

# GRASS 6 VISUAL TUTORIAL

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Lorenzo Moretti - ENEA - 2005 - [lorenzo.moretti@bologna.enea.it](mailto:lorenzo.moretti@bologna.enea.it)

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## Introduction

You can find many tutorials about Grass and almost any tutorial is concentrated on commands via X11 terminal. This tutorial is different: it's for people without Unix experience.

Grass is a powerful GIS with a long history in the Unix environment. Grass 6 is completely new and has a true Graphic User Interface (GUI) near the normal office applications.

Grass can be used from X11 terminal in any Operating System and from new menu in a graphic environment exclusively in Mac OS X. Grass run in many operating system using X11 as graphic environment. The Mac OS X version is the same but it can use a new menu in a true OS X environment like a normal Mac application. This tutorial is based on this version but it can be used in any operating system.

**ATTENTION:** if you have old GRASS GIS COMPLETE on Mac OS X you already have a **grassdata** folder with **spearfish57** location inside: it's not need download spearfish57 file from grass demo data site.

In this tutorial we use two demo data files from two sites:

Grass data demo site (**spearfish57**) <http://grass.itc.it/download/data.php>

Shape data demo site (**worlddata**) <http://ftp.intevation.de/freegis/worlddata/>.

## How Grass works

- Grass projects are in directories inside a principal folder and the path to this folder is called **DATABASE**: the principal folder name is usually **grassdata** and this folder can be anywhere in your Hard Disk (example: Database name is /Users/jackpb/grassdata). Attention: put grassdata folder in a path without space in the name.
- Grass project is called **LOCATION** and the locations are inside DATABASE (example: a Location is spearfish57)
- Grass is multiuser and it's possible to work from many terminal to a server and any user can create a session inside the Location: the session is called **MAPSET**. First Mapset of any Location has always the name **PERMANENT** with all settings for your project. After this Mapset any user can create a Mapset with any name. If you work alone you can work always with **PERMANENT** Mapset.
- Grass works in a region: the region is an area of your map. It can be your total map or a small part. If you don't see the map in a monitor you must select a region that cover that map. Example: you don't see a raster map on your monitor, select **GIS -> Region -> Manage region** and select this raster map in **Set region to match this raster map** box and press **Run**. After you'll view that raster map. The region is very important in Grass.

### ✓ Create your grass data directory

The first step is to create a folder where to insert all your projects.

Create a new folder wherever you want (eg: your home, in your startupdisk, or in a path without space in the name) with the name:

**grassdata**

### ✓ Download spearfish57 demo data

Go to grass demo data site, <http://grass.itc.it/download/data.php> and download the file spearfish57 (19 MB). This is the direct link:

[http://grass.itc.it/sampled/data/spearfish\\_grass57data.tar.gz](http://grass.itc.it/sampled/data/spearfish_grass57data.tar.gz)

Now you uncompress this file with Stuffit Expander or other software and you'll have a folder:

**spearfish57**

Drag this folder inside **grassdata** folder.

You have:

**grassdata** (dir - all your locations inside. The path to this folder is DATABASE)

**spearfish57** (dir - LOCATION for Grass 6: it's the project)

**PERMANENT** (dir - MAPSET principal for the location: all the files inside)

### ✓ Open your first workspace file (file .dm)

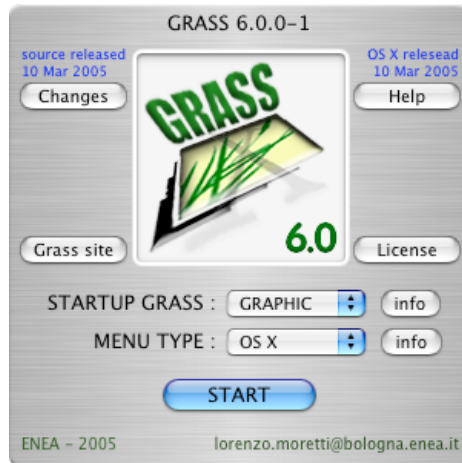
- Double clic on "**grass60**" application (inside /Applications/Grass folder) in Mac OS X. In other operating system enter grass60 in X11 terminal to start.



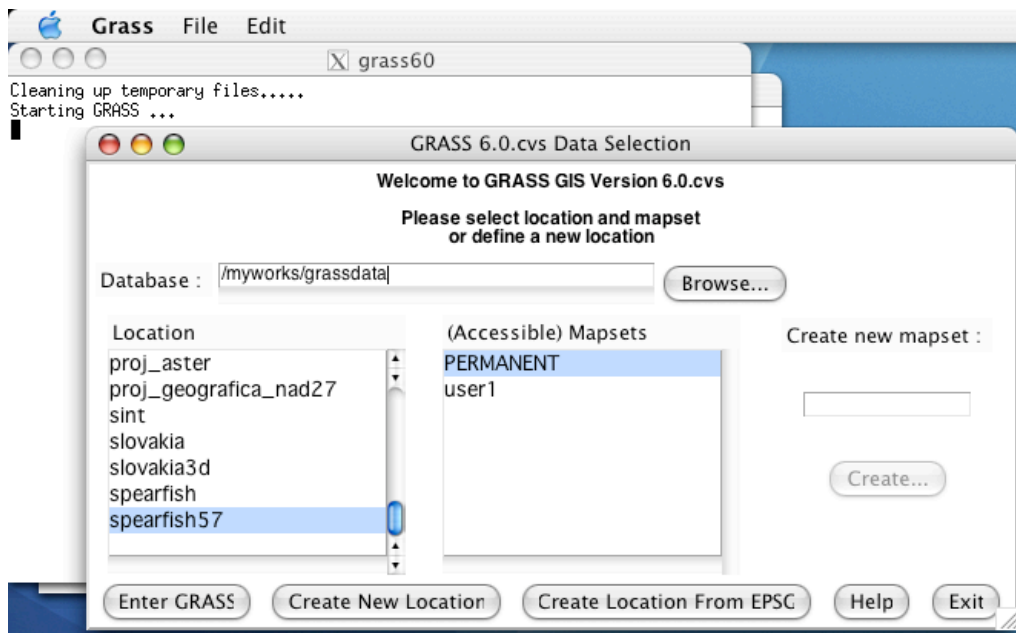
grass60

- This app in Mac OS X is the GRASS starting application and it quits after START. You can choice how GRASS run in "STARTUP GRASS": GRAPHIC environment (default, more easy) or TEXT environment (all commands via keyboard in X11 terminal) and how is the menu in "MENU TYPE": OS X (default, you have the new app with name Grass with menu up and a new GIS Manager all inside OS X environment) or X11 (graphic menu in X11 environment). Leave default choices, GRAPHIC and OS X and press **START**

:



- In the Data Selection window press **Browse** in Database to select your **grassdata** directory. Attention: you have to see grassdata name at the end of the Database box (like the screenshot);
- select **spearfish57** in Location, select **PERMANENT** in Mapsets and press **Enter GRASS**;



- now you work in **Grass 6** with two applications opened (only in Mac OS X, in other OSes you work always in X11 environment): one is **X11.app** where you have a **grass60 terminal** and one is new **Grass.app** with menu up and GIS Manager window, the GUI for GRASS (see a new "Grass ...running" icon in the **dock**). This last one is only opened when you open a Location, it doesn't work outside. If you close the GIS Manager window or quit from Grass.app you can reopen the GIS Manager from X11 grass60 terminal entering this command via keyboard:  
GRASS 6.0.0 (your\_location) :~ > d.m &
- You'll always work in Grass app but the keyboard commands, the display map, 3D NVIZ, the digitizing, etc are done in X11 environment. The jump from Grass and X11 is fast in Grass 6 and all is transparent;



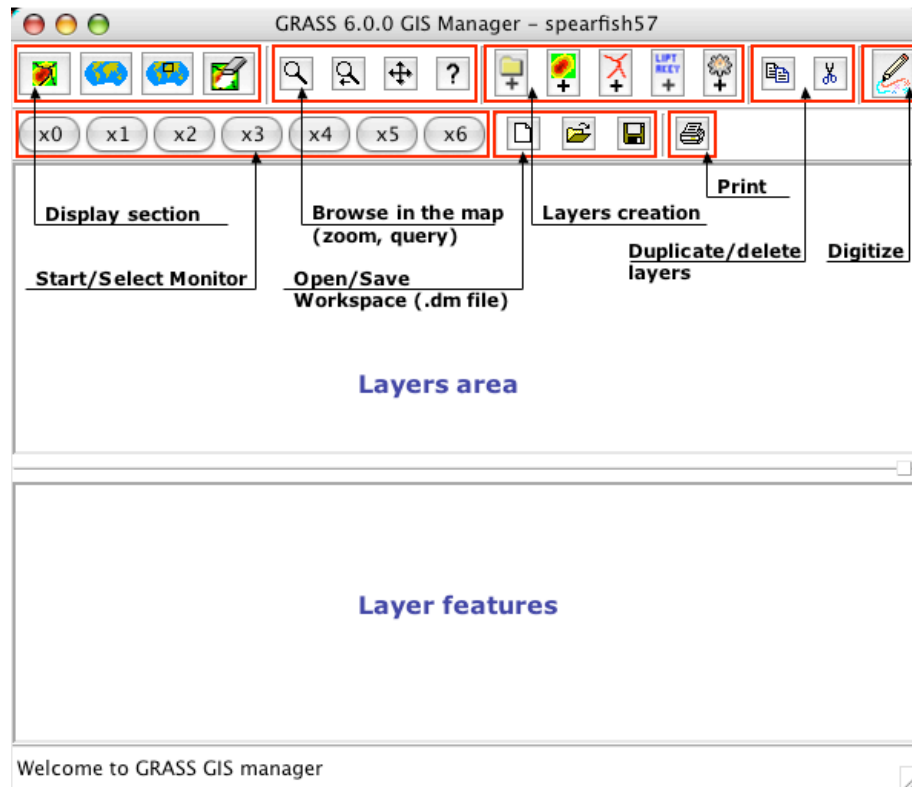
- in the Grass app (or GIS Manager in other O.S.) you have the menu up (only in Mac OS X) and a GIS Manager window to manage your LOCATION. This is the **Commands Menu** ...



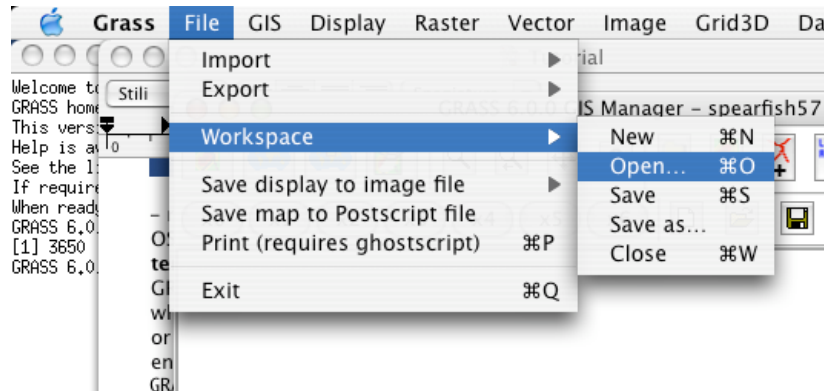
**File:** all commands to import vector and raster layers, to save workspace and to print  
**GIS:** all commands to manage your layers, your region, raster to vect and viceversa, etc.  
**Display:** all commands to display your map adding text, graph, legend, open 3D, etc.

**Raster:** all commands linked to Raster layers (models, surfaces, map calculator, etc.)  
**Vector:** all commands linked to Vector layers (digitize, query, data, network, etc.)  
**Image:** all commands linked to Image map from satellite (classify, filter, transform, etc.)  
**Grid3D:** all commands linked to manage Raster3D format  
**Database:** all commands to manage database connection (link, query, drivers, etc.)  
**Help:** help about Grass. Any commands has an Help opened from your browser

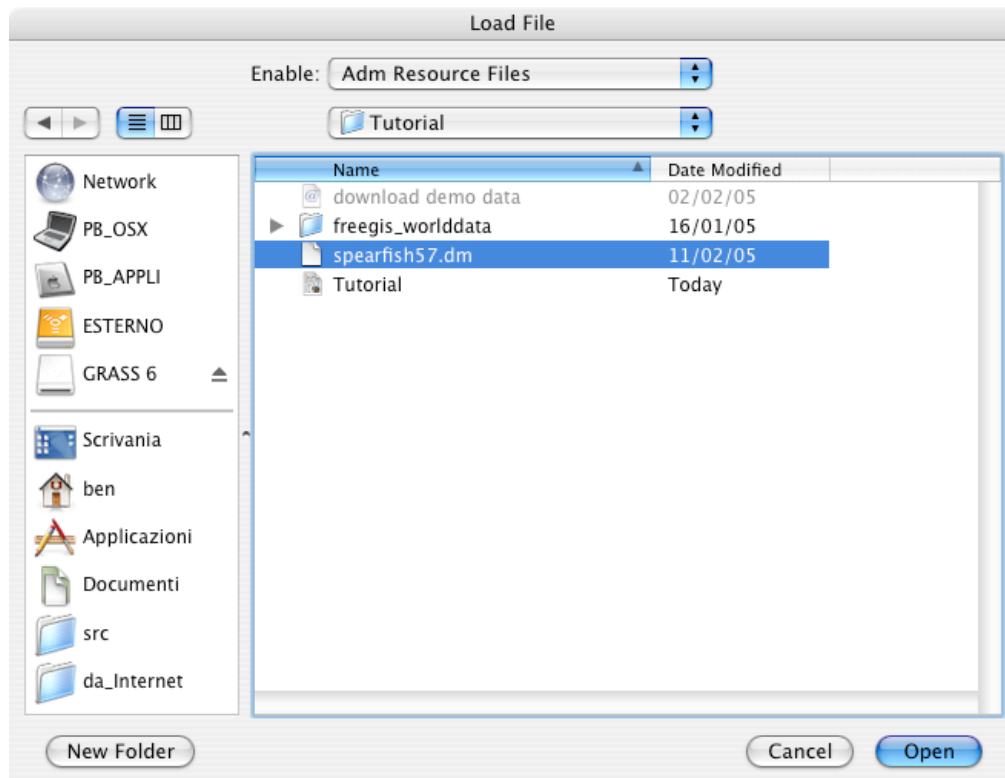
.... and this is **GIS Manager** window



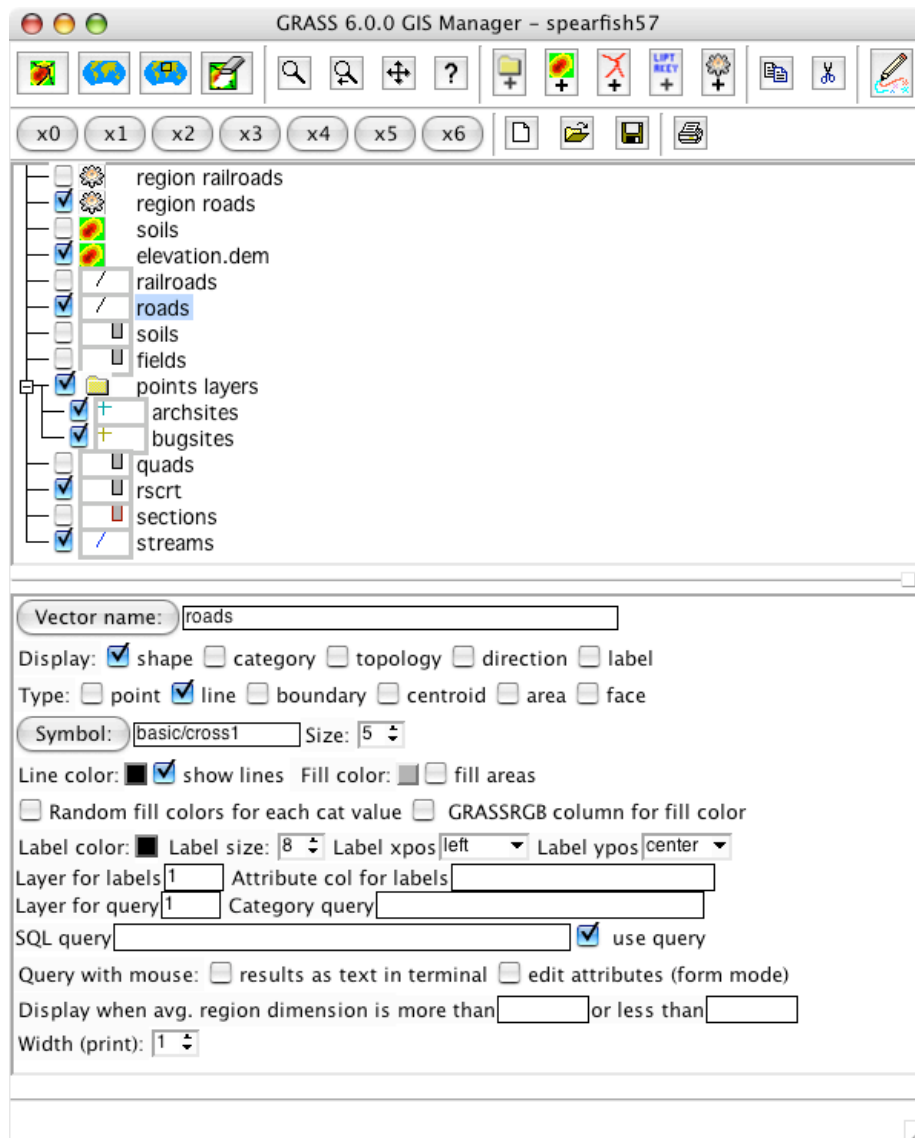
- in the Grass app (or GIS Manager in other O.S.) select **File -> Workspace -> Open...**



- ... browse in your hard disk and open the file **spearfish57.dm** inside **Tutorial** folder. This file can be move outside this folder

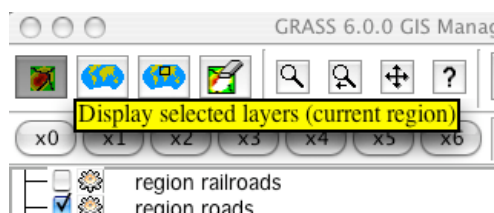


- now you have opened a new workspace (dm file) in your GRASS 6 GIS Manager. Look the new GIS Manager. It has 8 sections: first section on the left display the map, second browse in the map (zoom, pan, etc.), third add layers, fourth on the right manage layers on the list (duplicate and delete); fifth is on the right and is the icon to digitize, sixth has seven button to open/activate a monitor to view your maps, seventh is to manage the workspace

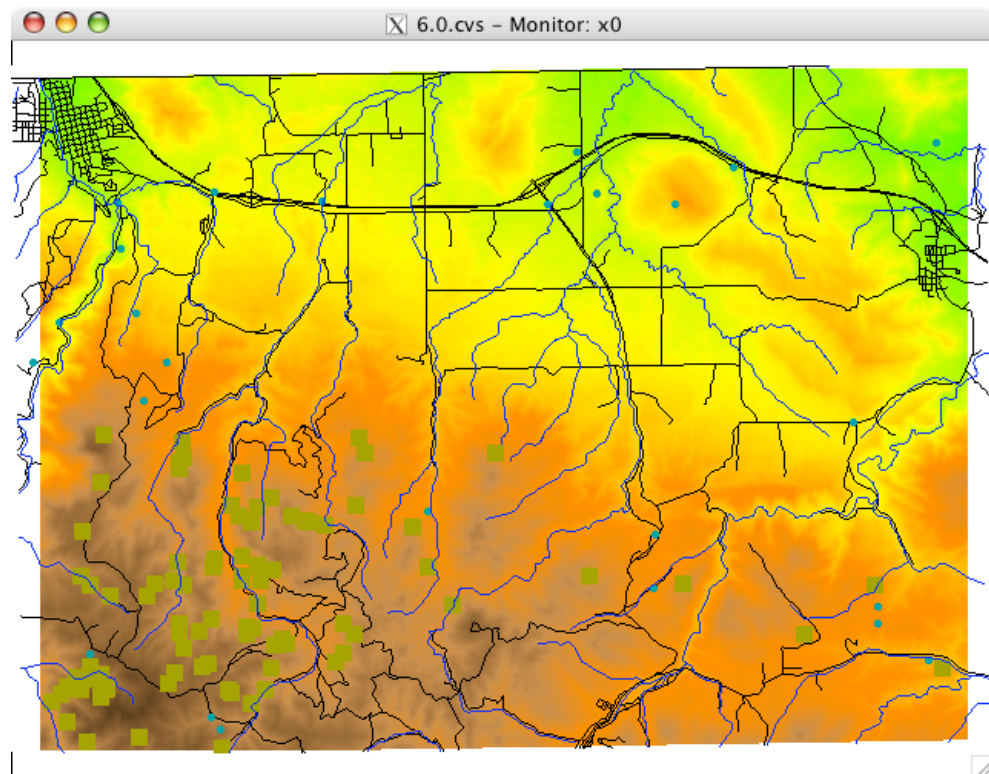


### ✓ View your first map

- now press first icon on the left "Display selected layers";



- the map is displayed in a X11 monitor (with name **Monitor: x0** but it's possible to open other six graphic monitor for different views).



- you always work in OSX with your Grass app but all is driven from X11 environment. You use X11 for viewing maps, looking the data, terminal commands, etc. Don't worry: X11 is fast for these operations and the jump from Grass.app and X11.app is easy. The big advantage is to work with Grass.app in a Mac environment (normal Mac dialog, Command-C to copy, Command-V to paste, Command-O open a .dm file, Command-S save a .dm file, etc.).

#### ✓ Insert your first text on the map

- now insert your first text on the map: choose **Display -> Display text on maps -> Draw text using TrueType fonts:**

- you have the window **d.text.freetype** and insert "Demo Map for Grass in Mac OS X" in Text box and, important, **you can use your Mac TrueType fonts** entering in Path to TrueType font box `"/Library/Fonts/Verdana"` (only in Mac OS X version), insert a "blue" Text color and "5" as Height of letter and press **Run**.

d.text.freetype

Draws text in the graphics monitor's active display frame using TrueType fonts.

Text (enclose multiple words "in quotes") (string, optional):

Map coordinates (float, optional):

Font name (string, optional):

Path to TrueType font (including file name) (string, optional):

Character encoding (default: UTF-8) (string, optional):

Text color, either a standard GRASS color or R:G:B triplet (separated by colons) (string, optional):

Height of letters (in percent of available frame height) (float, optional):

Text alignment (string, optional):

Rotation angle in degrees (counterclockwise) (float, optional):

Line spacing (float, optional):

☐ Use bold text  
☐ Use radians instead of degrees for rotation  
☐ Coordinates are in pixels ([0,0] is top left)

Left: Place text here  
Right: Quit

```

d.text.freetype 'text=Demo Map for Grass in Mac OS X' path=/Library/Fonts/Verdana color=blue size=5 align=ll rotation=0 linespacing=1.1
Click!
Left: Place text here
Right: Quit
            
```

Run

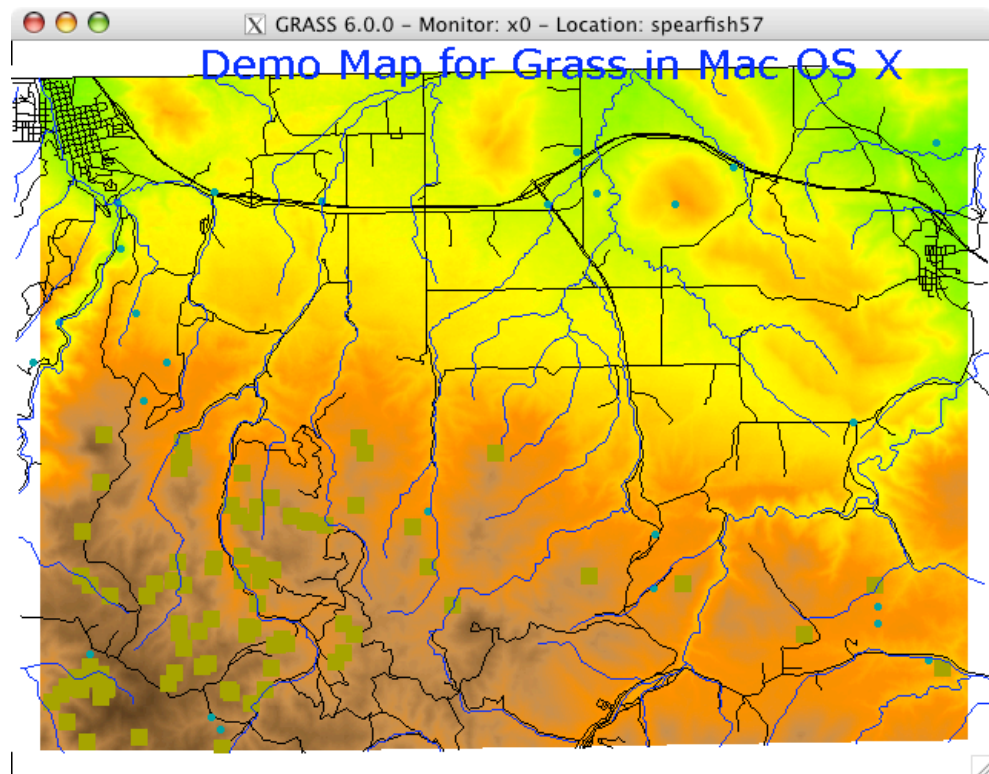
Help

Clear

Close

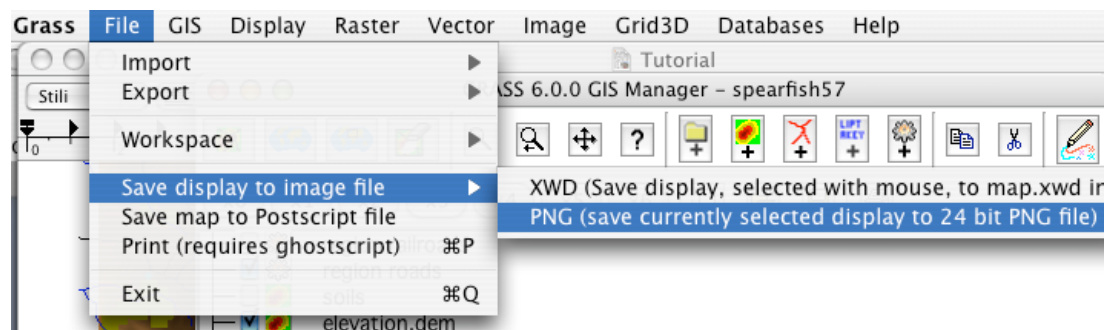
- now you have to go to Monitor: x0 in X11 environment and make a mouse clic where you want the text. And this is the result.





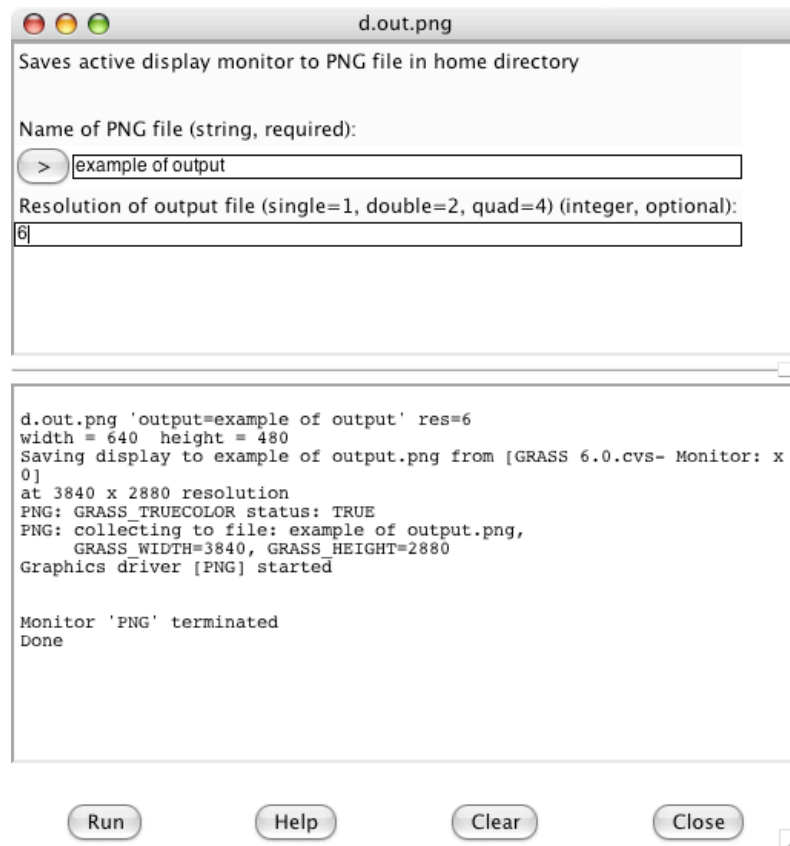
✓ **Make your first output file**

– now save your map at high resolution (what you see in Monitor: x0) selecting **File -> Save display to image file -> PNG**:



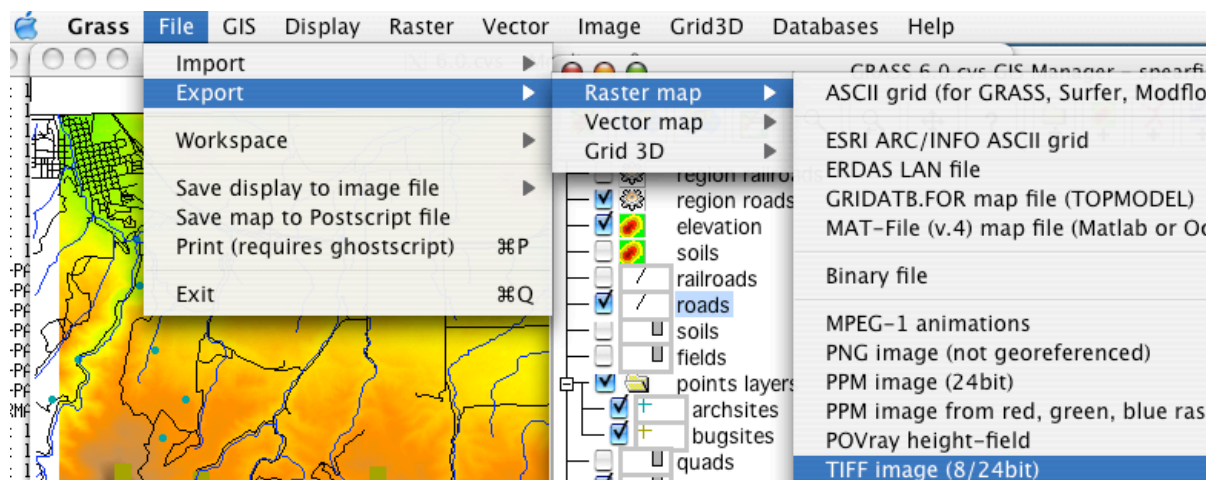
– you have the window **d.out.png**. Give the Name of PNG file (output path) and Resolution and press **Run**. In this example you can enter 6 but this value is very important because is linked to the output quality. Value 1 is a screenshot of your Monitor (low resolution). 2, 4, 6, etc. produce a map at higher resolution. Where is saved your map? In this example is saved in your Home folder (eg: /Users/jackpb/example of output.png). View this file and check the quality. Example: you can move this file in your Office document



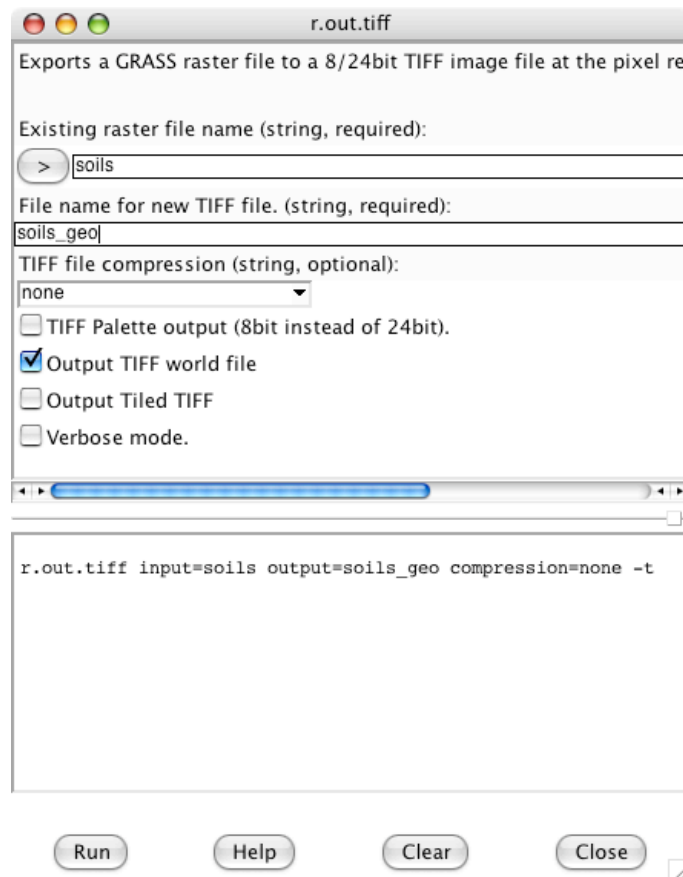


✓ **Output your first georeferenced raster file**

- Now make your first geotiff file: select **File -> Export -> Raster map -> TIFF image (8/24bit)** :



- you have a new window with name **r.out.tiff**. Press Existing raster file name button and select **soils** from list. Enter a File name for new TIFF file (in the example **soils\_geo**) and select Output TIFF world file. Press **Run** and the file is created in your Home folder. The geotiff file has two files: **soils\_geo.tif** and **soils\_geo.tfw**.



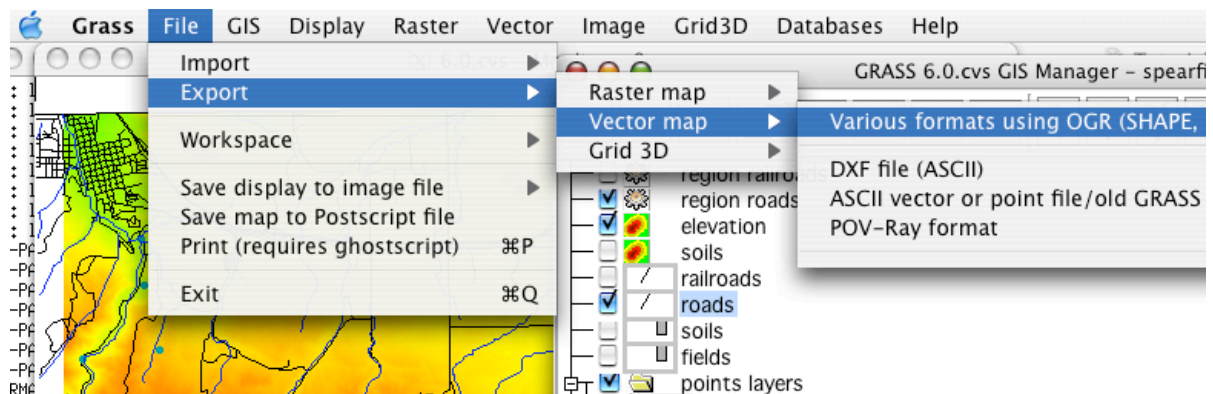
- in this window you see the real command for Grass:

`r.out.tiff input=soils output=soil_geo compression=none -t`

This commands can be copied and pasted into Command object in GIS Manager window for example.

### ✓ Output your first georeferenced vector file

- Now make your first vector output file: select **File -> Export -> Vector map -> Various formats using OGR** :



- you have a new window with name: **v.out.ogr**. Press Name of input vector and select **roads** form list. Select line in Feature type and enter in OGR datasource name the directory name where you want to put the new **ESRI Shapefile** (in the example output\_file is the dir and roads\_geo is the new shape file). Select the OGR formats (**ESRI Shapefile**) and press **Run**. After few seconds you have in your Home folder a new direcorly with name **output\_file** and inside you see 4 files: **roads\_geo.shp** and other three filess linked to it, **.dbf** for data, **.shx** for topology, **.prj** for projection.

Convert to OGR format.

Name of input vector (string, required):

Feature type. Possible combinations of more types: point,centroid or line,boundary. (string, optional)  
☐ point ☒ line ☐ boundary ☐ centroid ☐ area

OGR datasource name.  
 ESRI Shapefile: directory containing shapefiles  
 MapInfo File: directory containing mapinfo files (string, required):

output\_file

OGR layer name.  
 ESRI Shapefile: shapefile name  
 MapInfo File: mapinfo file name (string, required):

roads\_geo

Layer number (integer, optional):

OGR format. (string, optional):

OGR dataset creation option (format specific, NAME=VALUE) (string, optional):

OGR layer creation option (format specific, NAME=VALUE) (string, optional):

☐ Export features with category (labeled) only. Otherwise all features are exported  
☐ Use ESRI-style .prj file format (applies to SHAPE output only)

---

```

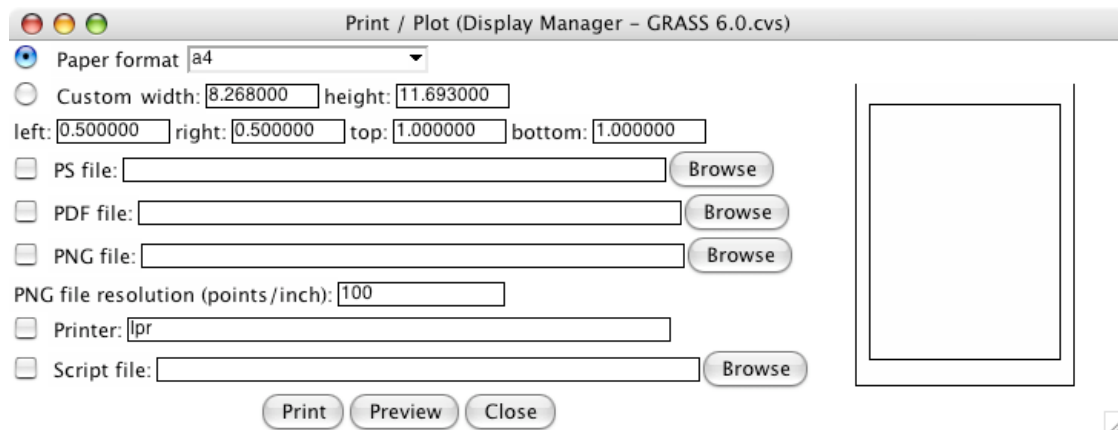
v.out.ogr input=roads type=line dsn=output_file olayer=roads_geo layer=1 format=ESRI_Sh
apefile
Exporting 825 points/lines...

825 features written
GRASS_INFO_WARNING(798,1): 6 features without category written
  
```

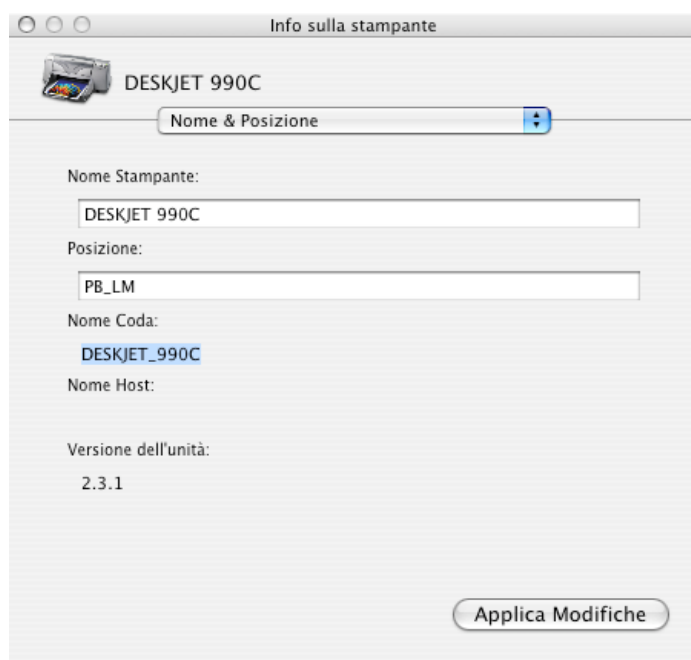
Run Help Clear Close

✓ **Make your first print**

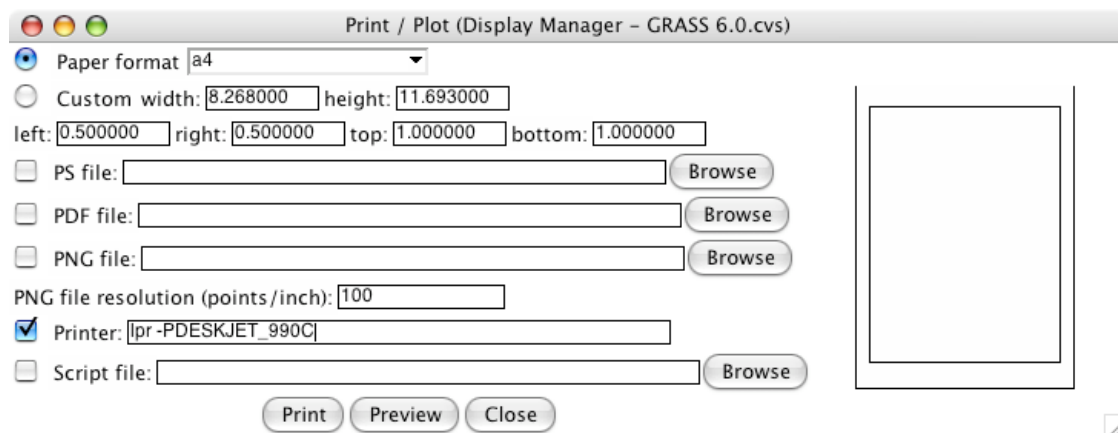
– if you have installed **ESP-Ghostscript** (see the INSTALL file) you can print and/or create a PDF file. Select **File -> Print (requires ghostscript)** and you see this window where there are many choices. PS, PDF and PNG file is easy: it's only need to select the choice and enter the output file name and press Print button, but how to Print?. The rule is to select Printer and to enter in the box: **lpr -Pname\_of\_printer**. The problem is the name of your printer.



- the name of your printer is in your Printer Configuration setup (*only in Mac OS X version*): select the printer and show info. You see the name valid for Grass driver in Que Name section (in this example: DESKJET\_990C)



- and now return to Grass app and enter the name in the box then press **Print** button:



- this print method is easy but not very efficient. The best output is to write an external Script file with all parameters. See the help in Grass 6.

- Now explore the layers, check the choices, display the map, etc.. and **save your new .dm file**.

– Exit from Grass 6. In X11 grass60 terminal enter:

GRASS 6.0.0 (spearfish57) :~ > exit

... and press Return. Grass quits your Grass app and exit from grass60 terminal.

Exit from X11 with Quit.

You have finished your first work.

Note: This table is useful for PRINTING

PAPERSIZE	X inches	Y inches	X cm	Y cm
a0	33.0556	46.7778	83.9611	118.816
a1	23.3889	33.0556	59.4078	83.9611
a2	16.5278	23.3889	41.9806	59.4078
a3	11.6944	16.5278	29.7039	41.9806
a4	8.26389	11.6944	20.9903	29.7039
a5	5.84722	8.26389	14.8519	20.9903
a6	4.125	5.84722	10.4775	14.8519
a7	2.91667	4.125	7.40833	10.4775
a8	2.05556	2.91667	5.22111	7.40833
a9	1.45833	2.05556	3.70417	5.22111
a10	1.02778	1.45833	2.61056	3.70417
b0	39.3889	55.6667	100.048	141.393
b1	27.8333	39.3889	70.6967	100.048
b2	19.6944	27.8333	50.0239	70.6967
b3	13.9167	19.6944	35.3483	50.0239
b4	9.84722	13.9167	25.0119	35.3483
b5	6.95833	9.84722	17.6742	25.0119
archA	9	12	22.86	30.48
archB	12	18	30.48	45.72
archC	18	24	45.72	60.96
archD	24	36	60.96	91.44
archE	36	48	91.44	121.92
flsa	8.5	13	21.59	33.02
flse	8.5	13	21.59	33.02
halfletter	5.5	8.5	13.97	21.59
note	7.5	10	19.05	25.4
letter	8.5	11	21.59	27.94
legal	8.5	14	21.59	35.56
11x17	11	17	27.94	43.18
ledger	17	11	43.18	27.94

### ✓ Create your first LOCATION

In this new example we use data (**worlddata**) downloaded from Freegis data site: <http://ftp.intevation.de/freegis/worlddata/>. In this site you can download very big large files for Grass and other GIS software. Try. The download link file is [http://ftp.intevation.de/freegis/worlddata/freegis\\_worlddata-0.1\\_simpl.tar.gz](http://ftp.intevation.de/freegis/worlddata/freegis_worlddata-0.1_simpl.tar.gz). Download the file, uncompress it and you'll have a new folder "freegis\_worlddata-0.1\_simpl", rename it to "**freegis\_worlddata**" and put this folder inside "Tutorial" folder.

Now Grass 6 can open more locations any time and now we make a new location for importing an external file. It's important to know the projection of your map. In this **example** we work with a map with:

Coordinate system: Latitude-Longitude

geodatic datum: no

ellipsoid: grs80

region:

north: 90

south: -90

west: -180

east: 180

grid resolution: not important

– double clic on **grass60** application and press START. After your first work (the previous example) GRASS 6 remember where is grassdata folder and now in the Data Selection window press **Create New Location** and in the window you have to enter the name for your LOCATION (your new project) and name of MAPSET. The DATABASE name is already written because GRASS 6 remember your previos work. In this example enter in LOCATION: **countries\_example** in MAPSET: **PERMANENT** (always is PERMANENT, you can't use another name as first Mapset) and in DATABASE your grassdata folder path;

```

grass60
GRASS 6.0.cvs

LOCATION: This is the name of an available geographic location. -spearfish-
        is the sample data base for which all tutorials are written.

MAPSET: Every GRASS session runs under the name of a MAPSET. Associated
        with each MAPSET is a rectangular COORDINATE REGION and a list
        of any new maps created.

DATABASE: This is the unix directory containing the geographic databases
        The REGION defaults to the entire area of the chosen LOCATION.
        You may change it later with the command: g.region
-----

LOCATION: countries_example_____ (enter list for a list of locations)
MAPSET: PERMANENT_____ (or mapsets within a location)

DATABASE: /myworks/grassdata_____

AFTER COMPLETING ALL ANSWERS, HIT <ESC><ENTER> TO CONTINUE
(OR <Ctrl-C> TO CANCEL)

```

- after press two keys: ESC and ENTER for entering and you see a window like this:

```

grass60
LOCATION <countries_example> - doesn't exist

Available locations:
-----
ansi                italia_cl_utm32_ed50    proj_geografica_nad27
da_scanner          italia_gbo             sint
etopo5              italia_utm32_ed50      slovakia
europa              maas                   slovakia3d
g51test-12          mondo                  spearfish
global              nelid-utm              spearfish57
imagery              proj_aster

Would you like to create location <countries_example> ? (y/n) [y] 

```

- now press ENTER for starting the creation of your new LOCATION. After you see this new window:

```

grass60
To create a new LOCATION, you will need the following information:

1. The coordinate system for the database
   x,y (for imagery and other unreferenced data)
   Latitude-Longitude
   UTM
   Other Projection
2. The zone for the UTM database
   and all the necessary parameters for projections other than
   Latitude-Longitude, x,y, and UTM
3. The coordinates of the area to become the default region
   and the grid resolution of this region
4. A short, one-line description or title for the location

Do you have all this information? (y/n) [y] 

```

- Grass wants to know all about your map, four informations: press ENTER and you see this new window:

```
grass60
Please specify the coordinate system for location <countries_example>

A  x,y
B  Latitude-Longitude
C  UTM
D  Other Projection
RETURN to cancel

> 
```

- you have to enter the type of your coordinate system: in this example enter **B** and press ENTER:

```
grass60
Please specify the coordinate system for location <countries_example>

A  x,y
B  Latitude-Longitude
C  UTM
D  Other Projection
RETURN to cancel

> B

Latitude-Longitude coordinate system? (y/n) [y] 
```

- press ENTER and now you have this new window:

```
grass60
Please enter a one line description for location <countries_example>

> 
```

- enter a description for your work (see the screenshot) and press ENTER:



```
grass60
Please enter a one line description for location <countries_example>
> countries example - my first work in Grass
```

- press ENTER for confirming:

```
grass60
Please enter a one line description for location <countries_example>
> countries example - my first work in Grass
=====
countries example - my first work in Grass
=====
ok? (y/n) [y]
```

- and now Grass wants to know the geodetic datum for this location. Remember: Grass has all coordinate systems. In the example there isn't this value and you have to enter **n** and press ENTER:

```
grass60
Please enter a one line description for location <countries_example>
> countries example - my first work in Grass
=====
countries example - my first work in Grass
=====
ok? (y/n) [y]
Do you wish to specify a geodetic datum for this location?(y/n) [y]
```

- Grass wants to know the ellipsoid name. You can view the [ellipsoids](#) list entering "list" (without quotes). In the

example enter **grs80** and press ENTER:

```
grass60
Please enter a one line description for location <countries_example>

> countries example - my first work in Grass
=====
countries example - my first work in Grass
=====
ok? (y/n) [y]
Do you wish to specify a geodetic datum for this location?(y/n) [y] n

Please specify ellipsoid name
Enter 'list' for the list of available ellipsoids
Hit RETURN to cancel request
>grs80
```

- in the new window you have to enter the boundaries of your region. In this example the limit is the whole world. See the screen below:

```
grass60
DEFINE THE DEFAULT REGION

===== DEFAULT REGION =====
| NORTH EDGE:90_____ |
| WEST EDGE | EAST EDGE |
| -180_____ | 180_____ |
| SOUTH EDGE:-90_____ |
=====

PROJECTION: 3 (Latitude-Longitude)      ZONE: 0

GRID RESOLUTION
  East-West: 1_____
  North-South: 1_____

AFTER COMPLETING ALL ANSWERS, HIT <ESC><ENTER> TO CONTINUE
(OR <Ctrl-C> TO CANCEL)
```

- now press 2 keys: ESC and ENTER and you'll see this new window:

```
grass60

projection: 3 (Latitude-Longitude)
zone: 0
north: 90N
south: 90S
east: 180E
west: 180W

e-w res: 1
n-s res: 1

total rows: 180
total cols: 360
total cells: 64,800

Do you accept this region? (y/n) [y] >
```

- if you have a window like this press ENTER and you have finished.

```
grass60

projection: 3 (Latitude-Longitude)
zone: 0
north: 90N
south: 90S
east: 180E
west: 180W

e-w res: 1
n-s res: 1

total rows: 180
total cols: 360
total cells: 64,800

Do you accept this region? (y/n) [y] >
LOCATION <countries_example> created!

Hit RETURN -->
```

- Now press RETURN and you return at your first window:

```
grass60
GRASS 6.0.cvs

LOCATION: This is the name of an available geographic location. -spearfish-
is the sample data base for which all tutorials are written.

MAPSET: Every GRASS session runs under the name of a MAPSET. Associated
with each MAPSET is a rectangular COORDINATE REGION and a list
of any new maps created.

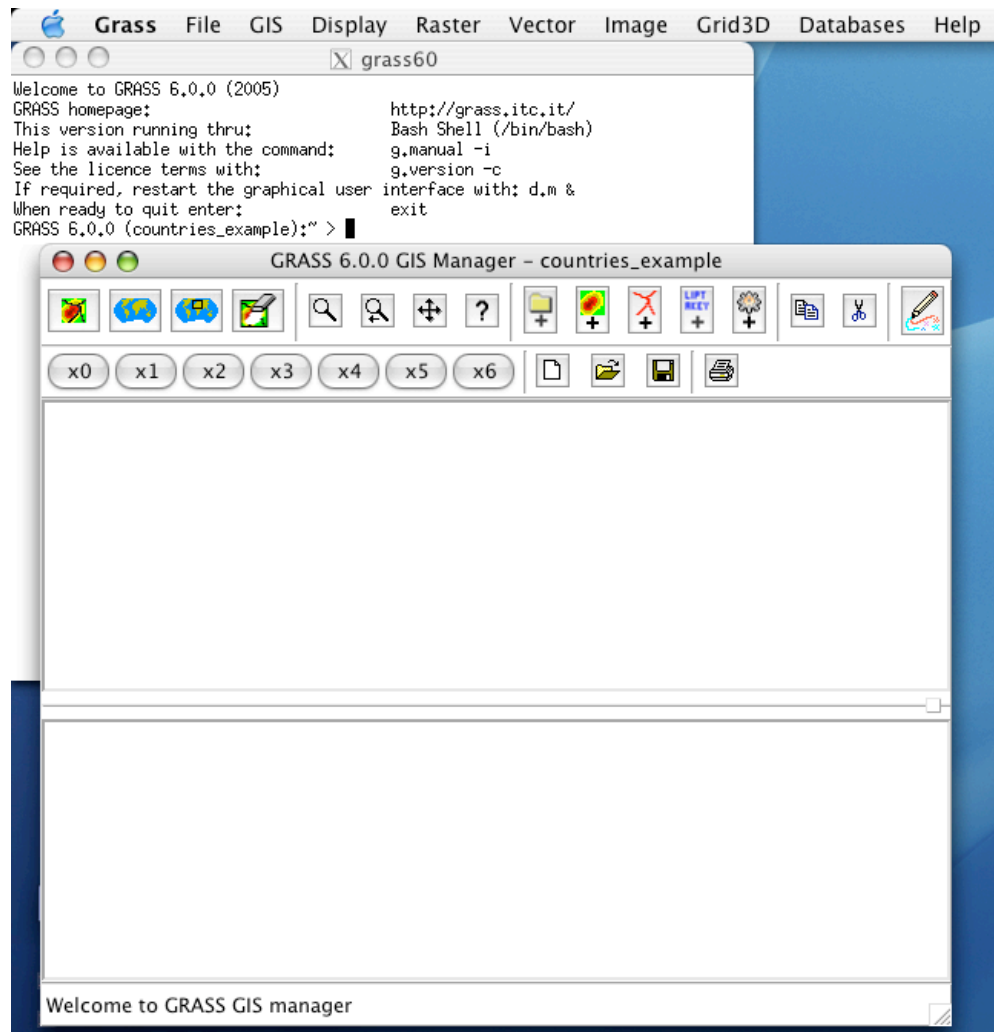
DATABASE: This is the unix directory containing the geographic databases

The REGION defaults to the entire area of the chosen LOCATION.
You may change it later with the command: g.region
-----

LOCATION: ountries_example_____ (enter list for a list of locations)
MAPSET: PERMANENT_____ (or mapsets within a location)
DATABASE: /Volumes/PB_APPLI/LAVORI/MAPPE/grassdata_____

AFTER COMPLETING ALL ANSWERS, HIT <ESC><ENTER> TO CONTINUE
(OR <Ctrl-C> TO CANCEL)
```

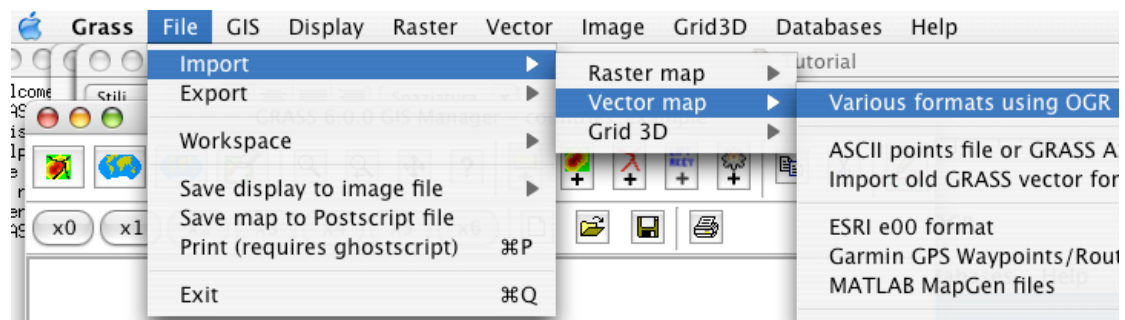
– press two keys: ESC and ENTER and you enter in your first work in GRASS. You have a X11 terminal and a Grass app in OS X:



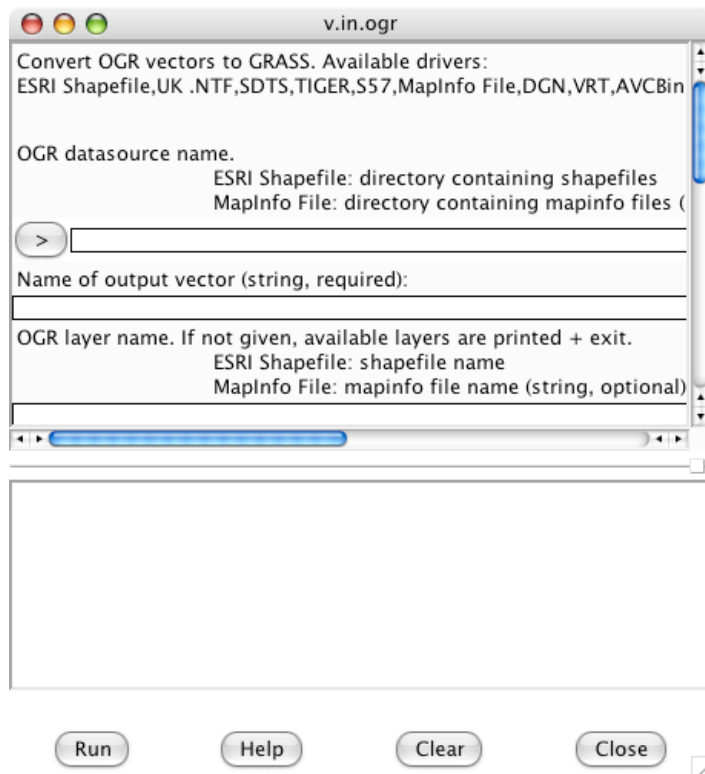
✓ **Import your first file in your first LOCATION**

You have your first location and now you import your first file:

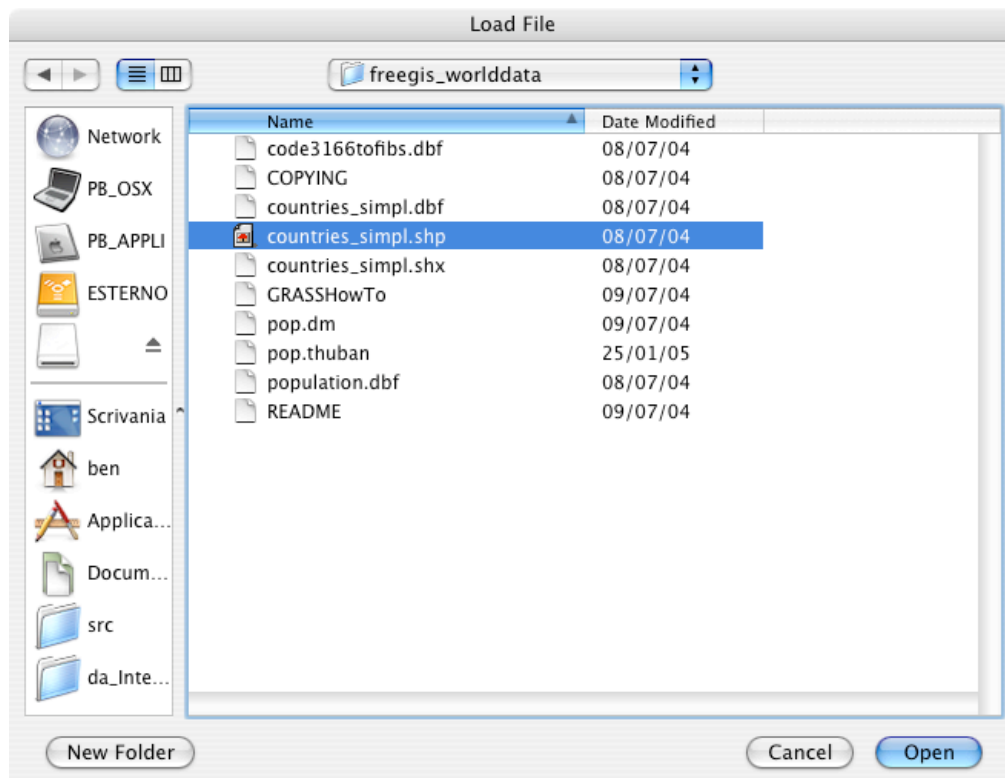
– in Grass app choose **File -> Import -> Vector map -> Various formats using OGR**



– this selection opens a new windows with the name **v.in.ogr** (tip: if you see a blank window press lower right corner and the window is redrawn or a clic on a bar):



– select now the OGR datasource name (the small button with > ) and browse in your Hard Disk inside Tutorial folder inside "freegis\_worlddata" folder and select **countries\_simpl.shp** and press **Open**;



– in v.in.ogr window you see the path for your external file. Now enter the Name of output vector (in the example enter **countries**). Remember that v.in.ogr like all commands has an help on-line. If you want to see more info about this commands press Help button. v.in.ogr like many others commands has many options and these options are very important. One of the most useful is "Override projection" (at the end of window) for importing an external file that is outside the region created when you make your LOCATION. In this example in v.in.ogr window you enter **countries** in Name of output vector box and **select Override projection** and press **Run** button;

Convert OGR vectors to GRASS. Available drivers:  
ESRI Shapefile, UK .NTF, SDTS, TIGER, S57, MapInfo File, DGN, VRT, AVCBin, REC, Memo

OGR datasource name.  
ESRI Shapefile: directory containing shapefiles  
MapInfo File: directory containing mapinfo files (string, required)

> /myworks/Tutorial/freegis\_worlddata/countries\_simpl.shp

Name of output vector (string, required):  
countries

OGR layer name. If not given, available layers are printed + exit.  
ESRI Shapefile: shapefile name  
MapInfo File: mapinfo file name (string, optional):

Import subregion only (xmin,ymin,xmax,ymax - usually W,S,E,N) (float, optional):

Run Help Clear Close

List of column names to be used instead of original names, first is used for category column. (s

☐ List available layers in data source and exit.  
☐ List available formats and exit.  
☐ Do not clean polygons.  
☐ Create 3D output.  
☐ Do not create attribute table.  
☒ Override projection (use location's projection).  
☐ Extend location extents based on new dataset.

- now in the v.in.ogr window you see how to work Grass. You see all steps for importing this external shape file in a Grass format. After several seconds or minutes (depends from your machine) you'll see the final step at the end;

v.in.ogr

point -> import area centroids as points  
line -> import area boundaries as centroids  
boundary -> import lines as area boundaries  
centroid -> import points as centroids (string, optional):

☐ point ☐ line ☐ boundary ☐ centroid

Snapping threshold for boundaries. -1 for no snap. (float, optional):  
-1


Name for new location to create (string, optional):

List of column names to be used instead of original names, first is used for category column. (s

☐ List available layers in data source and exit.  
☐ List available formats and exit.  
☐ Do not clean polygons.  
☐ Create 3D output.  
☐ Do not create attribute table.  
☒ Override projection (use location's projection).  
☐ Extend location extents based on new dataset.

Number of points : 0  
Number of lines : 0  
Number of boundaries: 12438  
Number of centroids : 5690  
Number of areas : 7362  
Number of isles : 3538  
Number of areas without centroid : 1672

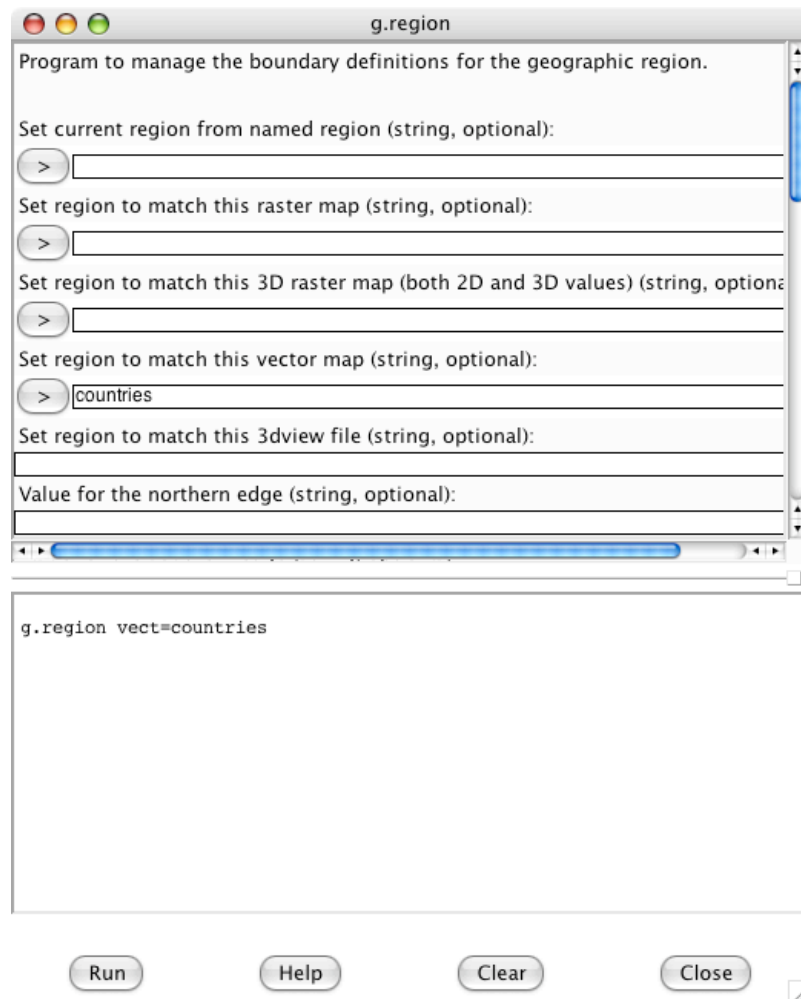
-----

 1554 areas represent more (overlapping) features, because polygons overlap in in  
put layer(s). Such areas are linked to more than 1 row in attribute table. The number  
of features for those areas is stored as category in layer 2.  
3902 input polygons  
total area: 1.473819e+14 (7362 areas)  
overlapping area: 2.412276e+10 (1554 areas)  
area without category: 3.543198e+10 (1672 areas)

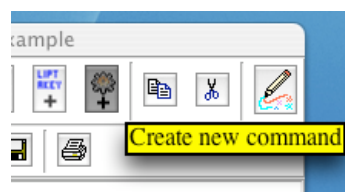
Run Help Clear Close

- now you can **Close** this window. It's normal in a new location to select at the beginning the region to display the imported map. We already have entered the exact region when we have created the location (see below) but this operation is always valid. Select **GIS -> Region -> Manage region** and select the vector map "countries" in Set region to match this vector map and press **Run**;

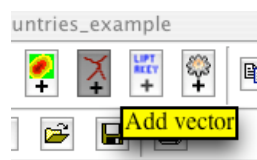




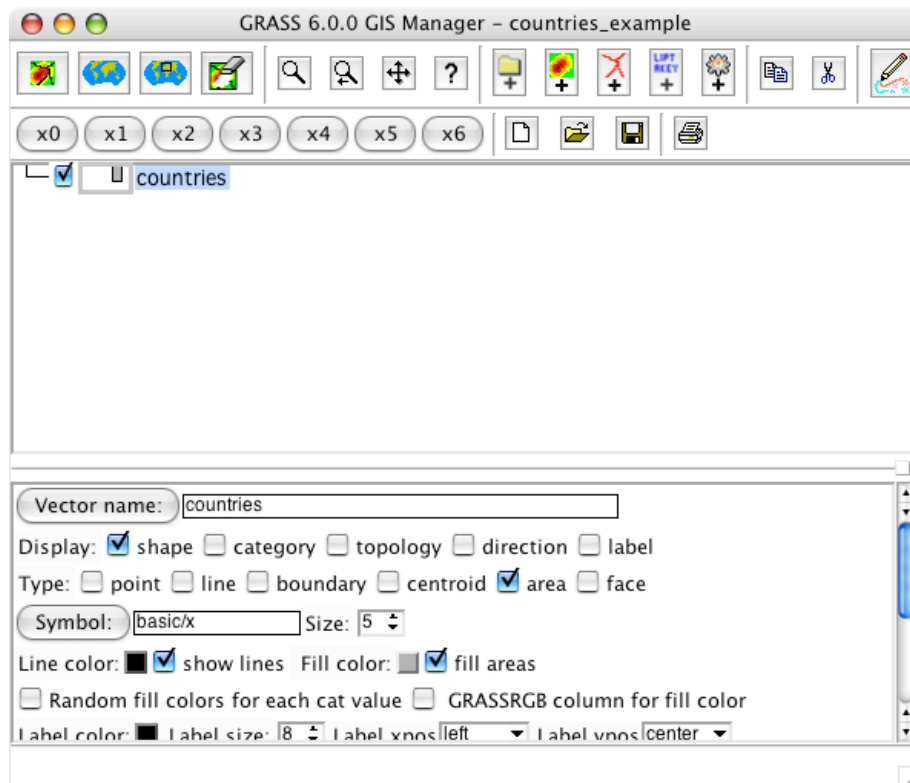
- you see the command "g.region vect=countries" that you can copy (Command-C or Ctrl-C) and paste in a box of an object created by "Create new command" icon (Command-V or Ctrl-V) in GIS manager window.



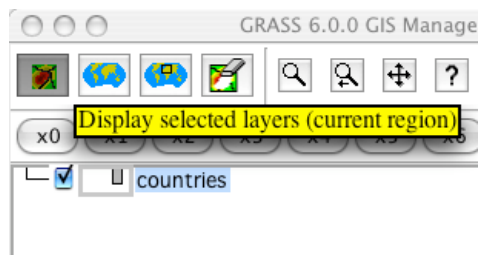
- Now in GIS Manager you select "Add vector" icon:



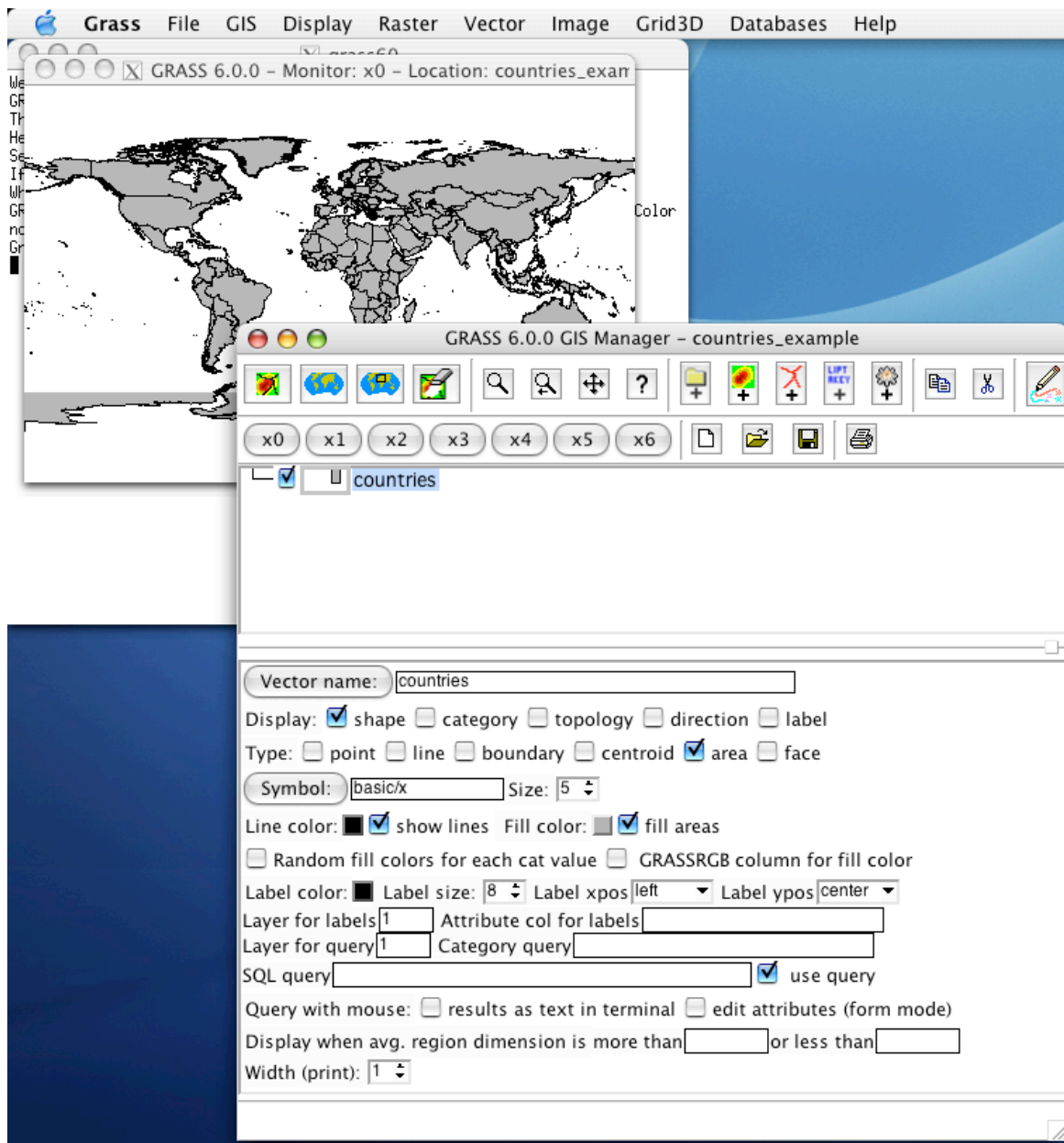
- in the list you'll see a new object with name vector 1. Press **Vector name** button for choosing the file: in this example select **countries** and select in the **Type** row only "area" like this window:



- and finally you can see the map selecting "Display selected layers (current region)" icon:

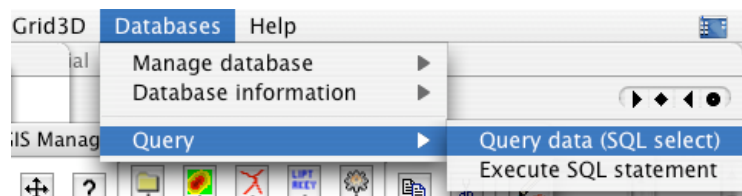


- this is the map:



### ✓ Your first SQL Query

- select Database -> Database information -> Query data (SQL select)



- you have a new window **db.select** and enter come Table name **countries** and press **Run**.

db.select

Estrae dati dal database.

Nome tabella, seleziona tutto da questa tabella (string, optional):  
countries

nome database (string, optional):  
\$GISDBASE/\$LOCATION\_NAME/\$MAPSET/dbf/

nome driver (string, optional):  
dbf

istruzione SQL select, ad esempio: 'select \* from rybniky where kapri = 'hodne

campo separatore in output (string, optional):  
|

output verticale del separatore di record (string, optional):

indicatore di valore nullo (string, optional):

Run Help Clear Close

- you view all data present in the dbf file linked to map

db.select

Estrae dati dal database.

Nome tabella, seleziona tutto da questa tabella (string, optional):  
countries

nome database (string, optional):  
\$GISDBASE/\$LOCATION\_NAME/\$MAPSET/dbf/

nome driver (string, optional):  
dbf

istruzione SQL select, ad esempio: 'select \* from rybniky where kapri = 'hodne

campo separatore in output (string, optional):  
|

output verticale del separatore di record (string, optional):

indicatore di valore nullo (string, optional):

3893|41470|78|FP|French Polynesia|FA001|266339|137582|128757|106.9000  
00  
3894|41473|78|FP|French Polynesia|FA001|266339|137582|128757|106.9000  
00  
3895|41480|78|FP|French Polynesia|FA001|266339|137582|128757|106.9000  
00  
3896|41490|56|CW|Cook Islands|FA001|0|0|0|0.000000  
3897|41491|56|CW|Cook Islands|FA001|0|0|0|0.000000  
3898|41495|78|FP|French Polynesia|FA001|266339|137582|128757|106.9000  
00  
3899|41505|176|PC|FA001|0|0|0|0.000000  
3900|41506|174|NZ|New Zealand|FA001|3993817|1983678|2010139|98.700000  
3901|41507|78|FP|French Polynesia|FA001|266339|137582|128757|106.9000  
00

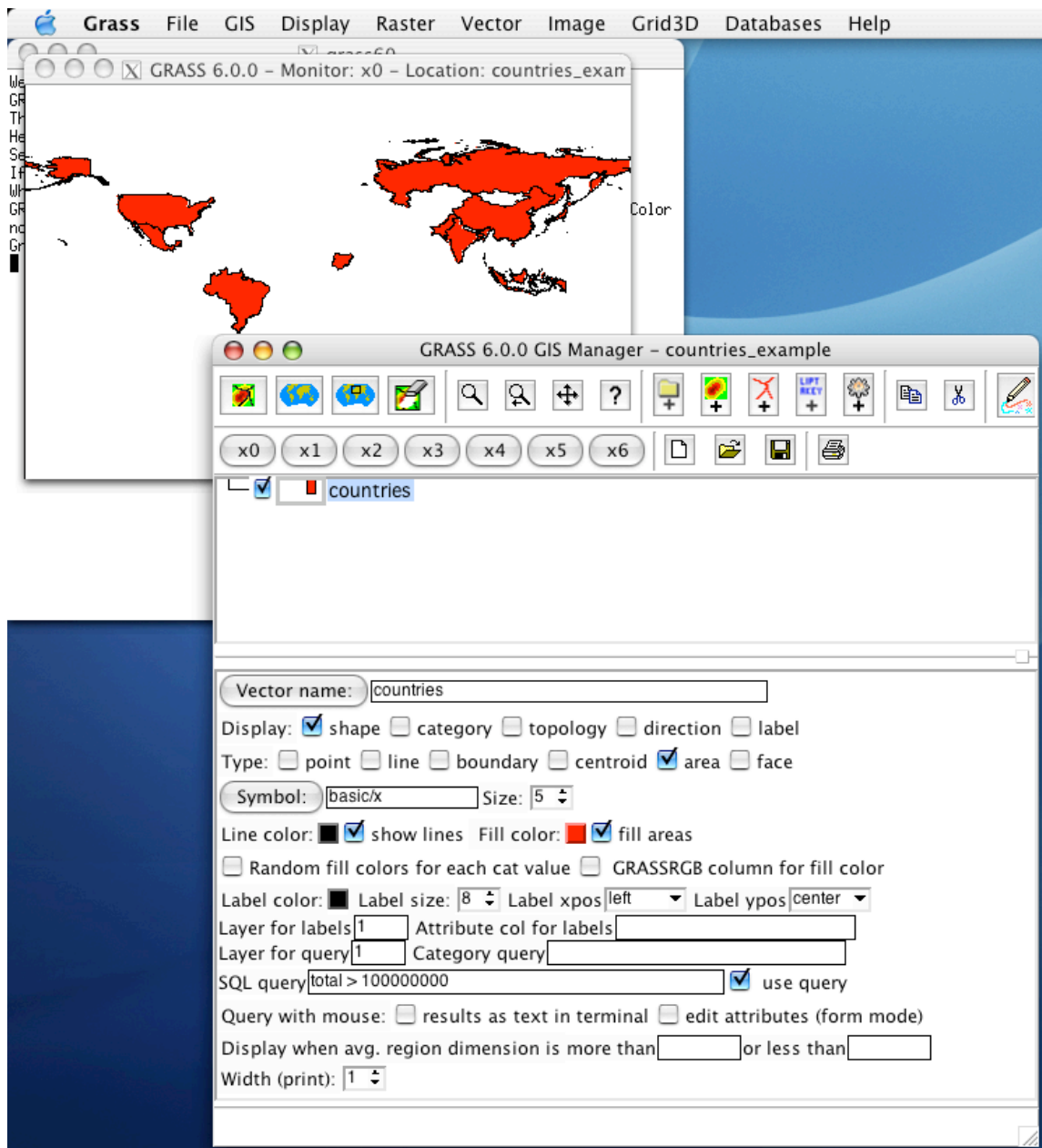
Run

Help

Clear

Close

– now return on your GIS Manager and make a SQL Query. Insert in the box SQL query "total > 1000000000" (without quotes) and select a color red in fill areas. Select Display selected layers to view the result. You see a new map with only the state with the value in the field total > 1000000000.



- continue to explore this map and open the workspace file, **pop.dm** in "freegis\_worlddata" folder. Modify this workspace file to create new map, new queries, etc.

See **Grass/Docs** folder for other info.

See **Grass/Extra** folder for other VERY USEFUL apps.

See **Grass/Links** folder for many web sites links.

More info at: <http://grass.gdf-hannover.de/twiki/bin/view/GRASS/WebHome>

Download more grass demo data at: <http://grass.itc.it/download/data.php>

Download more demo data at: <http://ftp.intevation.de/freegis/>

## Enter in the power of Grass 6

Note: Grass 5.4 can open spearfish57 location but it does not support Grass 6.0 vector files and workspace .dm file

<http://wwwamb.bologna.enea.it/forgrass/>

last update: 15 Mar 05  
lorenzo.moretti@bologna.enea.it