Introduction to GRASS

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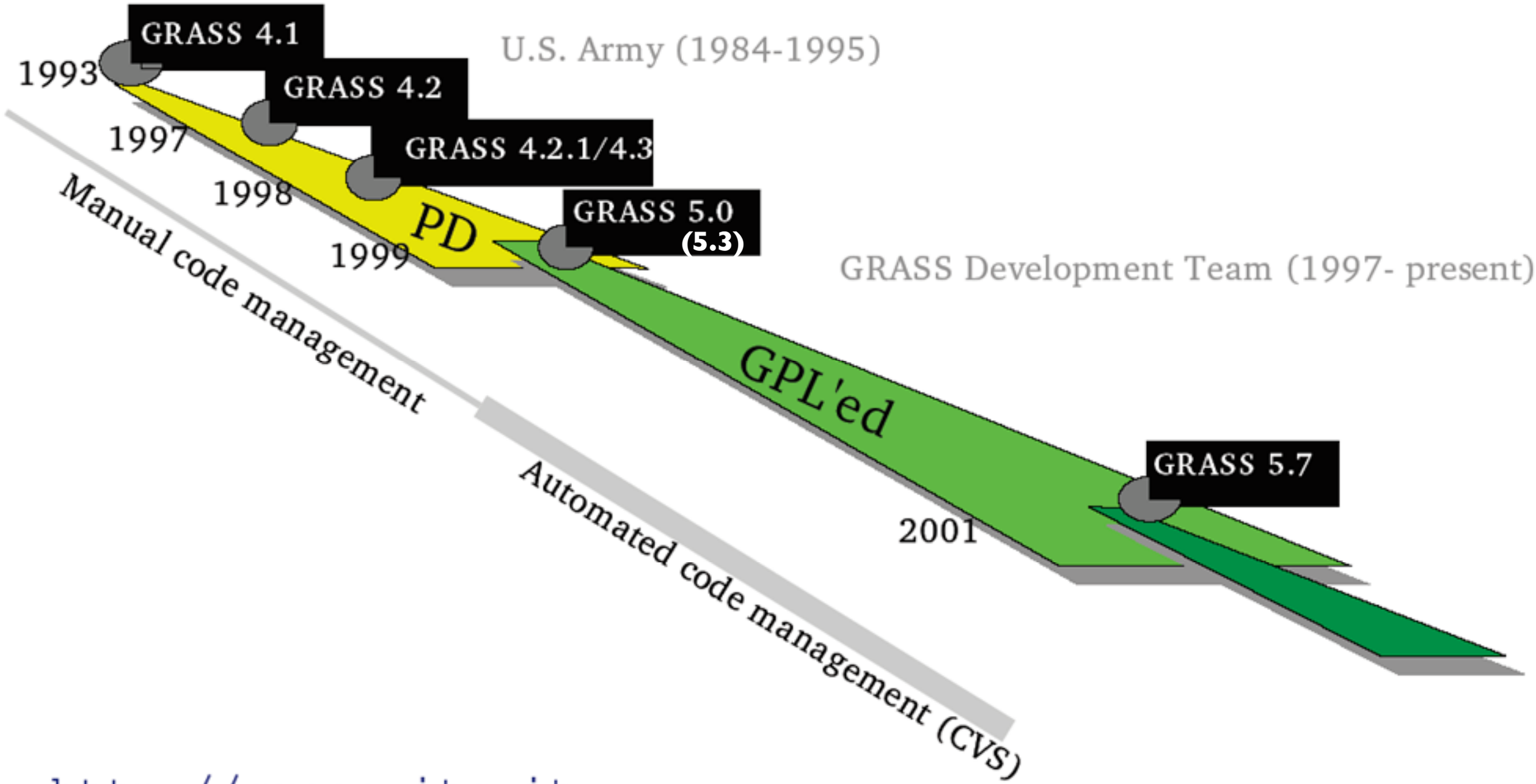
Introduction to GRASS

- Quick overview (with thanks to Markus Neteler, ITC-Irst Trento)
- Demonstration

What is GRASS?

- Open Source, Free as licensed in GPL
- portable, flexible GIS
- original strength in raster processing*

History



http://grass.itc.it

GRASS community

- GRASS main web site http://grass.itc.it
  - Download: Current versions 5.0.x, 5.3.x, 5.7.x
  - "GRASS Documentation Project" (GDP)
  - Sample data: Spearfish , SD, USA
- Mailing lists
- For hire support

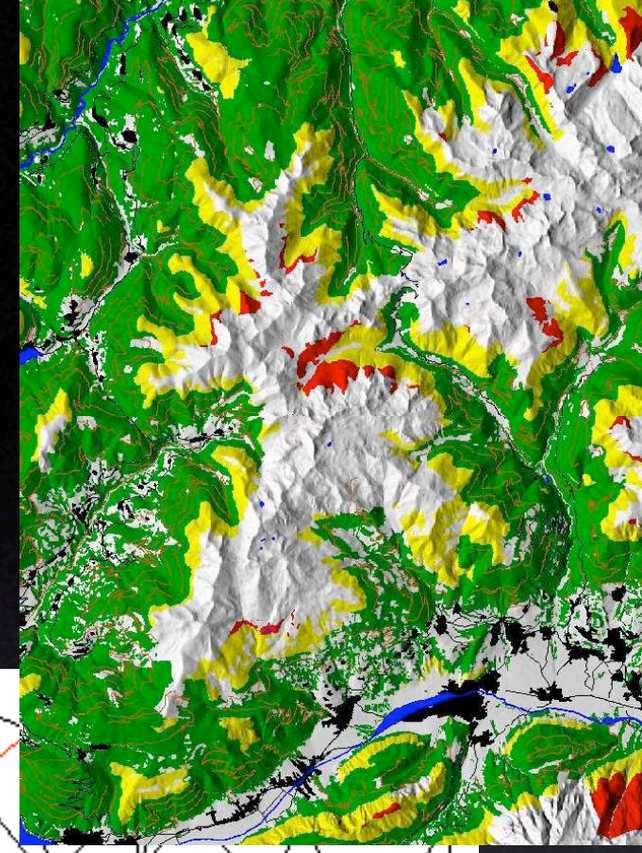
Supported Platforms

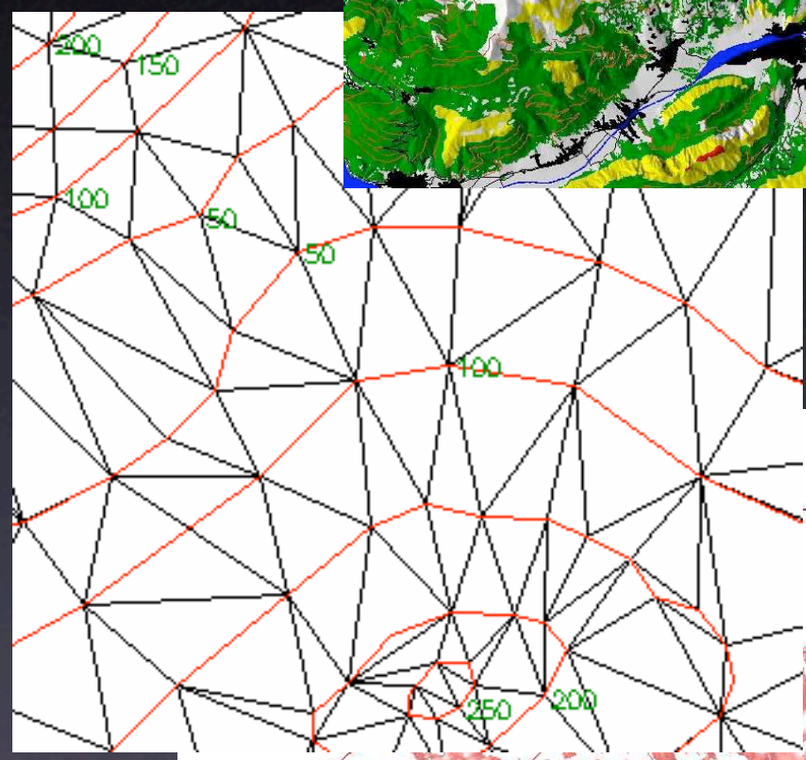
- Portable across platforms:
  - GNU/Linux
  - MS-Windows NT, 2000, XP with Cygwin
  - Mac OSX / Darwin
  - SGI/Irix
  - SUN/Solaris
- Experiments with openMosix clusters
- Handhelds:
  - HP/iPAQ
  - Sharp/Zaurus

GRASS Development

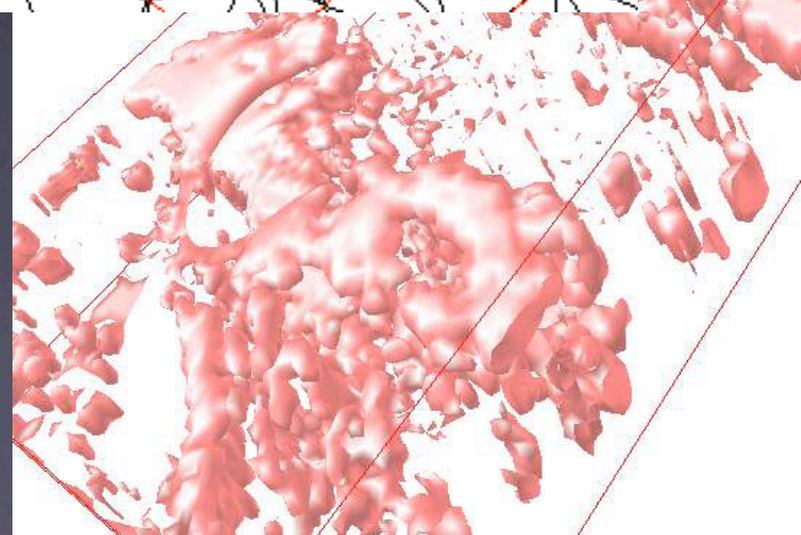
- Council-style development team
- Source code in CVS repository
- Bug & Wish tracking database (web)
- Developer mailing list & CVS commits

Supported Data Types

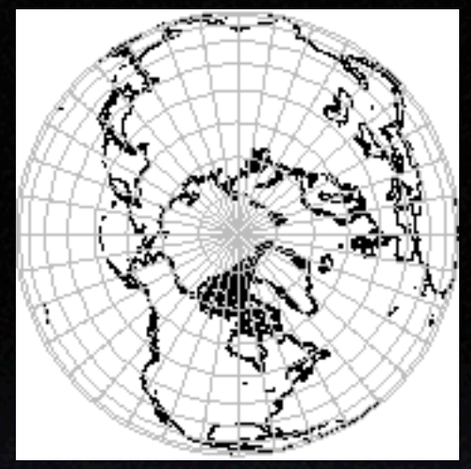




- 2-D raster data (includes image processing)
- 3-D voxel for volumetric data
- 2-D/3-D vector data with topology
- Multidimensional points data



Projections



- Support for more than 120 projections
- Datum transformation: 3-, 7-parameters, grids
- Routines used from PROJ4 library

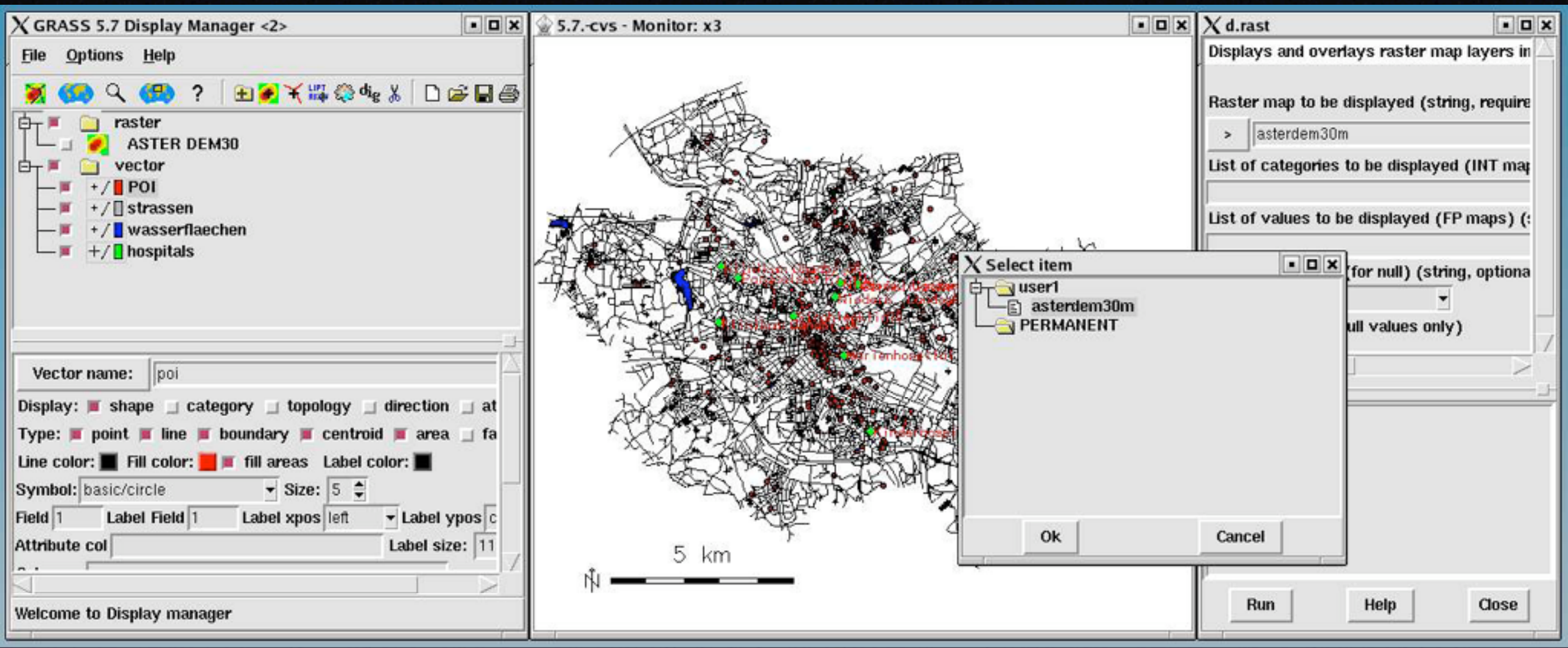
Database Management

- Attribute management internally or externally
- internally with DBF (xBase) files
- externally:
  - PostgreSQL
  - mySQL
  - ODBC interface to connect to Oracle etc

User Interface

- Traditionally command line interface, using modified shell, plus graphics window
- Additions & further development: tcltkgrass, d.m Display Manager, NVIZ, QGIS*, ...

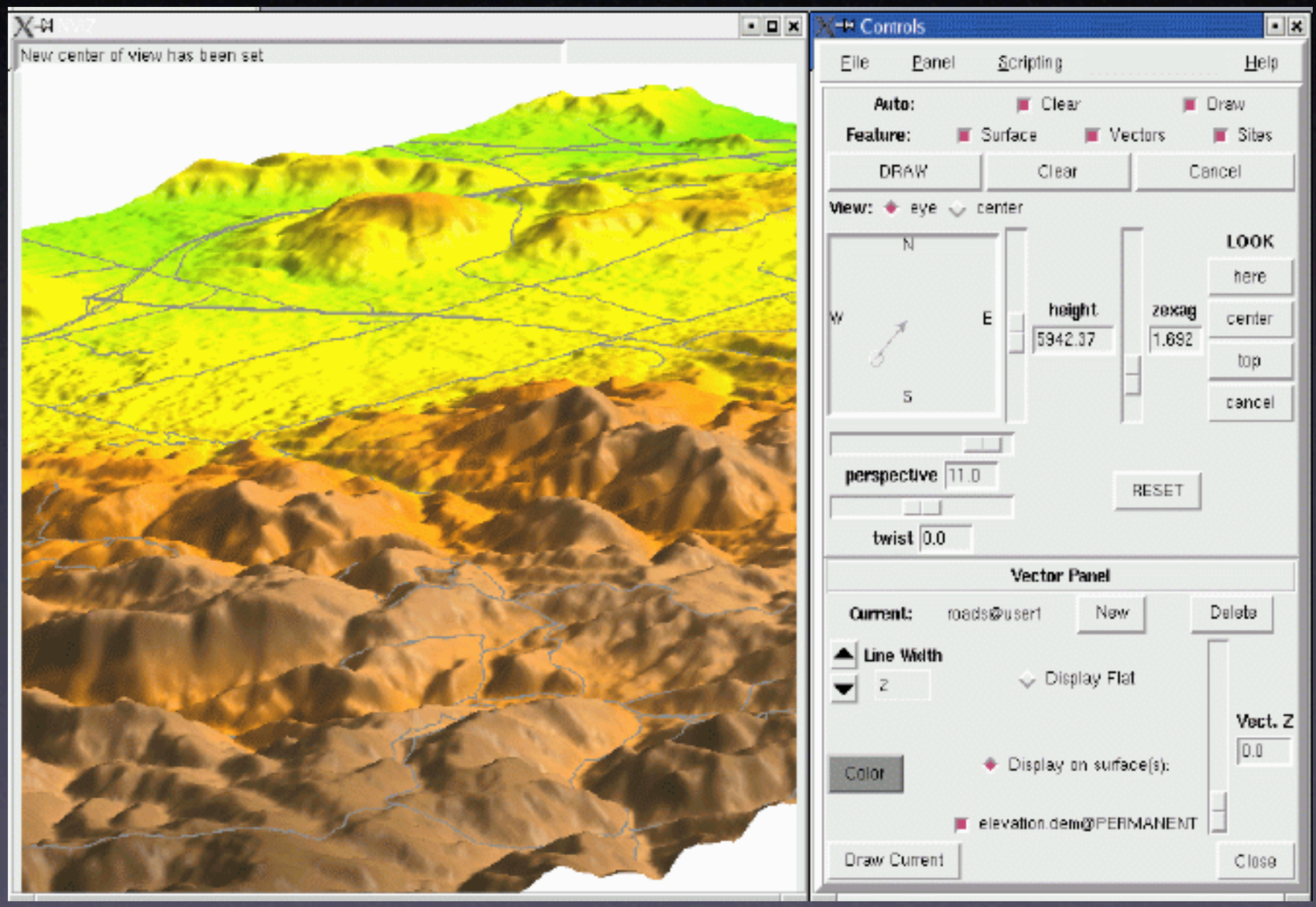
GUI



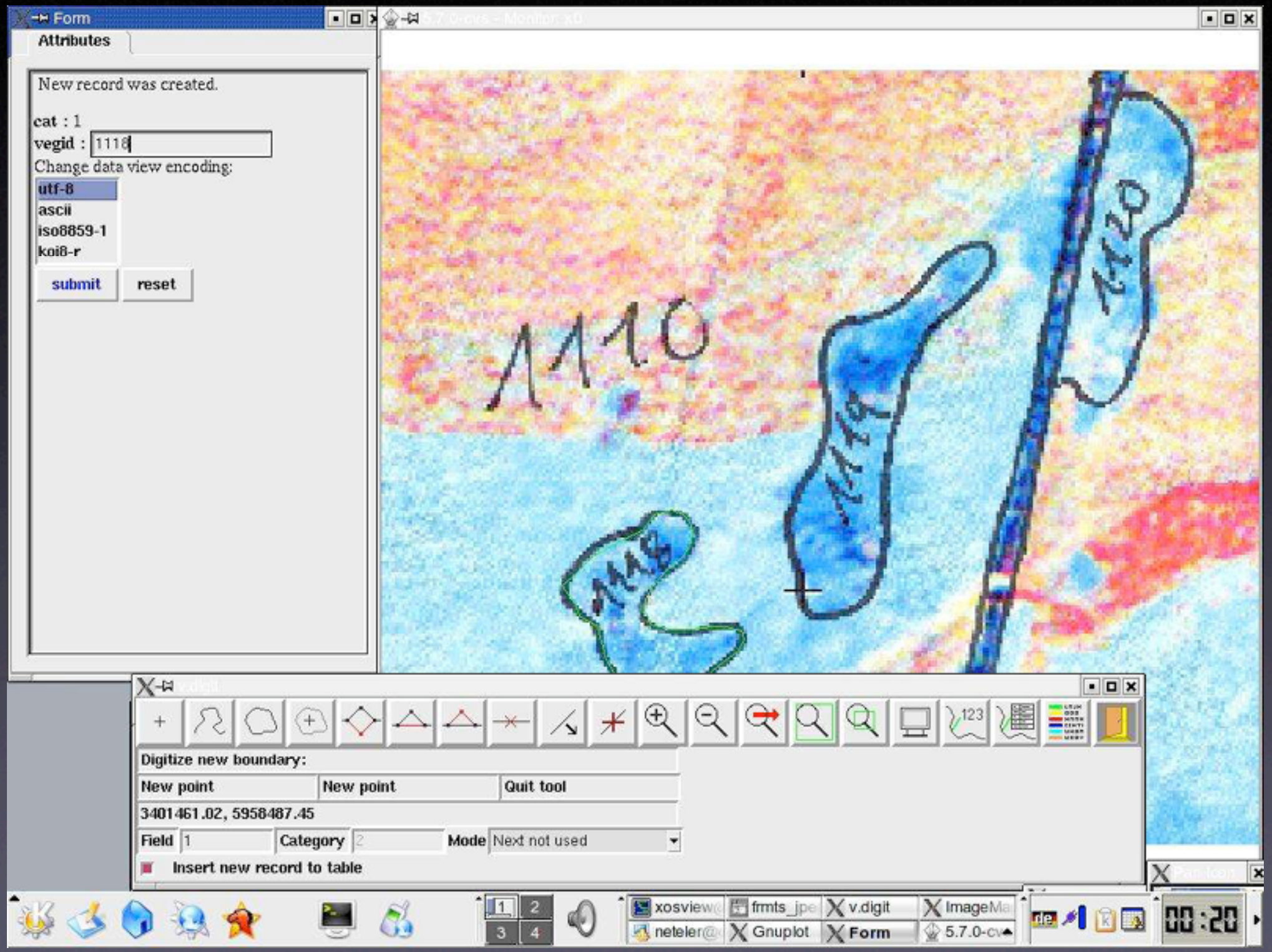
Display Manager

Module dialogues

NVIZ 3-D visualization



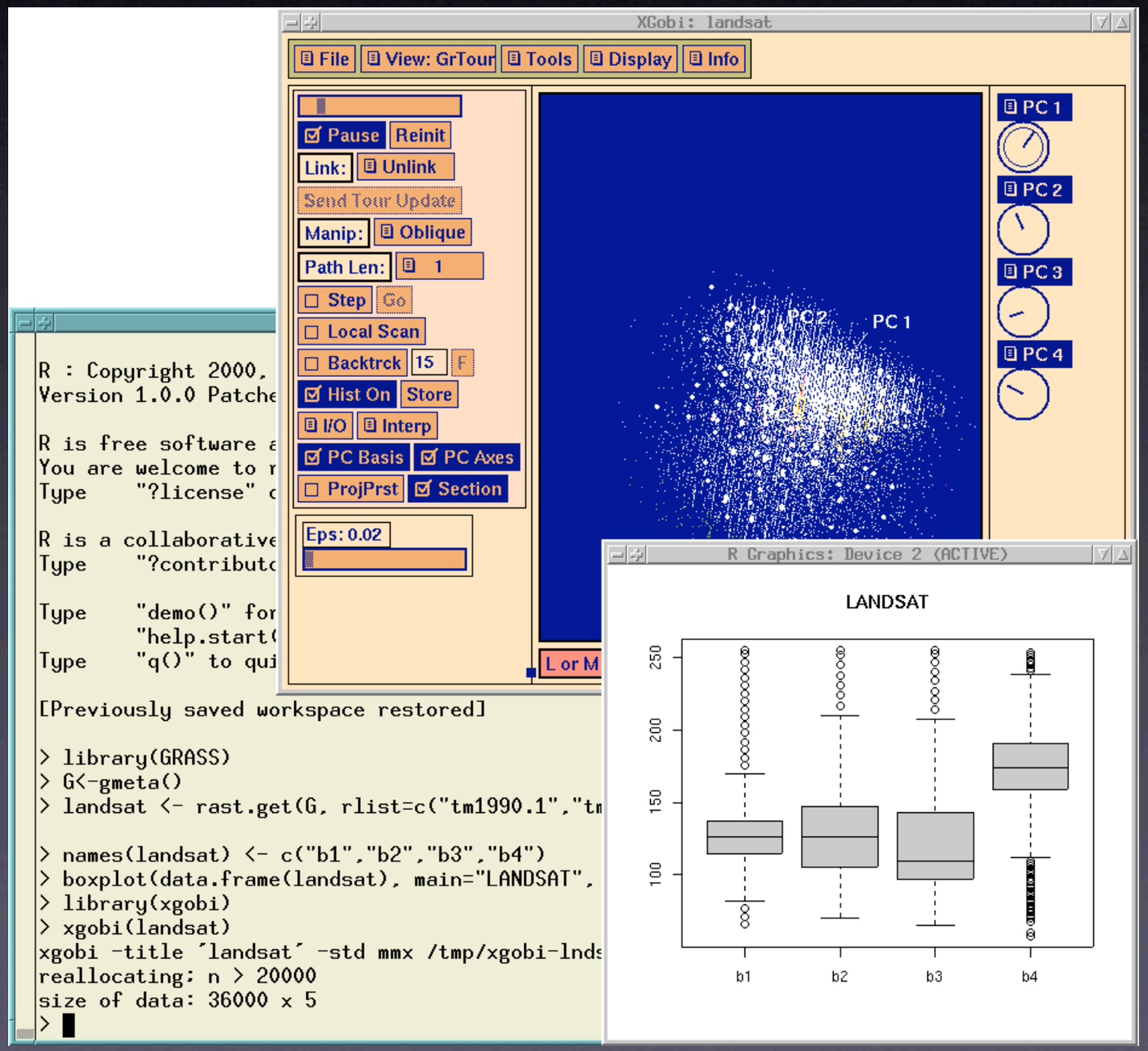
Digitizing


Form
Attributes
New record was created.
cat : 1
vegid : 1118
Change data view encoding:
utf-8
ascii
iso8859-1
koi8-r
submit
reset
Digitize new boundary:
New point
New point
Quit tool
3401461.02, 5958487.45
Field 1
Category 2
Mode Next not used
Insert new record to table
00:20

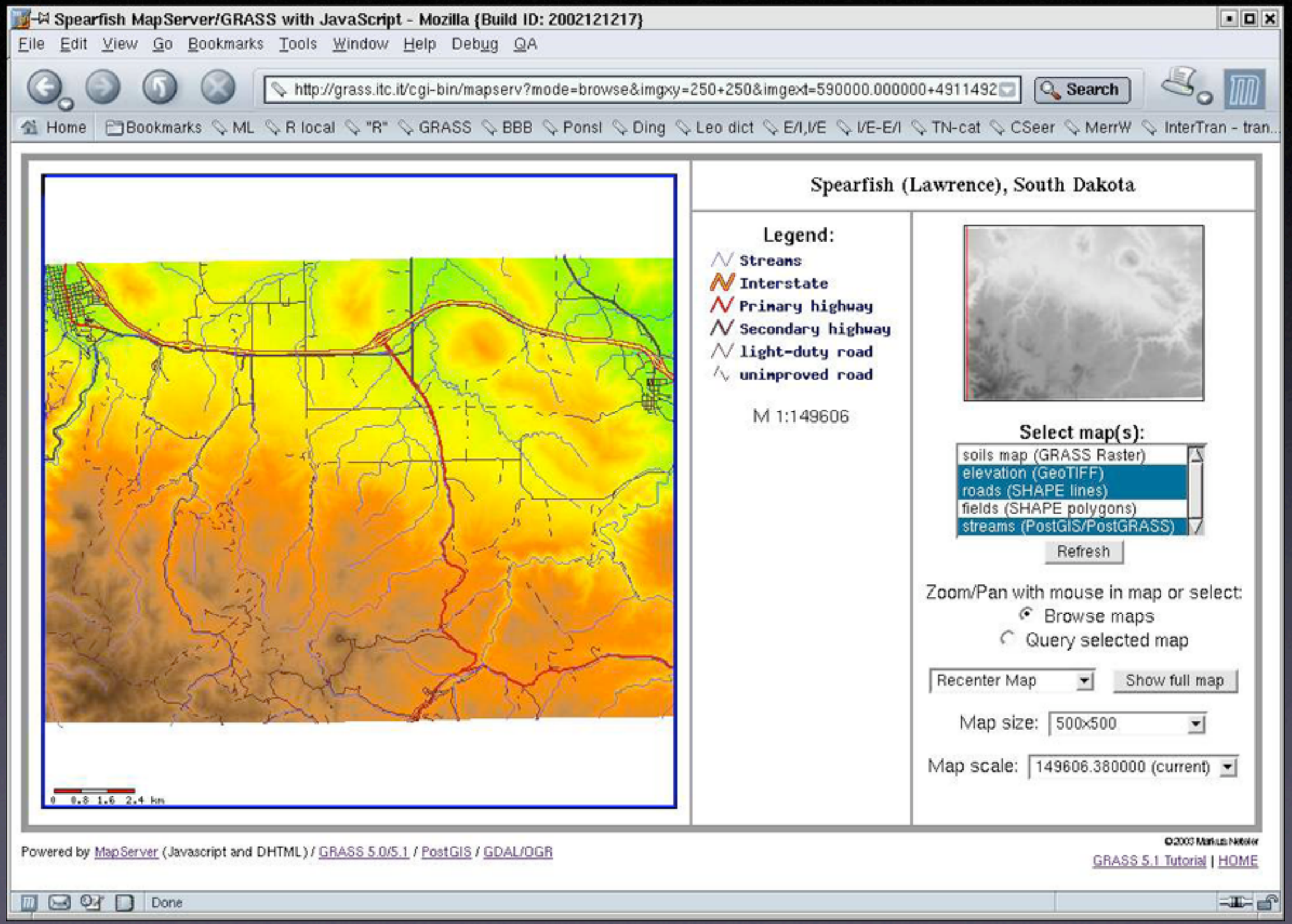
Links to other software:

Statistics - R (www.r-project.org)

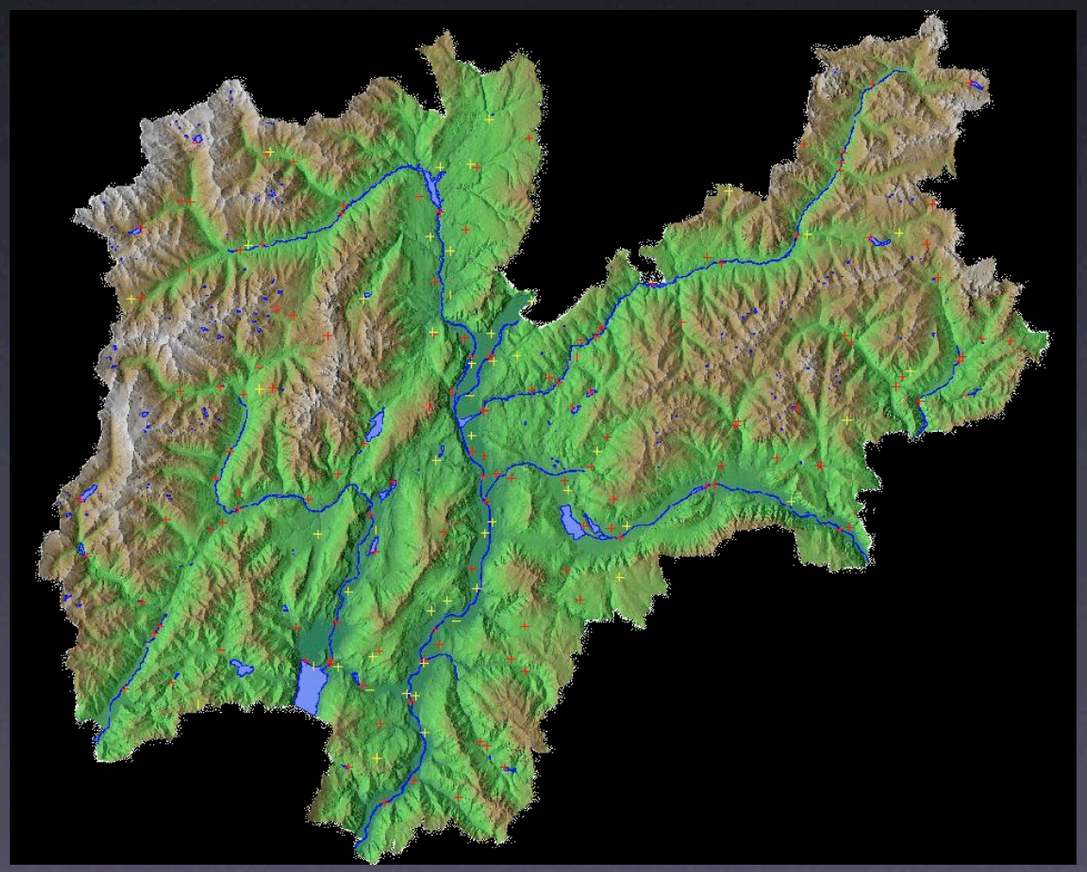
- spatial statistics, interpolation, spatial processes, ...

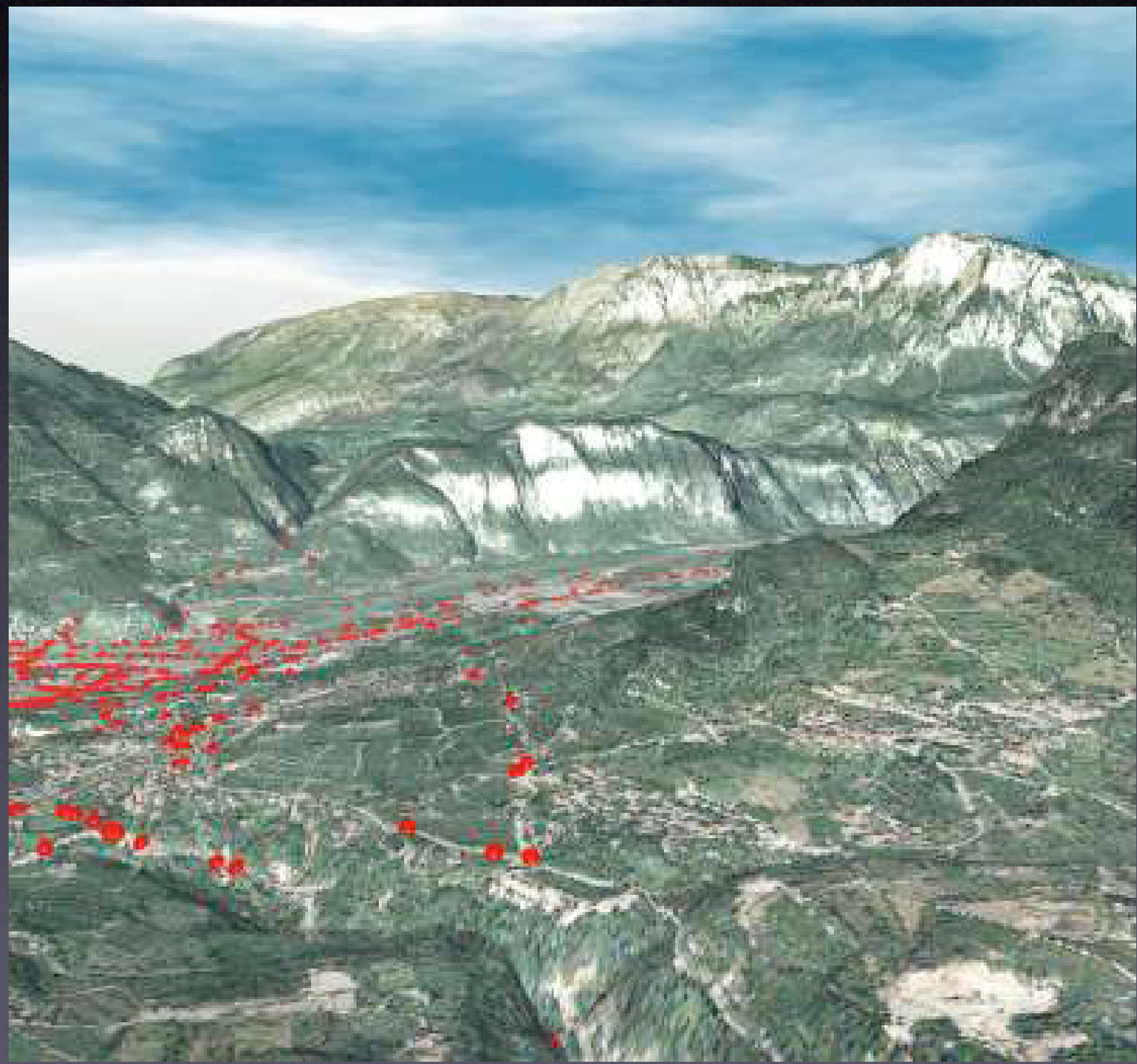


Mapserver

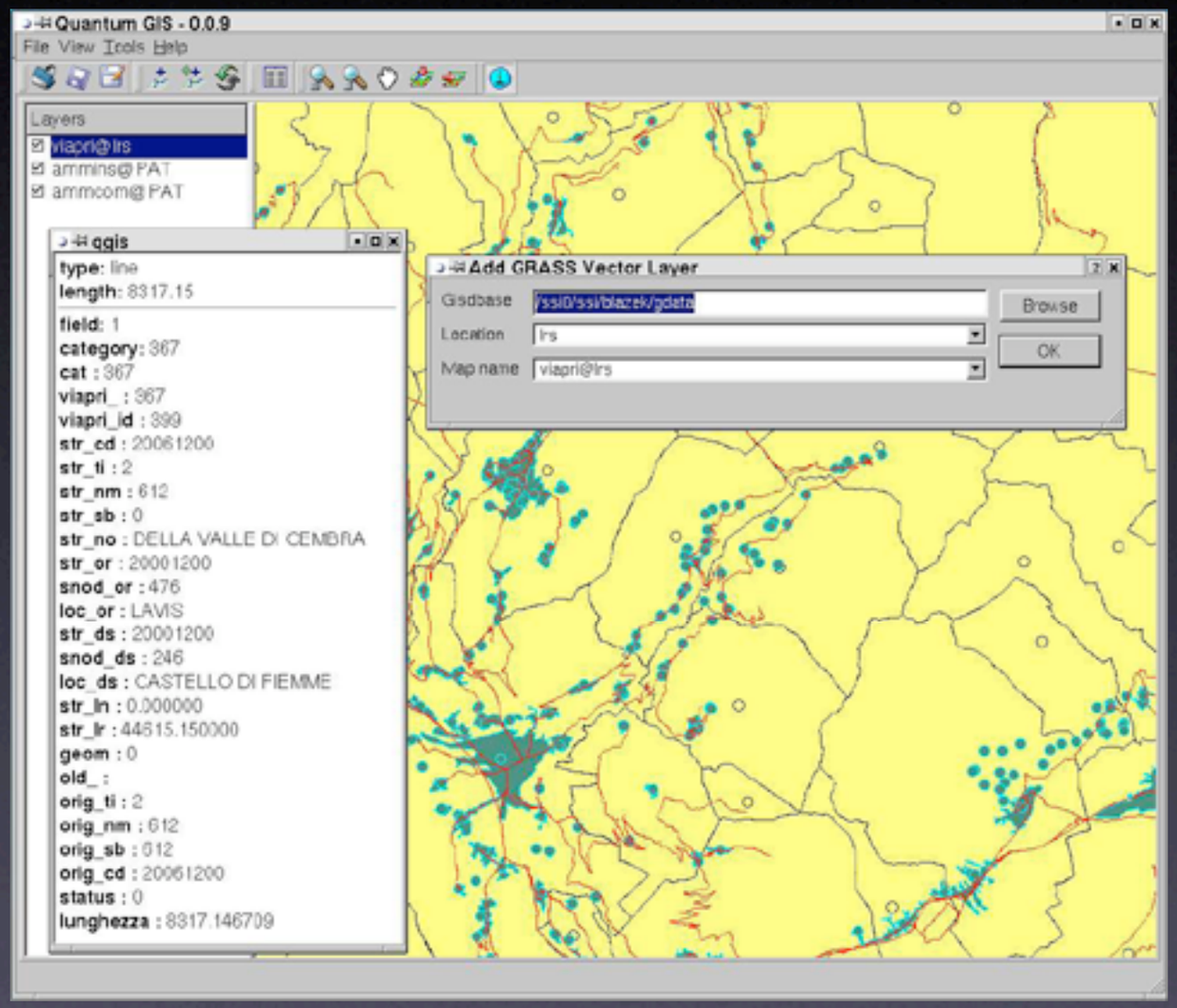

Spearfish MapServer/GRASS with JavaScript - Mozilla {Build ID: 2002121217}
File Edit View Go Bookmarks Tools Window Help Debug QA
http://grass.itc.it/cgi-bin/mapserv?mode=browse&imgxy=250+250&imgext=590000.000000+4911492
Search
Home Bookmarks ML R local "R" GRASS BBB Ponsl Ding Leo dict E/I,I/E I/E-E/I TN-cat CSeer MerrW InterTran - tran...
Spearfish (Lawrence), South Dakota
Legend:
Streams
Interstate
Primary highway
Secondary highway
light-duty road
unimproved road
M 1:149606
Select map(s):
soils map (GRASS Raster)
elevation (GeoTIFF)
roads (SHAPE lines)
fields (SHAPE polygons)
streams (PostGIS/PostGRASS)
Refresh
Zoom/Pan with mouse in map or select:
Browse maps
Query selected map
Recenter Map
Show full map
Map size: 500x500
Map scale: 149606.380000 (current)
0 0.8 1.6 2.4 km
Powered by MapServer (Javascript and DHTML) / GRASS 5.0/5.1 / PostGIS / GDAL/OGR
GRASS 5.1 Tutorial | HOME
Done

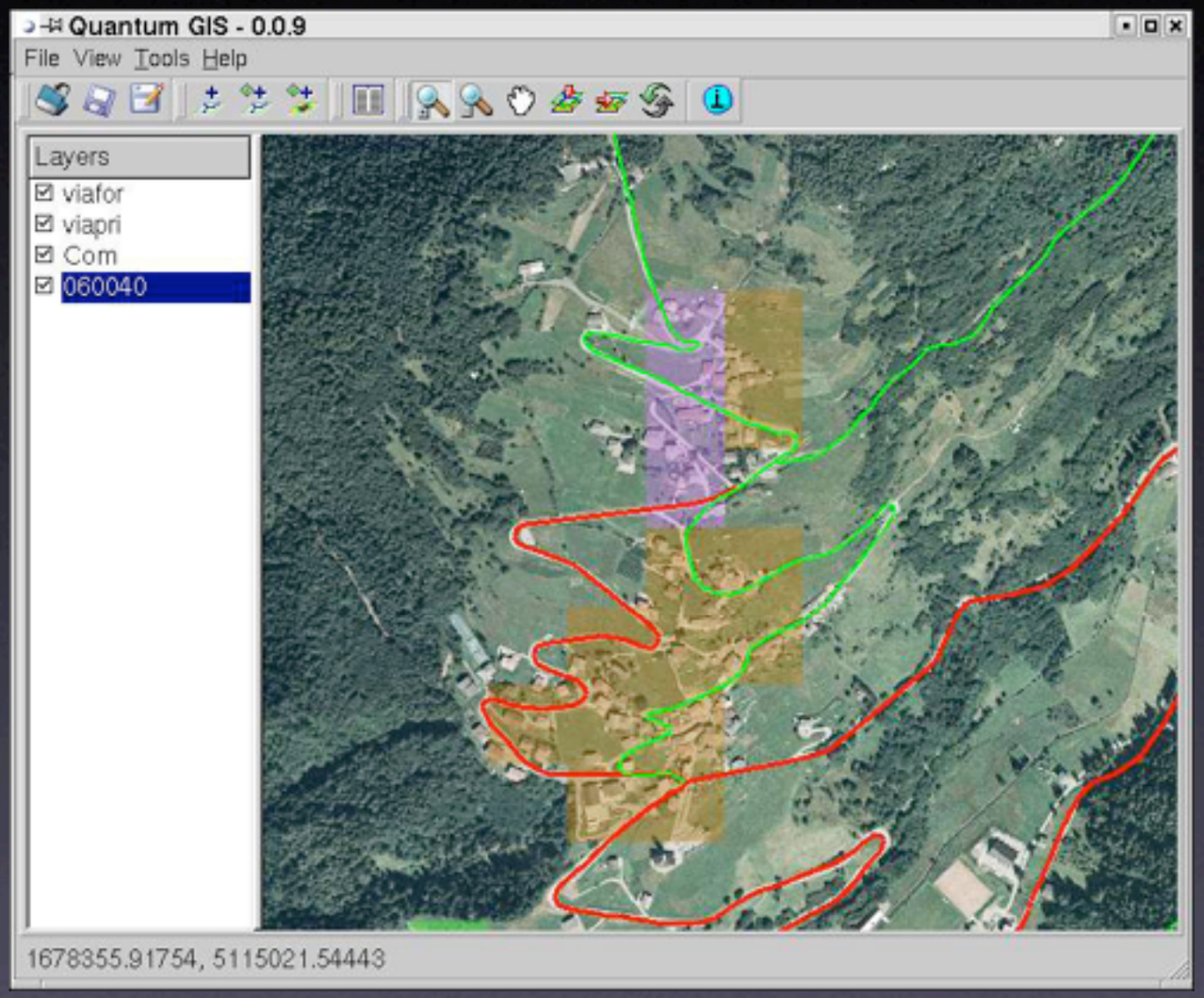
Povray Rendering





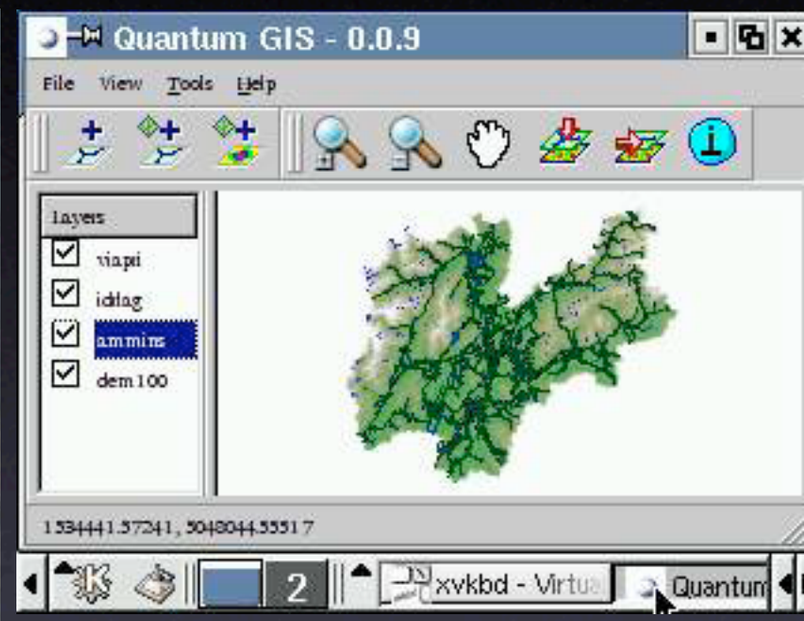
QGIS

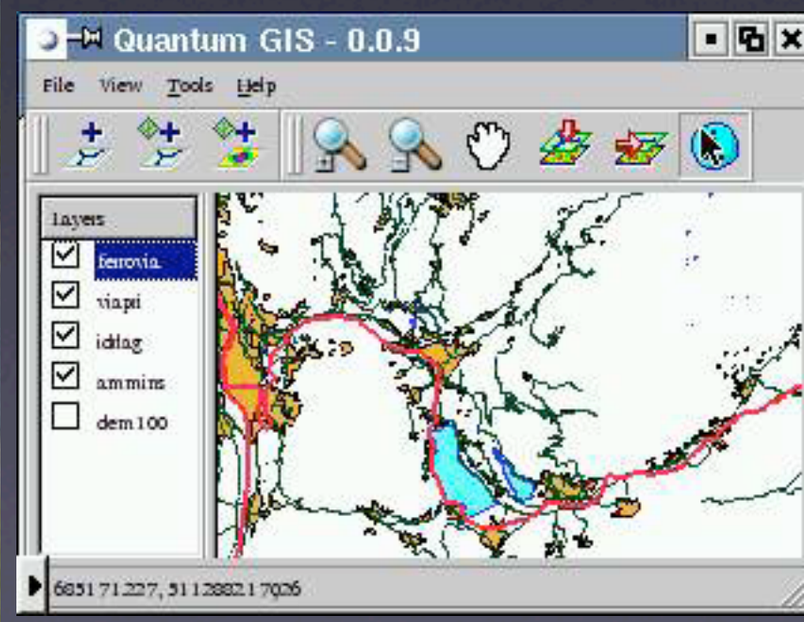




http://qgis.sourceforge.net

Mobile GRASS





Data Exchange

- Easy to read generic binary rasters
- Native format uses compression and header files; many other GIS read GRASS rasters but tend to only “know” v4 files
- GDAL to the rescue ! r.in.gdal r.out.gdal

Overview of GRASS

- GRASS is alive ! 20-year anniversary
- New modules constantly coming online
- More core developers desired
- Official GRASS 5.7 release imminent

Let's get to work!