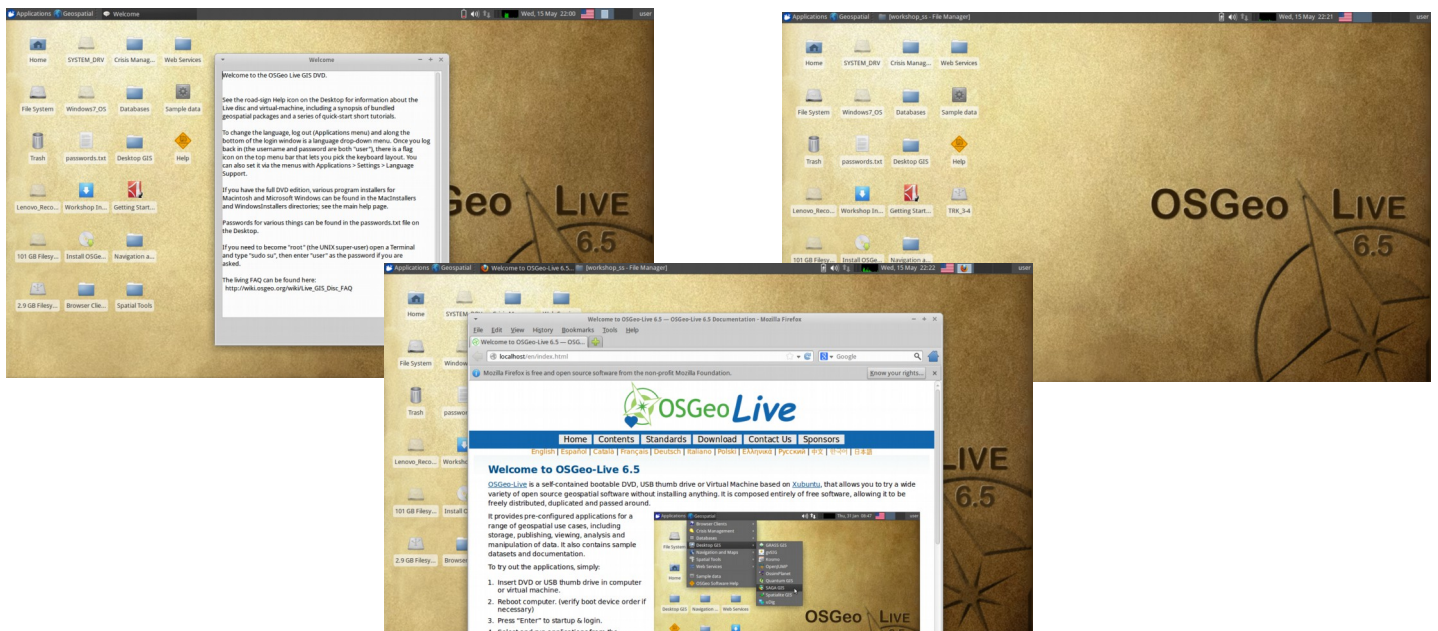


Exercise 0: Testing the installation

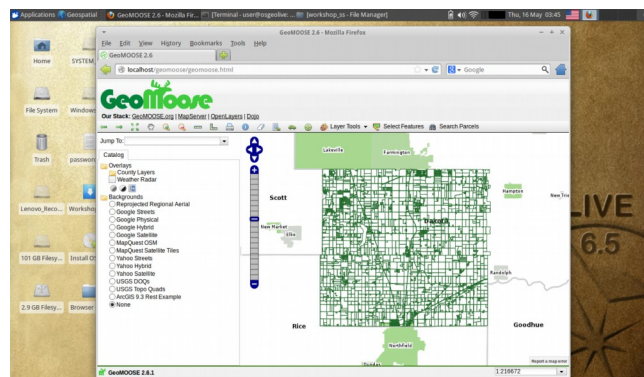
1. Test Apache: `http://localhost`

If it is working you should see the OSGeo Live Welcome page. Now you can go ahead and open Firefox.



2. Test GeoMOOSE: `http://localhost/geomoose/geomoose.html`

You should see GeoMOOSE load and display the initial map.



Exercise 1: Exploring the interface

Basic Tools

Note the tools in the toolbar above the map. If you hover over the tool you will see the tool's name. Try the various tools. There are two types of tools in GeoMOOSE. Some tools like “pan” and “zoom” stay active after they are selected. Other tools such as “Print” perform an immediate action and whatever tool was selected before remains active.

Other Tools/Services

Tools are also separated by if they are implemented in the client in JavaScript, or if they are implemented by querying the server. The tools that query the server are known as services.

Catalog

This is where the layers reside. Notice there are also tools available under each layer that apply to that particular layer.

Final Notes

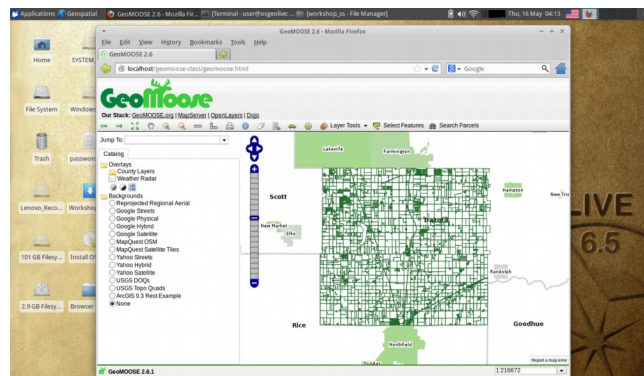
All of the tools, services, and layers are configured in the Mapbook. We will explore the Mapbook later.

Exercise 2: Creating a new GeoMOOSE instance

So far we have been working with the demonstration install on OSGeo Live. For the purposes of the workshop, we will make a new installation so we can make changes without disturbing the demo. To do this, first copy the existing demo install to a new folder. Then, configure the new folder to update the paths stored in the configuration files. Finally, create a symlink so Apache can see the files in the htdocs directory.

```
user@osgeo-live:/usr/local$ sudo cp -r geomoose geomoose-class
user@osgeo-live:/usr/local$ sudo chown -R user:user geomoose-class
user@osgeo-live:/usr/local$ cd geomoose-class
user@osgeo-live:/usr/local/geomoose-class$ sudo ln -s /usr/local/geomoose-class/htdocs \
/var/www/geomoose-class
```

You should now be able to view the “new” interface at <http://localhost/geomoose-class/geomoose.html>.



1. Adding a test script `phpinfo.php`. You can use the **Applications > Accessories > medit** tool to edit with.

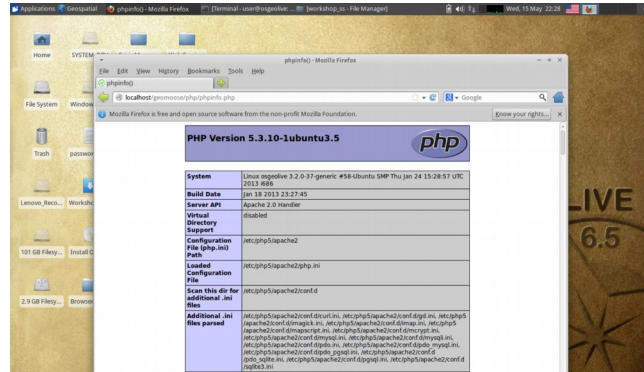
This script simply calls `phpinfo()` which allows us to verify that Apache is processing PHP files correctly. Also, check this page to make sure that the `sqlite3` module is installed. It is required by some of the services to keep track of features.

Create a new file named `phpinfo.php` in `/usr/local/geomoose-class/htdocs/php`.

```
<?php
phpinfo();
?>
```

2. Test PHP: <http://localhost/geomoose-class/php/phpinfo.php>

You should see a result similar to:

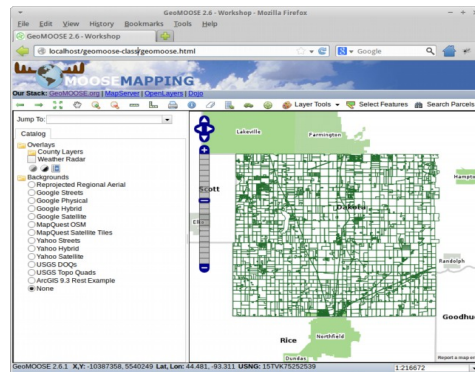


Exercise 3: Customizing the interface

In this exercise we will customize the new interface. We will start by changing the title and skin. This is done in the `geomoose.html` file.

1. Open the `geomoose.html` file in the `htdocs` folder of the new `geomoose-class` instance in a text editor.
2. Navigate to the `<title>GeoMOOSE</title>` line and change it to read


```
<title>GeoMOOSE 2.6 - Workshop</title>
```
3. Now navigate to around line 45 where the skins are defined. Comment out the gray skin and uncomment the blue skin. If you are familiar with CSS, take a look at the skin's CSS file.
4. Reload the `geomoose-class` page in the browser to see the changes



Exercise 4: Customizing the “Zoom To” list

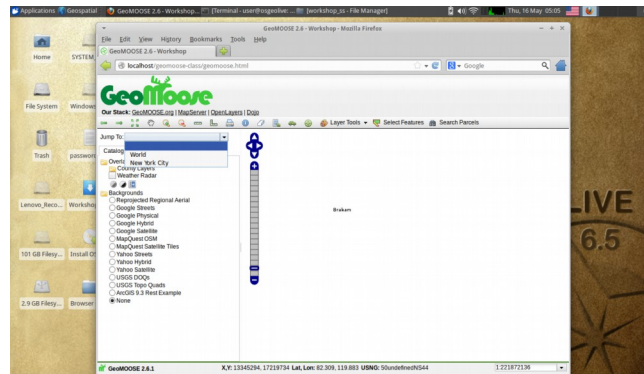
In this exercise we will customize the “zoom to” list.

Changing the Jump To list: Open the mapbook, find the lines that define the Jump To list. Change it to include entries for the world and New York City.

```
<param name="zoomto"><![CDATA[
{
  "Jump To:" : {
    "World" : [-20037508.34, -20037508.34, 20037508.34, 20037508.34] ,
    "New York City" : [-8242894, 4965204, -8227290, 4994963]
  }
}
```

Wrap up: Look at the other parameters available in the `<configuration/>` section of the mapbook.

Test it: Reload the `geomoose-class` page.



Exercise 5: Adding a WMS layer

There are two parts to adding a layer to GeoMOOSE. First a `<map-source/>` must be defined to tell GeoMOOSE how to access the data. Then a `<layer/>` entry must be added to the catalog. This is split because the layer can be included in the catalog multiple times.

Adding the map-source: Under the definition for the highlight layer add the following to define the new map-source.

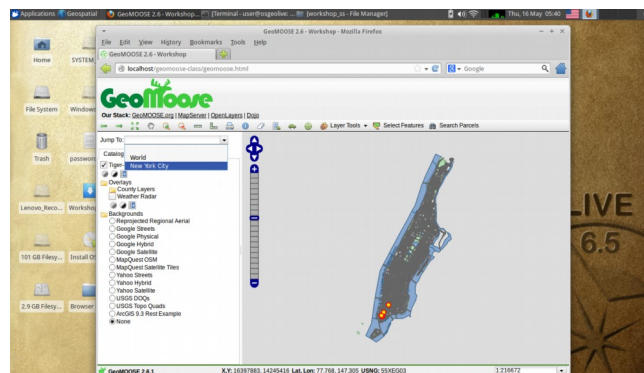
```
<map-source name="geoserver" type="wms">
  <url>http://localhost:8082/geoserver/ows?</url>
  <layer name="tiger-ny"/>
  <param name="TRANSPARENT" value="true"/>
</map-source>
```

Adding the layer: Locate the `<catalog/>` section. Add the following to add the layer to the catalog.

```
<layer title="Tiger-NY" src="geoserver/tiger-ny" status="on"/>
```

Start GeoServer: Goto `GeoSpatial > Web Services > GeoServer > Start GeoServer`. Once it's running . . .

Test it: Reload the `geomoose-class/html` page.



Exercise 6: Adding a MapServer Layer

Next, open the `mapbook.xml` file in a text editor.

Adding a MapServer layer is similar to adding a WMS layer. In GeoMOOSE 2.6 MapServer layers are implemented as WMS call to MapServer. This method is more convenient for specifying the file path.

This exercise will add the countries layer from the Natural Earth dataset that is included on OSGeo Live. We will need to create a Mapfile to tell MapServer how to render the layer. Then we will add that layer to the catalog. Finally, we will intentionally break the layer to demonstrate how to troubleshoot typical problems.

Creating the Mapfile : We will reuse some of the architecture from the OSGeo Live demo layers.

1. Under `/usr/local/geomoose-class/maps` create a directory called `workshop` and in `workshop` create a directory called `natural_earth`.
2. Copy the MapServer Mapfile (`natural_earth.map`) into the `natural_earth` directory. If you are familiar with MapServer, this is just a standard Mapfile. If you are not familiar with MapServer, this is just a text file.

Adding the layer to the Mapbook: This is similar to adding the WMS layer.

1. Open the `mapbook` in a text editor (`/usr/local/geomoose-class/conf/mapbook.xml`)
2. Add the `natural-earth` map-service above the `geoserver` service. Note: the order of the map-services controls the default draw order of the layers.

```
<map-source name="natural_earth" type="mapserver" queryable="true">
  <file>./workshop/natural_earth/natural_earth.map</file>
  <layer name="countries"/>
  <param name="TRANSPARENT" value="true"/>
</map-source>
```

Figure 1: `natural_earth.map`

MAP

```

NAME 'natural_earth'
SIZE 800 650
STATUS ON
EXTENT -20037508.34 -20037508.34 20037508.34 20037508.34
UNITS METERS

INCLUDE "../..//geomoose_globals.map"

WEB
  METADATA
    'ows_title' 'Countries'
    'ows_srs' 'EPSG:26915 EPSG:4326 EPSG:3857'
    'wms_enable_request' '*'
  END
END

PROJECTION
  'init=epsg:3857'
END

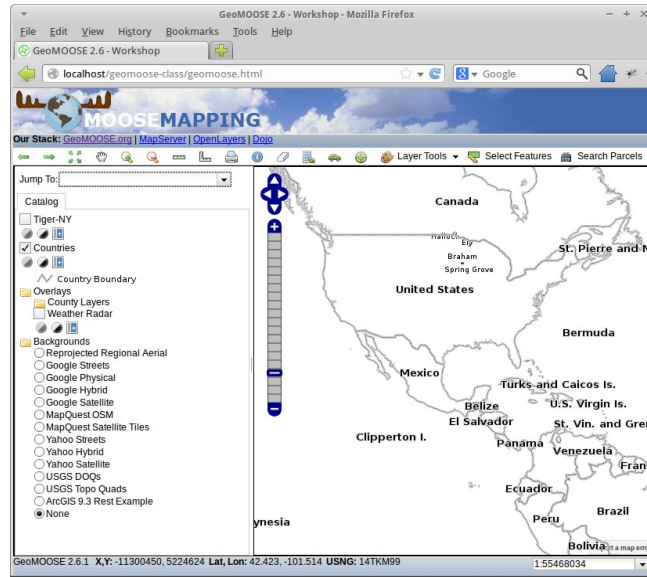
LEGEND
  STATUS ON
  LABEL
    TYPE TRUETYPE
    FONT vera_sans
    SIZE 8
    COLOR 0 0 0
  END
END

LAYER
  NAME 'countries'
  DATA '/home/user/data/natural_earth2/ne_10m_admin_0_countries'
  STATUS ON
  TYPE POLYGON
  MINSIZE 1000
  PROJECTION
    "init=epsg:4326"
  END
  LABELITEM 'NAME'
  CLASS
    NAME "Country Boundary"
    STYLE
      SYMBOL 'circle'
      SIZE 1
      OUTLINECOLOR 50 50 50
    END
    STYLE
      SYMBOL 'circle'
      SIZE 3
      OUTLINECOLOR 210 210 210
    END
    LABEL
      TYPE TRUETYPE
      FONT vera_sans-bold
      MINSIZE 8
      SIZE 10
      MAXSIZE 12
      COLOR 0 0 0
      OUTLINECOLOR 232 232 232
      BUFFER 4
    END
  END
END
END ## end Map

```

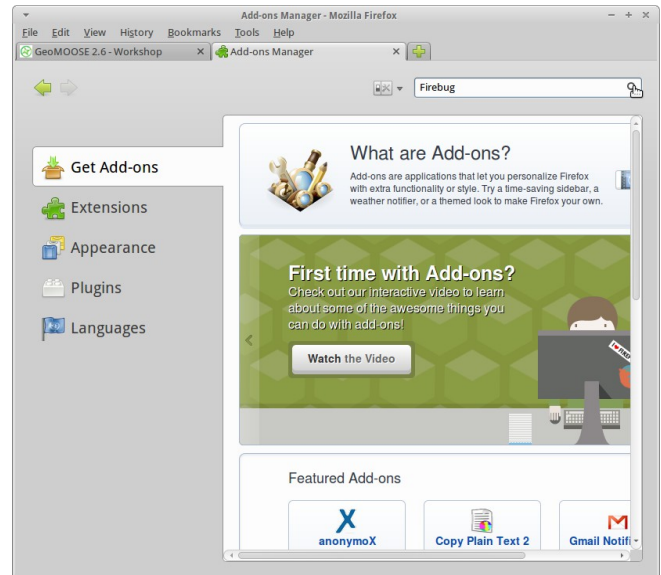
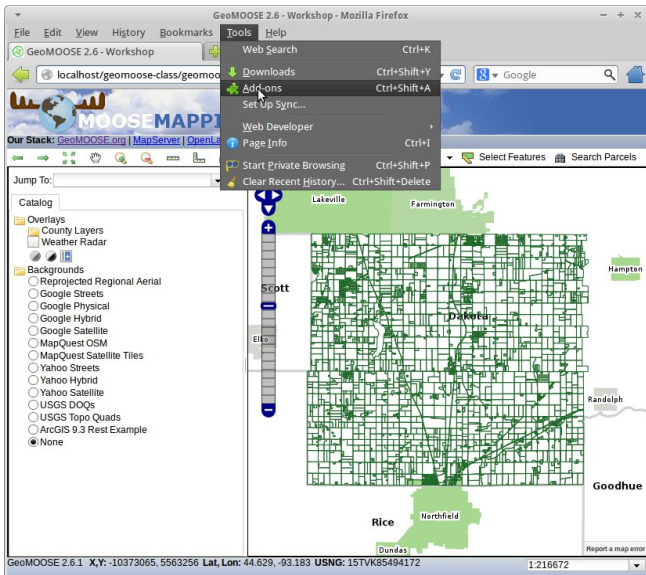
3. Add the layer to the catalog... maybe under the Tiger-NY layer, but really anywhere you want.

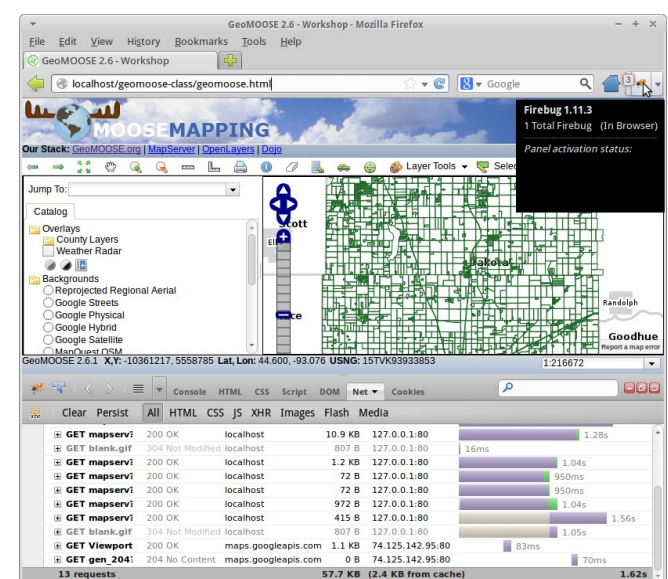
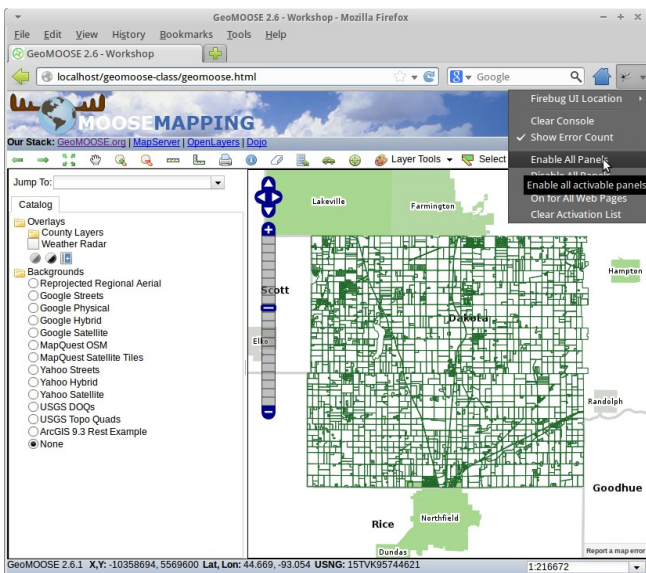
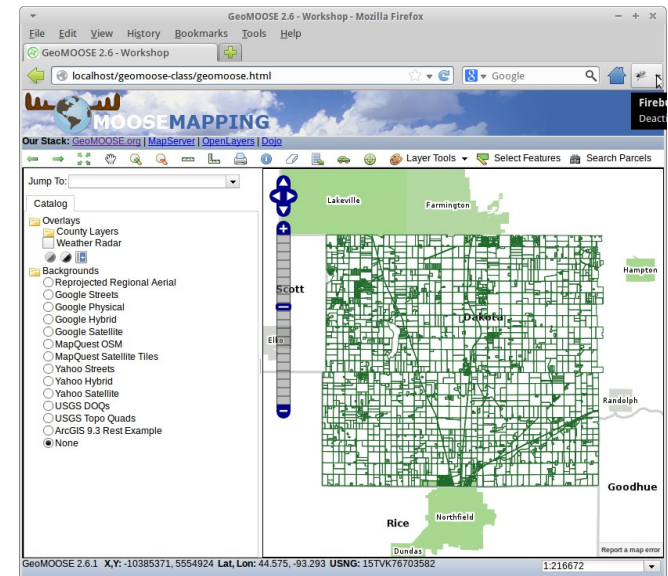
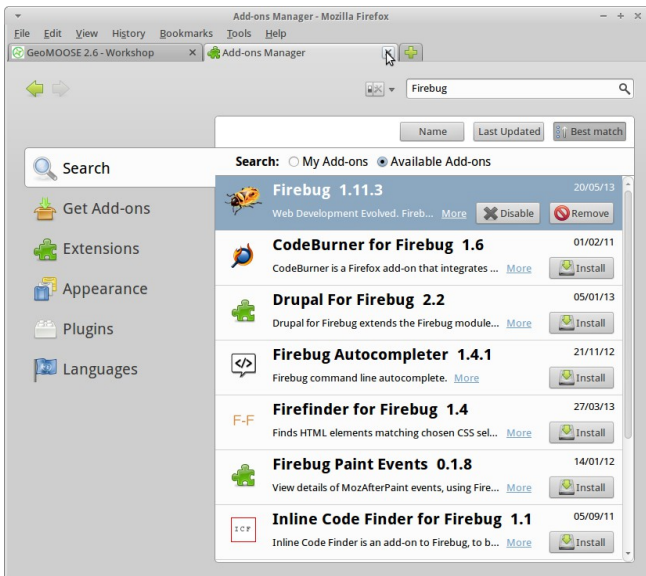
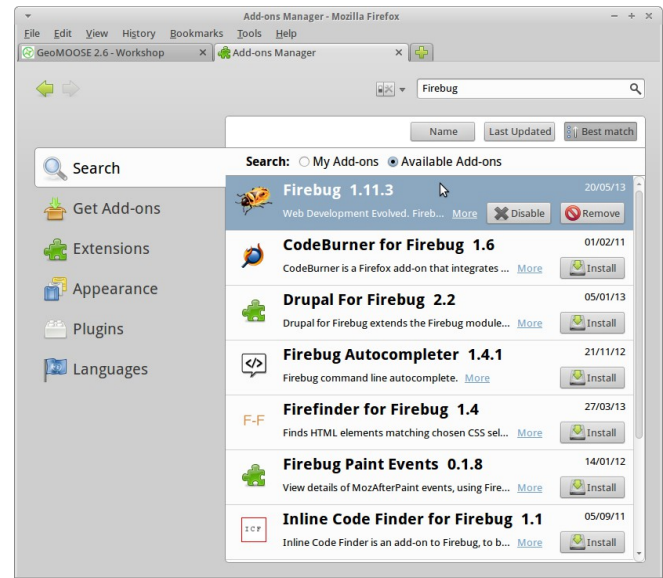
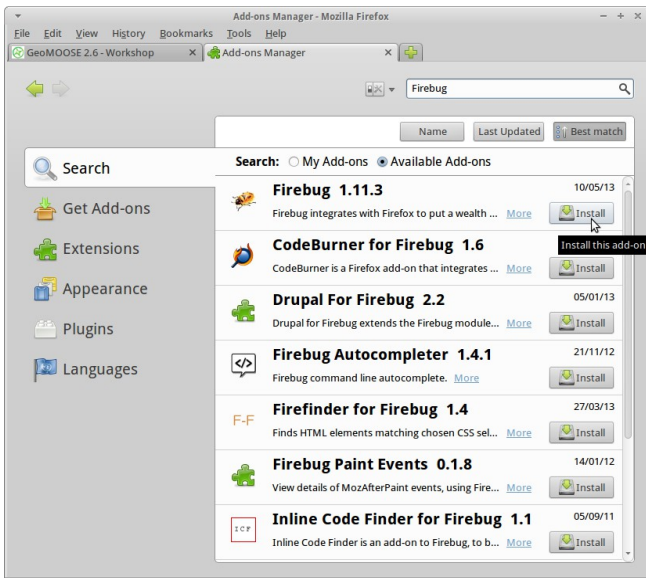

```
<layer title="Countries" src="natural_earth/countries" status="on"/>
```



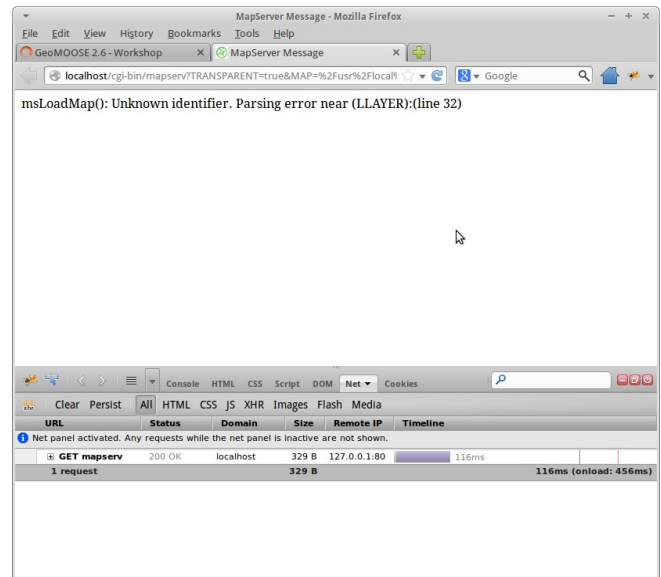
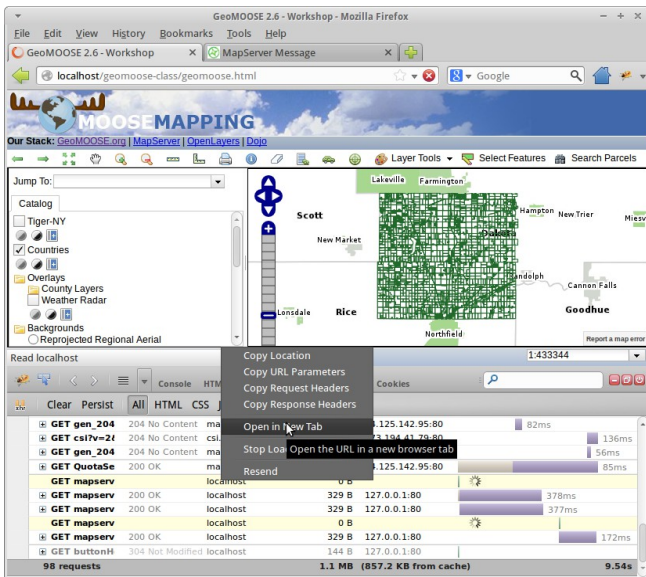
Exercise 7: Breaking it (and fixing it):

First let's install a debugging tool named Firebug.





Breaking the Mapfile: Edit the `natural_earth.map` file and introduce an error somewhere. For example change **LAYER** to **LLAYER**. Reload the layer in the interface and see what it does. Look in Firebug and look for the link to the natural earth layer. Open that link in a new tab to see the error message from MapServer.



Break the Mapbook:

1. Introduce an error into the mapbook. Change `<?xml version="1.0"?>` into `<?xxml version="1.0"?>`. Reload the interface and see what it does.
2. Restore the mapbook and reload the interface to make sure it works again.
3. Introduce a different error the mapbook. Change the name for the `natural_earth` map-source so it doesn't match the path for that layer in the catalog. I.E. change

```
<map-source name="natural_earth" type="mapserver" queryable="true">
```

to

```
<map-source name="natural_earth_" type="mapserver" queryable="true">
```

4. Reload the interface and see what it does.

Exercise 8: Changing Map Projection

For this exercise we will be creating a GeoMOOSE instance using a local projection. So, starting from the demo, create a new instance like in Exercise 2.

```
user@osgeo-live:/usr/local$ sudo cp -r geomoose geomoose-local
user@osgeo-live:/usr/local$ sudo chown -R user:user geomoose-local
user@osgeo-live:/usr/local$ cd geomoose-local
user@osgeo-live:/usr/local/geomoose-local$ sudo ln -s /usr/local/geomoose-local/htdocs \
                                                                    /var/www/geomoose-local
```

You should now be able to view the “new” interface at

<http://localhost/geomoose-local/geomoose.html>

Next, open the `mapbook.xml` file in a text editor. Find the line that sets the projection. Change the projection from EPSG:3857 to EPSG:26915. It should look like

```
<param name="projection">EPSG:26915</param>
```

Changing the Jump To list: Continuing in the mapbook look for “zoomto” parameter and change it to look like:

```
<param name="zoomto"><![CDATA[
{
  "Jump To:" : {
    'Dakota County' : [521238.614537864,4924218.86673578,473921.947801381,4974430.36885032] ,
    'Parcel Data' : [497205.409367,4923984.423582,477595.805945,4941970.52988] ,
    'Full State of MN' : [189783.560000,4816309.330000,761653.524114,5472346.500000]
  }
}]></param>
```

Changing the extents: Continuing in the mapbook, find the lines that configure the `max_extent` and `initial_extent`. Change the values for each of the settings so that they look like:

```
<param name="max_extent">189783.560000,4816309.330000,761653.524114,5472346.500000</param>
<param name="initial_extent">497205.409367,4923984.423582,477595.805945,4941970.52988</param>
```

Changing the Scale steps: Continuing in the mapbook look for “maxResolution” and “numZoomLevels”. These need to be removed.

And in their place add a new “scales” parameter which should look like:

```
<param name="scales">.5,1,4,8,16,24,32,64,128,270,550,1000</param>
```

Exercise 9: Custom Extensions

See <http://www.geomoose.org/developer/extensions.html>.

Exercise 10: Custom Services

See <http://www.geomoose.org/developer/services.html>.