

EASTWeb V2.0 Manual

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1. Installation

1.1 Recommended Hardware Specification

- CPU: At least 4 cores available
- RAM: Allow the application to use up to 0.5GB of memory
- HDD: Having at least 100 GB of available space will allow multiple projects and plugins to work for some time but this is entirely dependent on the projects the users create and run. As an example, downloading about two years' worth of files for ModisLST, ModisNBAR, NldasForcing, NldasNOAH, TRMM3B42, and TRMM3B42RT products takes up approximately 11GB. A single project for both Modis and both TRMM3B42 products takes up another 13GB while including intermediate files.

1.2 Installing Required Software

Currently the Postgres database and Java must be installed to run EASTWeb V2.0.

1.2.1 Installing Java 32-bit

Java 32-bit must be used in order to run the Gdal 32-bit libraries. For this application to run, 32-bit Java version 1.8.51 or higher must be installed.

Step 1. Downloading Java .exe

Open preferred browser and go to the following url:

www.oracle.com/technetwork/java/javase/downloads/index.html

Click "Download" under JRE as shown below.

The screenshot displays the Oracle Java SE Downloads page. On the left, a navigation menu lists various Java-related links. The main content area features three primary download options: Java Platform (JDK) 8u65 / 8u66, NetBeans with JDK 8, and Java SE 8u65 / 8u66. The Java SE 8u65 / 8u66 section provides detailed information about the release, including security fixes and features, and offers download links for the JDK, Server JRE, and JRE. A sidebar on the right contains a 'Java Resources' section with links to Java APIs, technical articles, demos, forums, and more. At the bottom right, there is a promotional banner for the JavaOne conference, held from October 25-29, 2015, in San Francisco, U.S., with a 'Register Now' button.

current version of the JRE (in this case it is 1.8.66) and click the Windows x86 offline option as shown below.

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| Linux x64 | 46.87 MB | jre-8u65-linux-x64.rpm |
| Linux x64 | 68.38 MB | jre-8u65-linux-x64.tar.gz |
| Mac OS X x64 | 64.23 MB | jre-8u65-macosx-x64.dmg |
| Mac OS X x64 | 55.93 MB | jre-8u65-macosx-x64.tar.gz |
| Solaris SPARC 64-bit | 52.06 MB | jre-8u65-solaris-sparcv9.tar.gz |
| Solaris x64 | 49.83 MB | jre-8u65-solaris-x64.tar.gz |
| Windows x86 Online | 0.56 MB | jre-8u65-windows-i586-iftw.exe |
| Windows x86 Offline | 47.81 MB | jre-8u65-windows-i586.exe |
| Windows x86 | 59.28 MB | jre-8u65-windows-i586.tar.gz |
| Windows x64 | 54.29 MB | jre-8u65-windows-x64.exe |
| Windows x64 | 62.61 MB | jre-8u65-windows-x64.tar.gz |


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| Linux x64 | 68.4 MB | jre-8u66-linux-x64.tar.gz |
| Mac OS X x64 | 64.23 MB | jre-8u66-macosx-x64.dmg |
| Mac OS X x64 | 55.93 MB | jre-8u66-macosx-x64.tar.gz |
| Solaris SPARC 64-bit | 52.08 MB | jre-8u66-solaris-sparcv9.tar.gz |
| Solaris x64 | 49.68 MB | jre-8u66-solaris-x64.tar.gz |
| Windows x86 Online | 0.56 MB | jre-8u66-windows-i586-iftw.exe |
| Windows x86 Offline | 47.87 MB | jre-8u66-windows-i586.exe |
| Windows x86 | 59.28 MB | jre-8u66-windows-i586.tar.gz |
| Windows x64 | 54.38 MB | jre-8u66-windows-x64.exe |
| Windows x64 | 62.61 MB | jre-8u66-windows-x64.tar.gz |

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Step 2. Installing Java

Navigate to the folder where you downloaded the .exe file to then double click on “jre-8u66-windows-i586”

The following installation wizard will appear:



Click "Install". Wait for the progress bar. When the progress bar completes, click "Close".



1.2.2 Installing PostgreSQL

As Java 32-bit must be used it is preferable that Postgres database be a 32-bit version.

Step 1. Downloading Postgres

Open preferred browser and go to the following url: www.enterprisedb.com/products-services-training/pgdownload#windows

The screenshot shows the 'Download PostgreSQL' page on the EnterpriseDB website. On the left is a sidebar with navigation links: Subscriptions, Postgres Plus Advanced Server®, PostgreSQL Overview, Download PostgreSQL, Postgres Plus Cloud Database, EnterpriseDB Tools, Postgres Enterprise Manager, xDB Replication - Multi Master, xDB Replication - Single Master, EDB Failover Manager, EDB Backup and Recovery Tool, and EDB SQL/Protect. The main content area is titled 'Download PostgreSQL' and includes a note about cookies. It lists four PostgreSQL versions with their respective installers and operating system options:

- Version 9.5.0 Beta 2**: Linux x86-32, Linux x86-64, Win x86-32, Win x86-64, Mac OS X.
- Version 9.4.5**: Linux x86-32, Linux x86-64, Win x86-32, Win x86-64, Mac OS X.
- Version 9.3.10**: Linux x86-32, Linux x86-64, Win x86-32, Win x86-64, Mac OS X. The 'Win x86-32' button is circled in red.
- Version 9.2.14**: Linux x86-32, Linux x86-64, Win x86-32, Win x86-64, Mac OS X.

Click "Win x86-32" for the PostgreSQL version you have chosen to install (for this example Version 9.3.10 was chosen). The download should automatically start.

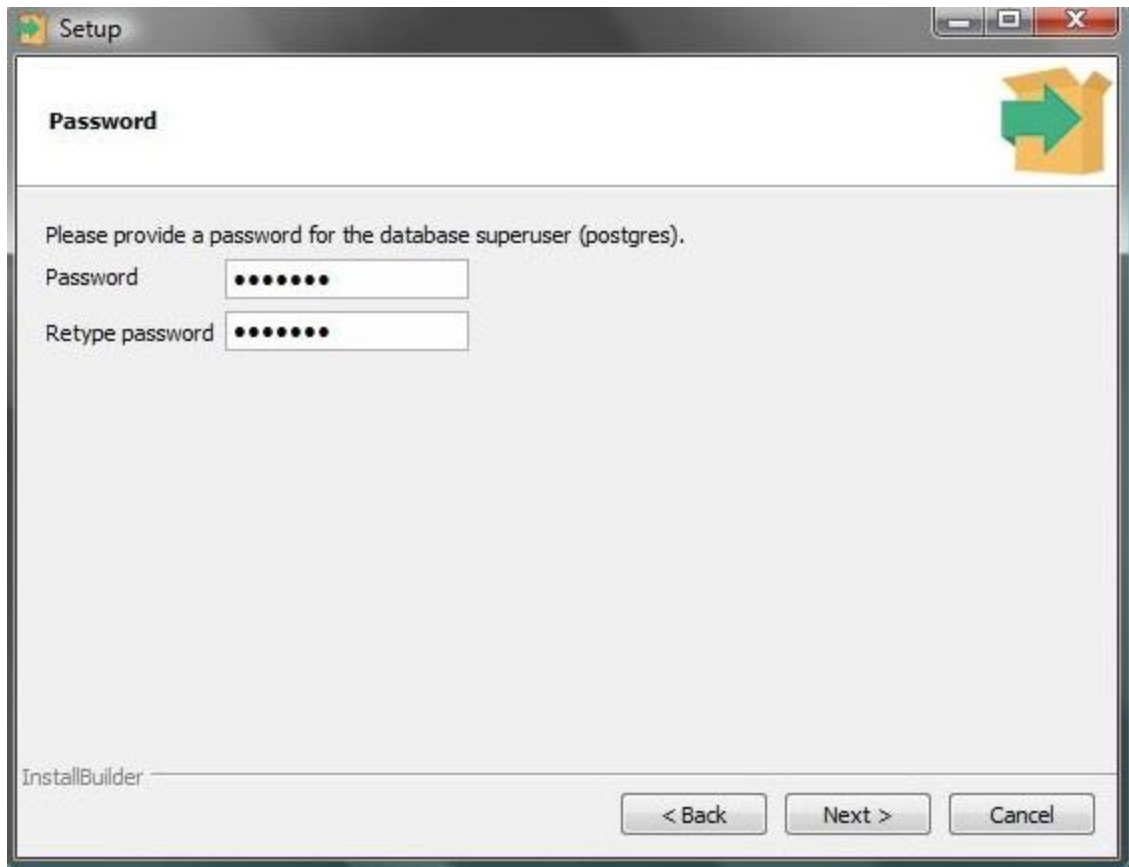
Step 2. Installing Postgres

Navigate to the folder where you downloaded the .exe file to then double click on it.

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.



Setup

Password

Please provide a password for the database superuser (postgres).

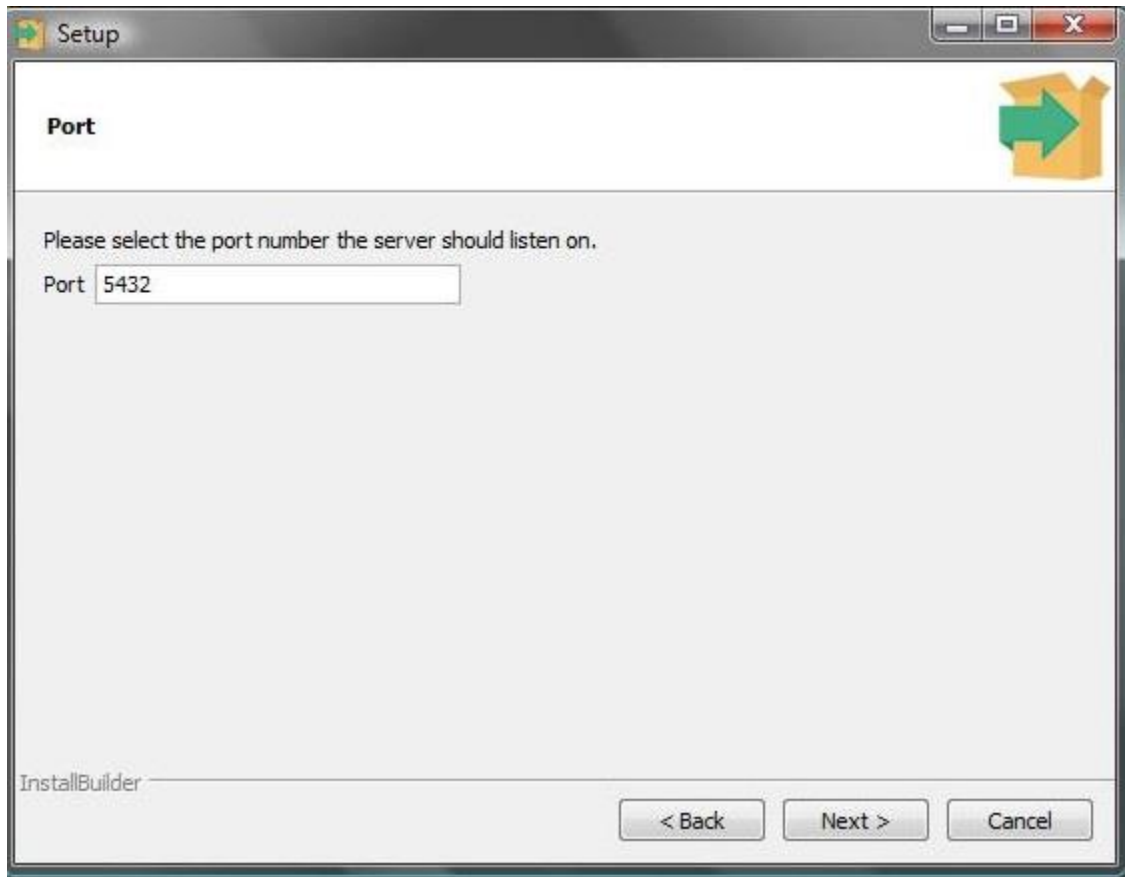
Password

Retype password

InstallBuilder

< Back Next > Cancel

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.



The screenshot shows a Windows-style 'Setup' window. The title bar contains the word 'Setup' and standard window controls. The main content area is titled 'Port' and includes a large green arrow icon pointing right. Below the title, a message reads: 'Please select the port number the server should listen on.' A text input field labeled 'Port' contains the value '5432'. At the bottom left, the text 'InstallBuilder' is visible. At the bottom right, there are three buttons: '< Back', 'Next >', and 'Cancel'.

Setup

Port

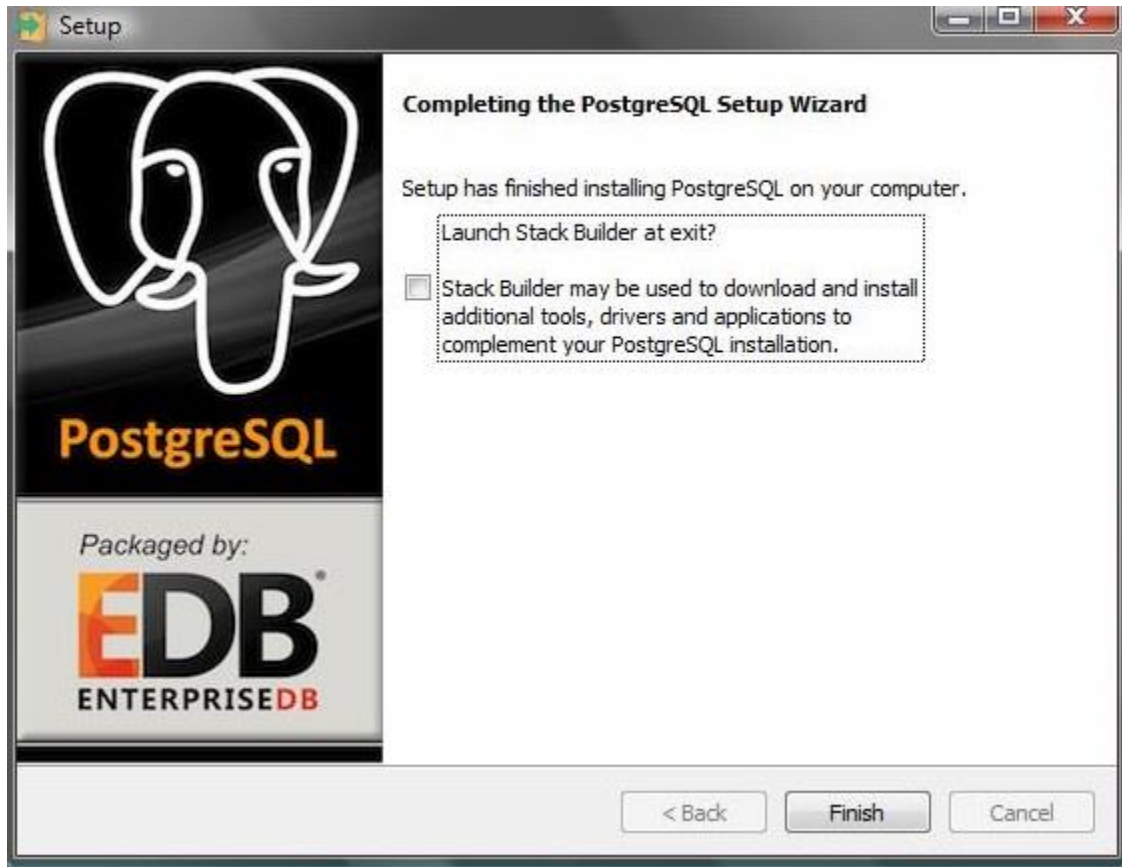
Please select the port number the server should listen on.

Port 5432

InstallBuilder

< Back Next > Cancel

Click the “Next” button until progress bar appears. When the progress bar completes uncheck the “Launch Stack Builder at exit?” checkbox and click “Finish”.

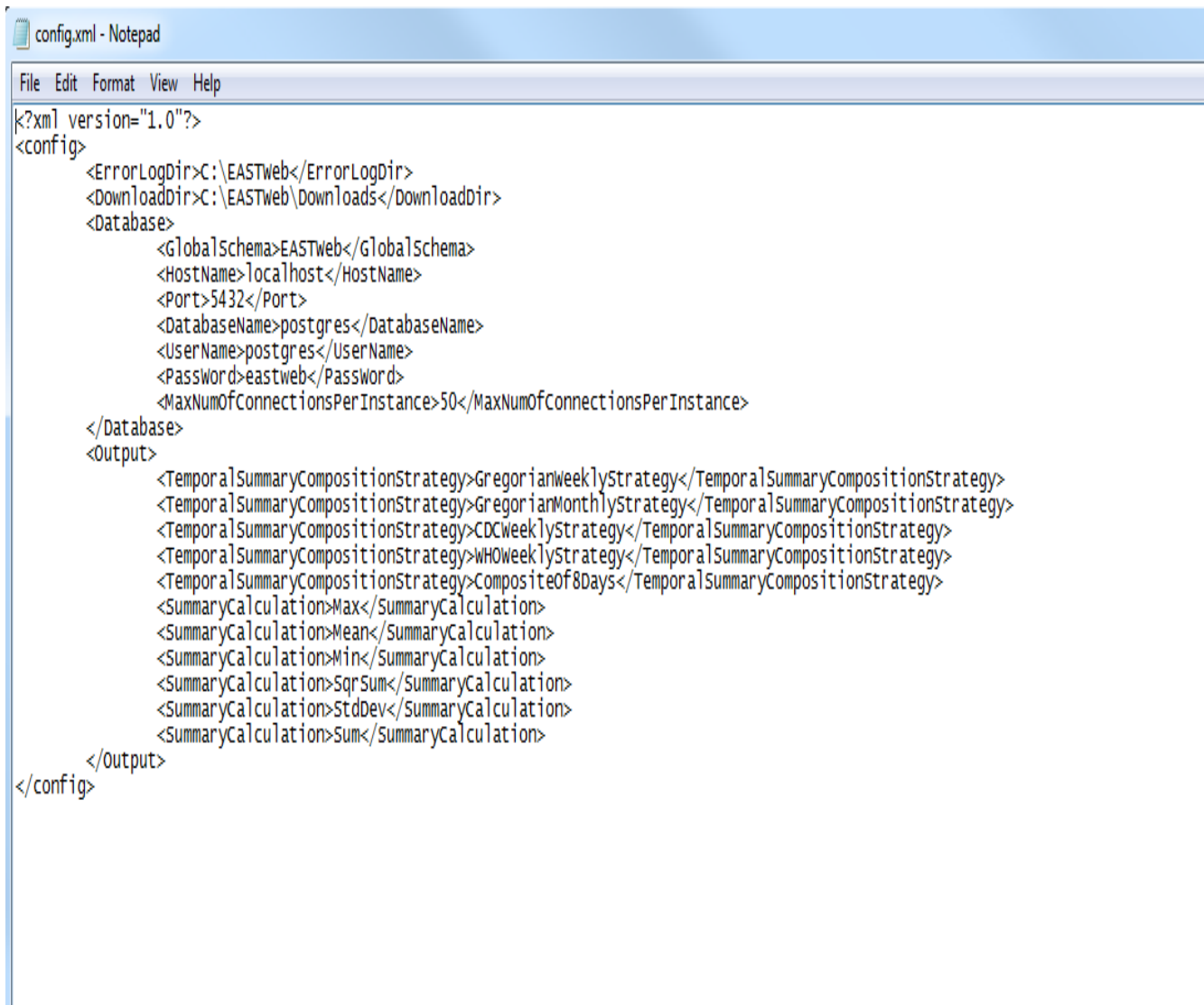


1.3 Configuration

The software may need to be configured before use. A configuration file located within the EASTWeb V2.0 installation directory specifies the location of resources, values needed to use the resources, and advanced EASTWeb V2.0 settings.

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

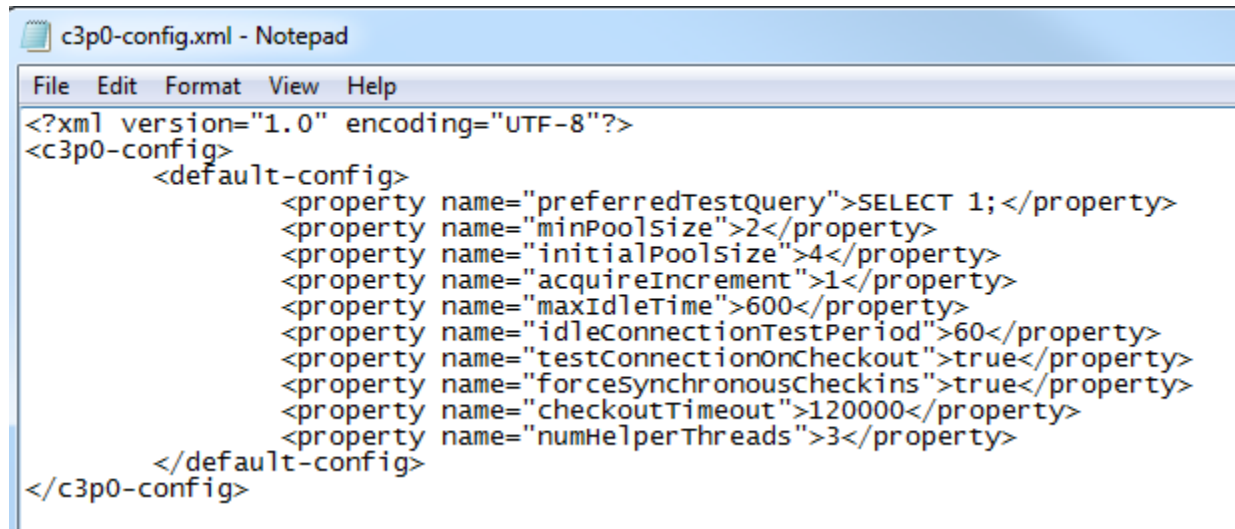
Open the “config.xml” in Notepad.



```
<?xml version="1.0"?>
<config>
  <ErrorLogDir>C:\EASTweb\ErrorLogDir>
  <DownloadDir>C:\EASTweb\Downloads\DownloadDir>
  <Database>
    <GlobalSchema>EASTweb</GlobalSchema>
    <HostName>localhost</HostName>
    <Port>5432</Port>
    <DatabaseName>postgres</DatabaseName>
    <UserName>postgres</UserName>
    <Password>eastweb</Password>
    <MaxNumOfConnectionsPerInstance>50</MaxNumOfConnectionsPerInstance>
  </Database>
  <Output>
    <TemporalSummaryCompositionStrategy>GregorianWeeklyStrategy</TemporalSummaryCompositionStrategy>
    <TemporalSummaryCompositionStrategy>GregorianMonthlyStrategy</TemporalSummaryCompositionStrategy>
    <TemporalSummaryCompositionStrategy>CDCWeeklyStrategy</TemporalSummaryCompositionStrategy>
    <TemporalSummaryCompositionStrategy>WHOWeeklyStrategy</TemporalSummaryCompositionStrategy>
    <TemporalSummaryCompositionStrategy>CompositeOf8Days</TemporalSummaryCompositionStrategy>
    <SummaryCalculation>Max</SummaryCalculation>
    <SummaryCalculation>Mean</SummaryCalculation>
    <SummaryCalculation>Min</SummaryCalculation>
    <SummaryCalculation>SqrSum</SummaryCalculation>
    <SummaryCalculation>StdDev</SummaryCalculation>
    <SummaryCalculation>Sum</SummaryCalculation>
  </Output>
</config>
```

The DownloadDir tag specifies the location where downloaded files will be saved. Ensure that the location specified by the DownloadDir has sufficient space for your needs. If it does not, specify an alternate location.

Open the “c3p0-config.xml” in Notepad.



```
<?xml version="1.0" encoding="UTF-8"?>
<c3p0-config>
  <default-config>
    <property name="preferredTestQuery">SELECT 1;</property>
    <property name="minPoolSize">2</property>
    <property name="initialPoolSize">4</property>
    <property name="acquireIncrement">1</property>
    <property name="maxIdleTime">600</property>
    <property name="idleConnectionTestPeriod">60</property>
    <property name="testConnectionOnCheckout">true</property>
    <property name="forceSynchronousCheckins">true</property>
    <property name="checkoutTimeout">120000</property>
    <property name="numHelperThreads">3</property>
  </default-config>
</c3p0-config>
```

1.3.1 config.xml

Valid element tag names – each tag should be defined only once unless otherwise specified.

| | |
|------------------------------------|--|
| ErrorLogDir | Directory path to use when printing error logs (errors will either print here or at a location of batchfile) |
| DownloadDir | Directory path to use when saving downloaded data files |
| GlobalSchema | Name of schema to use for global information for EASTWeb V2.0 application |
| HostName | Host name to use when connecting to the database |
| Port | Port number to use when connecting to the database |
| DatabaseName | Name of the database to use for all application created schemas |
| UserName | Login user name |
| Password | Password for user account |
| MaxNumOfConnectionsPerInstance | Maximum number of simultaneous connections to allow EASTWeb V2.0 to create |
| TemporalSummaryCompositionStrategy | Name of TemporalSummaryCompositionStrategy implementing class to include in EASTWeb V2.0 (1+ can be defined) |
| SummaryCalculation | Name of SummaryCalculation implementing class to include in EASTWeb V2.0 |

1.3.2 c3p0-config.xml

Valid element tag names – each tag should be defined only once unless otherwise specified. See http://www.mchange.com/projects/c3p0/#configuration_properties for more information.

- c3p0-config:
 - default-config:
 - property element list...

2. Project Tutorial

This tutorial walks through the steps required to create, process, and query a project. The tutorial also includes discussion of 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 Creating a New Project

2.1.1 Load the EASTWeb V2.0 Main Window

Navigate to the installation directory for EASTWeb V2.0 and double click on “Run EASTWeb.bat”.

NOTE: Do not run more multiple instances of EASTWeb at the same time.

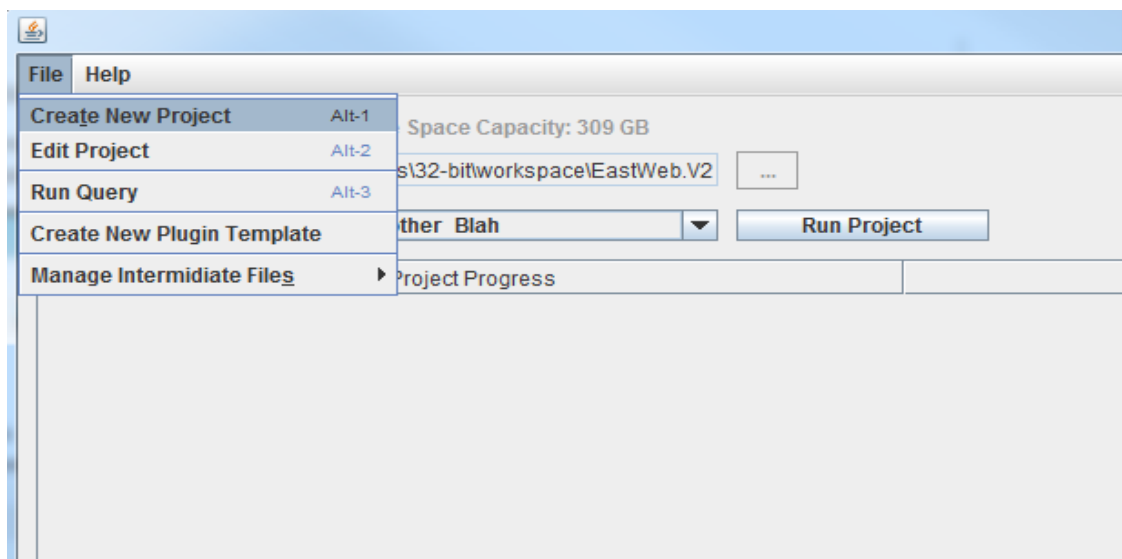


Figure 1. EASTWeb V2.0 Main window

Select File -> Create New Project and a Project information window will be prompted

2.1.2 Project Information Window

2.1.2.1 Adding Plugins

Step 1. Load the Plugin Information Window

Click the “+” button on the top left corner of the Project information window (Figure 2)

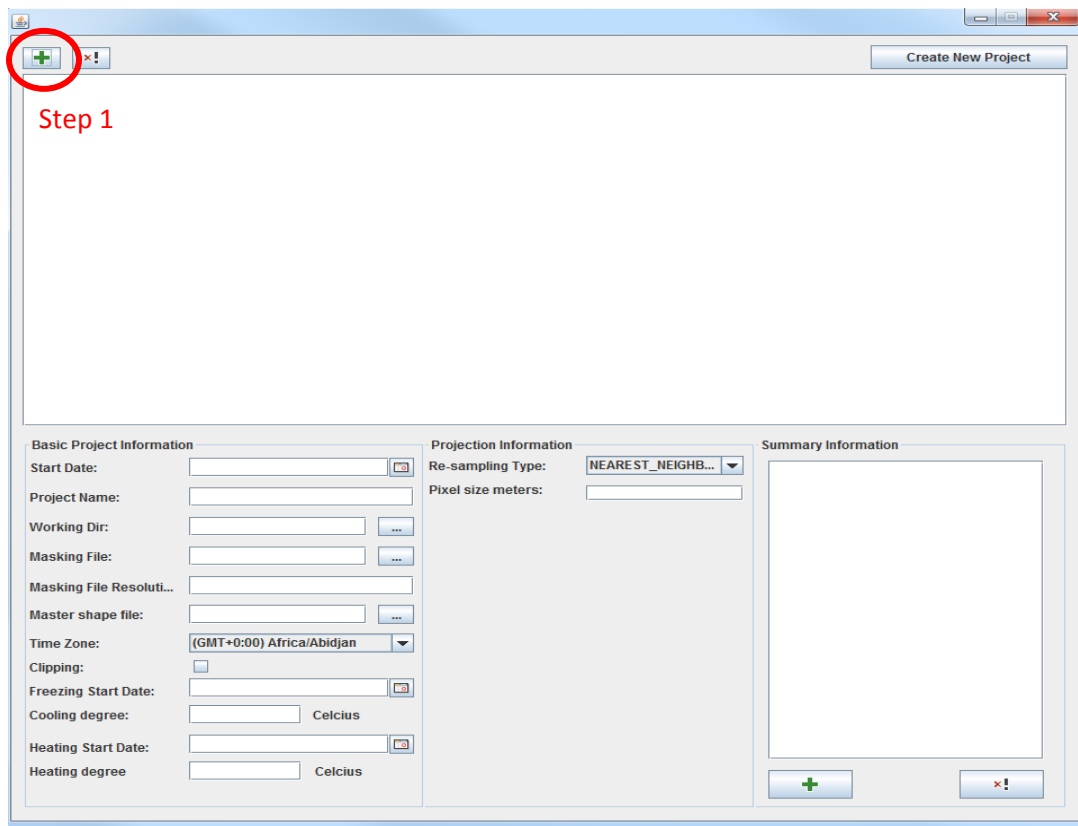


Figure 2. Project Information window

A plugin information window will be prompted.

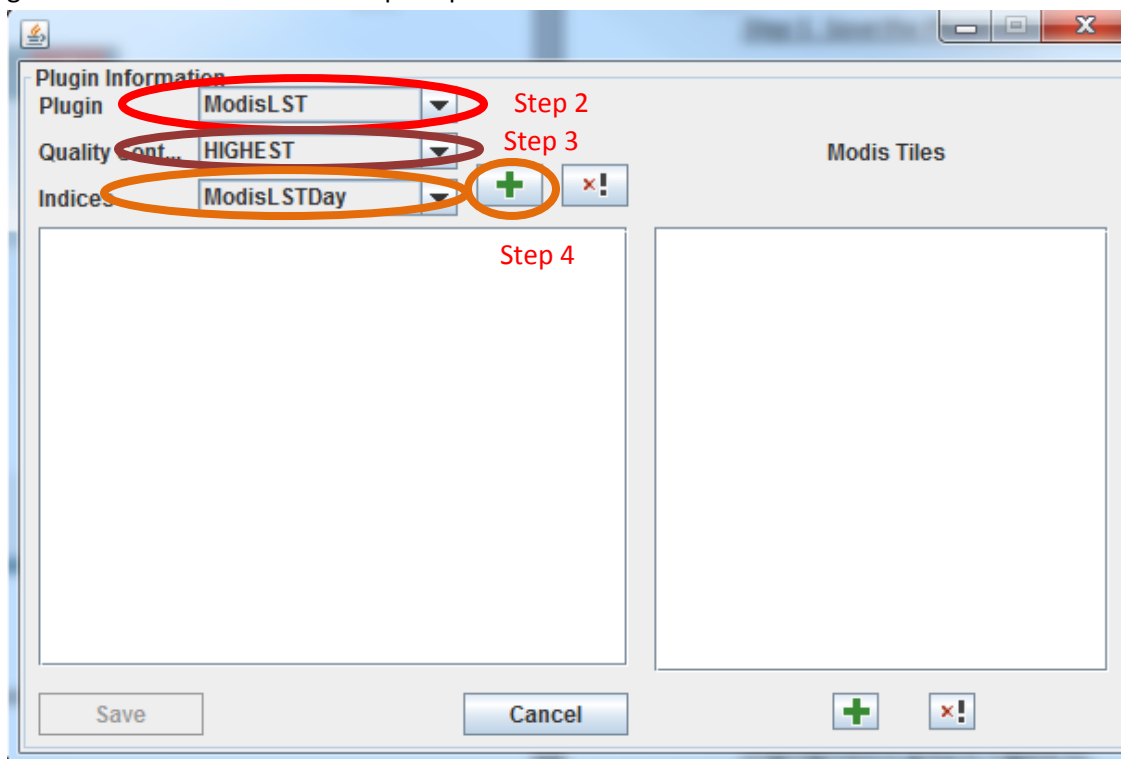


Figure 3. Plugin Information window

Step 2. select a plugin

Use the “Plugin” dropdown box (highlighted in red in the Figure 3) to choose a plugin for a project.

Step 3. choose quality control

Use the “Quality control” dropdown box (highlighted in orange in the Figure 3) to choose the desired quality level.

Step 4. Choose Indices

Use the “Indices” dropdown box (highlighted in green in the Figure 3) to choose one index calculator, click the “+” button in green to add it in.

Repeat this step until all the desired indices are added in. Figure 4 shows ModisLST plugin with two indices selected.

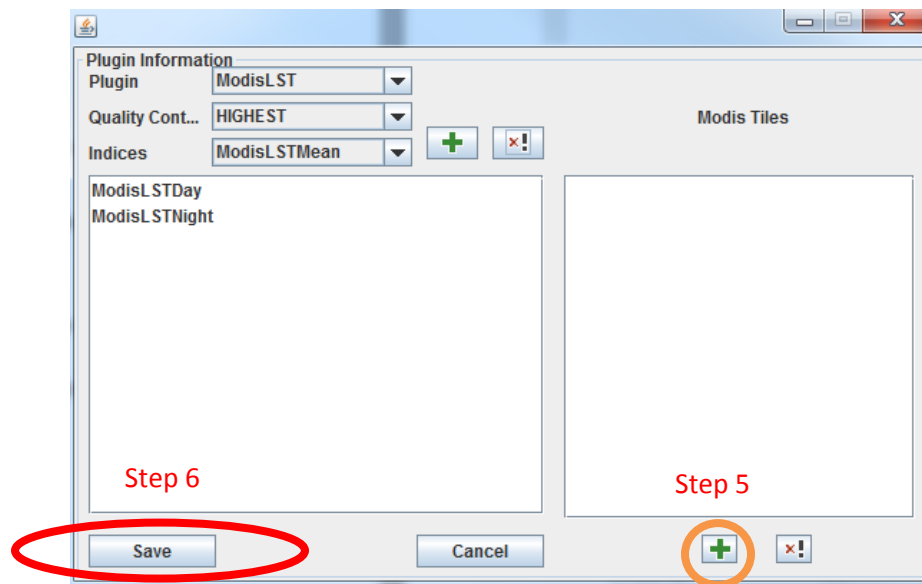


Figure 4. ModisLST plugin with three indices selected

To remove an index, highlight the index and click the “x!” button.

Step5. Input MODIS tiles if MODIS products are used

Click the “+” (highlighted in green) in the Modis Tiles section shown in Figure 4.

Enter a tile in the prompted dialog window. The format for a tile is *h* followed by two digits and *v* followed by two digits (see Figure 5). Click “OK” button to add the tile.

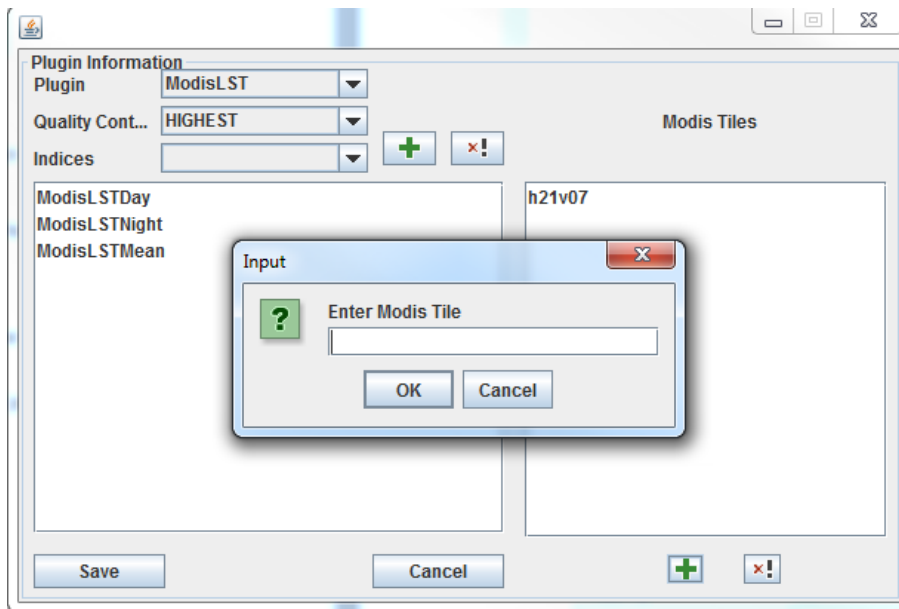


Figure 5. Plugin Information window when entering tiles

Repeat the step until all desired tiles have been added.

NOTE: If MODIS products are used, any MODIS plugin saved will contain the same Modis Tiles as the first MODIS plugin entered (All tiles will be the same for all MODIS plugins as shown in Figure 5).

Step 6. Save the Plugin information

Click "Save" button (highlighted in red in Figure 4).

The Plugin Information will be shown in the Project Information window (Figure 6).

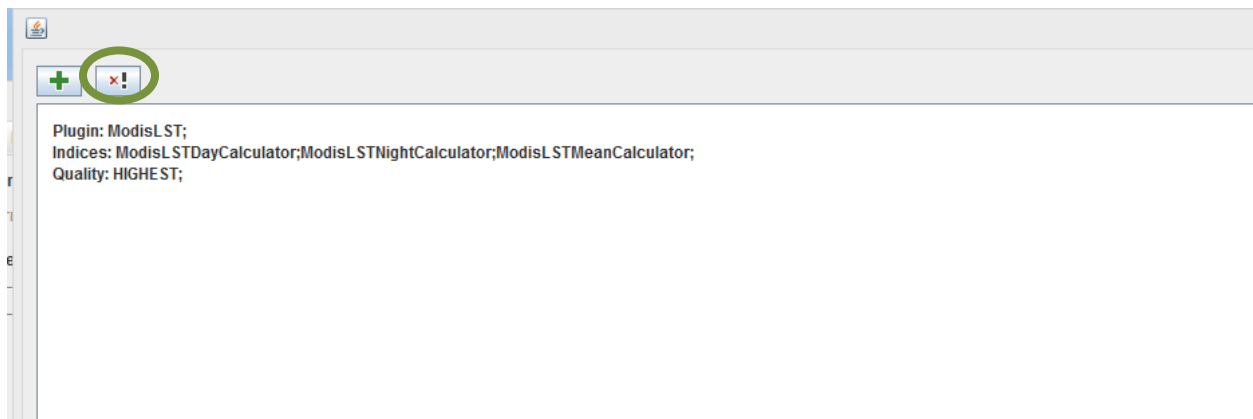
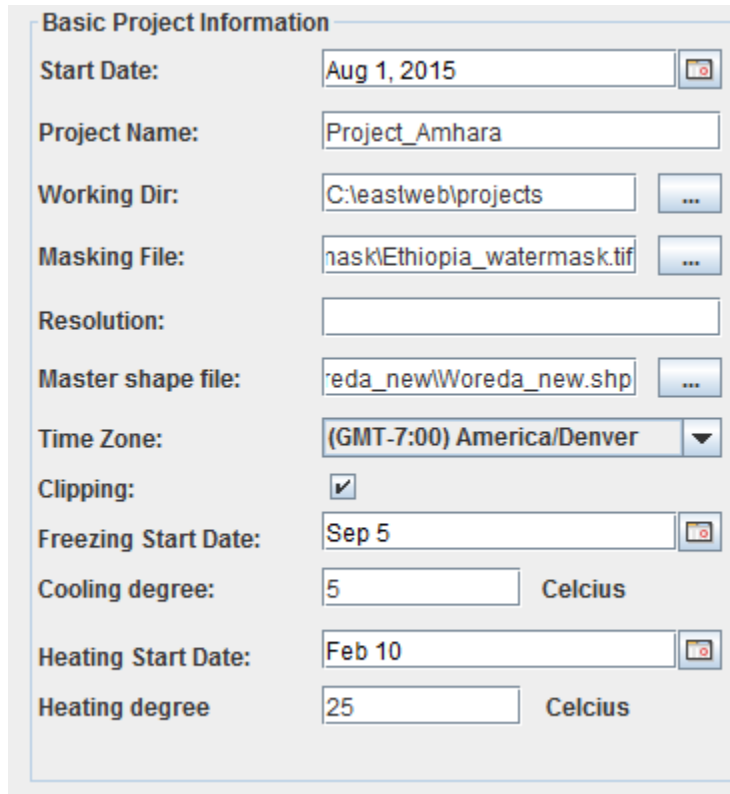


Figure 6. Project Information window after a plugin is added in

Repeat step 1 through step 6 to add more plugins to the project.

To remove a plugin, in the Project Information window, highlight the plugin and click “x!” button (highlighted in green in Figure 6).

2.1.2.2 Input Basic Project Information



The screenshot shows the 'Basic Project Information' section of a software window. It contains several input fields and controls:

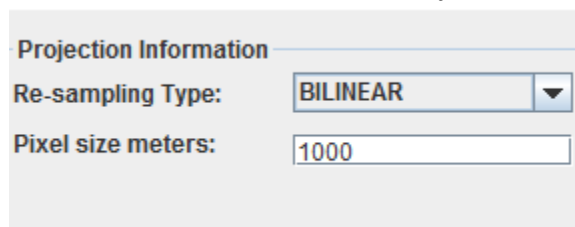
- Start Date:** A text box containing 'Aug 1, 2015' with a calendar icon to its right.
- Project Name:** A text box containing 'Project_Amhara'.
- Working Dir:** A text box containing 'C:\leastweb\projects' with a browse button (three dots) to its right.
- Masking File:** A text box containing 'nask\Ethiopia_watermask.tif' with a browse button (three dots) to its right.
- Resolution:** An empty text box.
- Master shape file:** A text box containing 'reda_new\Woreda_new.shp' with a browse button (three dots) to its right.
- Time Zone:** A dropdown menu showing '(GMT-7:00) America/Denver'.
- Clipping:** A checked checkbox.
- Freezing Start Date:** A text box containing 'Sep 5' with a calendar icon to its right.
- Cooling degree:** A text box containing '5' followed by the label 'Celcius'.
- Heating Start Date:** A text box containing 'Feb 10' with a calendar icon to its right.
- Heating degree:** A text box containing '25' followed by the label 'Celcius'.

Figure 7. Basic Project Information section in the Project Information Window

Add all the needed information about the project. The sample information of a project is shown in Figure 7.

2.1.2.3 Inputting Projection Information

Enter desired information in the Projection Information section as shown in Figure 8.



The screenshot shows the 'Projection Information' section of the software window. It contains two input fields:

- Re-sampling Type:** A dropdown menu with 'BILINEAR' selected.
- Pixel size meters:** A text box containing '1000'.

Figure 8. Projection Information section in the Project Information Window

2.1.2.4 Summary Information

To add summary units, please follow the three steps listed below:

Step 1. Click the “+” button in the Summary information section in the Project Information Window.

Step 2: Select the shapefile, field name and temporal summary in the prompted window (shown in Figure 10) and click the “Save” button.

Step 3: Repeat step 1 and step 2 until the desired summary units are all added. Figure 11 shows the display of the summary units in the Summary Information section.



Figure 9. Summary Information section

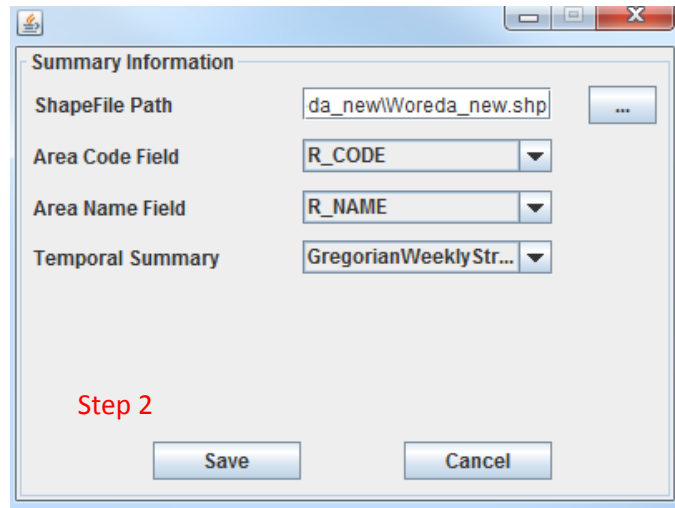


Figure 10. Prompt window for summary units

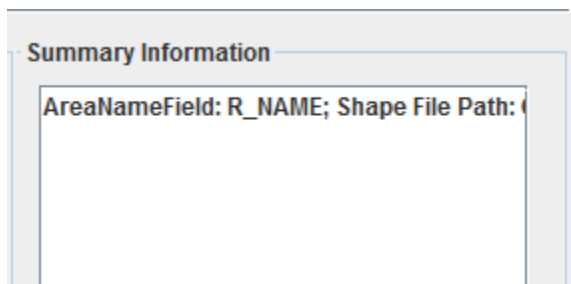


Figure 11. A summary unit is added.

NOTE:

- No interpolation is done within EASTWeb V2.0 currently.
- If product can't be summarized into the specified amount of days then summaries will not be produced for that product in association to the invalid temporal summary.
- Temporal summarizations can be left out to allow all products to be summarized via zonal summarization.
- MODIS products can be summarized additionally with the 8 day composite strategy allowing comparisons to be made with other products which have daily output.

2.1.2.5 Create the new project

Click the “Create New Project” button on the right corner of the Project Information window. After a message “Project was saved!” prompted and the “ok” button is clicked, the Main window will be brought back.

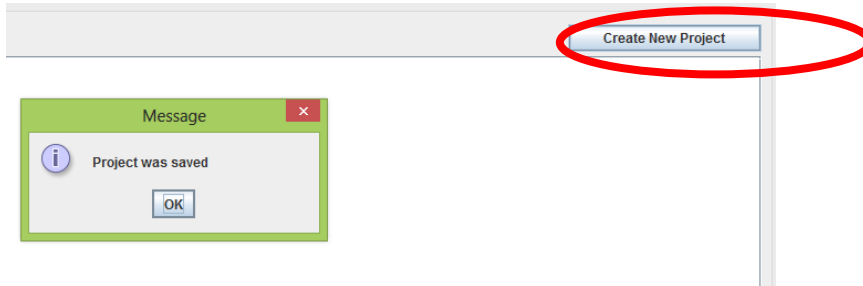


Figure 12. “Create New Project” button on the Project Information window

2.2 Running a Project

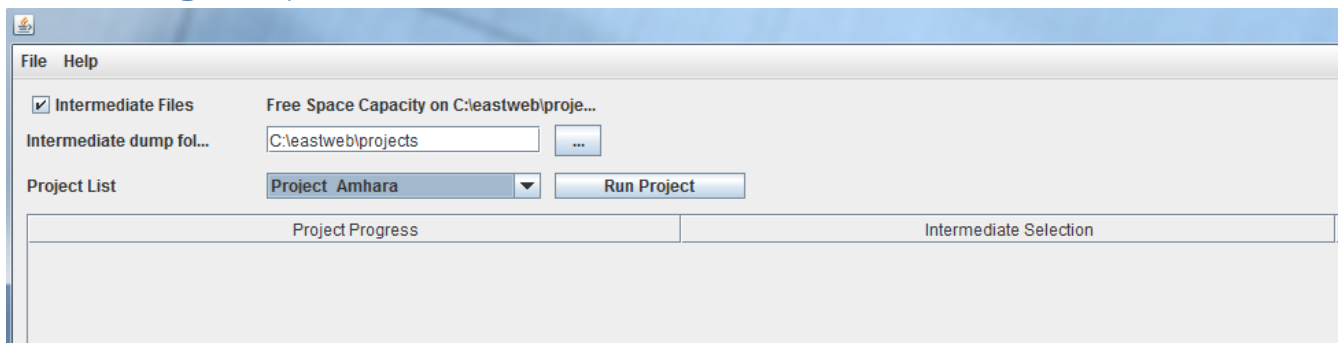


Figure 13. Main window

The created projects are listed in the “Project List”. Check the “Intermediate Files” to save the files produced during the processing and choose a location to store the intermediate files. Select the project in the “Project List” and then click the “Run Project” button.

NOTE: Do not run more than one instance of a project at the same time.

Figure 14 shows the status of a running project.

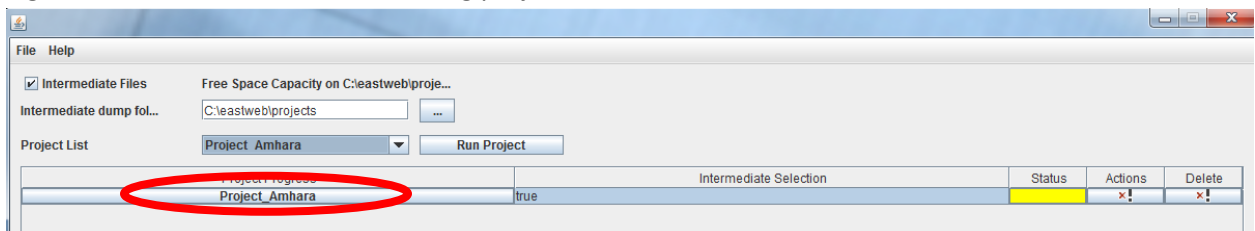


Figure 14. Project processing status

Status bar colors

Yellow – Project Processing

Red – Errors encountered in project

Green – Project has completed processing

The processing progress can be monitored by clicking on the project name. The Progress Summary will be prompted as shown in Figure 15.

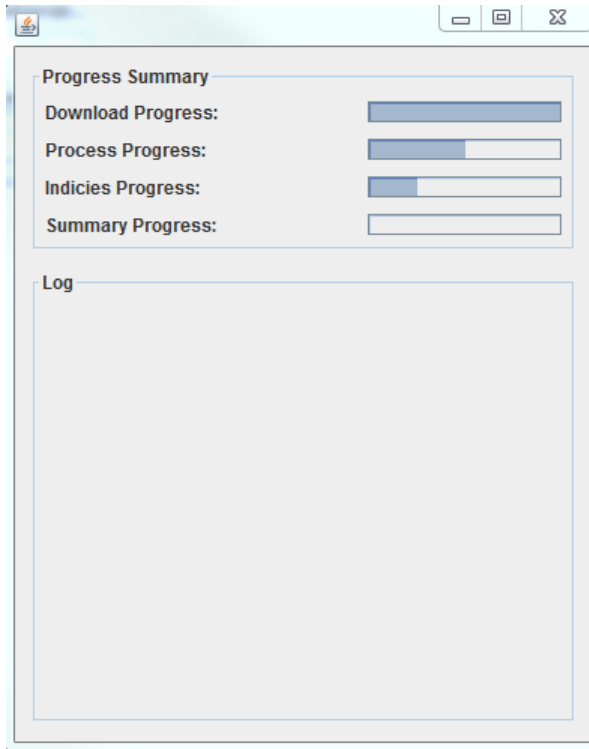


Figure 15. Progress Summary

2.3 Query Database

To query the summary in the database, select File - > Run query in the Main window. The query UI will be prompted as shown in Figure 16.

Step 1: Select the project in the dropdown menu, then fill in the query criteria. A sample is shown in Figure 17. If you want to view the SQL click on "View SQL". The query UI will display the SQL as shown in Figure 18.

Step 2: click "Query" button.

Project:

Plugin:

Fields

☐ count ☐ stdev ☐ sqrSum

☐ sum ☐ min

☐ mean ☐ max

Clause Statement

☐ Zone

☐ Year

☐ Day

Enviromental Index

Include

Exclude

View SQL Query Cancel

Figure 16. Query window

Project:

Plugin:

Fields

☒ count ☐ stdev ☐ sqrSum

☒ sum ☐ min

☐ mean ☐ max

Clause Statement

☒ Zone

☒ Year

☐ Day

Enviromental Index

Include

TRMM3B42RTIndex

Exclude

View SQL Query Cancel

Figure 17. Filled query

Project:

Plugin:

Fields

☒ count ☐ stdev ☐ sqrSum

☒ sum ☐ min

☐ mean ☐ max

Clause Statement

☒ Zone

☒ Year

☐ Day

Enviromental Index

Include

TRMM3B42RTIndex

Exclude

View SQL Query Cancel

SELECT

name,

year,

day,

index,

count,

sum,

TRMM3B42RTIndex,

FROM

"Project_Amhara"

WHERE

year<2015

zoneChilga

Figure 18. View SQL

Step 3: Enter the file path for where to write the csv file to then click “OK”.

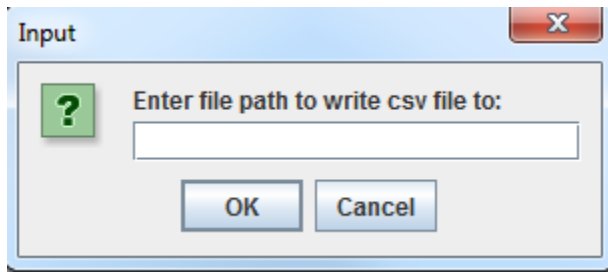


Figure 19. csv file path

3. Troubleshooting

- At times it can take several minutes for EASTWeb V2.0 to close, a project to stop, or to see progress update for the Processor step.
- The Modis product's servers have been known to be down from time to time more so than the others. When needing to download Modis data be sure to check for any new error logs.
- When starting a project with Modis product(s) the startup of the project will take noticeably longer than for other plugin products.