

Open source at OSGeoREL

GRASS GIS, open source development and academia, GSoC

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NC State FOSS Fair 2014
March 1st



NCSU OSGeoREL

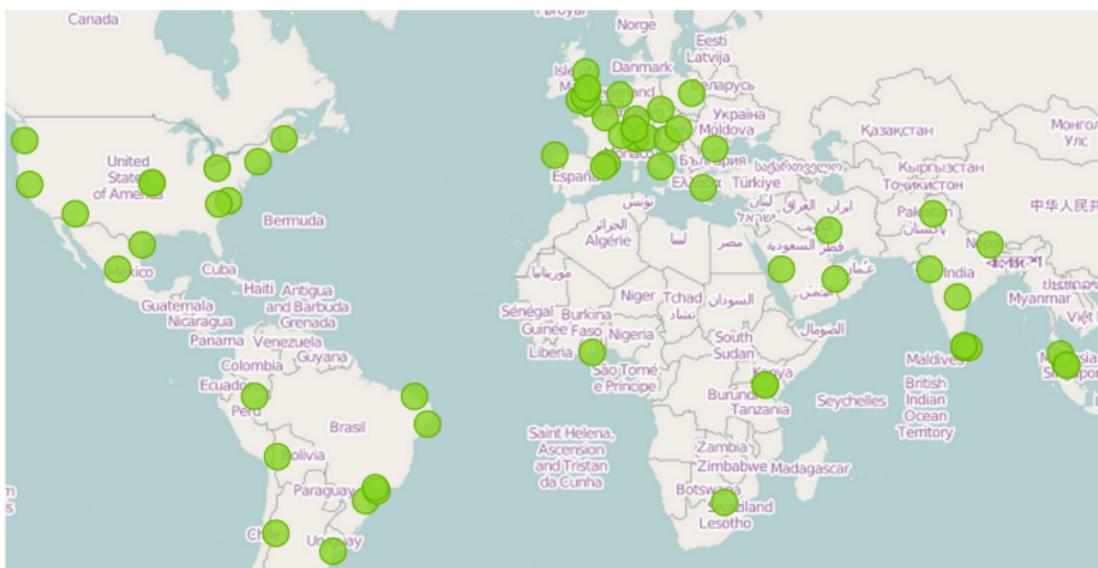
Open Source Geospatial Foundation
Research and Education Laboratory
at North Carolina State University

NC STATE UNIVERSITY



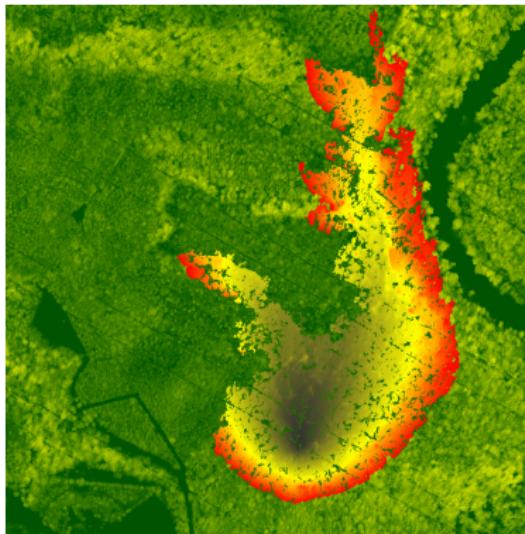
- <http://gis.ncsu.edu/osgeorel/>
- ncsu_osgeorel@ncsu.edu
- MEAS, Jordan Hall

NCSU OSGeoREL is a part of worldwide initiative

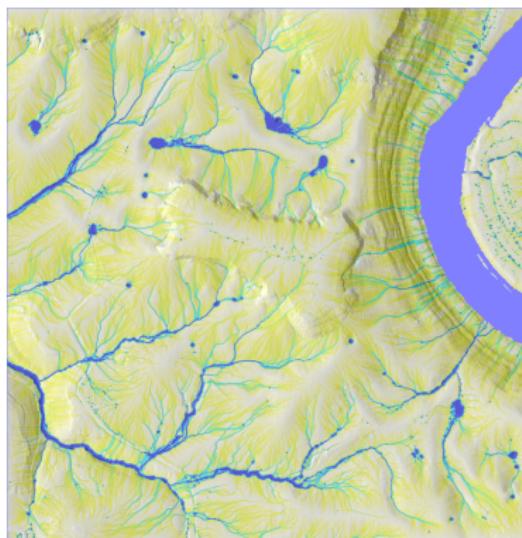


■ <http://geoforall.org/>

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Wild fire analyses

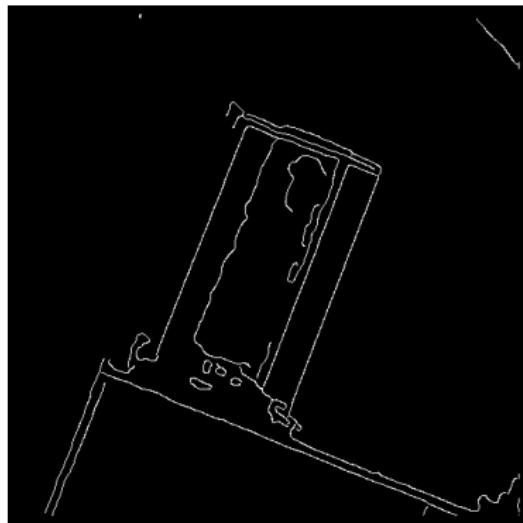


Water flow simulation

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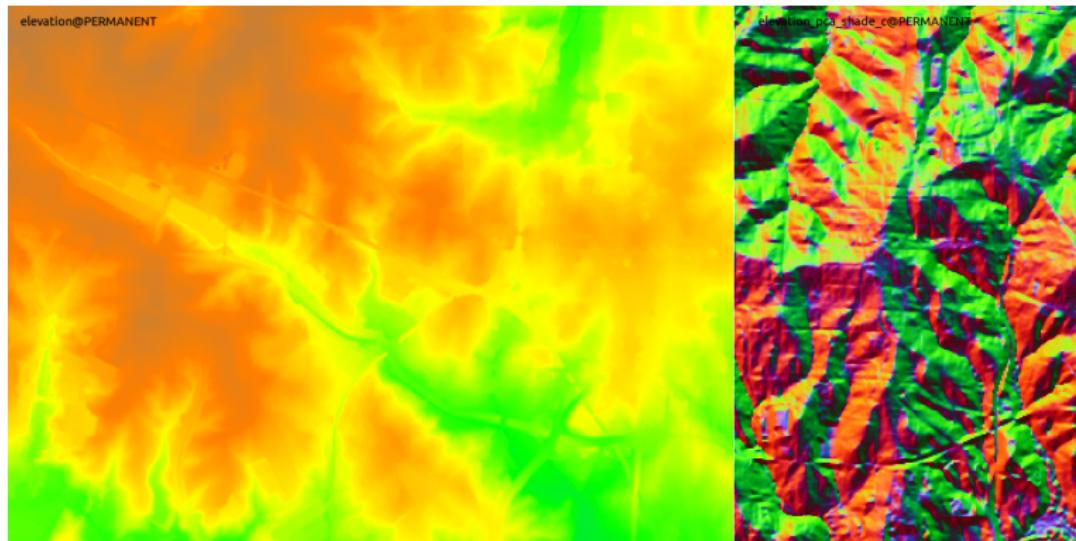


Aerial image



Edge detection

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Feature enhancement

GRASS GIS

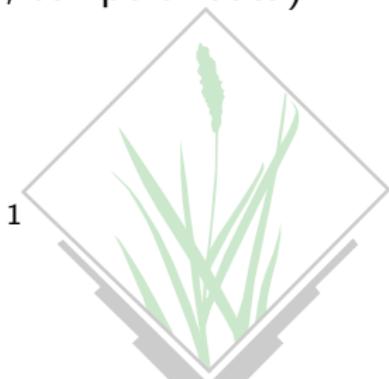
- Uses other software packages, e.g. SQLite, GDAL
- Used by other software packages, e.g. QGIS, gvSIG
- Connects to other software packages, e.g. R, PostGIS
- Available in repositories of GNU/Linux distributions

- <http://grass.osgeo.org/>
- GNU/Linux, Mac OS X, MS Windows, clusters, ...
- C, Python, command line and graphical interfaces
- 30 years in 2013
- changes every day



Examples of GRASS GIS features

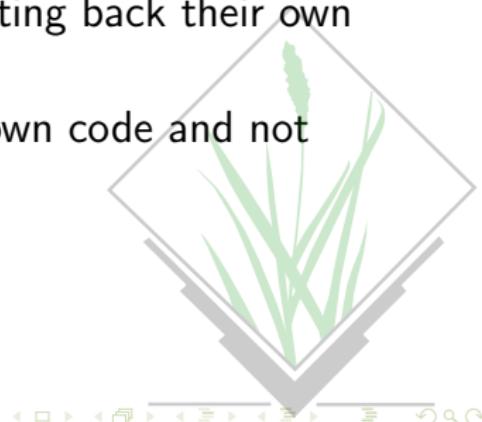
- 2D, 3D and 4D processing
- least-cost path, image processing, machine learning
- 3D visualizations
- landscape processes simulations
- big data (large areas, high-resolution data, temporal data)
- parallelization (OpenMP, pthreads, Python multiprocessing, ...)
- supercomputers
- exposing processing through web services¹



¹First GRASS GIS processing accessible online in 1995, GRASSLinks by Huse, S. M., University of California   

Development challenges

- Users not reporting bugs (because software is something you cannot change)
- Users not sharing their own work which can be reused
- Developers/power users not contributing back their own improvements
- Developers/researches writing their own code and not incorporating it into existing projects



Google Summer of Code

- various free and open source projects participate
 - students apply with their own ideas
 - Google pays students to work on FOSS projects
 - student application period opens March 10 (Monday)
- <http://www.google-melange.com/gsoc/homepage/google/gsoc2014>



GRASS GIS Community Sprint Vienna

- from March 24th (Monday) to March 28th (Friday)
- smaller event here
- contact vpetras@ncsu.edu
- http://grasswiki.osgeo.org/wiki/GRASS_Community_Sprint_Vienna_2014



Free and open source in academia

- sharing research results
- reproducibility
- applications in developing countries
- FOSS is open for innovations and modifications
- possibility to work closely with developers



Free and open source in academia

- your research is worth sharing!
- your research is worth preserving!

- merge your work into a bigger project

Everything which was connected with GRASS, but not merged, died.

Free and open source in academia

GRASS Temporal Framework use case

- working with geographic data with assigned time
- written as part of PhD thesis at university in Germany
- published paper with description and their usage
- now we are using it to work with our temporal data



Summary

- NCSU OSGeoREL does cool stuff both development and natural science
- GRASS GIS has a lot of features but more contribution is needed
- People don't contribute enough: keep the code, keep use cases, ...
- GSoC is a way to start with FOSS or join a code sprint
- healthy FOSS project
 - uses other FOSS projects
 - used by other FOSS projects
- truly shared and used research
 - uses FOSS
 - creates FOSS
 - connects to bigger FOSS projects

Thank you for your attention.