



MapWindowTM

GIS



Utah State
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Idaho State University
Geospatial Software Laboratory



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Department of Geosciences

Campus Box 8072 785 S. 8th Avenue Pocatello, ID 83209-8072 Phone: 208-282-3365 Fax: 208-282-4414

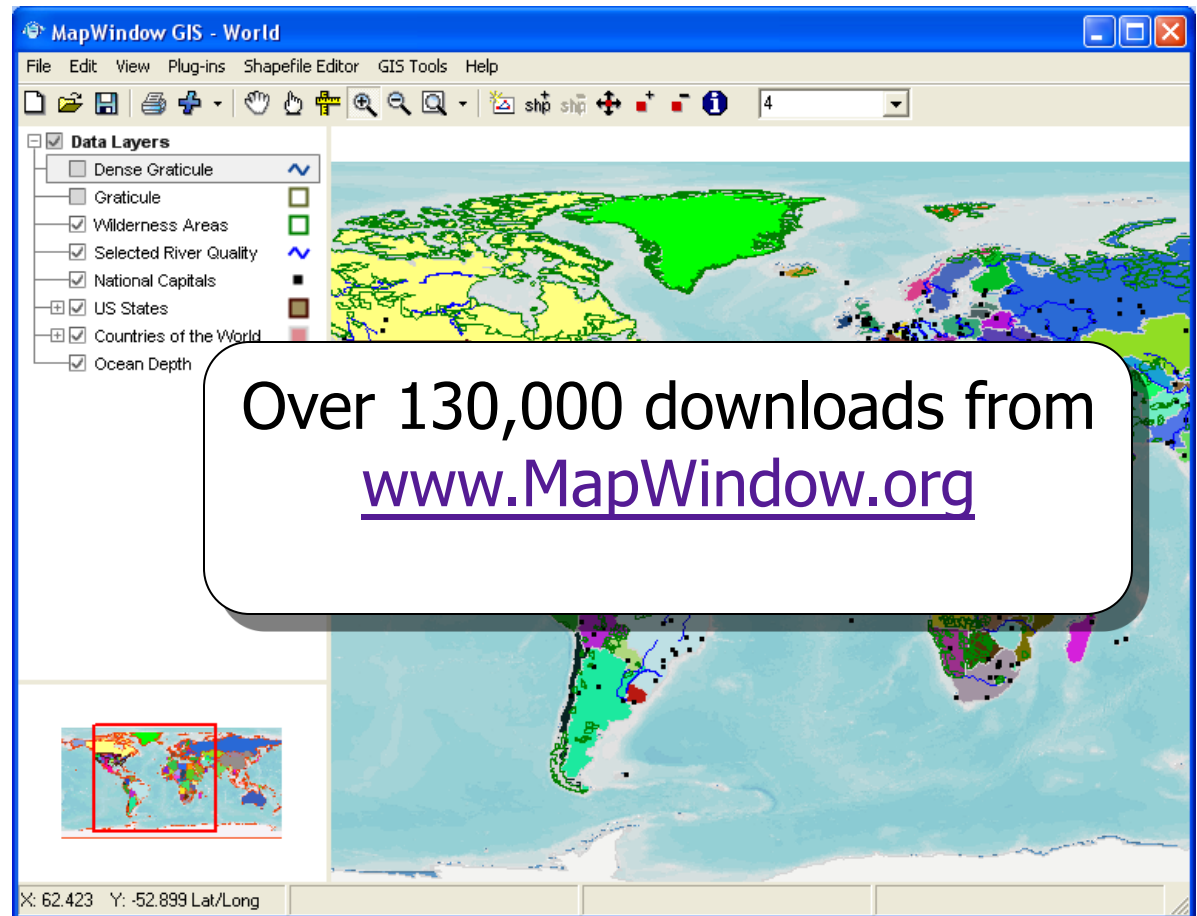


MapWindow

MapWindow GIS Framework



- **Developed by Students and International Collaborators**
- Open Source standards-based programmable GIS for:
 - Visualization
 - Data analysis
 - Modeling
 - Custom GIS development
- Adopted by EPA

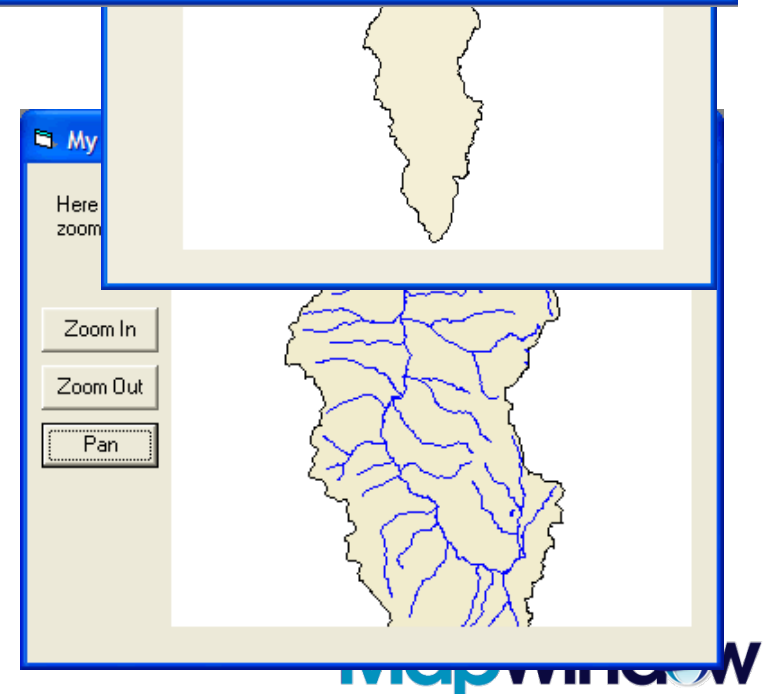


It started with a white box...



- The core MapWindow component is a programming object (think “MapObjects”) that can be added to a form in Visual Basic or other languages supporting ActiveX

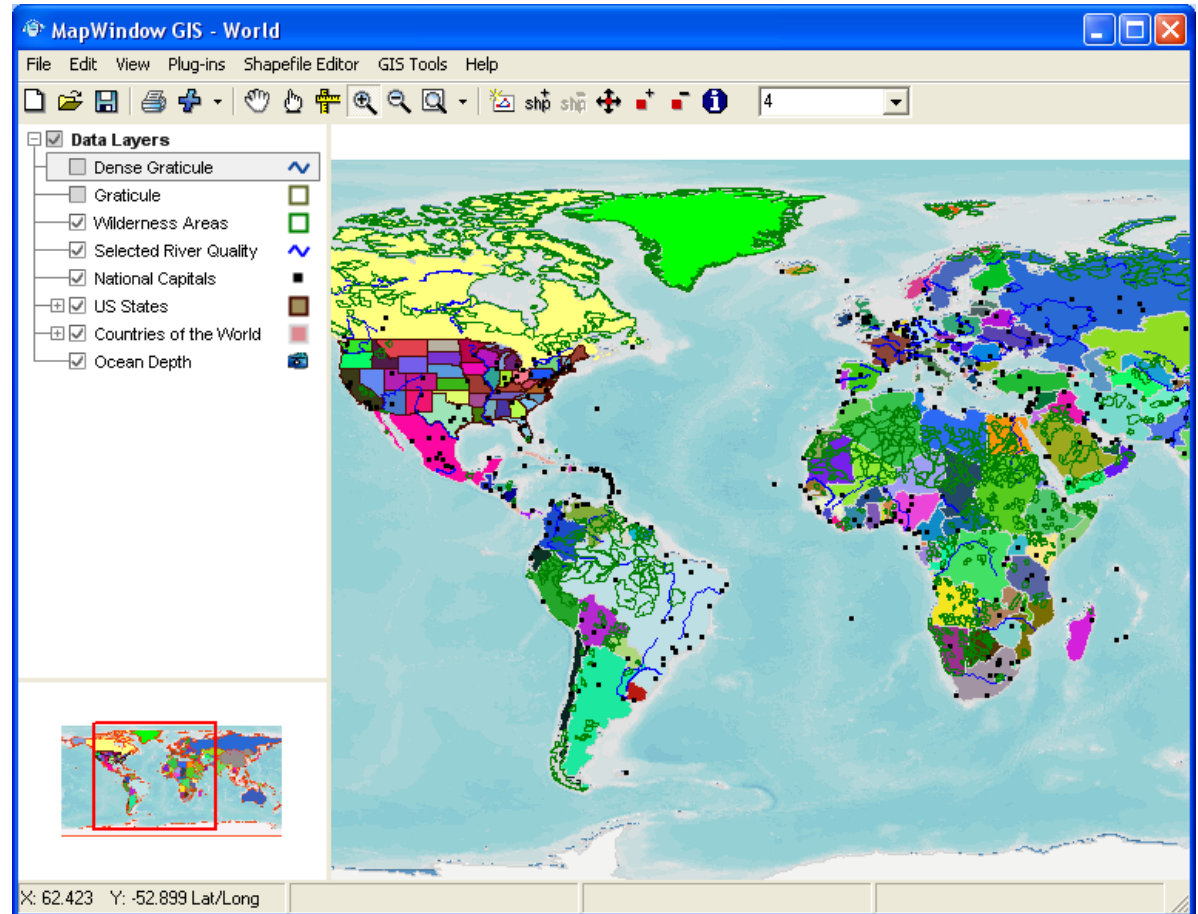
```
Project1 - Form1 (Code)
Form Load
Private Sub Form_Load()
    Dim sf As New Shapefile
    sf.Open App.Path & "\basin.shp"
    Map1.AddLayer sf, True
End Sub
```





...and a graphical user interface...

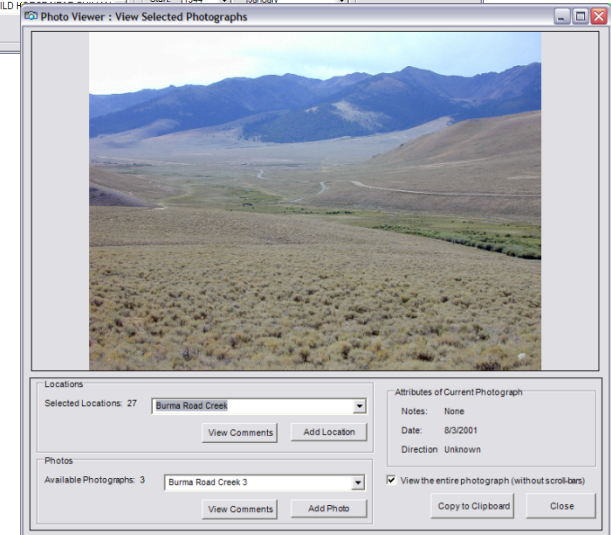
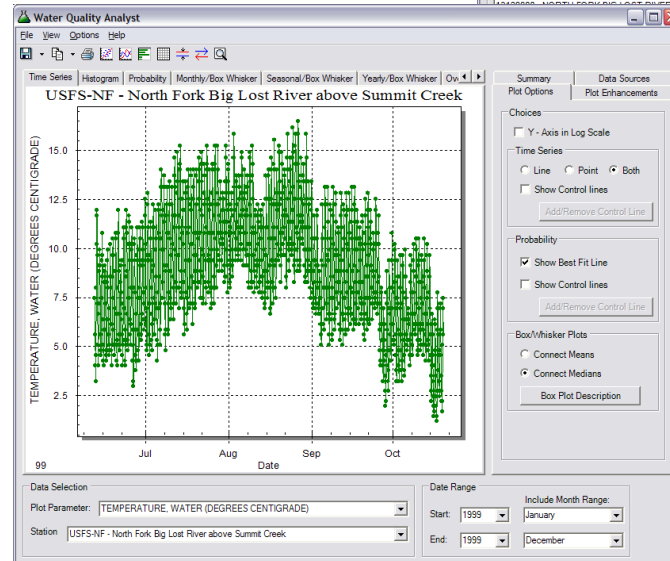
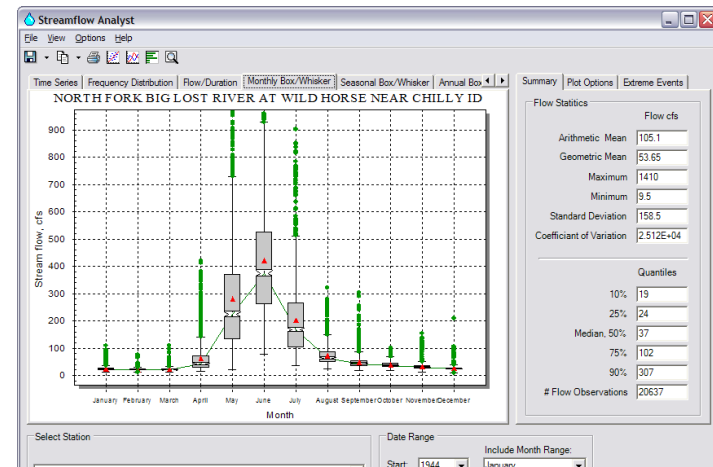
- A Programmable GIS that supports:
 - Visualization
 - Data analysis
 - Modeling
 - Custom GIS application development





...and plug-ins.

- Automatic Watershed Delineation
- Water Quality Analyst
- Streamflow Analyst
- PhotoViewer
- TIN Builder/Viewer
- Grid Wizard
- Model Manager
- BASINS
- SWAT



See www.MapWindow.org



MapWindow.org

- Downloads
- Sample code
- Discussion forum
- Bug system
- Source code
- etc...

MapWindow GIS
Open Source Programmable Geographic Information System Tools

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MapWindow Mailing List

Please enter your e-mail address to receive occasional notices about MapWindow (about three or four times a year). Commuters and developers should consider subscribing to [additional mailing lists](#) to track announcements, and discussions in the [MapWindow forums](#).

Component

If you would like to contribute a component to this list, please feel free to [add your listing](#). If you've written a script for MapWindow, the [online script directory](#) is the place to submit it. You need to be a registered [MapWindow Team Member](#) to contribute. Click [here](#) to register.

Product	Description
MapWindow GIS Application	The MapWindow application includes the GUI, MapWindow Interfaces DLL (which includes the I...
MapWinGIS ActiveX Control	This is the MapWinGIS ActiveX control used by the MapWindow application. This may also be ...
Sample ActiveX Project: Hike Difficulty Analysis	This is a sample Visual Basic 2005 project utilizing the MapWinGIS ActiveX control to build...
Sample MapWindow Plug-in Project: Path Analyzer	This is a sample MapWindow Application plug-in written with Visual Basic 2005...

MapWindow GIS Components

Product

Description

[MapWindow GIS Application](#)

The MapWindow application includes the GUI, MapWindow Interfaces DLL (which includes the I...

[MapWinGIS ActiveX Control](#)

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[Sample MapWindow Plug-in Project: Path Analyzer](#)

This is a sample MapWindow Application plug-in written with Visual Basic 2005...

MapWindow Plug-ins contributed by the Utah Water Research Laboratory EMRC

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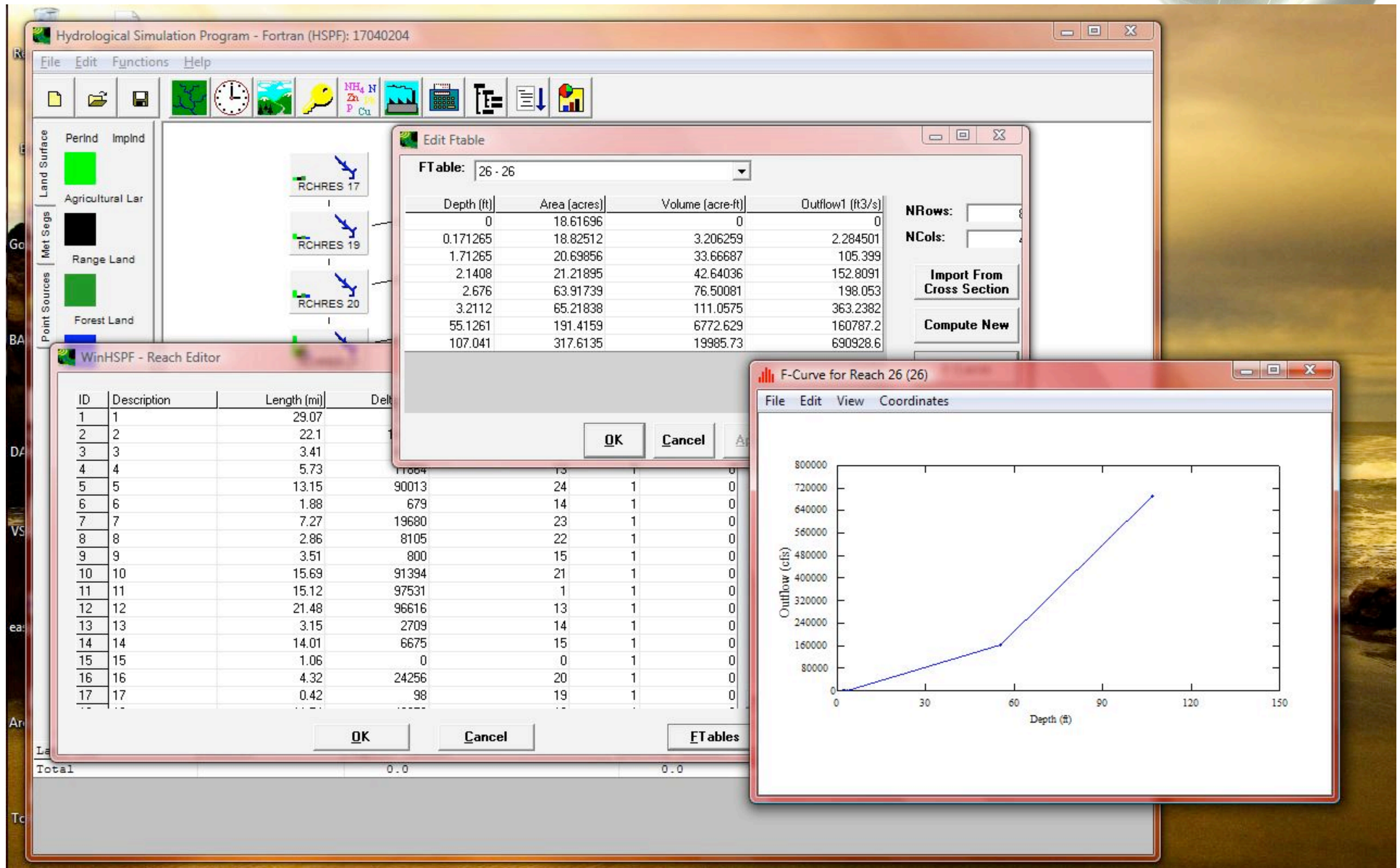
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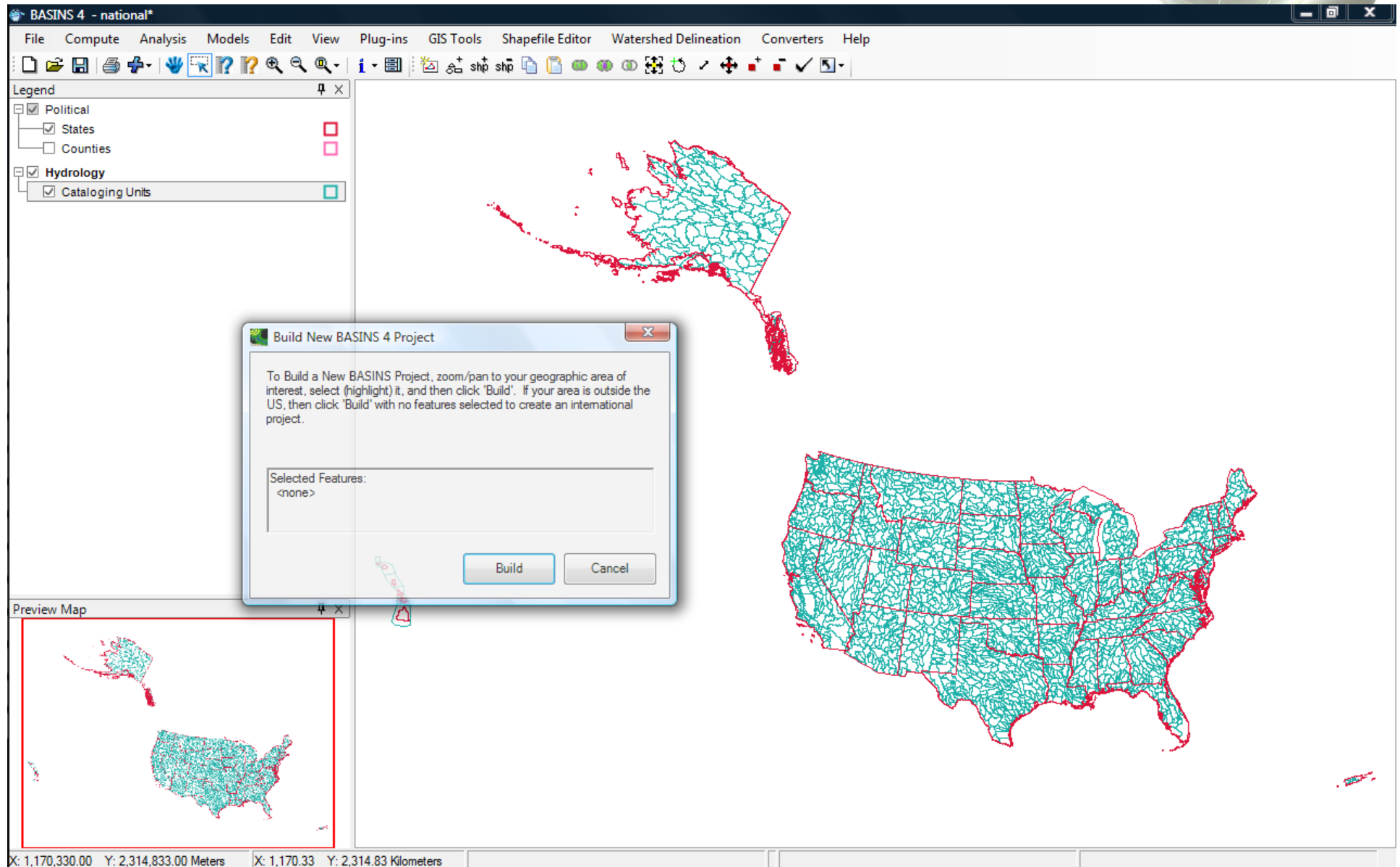
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Map Labeling for MapInfo

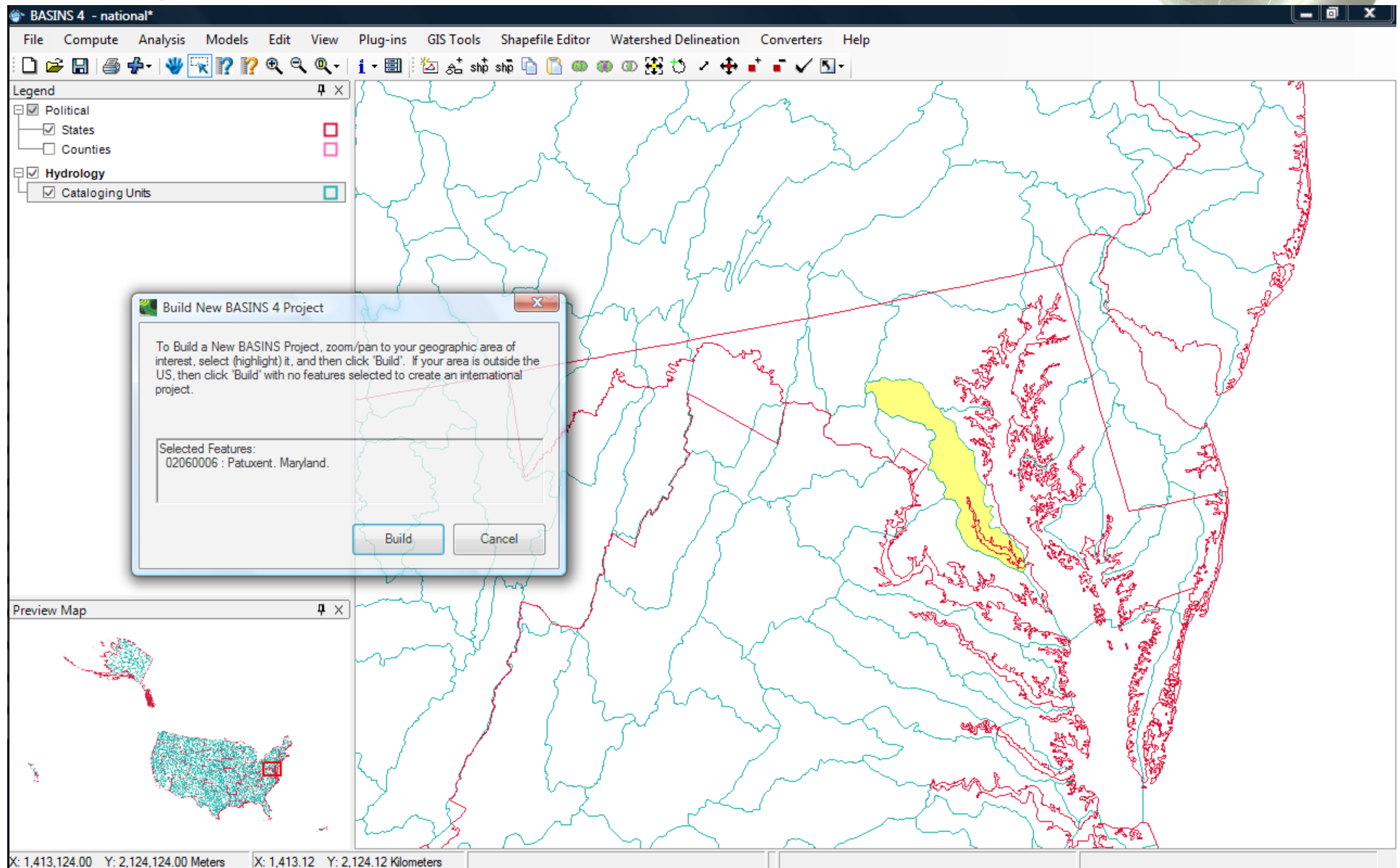
Demo...



Creating a MapWindow/BASINS Project



Creating a MapWindow/BASINS Project



Linkage to GIS



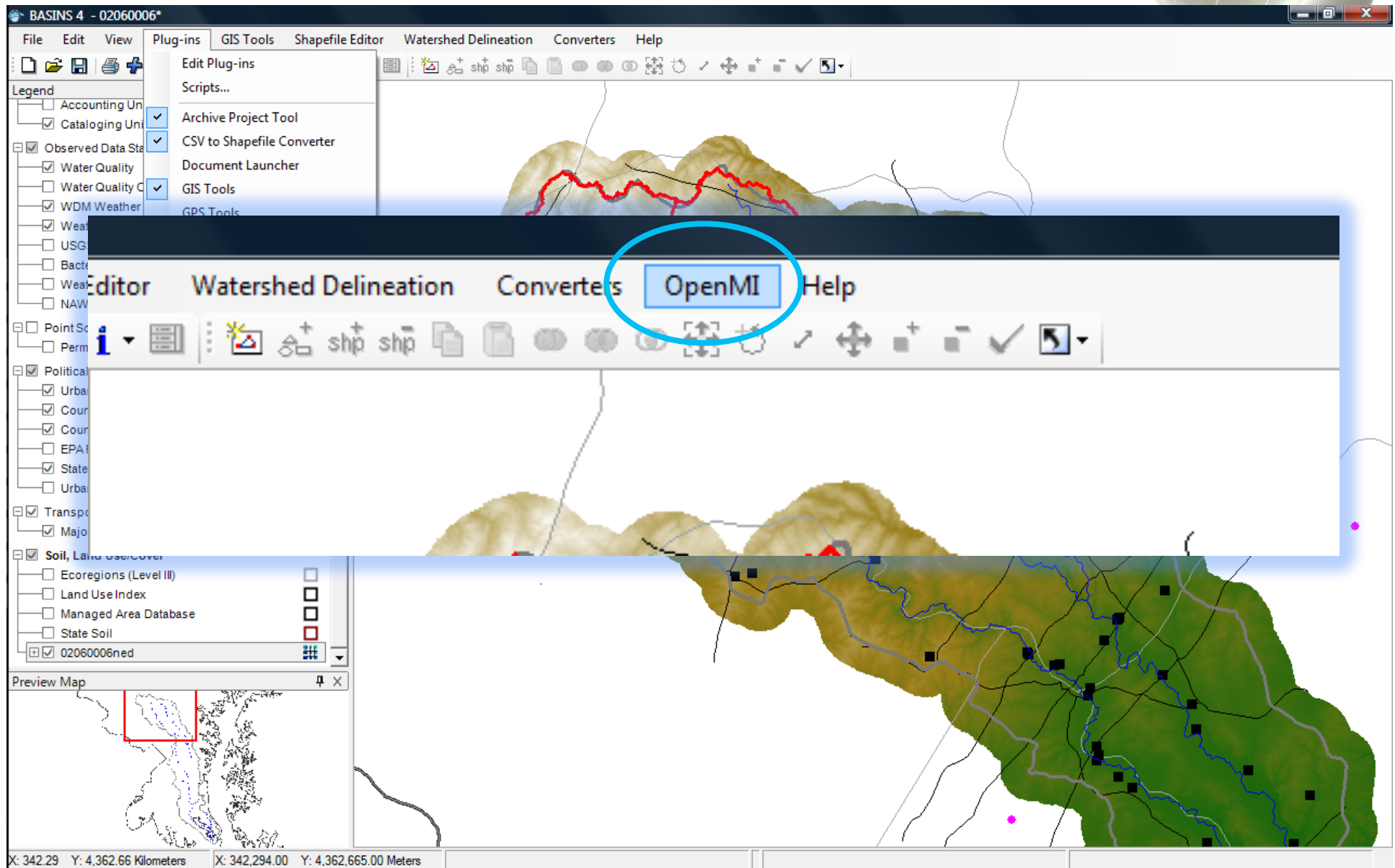
Implement both the OpenMI LinkableComponent and MapWindow plug-in interfaces

```
/// Summary description for SimpleRiverOpenMIComponent.
/// </summary>
public class SimpleRiverOpenMIComponent : Oatc.OpenMI.Sdk.Wrapper.LinkableEngine, MapWindow.Interfaces.IPlugin
{
    public void Initialize(MapWindow.Interfaces.IMapWin m_MapWin, int ParentHandle)...
```

Now the model can interact with the map directly (through MapWindow.IPlugin), as well as with other models (through OpenMI.ILinkable Component).

This approach serves as a design pattern that could be used to integrate OpenMI more tightly with ArcMap, for example.

OpenMI Model Manager



Linkage to GIS



BASINS 4 - 02060006*

File Edit View Plug-ins GIS Tools Shapefile Editor Watershed Delineation Converters OpenMI Help

Legend

- ☐ Account
- ☒ Catalog
- ☒ Observed Data
- ☒ Water Quality
- ☒ Water Quality
- ☒ WDM Watershed
- ☒ Weather
- ☐ USGS Geology
- ☐ Bacteria
- ☐ Weather
- ☐ NAWQA
- ☐ Point Source
- ☐ Permit
- ☒ Political
- ☒ Urban Area
- ☒ County Boundary
- ☒ County Boundary
- ☐ EPA Region
- ☒ State Boundary
- ☐ Urban Area
- ☒ Transportation
- ☒ Major Road
- ☒ Soil, Land Use
- ☐ Ecoregion
- ☐ Land Use
- ☐ Managed
- ☐ State Soil
- ☒ 02060006

Preview Map

X: 301.06 Y: 4,360.62 Kilometers X: 301,058.00 Y: 4,360,621.00 Meters

OpenMI Model Manager 0.2

Models, Tools, and Components

Models

- Landscape model
- Groundwater
- Simple stream
- SWAT
- HSPF
- Weather simulation

Tools

- Clip Grid with Polygon
- Reproject Raster
- Reproject Vector
- Interpolation
- Convert raster format

Components

- Loop management
- Iteration manager
- Trigger

Landscape Model

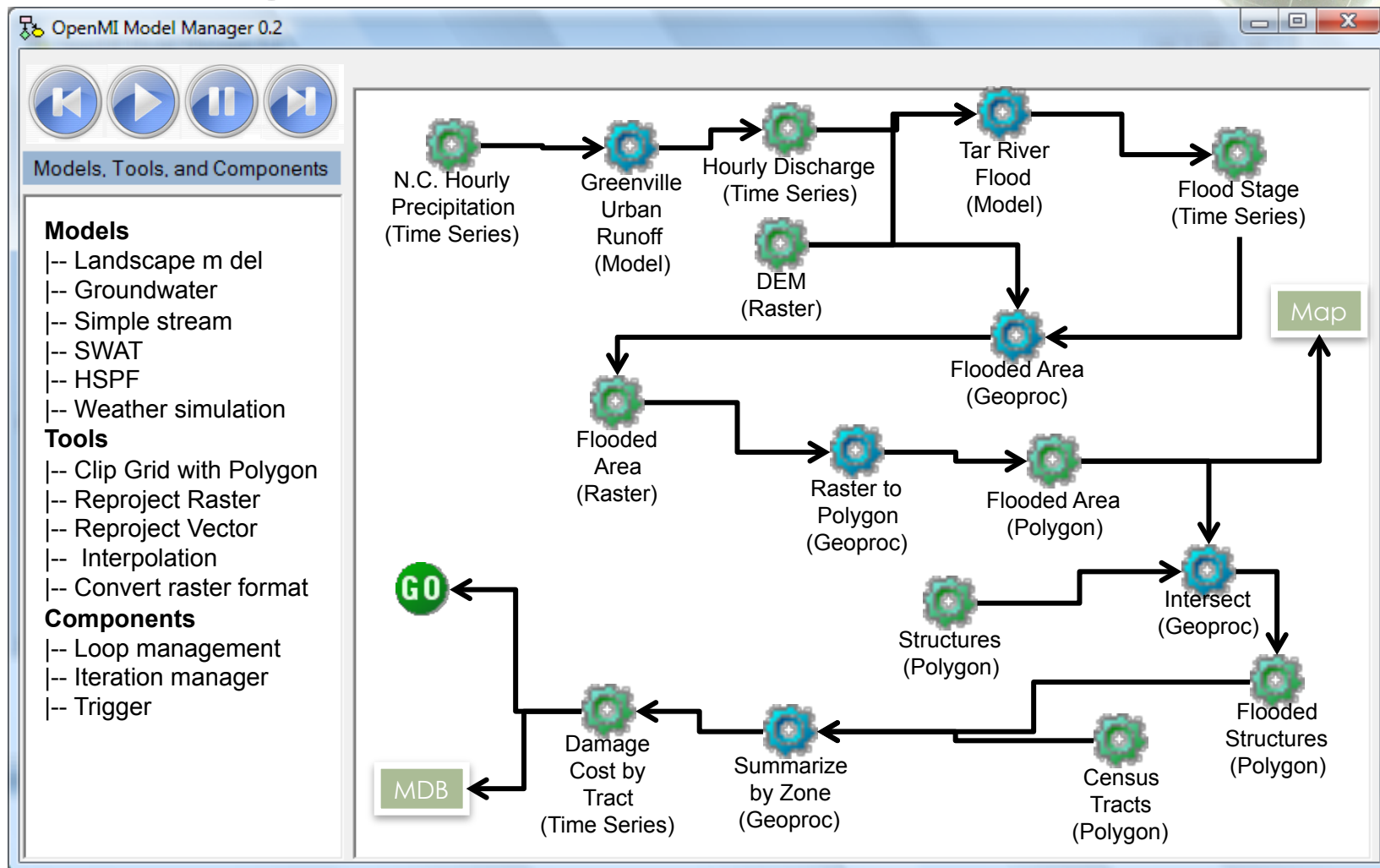
Streamflow Model

GO

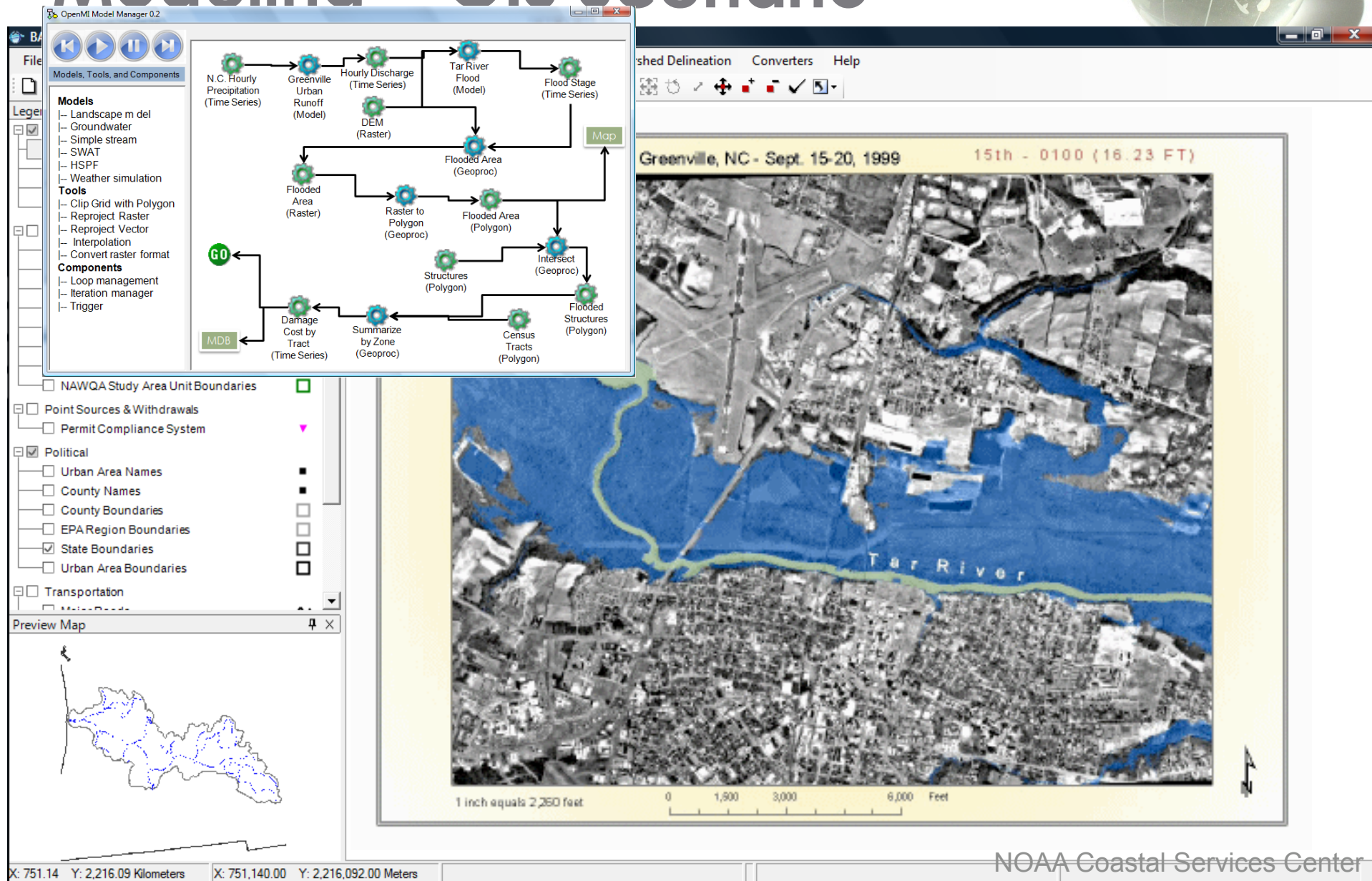
Next steps include:

- Build a better OpenMI Configuration Editor "Model Manager".
- Integrate geospatial data processing at time zero – and subsequent steps as needed.
- Building a true temporal geospatial GIS.

An Integrated Time Series Modeling + GIS Scenario



An Integrated Time Series Modeling + GIS Scenario



An Integrated Time Series Modeling + GIS Scenario

