Free and Open Source Geospatial Software and Data

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Software and Data Licenses

Proprietary	Shareware
•Limited Distribution •Limited Use •End User License Agreement •Closed Source Code •Vendor support	•Unlimited Distribution •Limited Use •End User License Agreement •Closed Source Code
Public Domain	**Open Source**
•Unlimited Distribution •Unlimited Use •Closed Source Code •Can be turned into proprietary product if value is added •Rarely has support	•Unlimited Distribution •Unlimited Use •Open Source Code •Can be improved but may not be turned into a proprietary product •Community support

Geographical Information Systems

- ## No Good Definition

  - **Geographic information systems (GIS)** or **geospatial information systems** is a set of tools that captures, stores, analyzes, manages, and presents data that are linked to location(s). (Wikipedia)

 - A database whose elements have Geographic Information (geo-coded)

Cost Ratio

"When creating a GIS your computers will cost you 300,000 drachmas, your software licenses 3,000,000 drachmas and your data 30,000,000 drachmas"

Professor Kollia 6th semester GIS course

ArcInfo

- Made by ESRI
- Expensive
  - VT pays $9,200-9,800/ yr
- Powerful
- User friendly (6/10)
- Industry Standard
- Mostly GIS
- Available in various OS
- Current Version 9.3
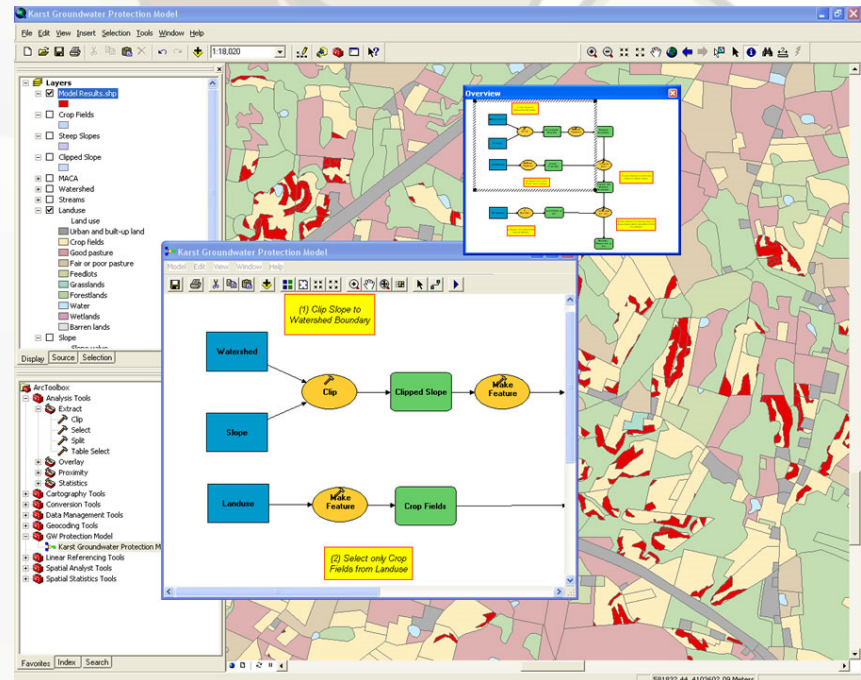
ENVI

- Made by ITTVIS
- Integrated with IDL
- Expensive
  - CNRE pays $3,000/year
- Powerful
- Not very user friendly (5/10)
- Few GIS functionalities
- Various OS
- Current Version 4.8
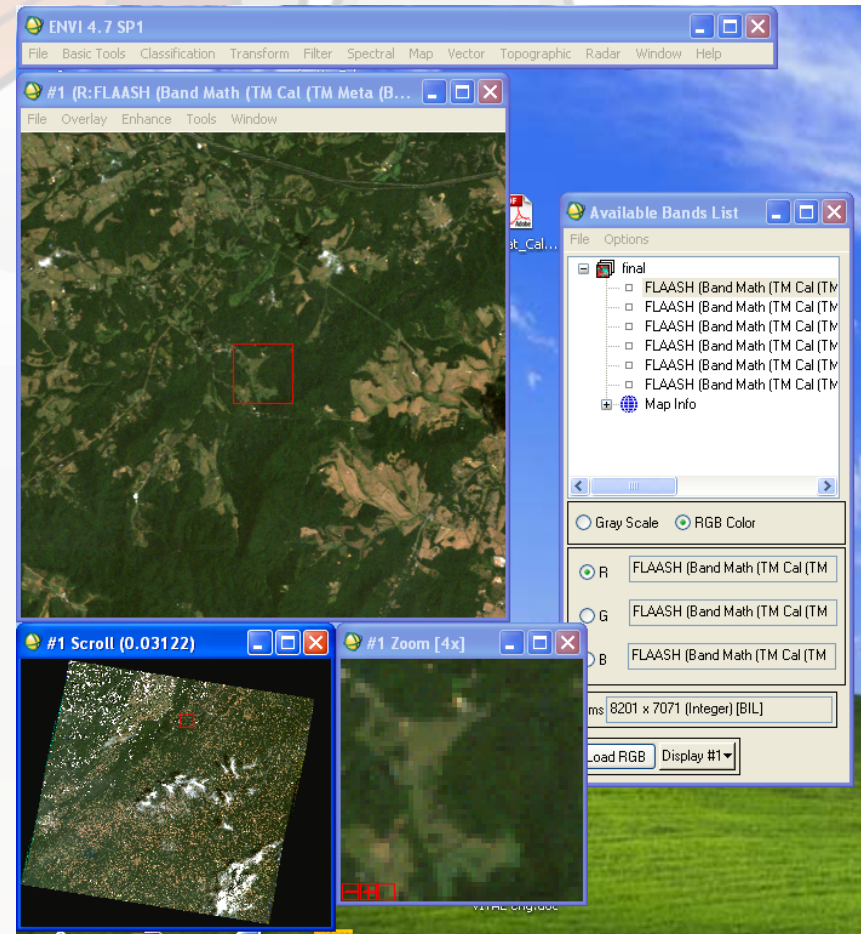
SPRING

- Sistema de Processamento de Informações Georeferenciadas
- Made by the Brazilian Space Agency (INPE)
- Free Software, INPE owns copyright
- Current version 5.1
- Available in Portuguese, English, Spanish and French
- Windows and Linux
- More Remote Sensing than GIS
- Peculiar file structure, idiosyncratic philosophy

GRASS GIS

- Geographic Resources Analysis Support System
- Originally made for US Army CERL in 1982 for Unix
- Since version 4.2 Open Source
- Current version 6.4, first stable Windows version
- Very Powerful
- Command line based
- Very user unfriendly
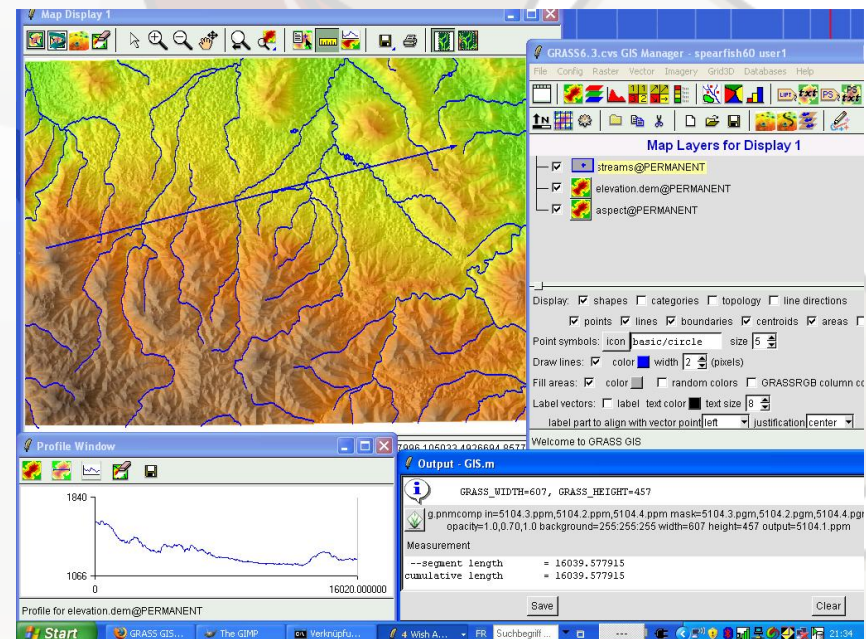
Quantum GIS

- Inspired by ArcInfo

- Open Source

- Current Version 1.5

- User friendly

- Not very capable

- Available in many OS
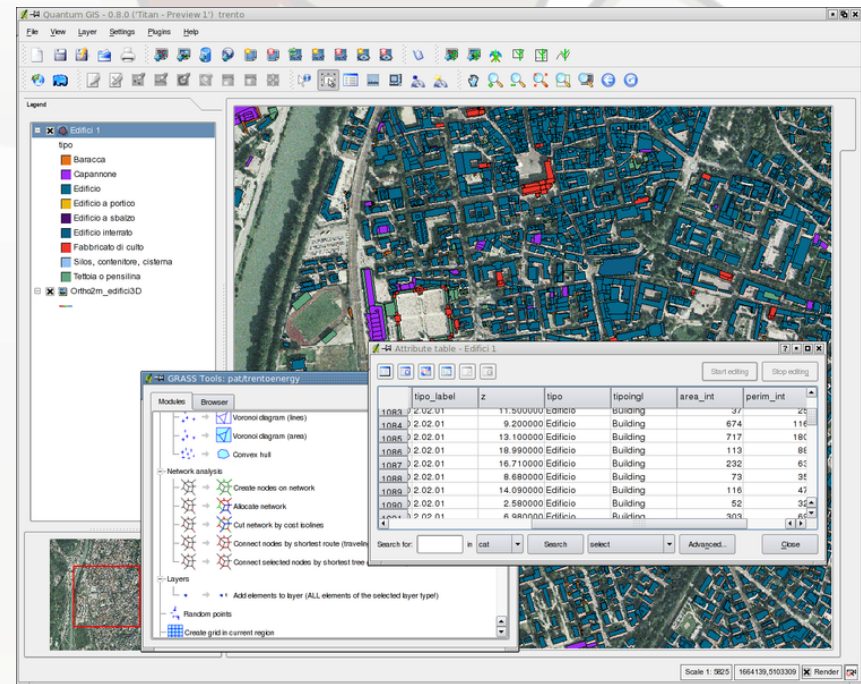
Geospatial Data sources

- Government agencies
  - "[G]overnment of the people, by the people, for the people, shall not perish from the earth"
    - Abraham Lincoln, Gettysburg Address (11/19/1863)
  - "L'État c'est Moi"
    - Apocryphal, attributed to Louis XIV
  - "It is the duty of a good shepherd to shear his sheep, not to skin them"
    - Emperor Tiberius
- Corporate Sources
  - Utilities
  - Private Satellites
- The Public
  - OpenStreetMap

Geospatial Data Limitations

- Proprietary
  - "Raw images may not be published. Processed images may only be published if the original cannot be recovered from it" (SPOT Image License)

- GNU Public License
  - No commercial product can be made from it

- Public Domain
  - Reference to the original creator

Freegis.org

- A database with links to georeferenced data
- Most originate in the US government
  - TIGER
  - Geo Names Server
  - SRTM

USGS Earth Explorer

http://edcsns17.cr.usgs.gov/EarthExplorer/

NASA WIST

https://wist.echo.nasa.gov/~wist/api/imswelcome/

European Environmental Agency

http://www.eea.europa.eu/data-and-maps/data

Openstreetmap.org

RADAR

- Sideways looking
- Satellite or airborne sensors
- Can image surface roughness and moisture content
- Radar images require special processing
- Helpful when the ground is not visible
  - Clouds
  - Night
- Has its own specialized community
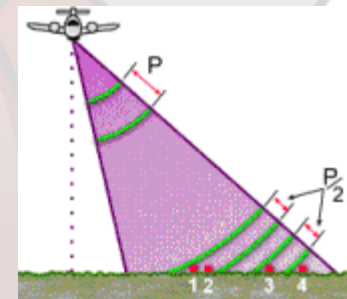
Alaska Satellite Facility

- http://www.asf.alaska.edu

- Contains RADAR imagery and software at various processing levels

- Downloading foreign sensor data requires submitting a proposal and is open only to government and educational institutes
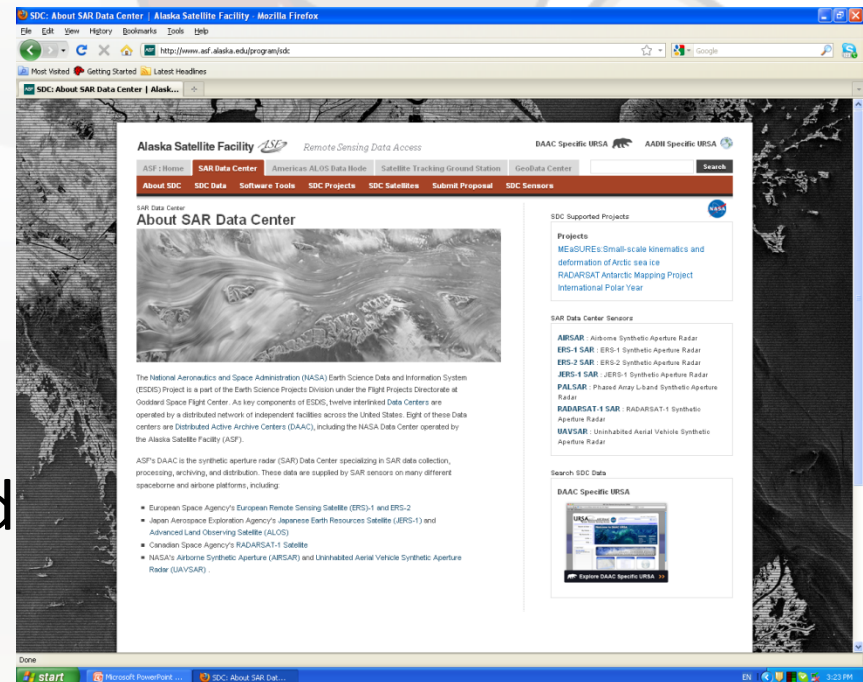
Conclusions

- A lot of Open Source and Free Geospatial software is available but it is not very commonly used or user friendly

- Most free Geospatial information originates with the US Government

- Most is in the form of Raster layers

- Difficult to create commercial applications from it