_DAYS>
  <Transform>
    <NAD83_NAD27_TRANSFORM>
      NAD_1927_To_NAD_1983_NADCON</NAD83_NAD27_TRANSFORM>
    <NAD83_WGS72_TRANSFORM>
      NAD_1983_To_WGS_1984_5;WGS_1972_To_WGS_1984_2</NAD83_WGS72_TRANSFORM>
    <NAD83_WGS84_TRANSFORM>
      NAD_1983_To_WGS_1984_5</NAD83_WGS84_TRANSFORM>
    <WGS84_NAD27_TRANSFORM>
      NAD_1927_To_WGS_1984_4</WGS84_NAD27_TRANSFORM>
    <WGS84_WGS72_TRANSFORM>
      WGS_1972_To_WGS_1984_2</WGS84_WGS72_TRANSFORM>
    </Transform>
  </config>
```

The ROOT_DIRECTORY tag specifies the location of the EASTWeb data directory. The software will use this location to store project data. The project created in the Georgia project takes up nearly sixty-two gigabytes. Ensure that the location specified by the ROOT_DIRECTORY parameter has sufficient space for your needs. If it does not, specify an alternate location. The TEMP_DIRECTORY tag specifies the location of the temp data directory.

For the following Georgia project tutorial, we assume that the default values are used. For information

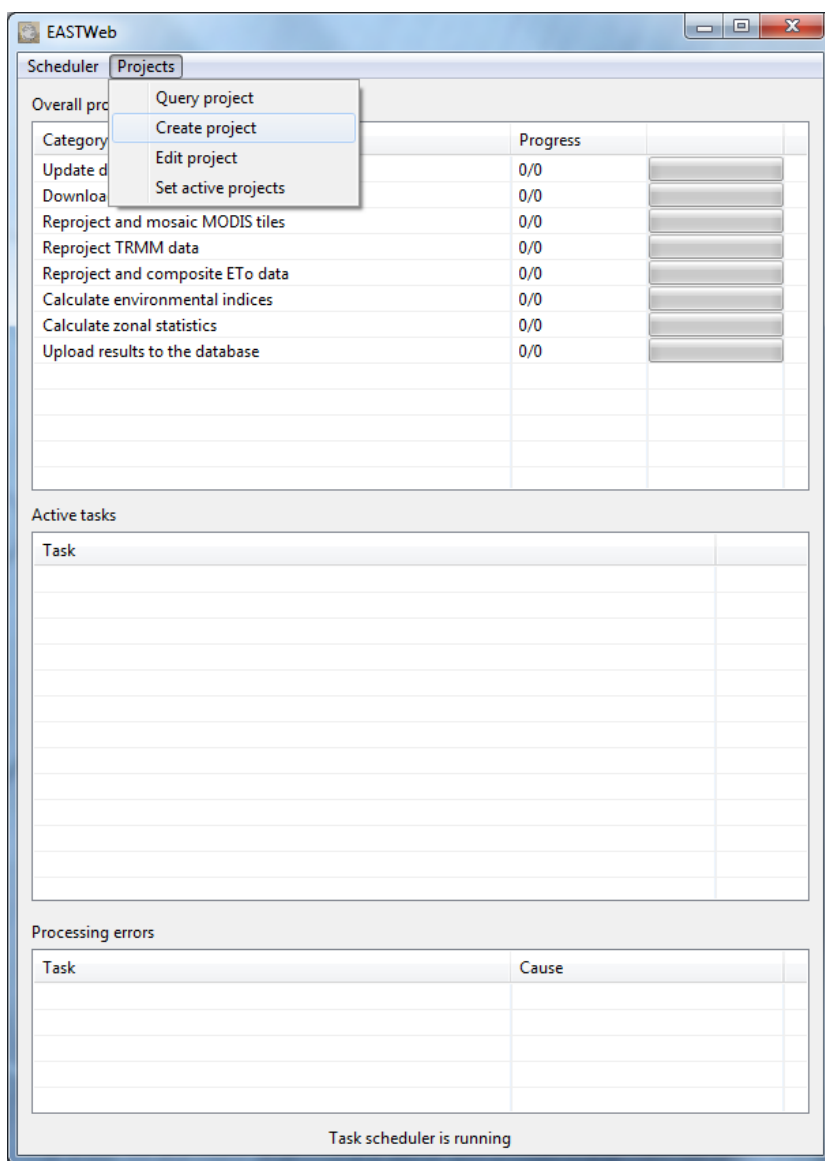
on how to set non-default values, see section 3.1 Parameter list.

2. Georgia project tutorial

This tutorial walks through the steps required to create, process, and query a project. The tutorial also includes discussion of processing errors and important things to know when creating your own project. If an issue is encountered while following the tutorial, refer to the troubleshooting section of this document.

2.1 Running the software and creating a project

Navigate to the EASTWeb installation folder and double click “EASTWeb Local.bat”. Open the “Projects” menu and click on “Create project”.



Set the project name to “ga_aea” (short for “Georgia Albers Equal Area”) and set the start date to 1/1/2013.

EASTWeb

Scheduler Projects

Overall progress

Category	Progress
Update download caches	0/0
Download data	0/0
Reproject and mosaic MODIS tiles	0/0
Reproject TRMM data	0/0

New Project

Basic Project Information
Enter basic project information.

Project name:

Start date:

Calculate ETa: ☐

Elevation file:

Watermask:

Minimum LST in celcius:

Maximum LST in celcius:

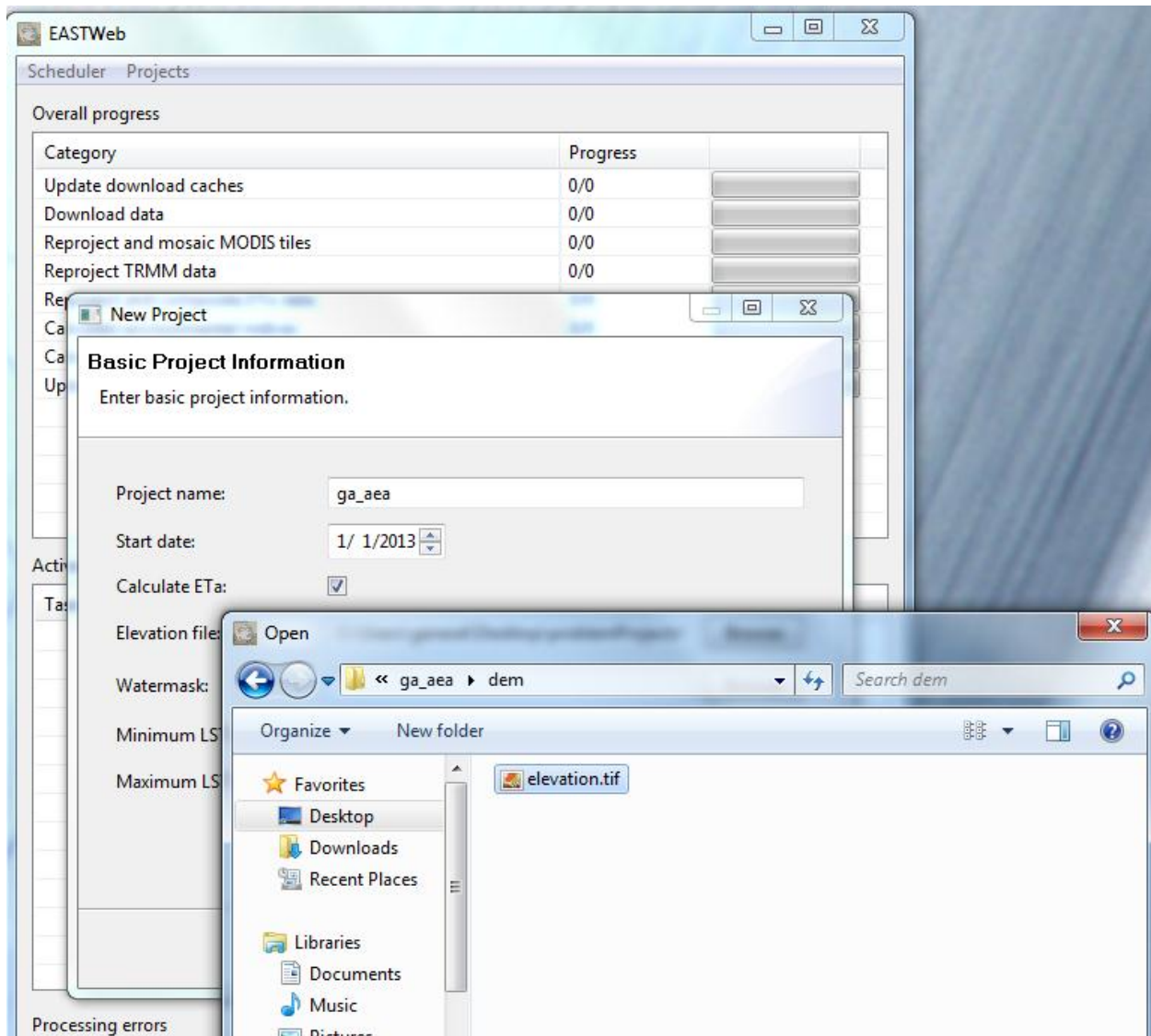
< Back Next > Finish Cancel

Processing errors

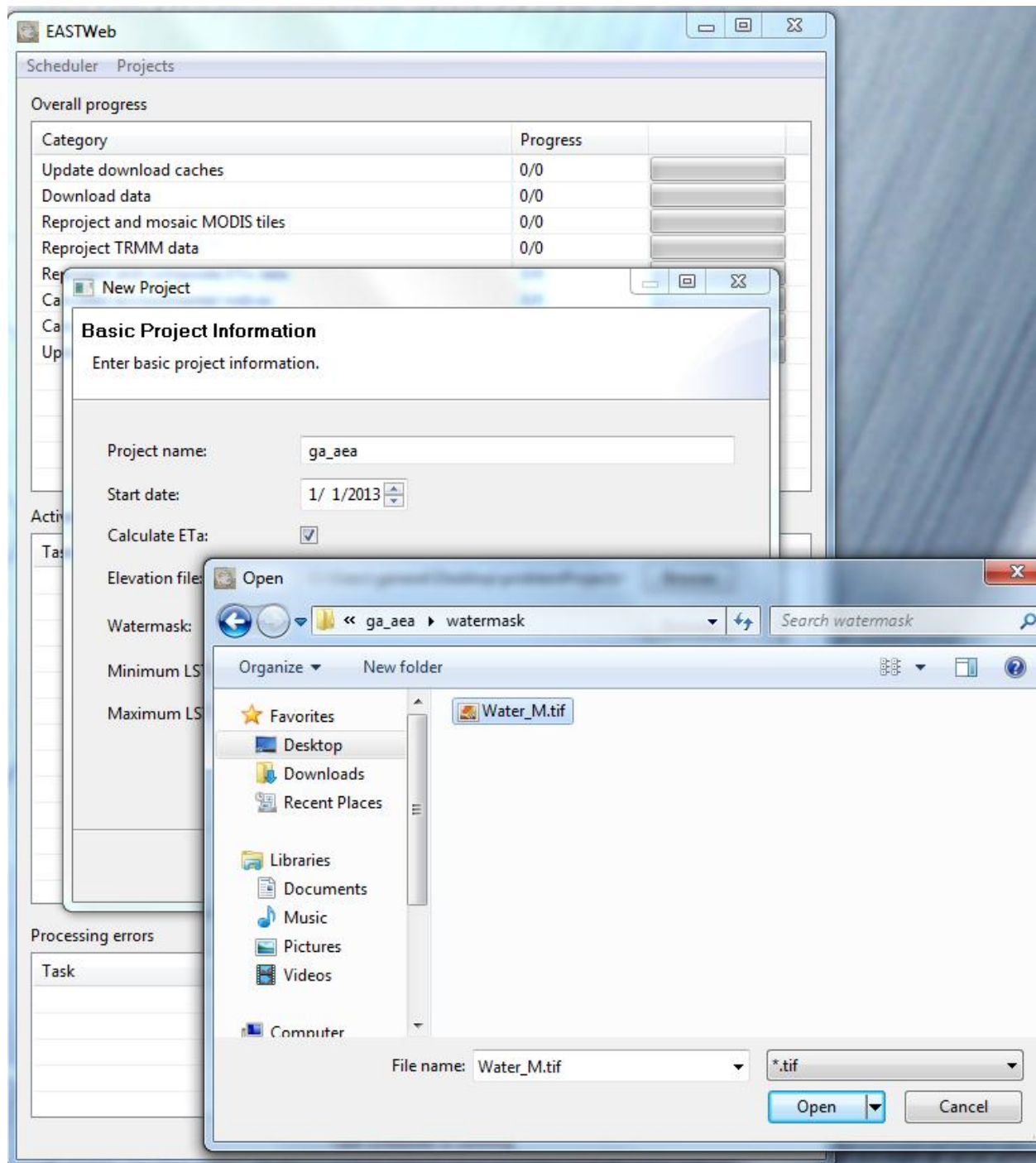
Task	Cause

Task scheduler is running

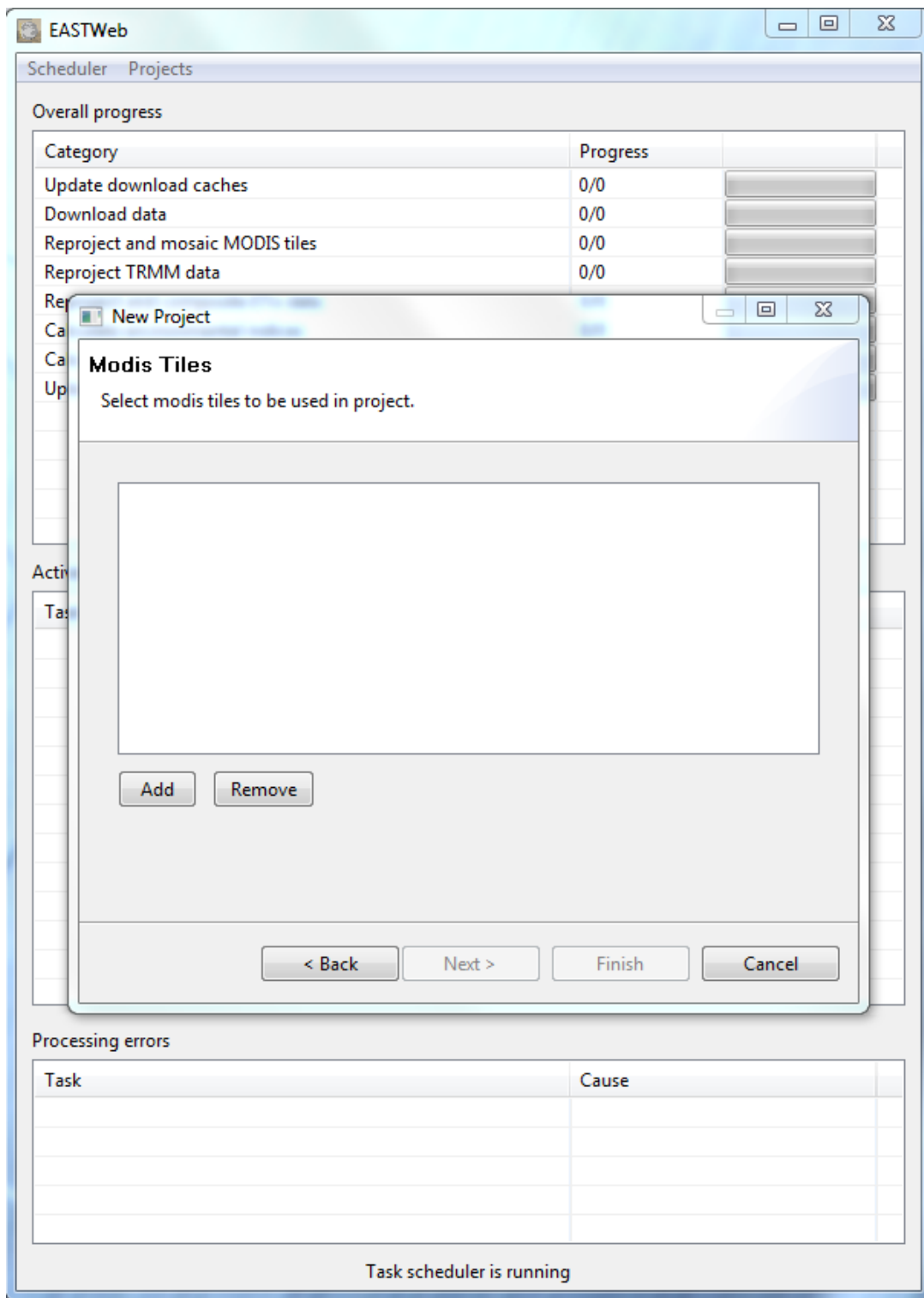
Next check the “calculate ETa” checkbox and click on the “Browse” button next to the “Elevation file” text entry. Navigate to the “ga_aea” folder inside the download package and select the tif file in the “dem” folder.



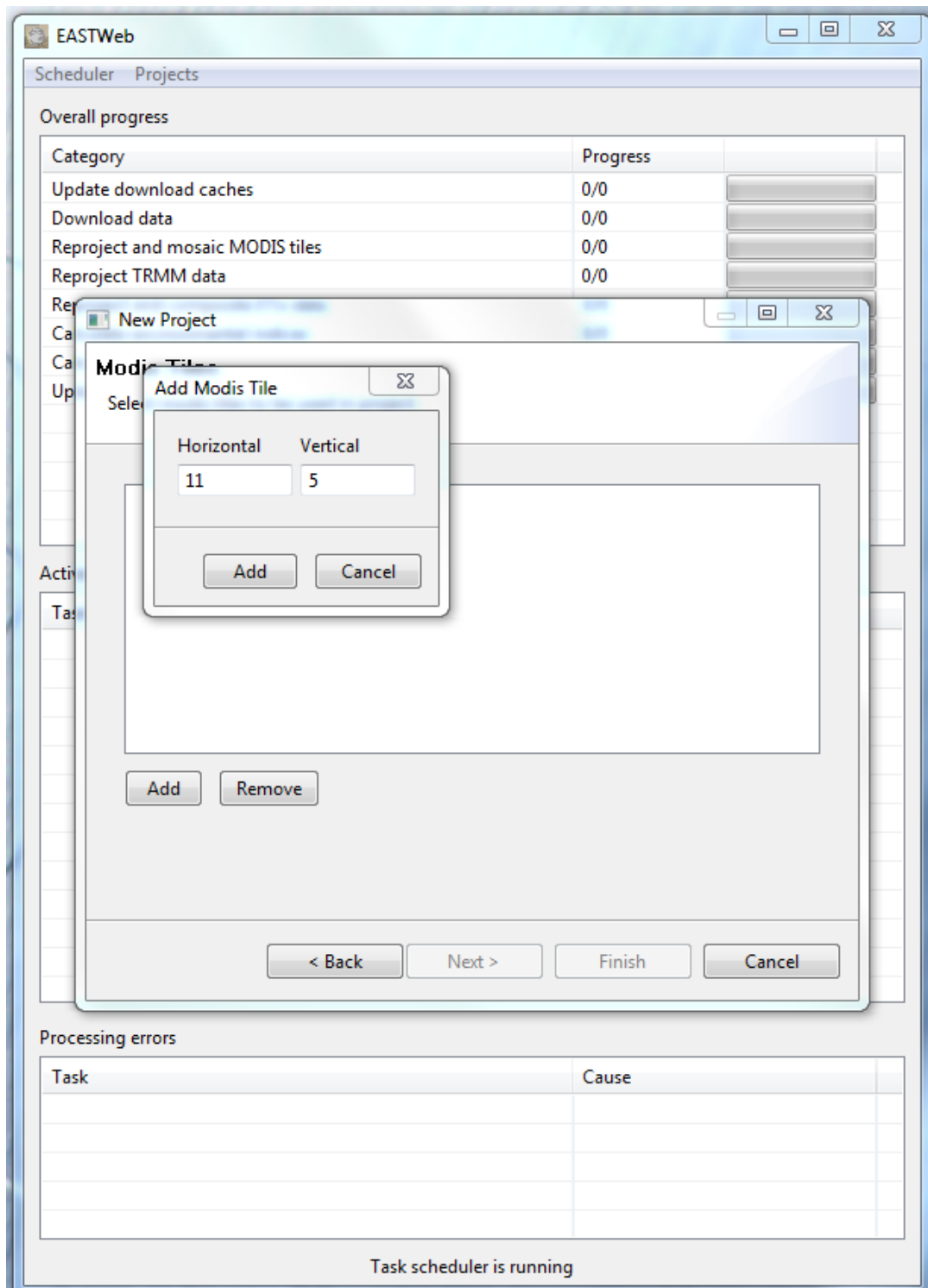
Now click the “Browse” button next to the watermark entry. Again, navigate to the ga_aea folder, but this time select the tif file in the watermark folder.



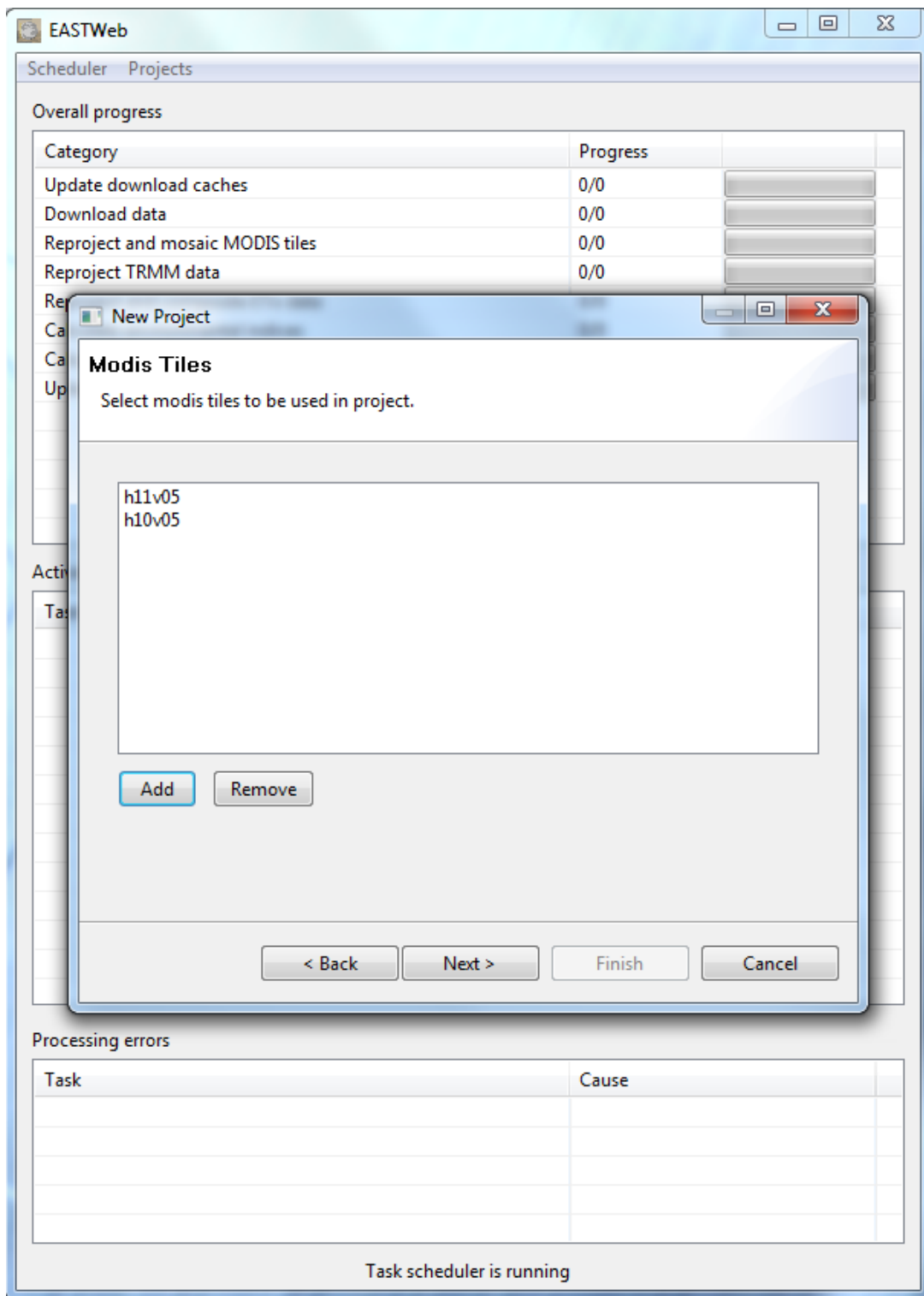
Click the “Next” button.



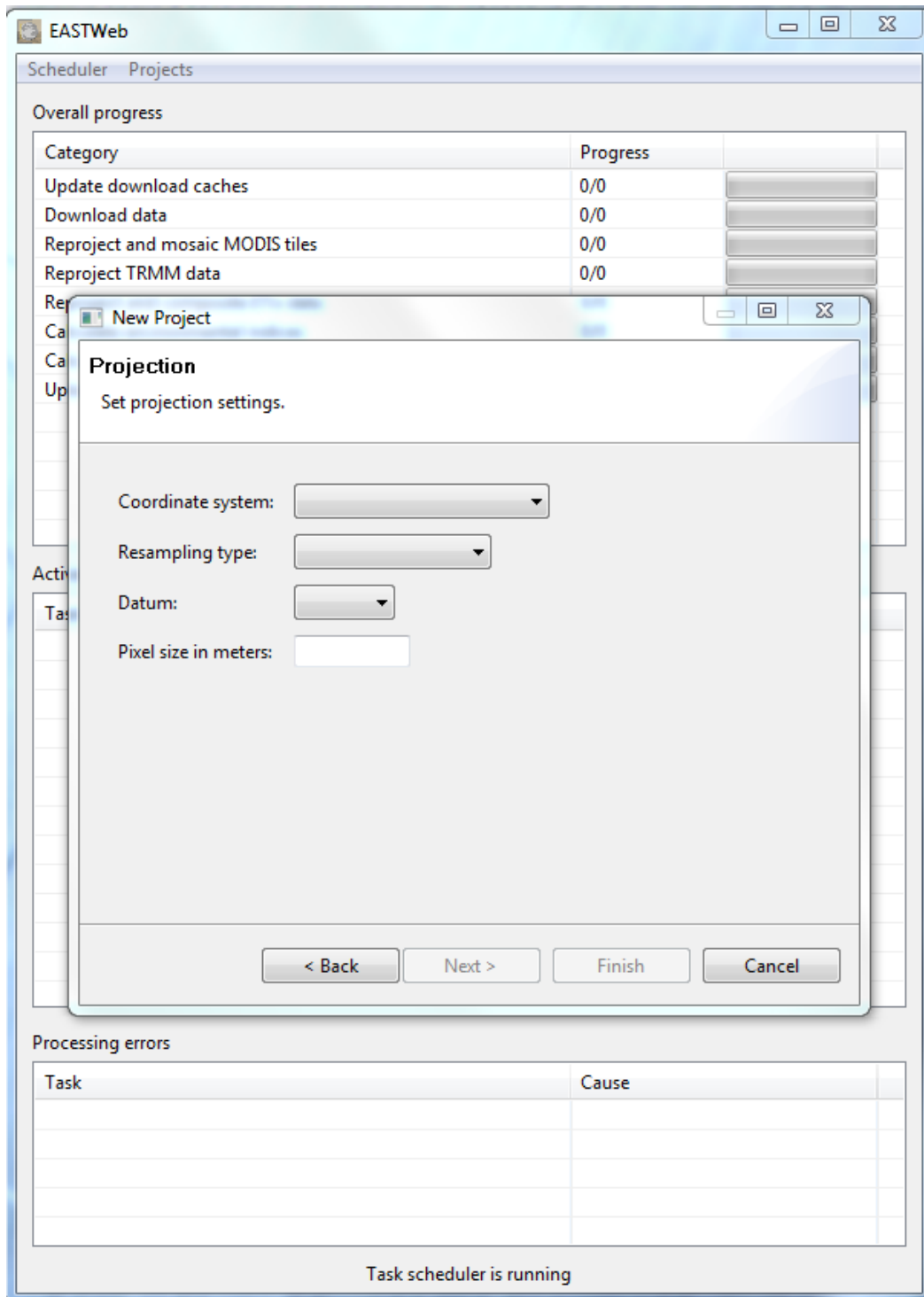
The project needs to know what Modis tiles to download. Click the “Add tile” button. Enter “11” for the horizontal and “5” for the vertical.



Repeat the previous step, this time using “10” for the horizontal and “5” for the vertical.



Click the “Next” button.



The project needs to know what projection to project Modis tiles and other resources into. Select “Albers Equal Area” from the “Coordinate system” dropdown menu. From the “Resampling type” dropdown menu, select “Nearest Neighbor”, and from the “Datum” dropdown menu, select “NAD83”. Finally, enter “1000” into the “Pixel size in meters” text entry.

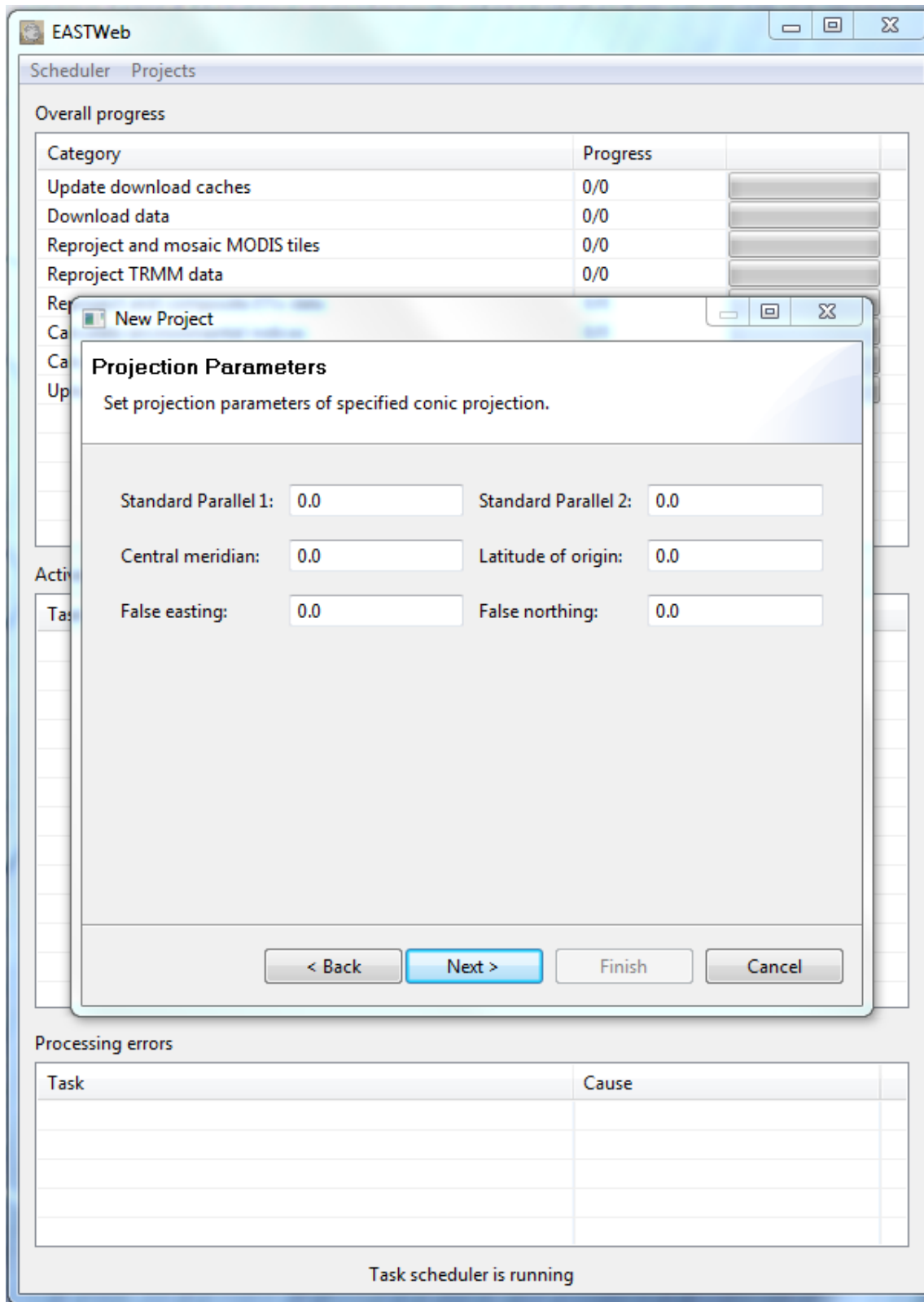
The screenshot shows the EASTWeb application window. The 'New Project' dialog box is open, displaying the 'Projection' settings. The 'Coordinate system' is set to 'Albers Equal Area', 'Resampling type' is 'Nearest Neighbor', 'Datum' is 'NAD83', and 'Pixel size in meters' is '1000'. The 'Next >' button is highlighted in blue. In the background, the 'Overall progress' table shows tasks at 0/0 completion, and the 'Processing errors' table is empty.

Category	Progress
Update download caches	0/0
Download data	0/0
Reproject and mosaic MODIS tiles	0/0
Reproject TRMM data	0/0

Task	Cause

Task scheduler is running

Click the “Next” button.



Projection specific parameters must now be set. For this project, we set “Standard Parallel 1” to “43”, “Standard Parallel 2” to “47”, “Central meridian” to “-102”, and “Latitude of origin” to “45”.

The screenshot shows the EASTWeb application window. The 'Scheduler' tab is active, displaying a table of tasks and their progress. A 'New Project' dialog box is open, showing the 'Projection Parameters' section. The parameters are set as follows:

Category	Progress
Update download caches	0/0
Download data	0/0
Reproject and mosaic MODIS tiles	0/0
Reproject TRMM data	0/0

Projection Parameters
Set projection parameters of specified conic projection.

Standard Parallel 1:	43	Standard Parallel 2:	47
Central meridian:	-102	Latitude of origin:	45
False easting:	0.0	False northing:	0.0

Buttons: < Back, Next >, Finish, Cancel

Processing errors

Task	Cause

Task scheduler is running

Click the “Next” button.

The screenshot shows the EASTWeb Scheduler Projects window. The 'Overall progress' section contains a table with the following data:

Category	Progress
Update download caches	0/0
Download data	0/0
Reproject and mosaic MODIS tiles	0/0
Reproject TRMM data	0/0

The 'New Project' dialog is open, showing the 'Zonal Summaries' step. It includes a table for adding summaries:

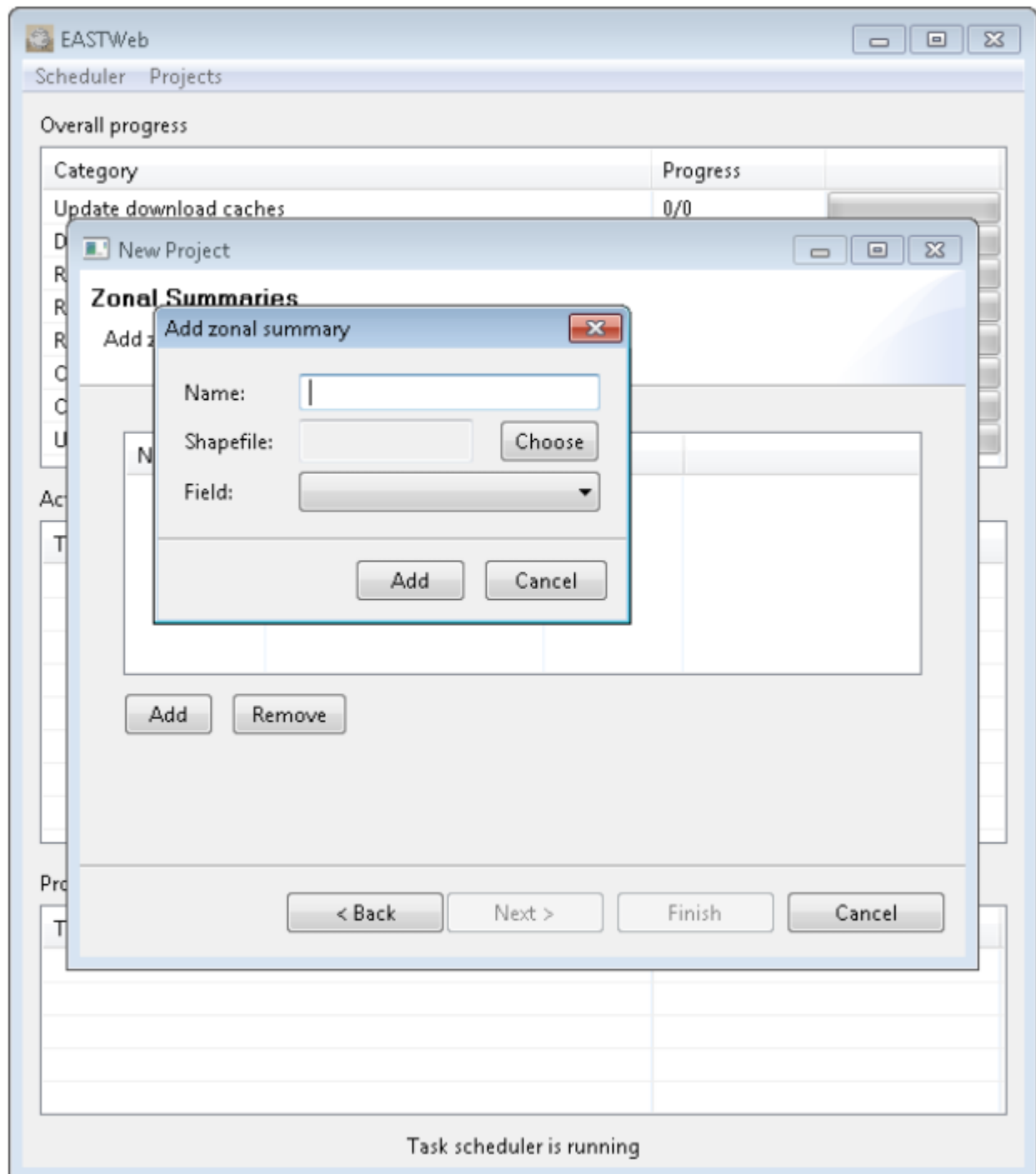
Name	Shape File	Field

Below the table are 'Add' and 'Remove' buttons. At the bottom of the dialog are '< Back', 'Next >', 'Finish', and 'Cancel' buttons.

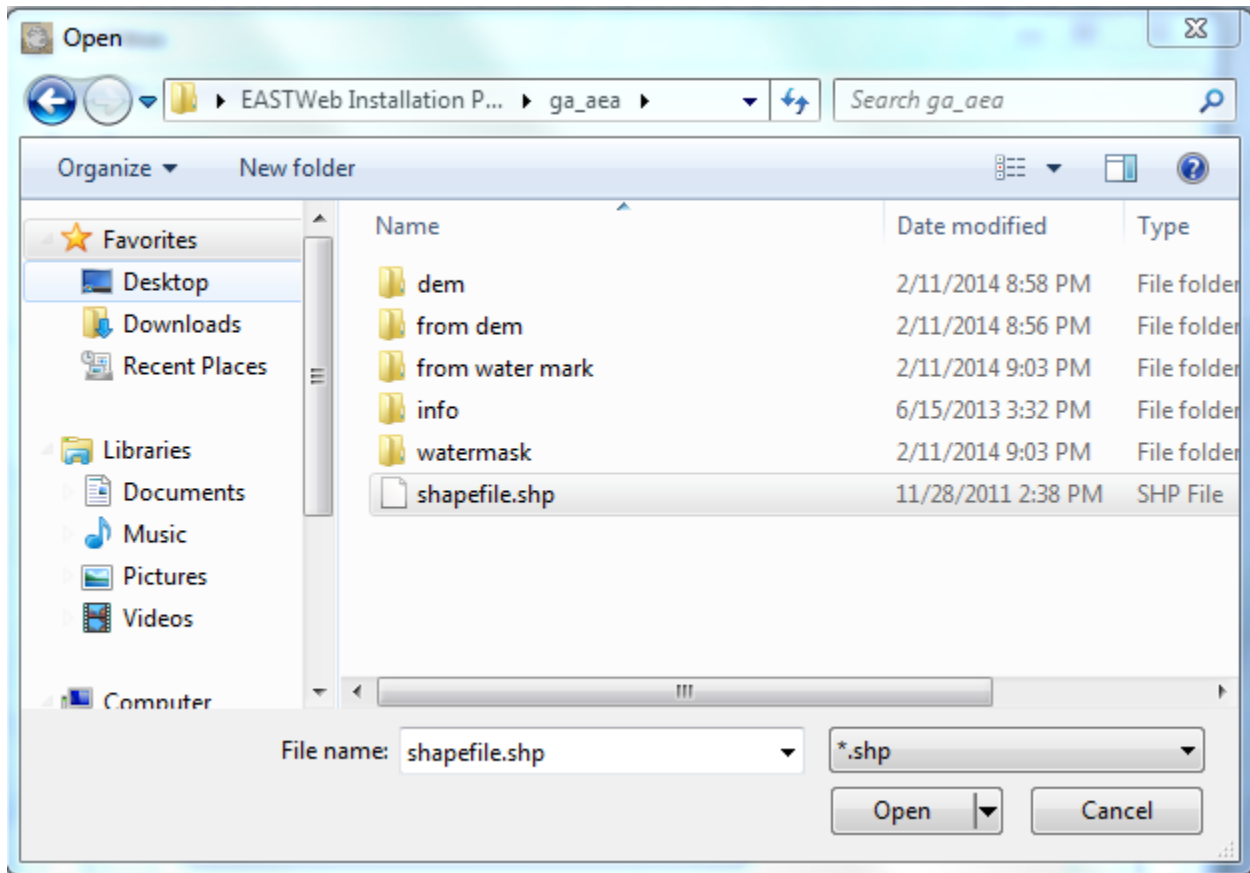
The 'Processing errors' section at the bottom of the main window contains an empty table with columns 'Task' and 'Cause'.

At the very bottom of the window, it says 'Task scheduler is running'.

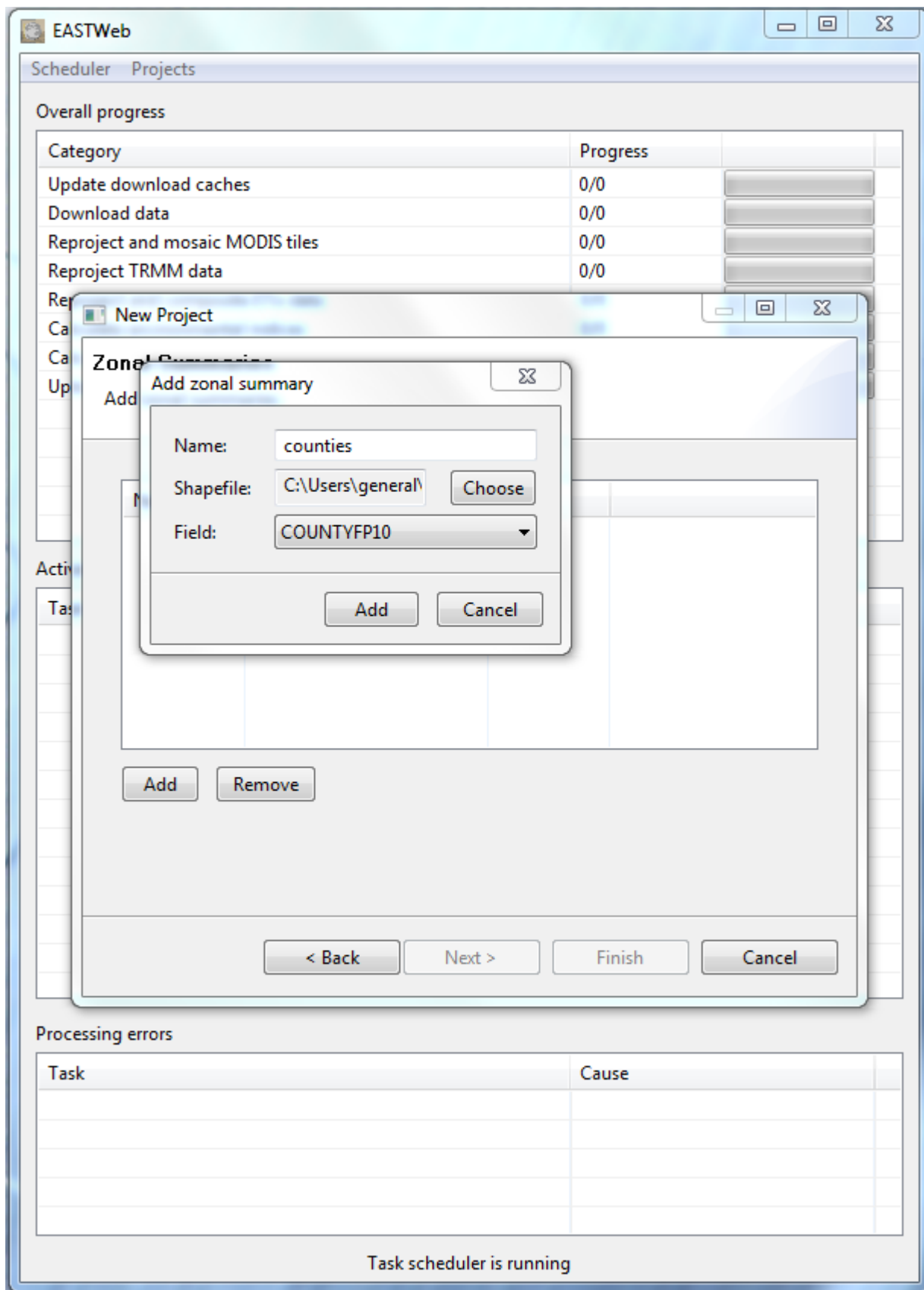
We must now set the zonal summary units for the project. Zonal summaries define what the software will calculate statistics on, as well as the shapefiles that will be used to clip outputs. Click the “Add” button.



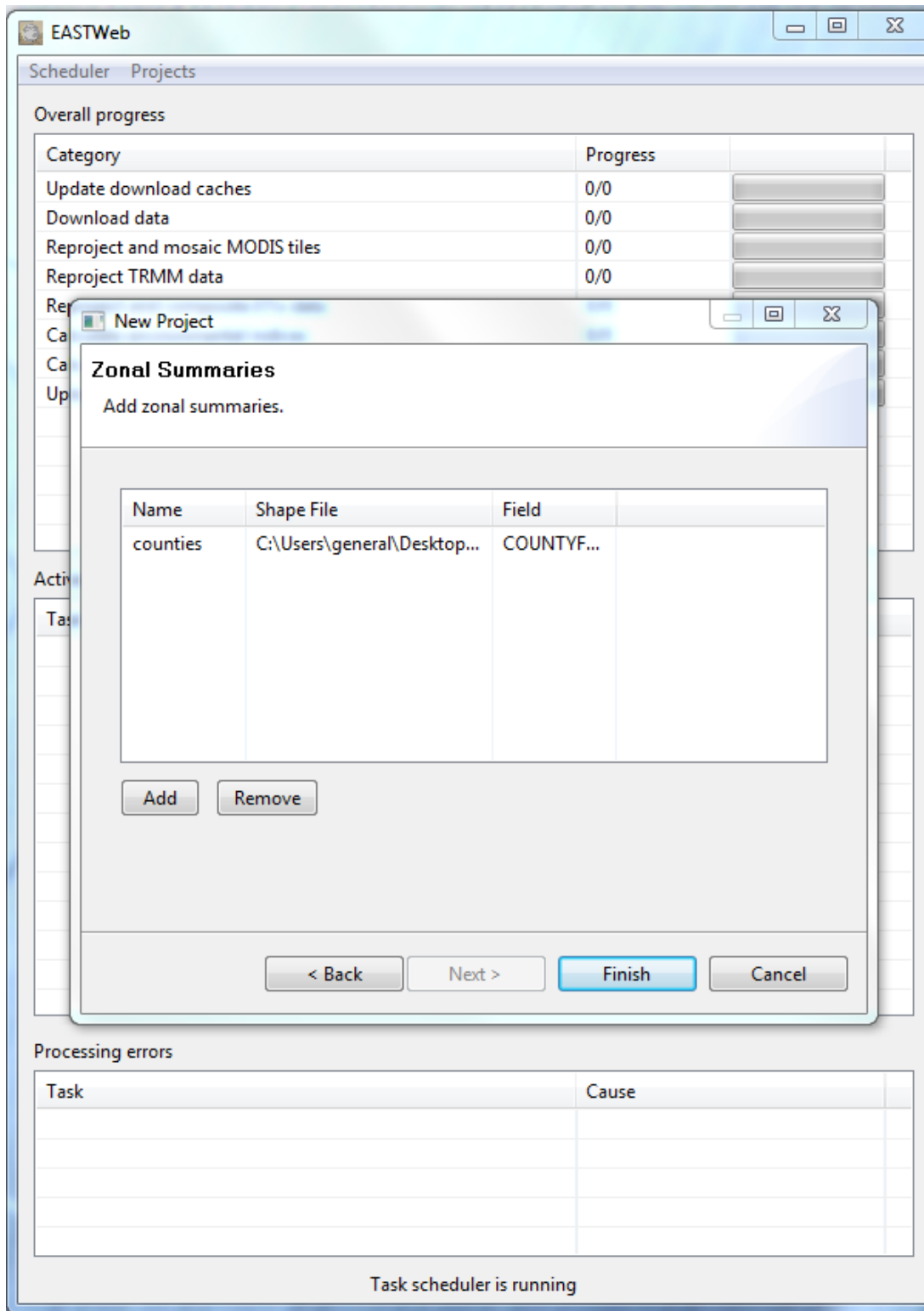
Click the “Choose” button. A file selection dialog will appear. Navigate to the “ga_aea” folder inside the “EASTWeb Installation Package” directory. Select “shapefile.shp” and click the “Open” button.



Enter “counties” into the “Name” text entry and select “COUNTYFP10” from the “Field” dropdown menu.



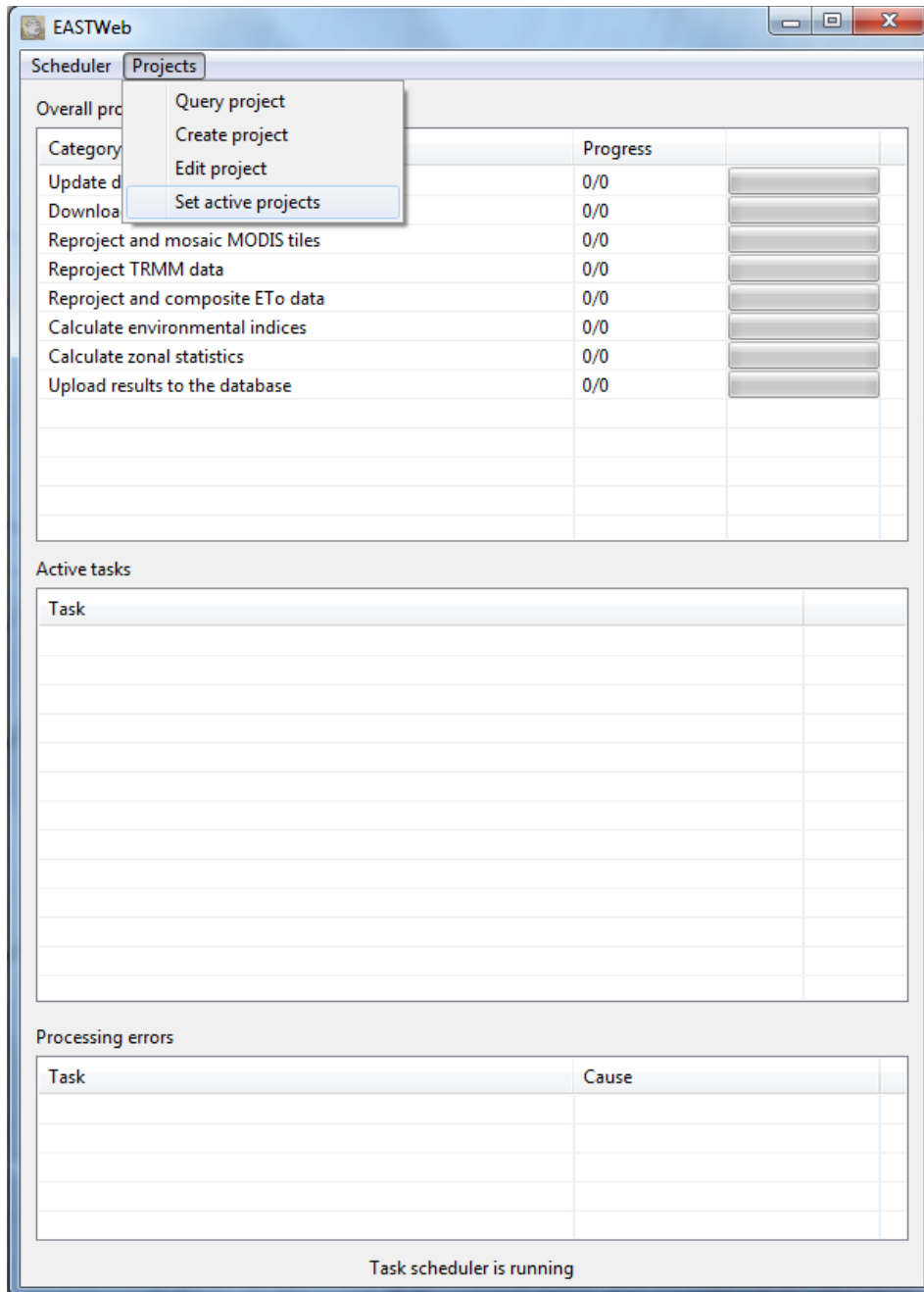
Click the “Add” button on the “Add zonal summary” dialog.



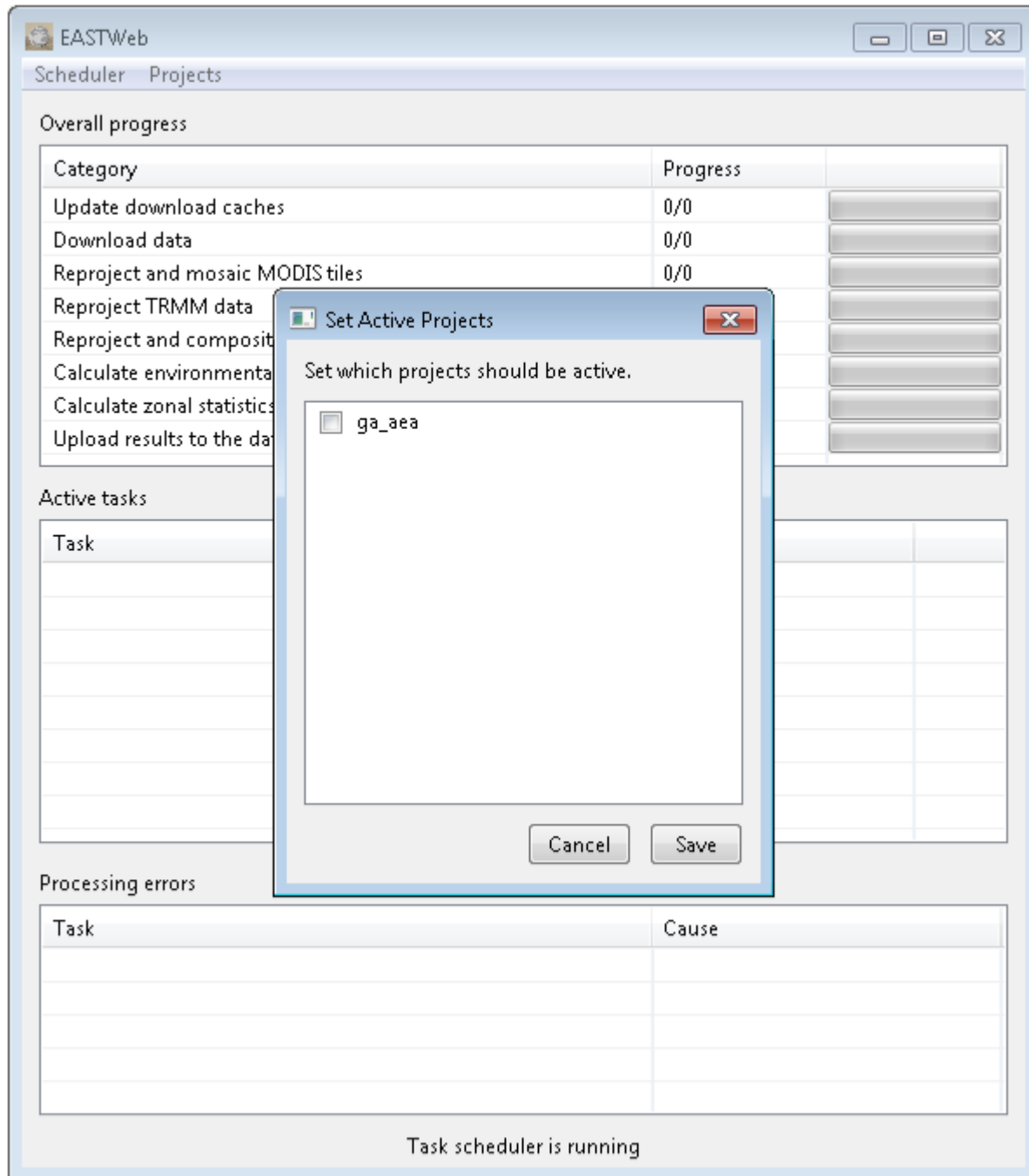
All the required steps have been completed at this point. If desired, review previous steps using the “Back” and “Forward” buttons. When satisfied, click the “Finish” button to finalize the creation of the project.

If no warning dialogs appear the project has been successfully created and is ready for processing.

However, the project needs to be activated before processing will occur. Open the “Projects” menu and click the “Set active projects” menu item.

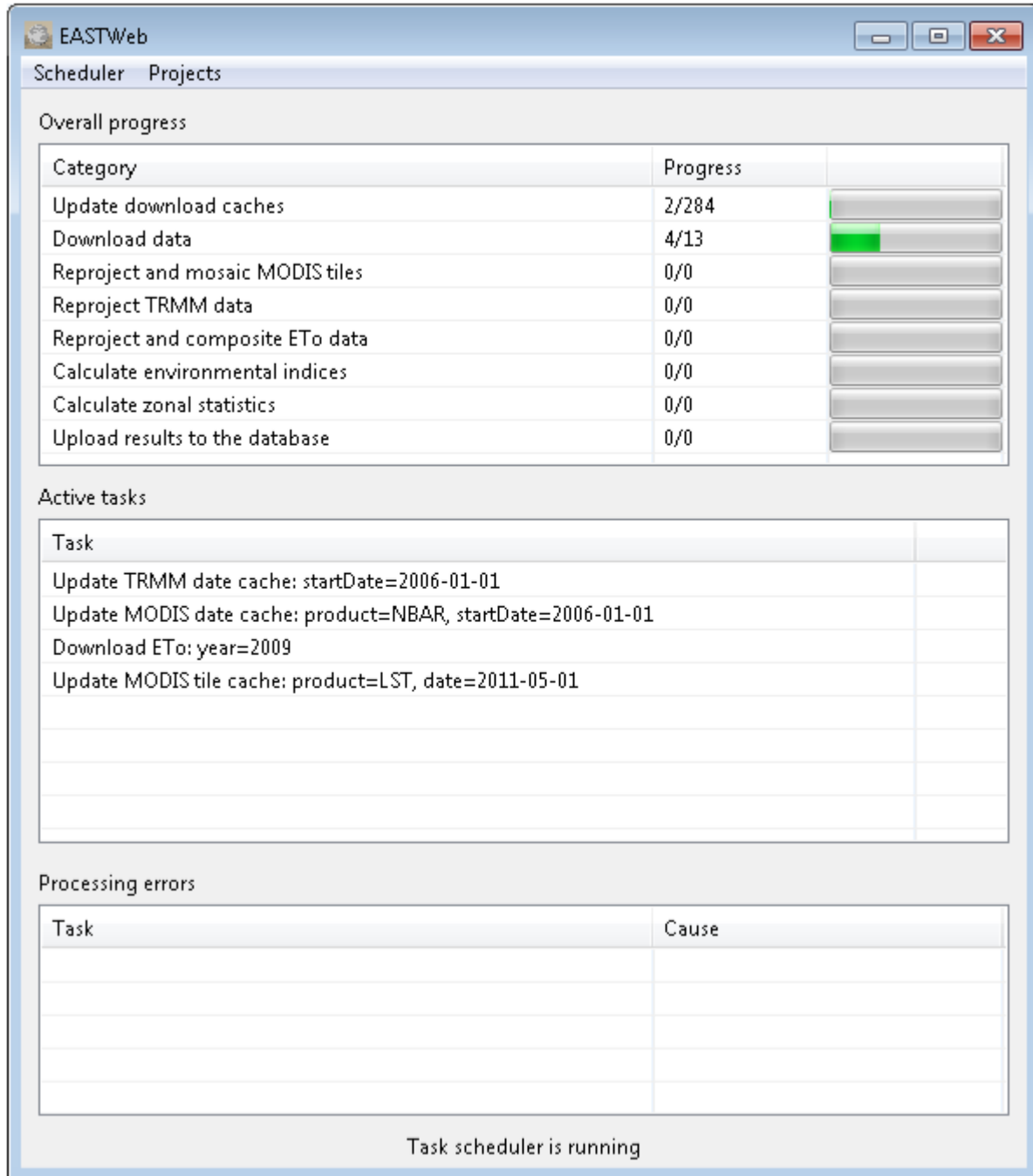


The following dialog should appear:

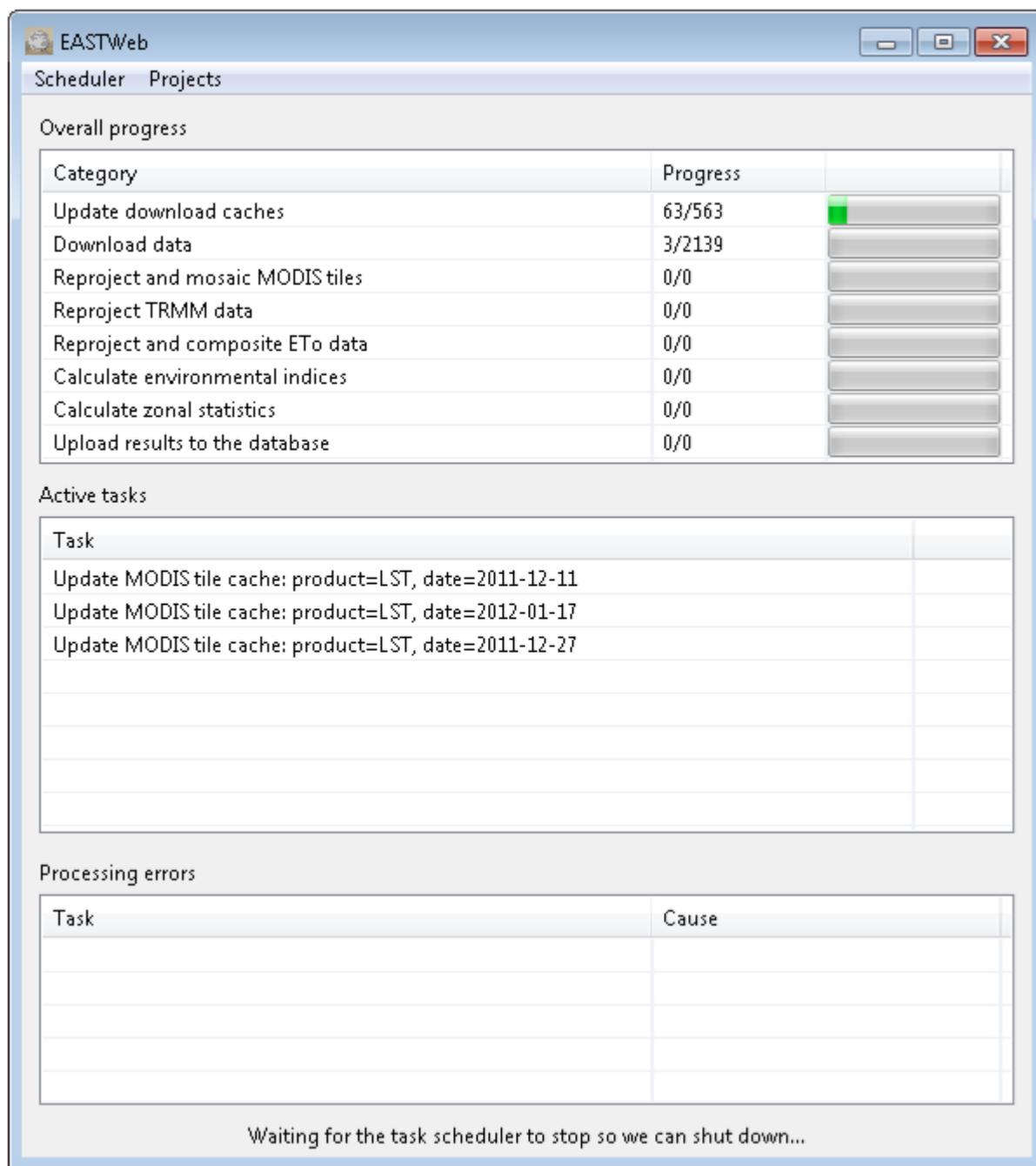


Check the “ga_aea” checkbox and click the “Save” button.

Now that the project is active, the software should begin processing it immediately. Depending on the size of the project and speed of the computer, processing may take quite some time. On the recommended system, the Georgia Albers Equal Area project takes roughly eighteen to nineteen hours to complete.



The software can be closed if necessary. When the software is launched again it will automatically resume processing on the active projects. Note that the software must wait for the active tasks to finish before exiting. Depending on what tasks are active, the software may take a few moments or up to two minutes to exit.

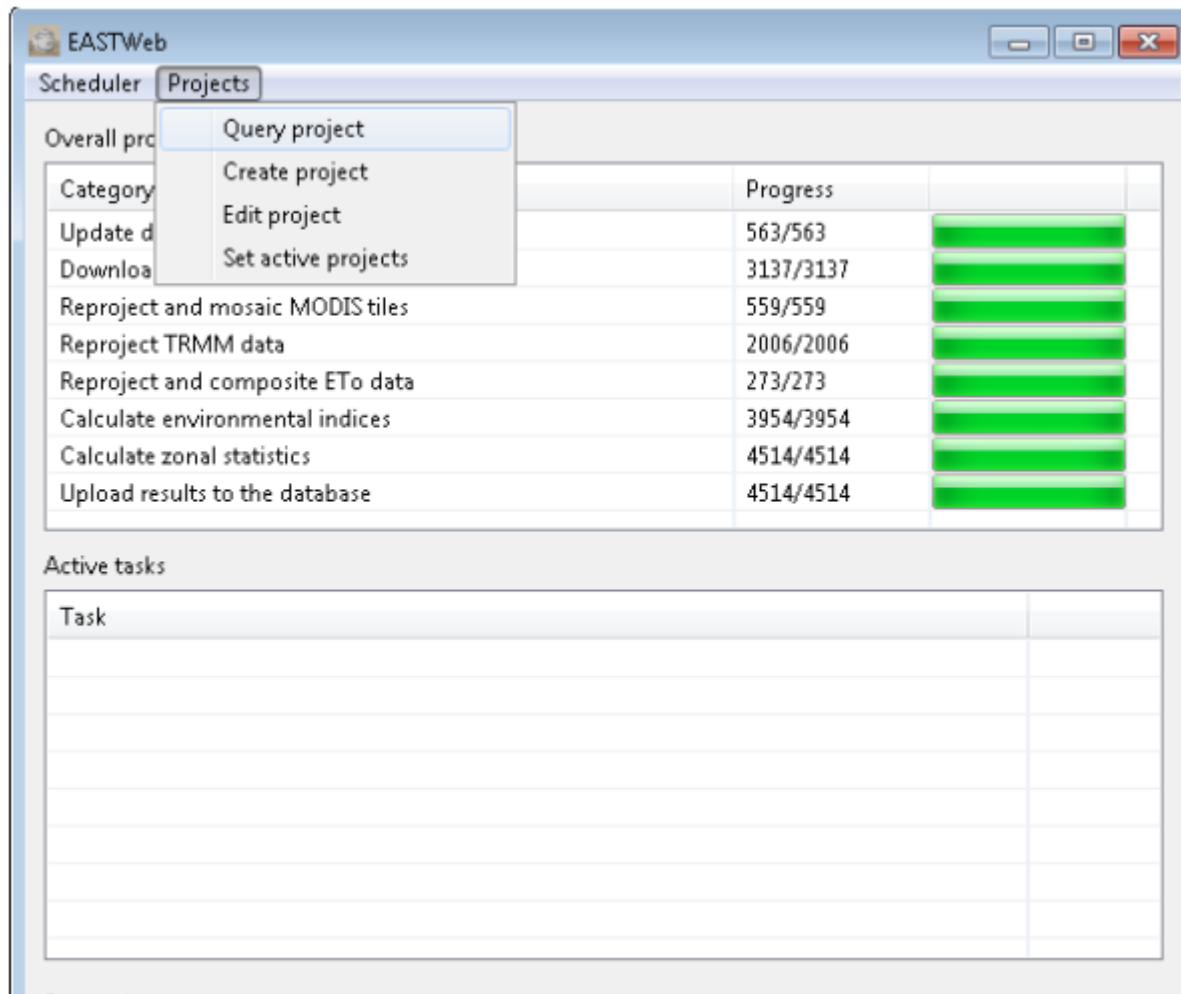


2.2 Processing errors

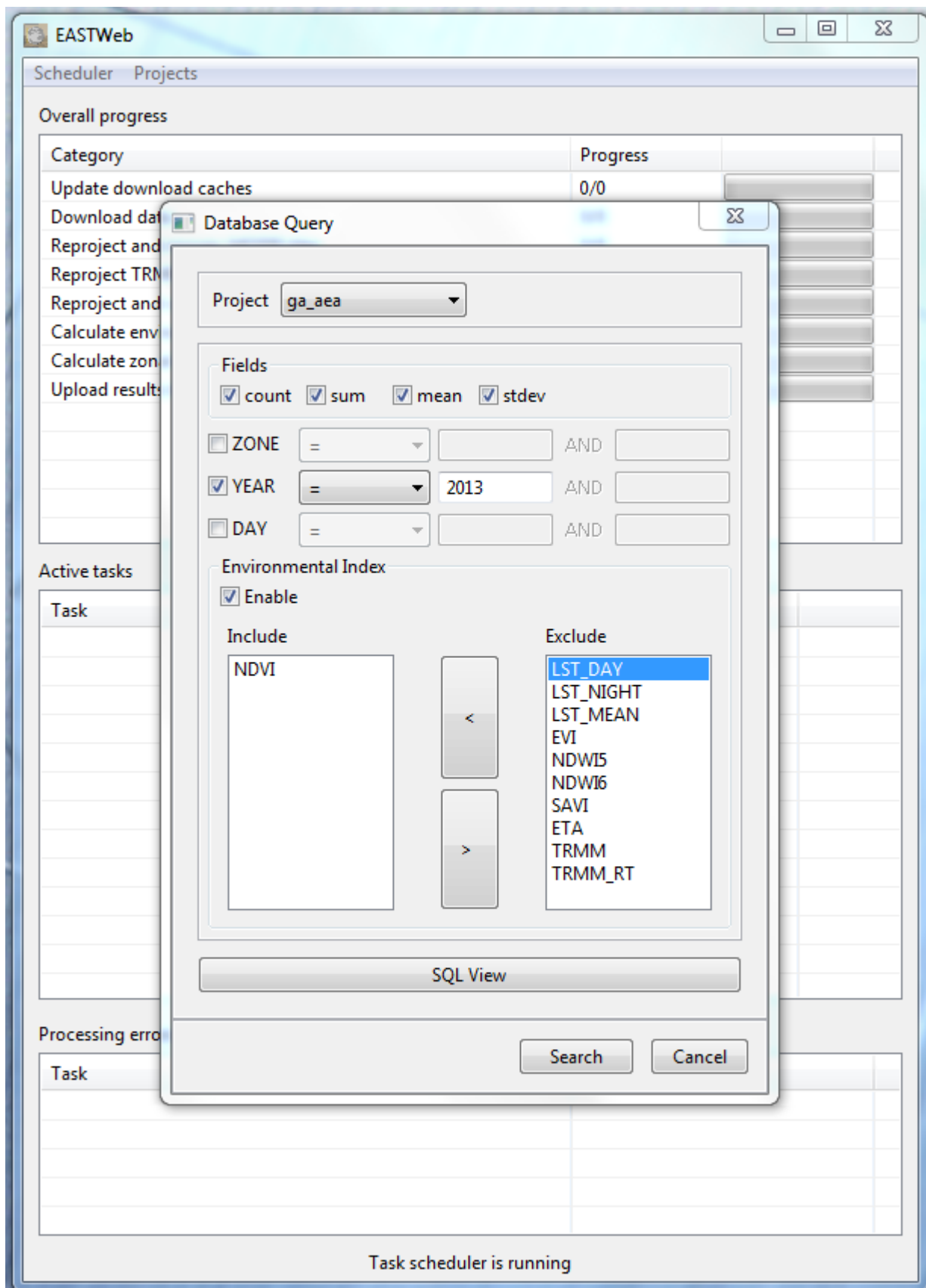
Processing errors can be expected when processing any non-trivial project. Some processing errors indicate a misconfiguration or issue with the system setup. If the software stops making progress, or generates very large numbers of errors, please contact Dr. Michael Wimberly (Michael.Wimberly@sdstate.edu) or Dr. Yi Liu (yi.liu@sdstate.edu).

2.3 Querying the project

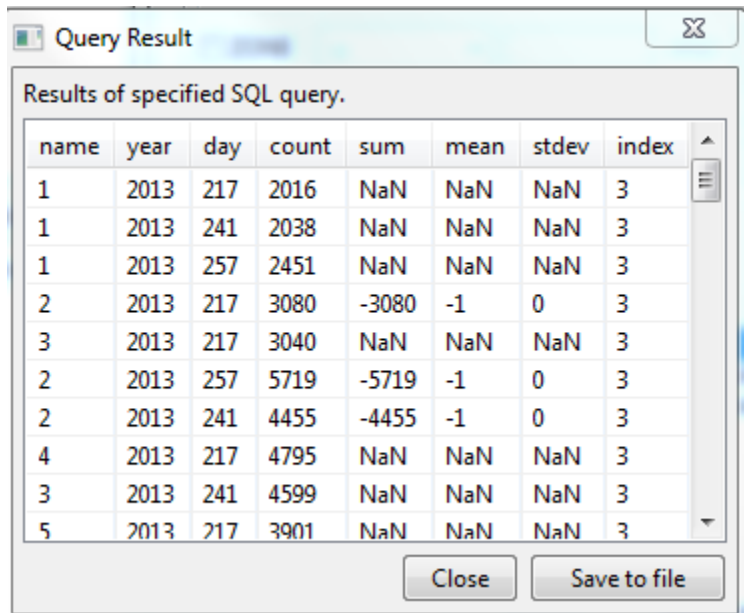
When the project has finished processing it is possible to query its zonal statistics. Open the “Projects” dropdown menu and click the “Query project” menu item.



We will query NDVI for the year 2013. Select “ga_aea” from the “Project” dropdown menu if is not already selected. Check the “Year” checkbox and type “2013” into the corresponding text field. Check the “Enable” checkbox located directly under the “Environmental Index” text label and, from the “Exclude” list nearby, select “NDVI” and click the “<” button. “NDVI” should now be in the “Include” list.



Click the “Search” button. A progress dialog will appear displaying the progress of the query. The software may take a few moments to complete the query. When the query has completed, a “Query Result” window will appear, displaying the results of the specified query.



Query Result

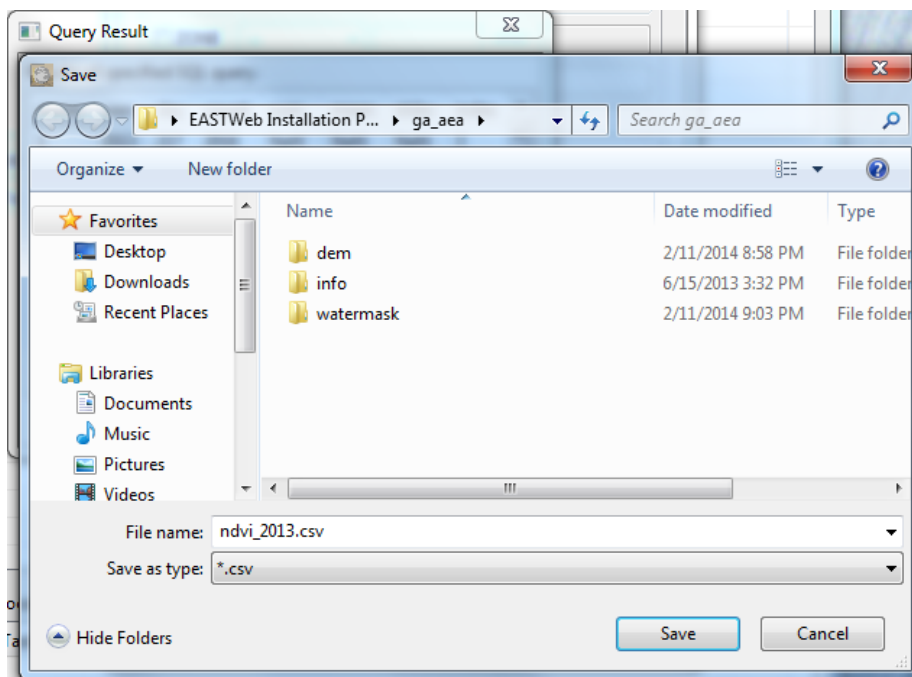
Results of specified SQL query.

name	year	day	count	sum	mean	stdev	index
1	2013	217	2016	NaN	NaN	NaN	3
1	2013	241	2038	NaN	NaN	NaN	3
1	2013	257	2451	NaN	NaN	NaN	3
2	2013	217	3080	-3080	-1	0	3
3	2013	217	3040	NaN	NaN	NaN	3
2	2013	257	5719	-5719	-1	0	3
2	2013	241	4455	-4455	-1	0	3
4	2013	217	4795	NaN	NaN	NaN	3
3	2013	241	4599	NaN	NaN	NaN	3
5	2013	217	3901	NaN	NaN	NaN	3

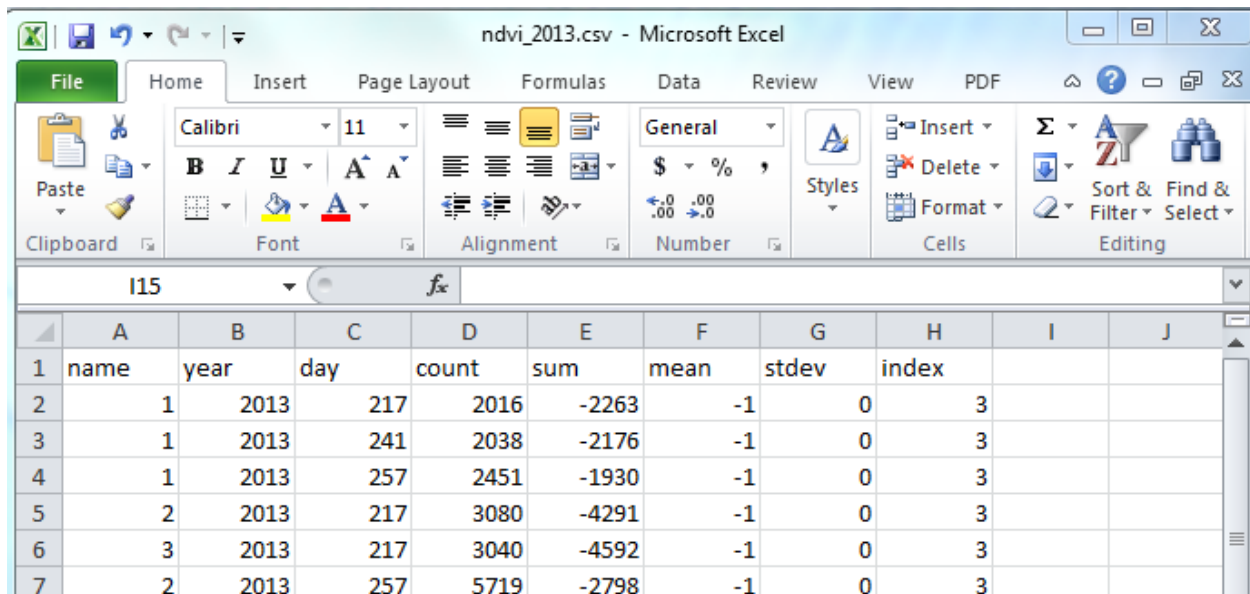
Close Save to file

The results can be inspected inside this window, or saved to a file to be inspected in Microsoft Excel or other data inspection application. Click the “Save to file” button.

A file selection dialog will appear. Type “ndvi_2013” in the “File name” text entry, navigate to the desired file location and click the “Save” button.



A dialog will appear to indicate that the operation was successful. To open the “ndvi_2013.csv” in Excel, simply navigate to the folder it was saved in and double click on it.



	A	B	C	D	E	F	G	H	I	J
1	name	year	day	count	sum	mean	stdev	index		
2	1	2013	217	2016	-2263	-1	0	3		
3	1	2013	241	2038	-2176	-1	0	3		
4	1	2013	257	2451	-1930	-1	0	3		
5	2	2013	217	3080	-4291	-1	0	3		
6	3	2013	217	3040	-4592	-1	0	3		
7	2	2013	257	5719	-2798	-1	0	3		

2.4 Creating your own project

Important things to keep in mind when creating a project:

- The watermask and elevation file MUST be grid files.
- The watermask, elevation file, and shape files MUST share the same projection.
- The projection of the project MUST match that of the watermask, elevation file, and shape files.
- The shapefile, elevation file, and watermask all MUST be a subset of the combined Modis tiles.

If any of these criteria are not met the system will fail or produce unusable results.

3. Configuration

The EASTWeb system needs to be configured before use by editing a configuration text file named “config” located within the installation directory.

3.1 Configuration format

Protocol	Ftp	Http
Format	<pre><Product Name> <type>ftp</type> <hostName> </hostName> <userName> </userName> <passWord> </passWord> <RootDir </RootDir> </Product Name></pre>	<pre><Product Name> <type>http</type> <url> </url> </Product Name></pre>
Example	<pre><Trmm> <type>ftp</type> <hostName>disc2.nascom.nasa.gov</hostName> <userName>anonymous</userName> <passWord>anonymous</passWord> <Trmm3B42RootDir>/ftp/data/TRMM/Gridded/Derived_Pro ducts/3B42_V7/Daily</Trmm3B42RootDir> <Trmm3B42RTRootDir>/ftp/data/TRMM/Gridded/Derived_Pr oducts/3B42RT/Daily</Trmm3B42RTRootDir> </Trmm></pre>	<pre><Eto> <type>http</type> <url>http://earlywarning.usgs.gov/fews/global/we b/dwnglobalpet.php</url> </Eto></pre>

3.2 Tag list

ROOT_DIRECTORY	File path of the directory to store data in. Long file paths should be avoid, as some ArcGIS functions will fail if a path is too long. Ensure that the specified location has plenty of space. Individual large EASTWeb projects can take up upwards of 100GB.
TEMP_DIRECTORY	File path of dicrectory of tempory files.
Type	The type of download protocol.
url	Uniform Resource Locator.
hostName	The host name of server. If the database server is on the local machine, this should be "localhost:PORT" where "PORT" is the port number set during the PostgreSQL installation.
urserName	Username to log in server.
PassWord	PassWord to log in server.
NAD83_NAD27_TRANSFORM	The transformation to use when converting from North American Datum 1983 to North American Datum 1927.
NAD83_WGS72_TRANSFORM	The transformation to use when converting from North American Datum 1983 to World Geographical System 1972.
WGS84_NAD27_TRANSFORM	The transformation to use when converting from North American Datum 1983 to World Geographical System 1984.
WGS_1972_To_WGS_1984_2	The transformation to use when converting from World Geographical System 1984 to North American Datum 1927.
WGS84_WGS72_TRANSFORM	The transformation to use when converting from World Geographical System 1984 to World Geographical System 1972.

3. Contact

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