John A Koudelka

Lead for Applied Visualization Laboratory
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CAES (Center for Advanced Energy Studies)
and
Advanced Scientific Computing
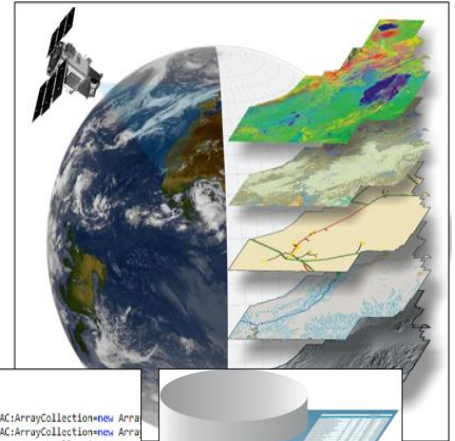**Nuclear Science and Technology**

About me

- Undergraduate degree in Geography at University of Denver

- Master's degree in Remote Sensing and GIS at University of Wisconsin in Madison

- 13 years performing work in GIS at Idaho National Laboratory
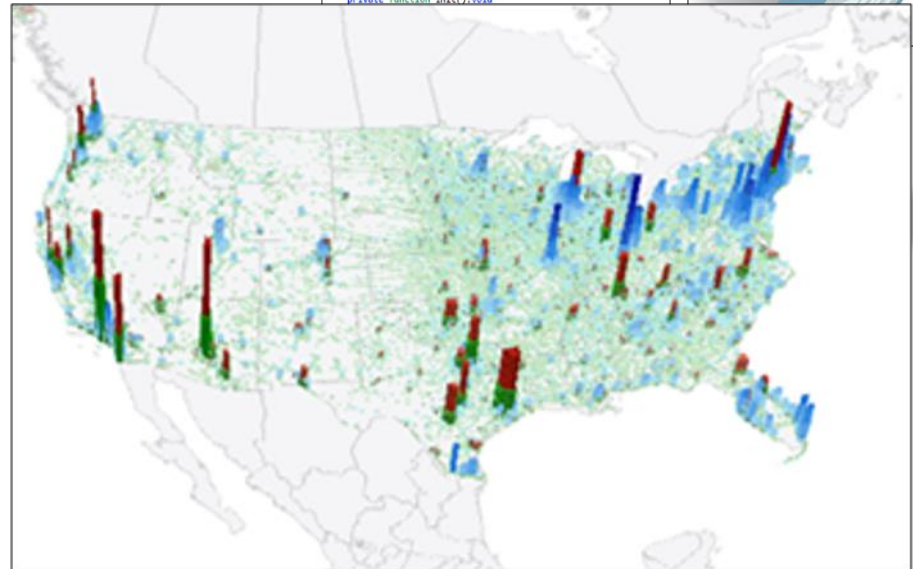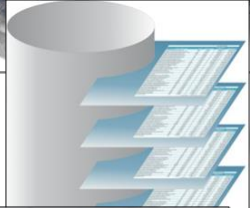
Today's Webinar

- What is GIS?

- How is it used?

- Benefits

- Geothermal Applications

- Software

- Data Resources

- Q&A

What is GIS?

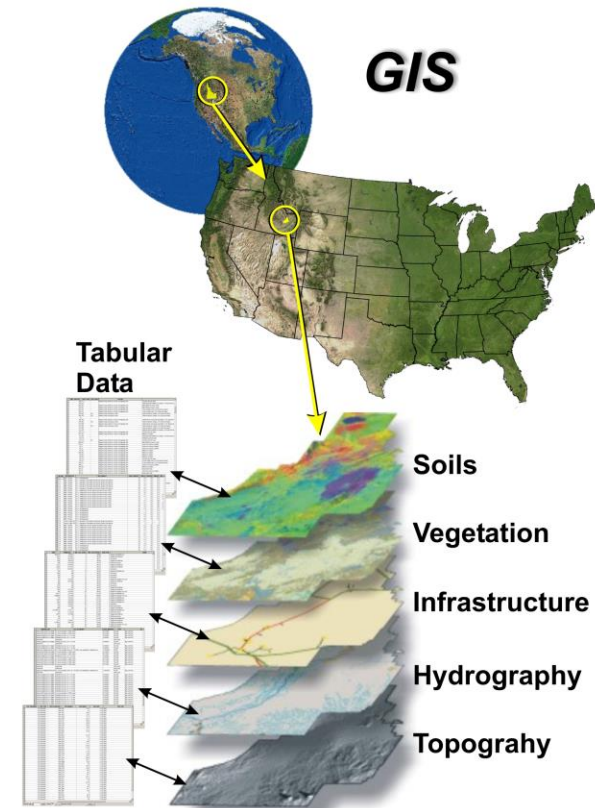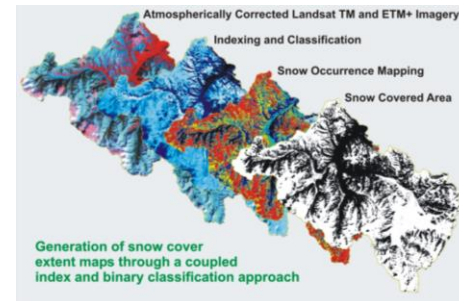- A Geographic Information System is a tool used to display, organize, process, store, analyze, and create spatial data.

- Its strength is the ability to visualize information with geography, it reveals deeper insights into data such as patterns and relationships.

- Visualization in 2D and 3D

- Field of information science
  - Statistics
  - Mathematics
  - Databases
  - Computer Science
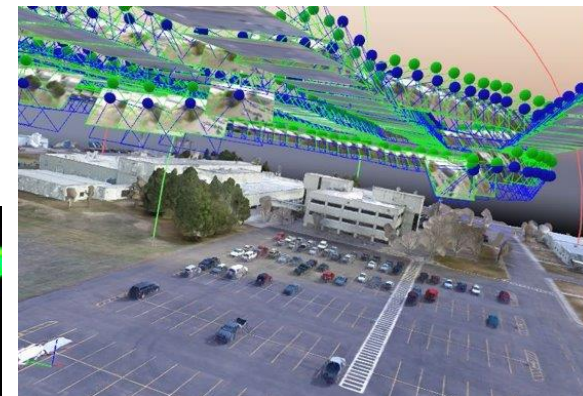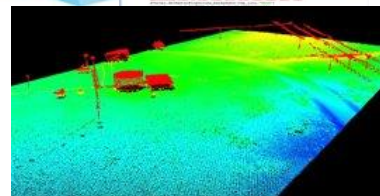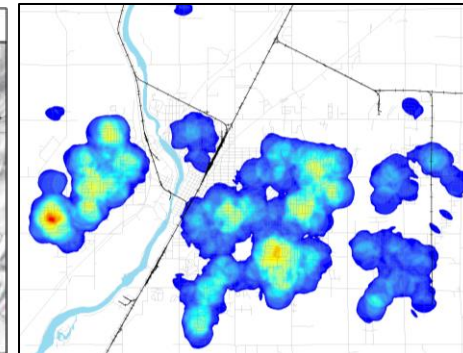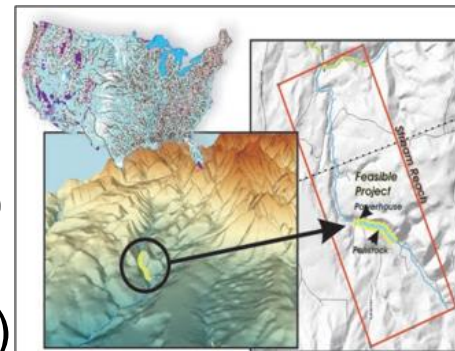
- Made up of data, software, and computers

How is GIS used?

- Forecasting
- Knowledge for decisions
- Monitoring change
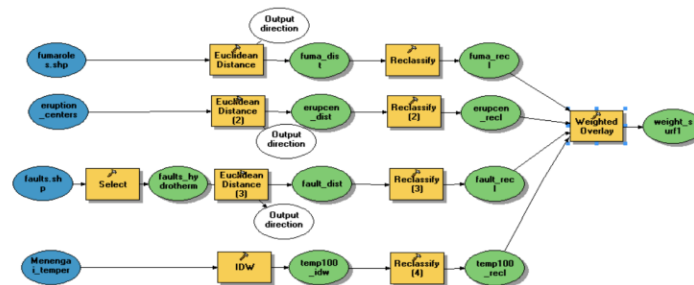- Understanding trends
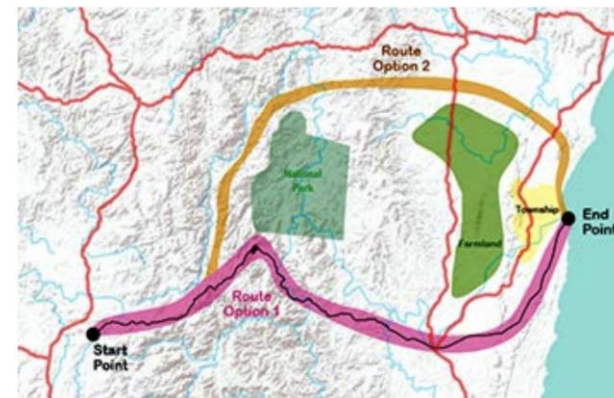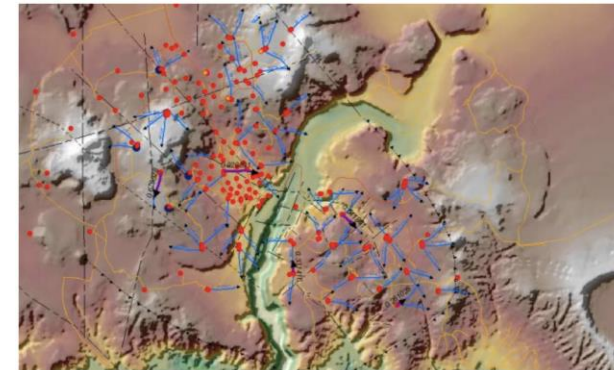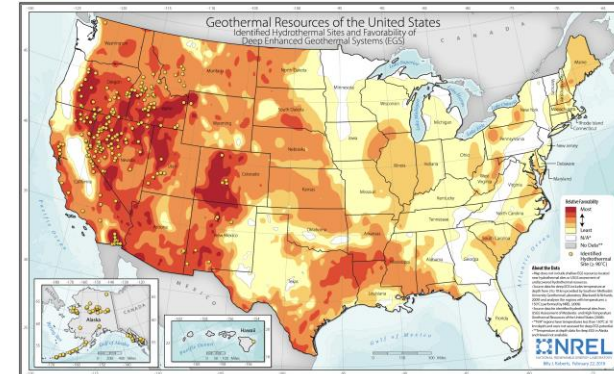- Identifying problems

Benefits of a GIS

- Improve communications (visual)
- Data repository
- Technology ready (cloud, mobile)
- Reduce costs (routing)

Geothermal applications of GIS

- Mapping geothermal resource potential

- Locating geothermal power plants

- Understanding geothermal gradients

- Analysis of geologic structures
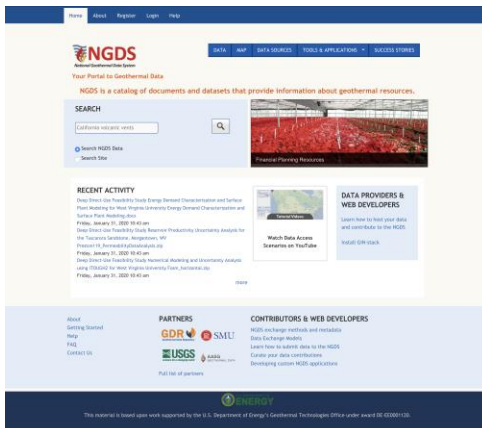
- Pipeline routing

- Well planning

GIS Desktop Software

- Open Source (free)
  - GRASS
  - MapWindow
  - QGIS
- Proprietary
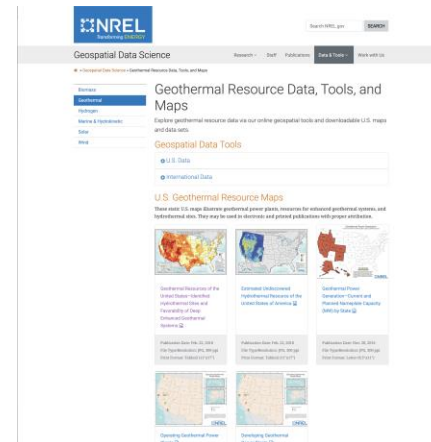 - MapInfo
  - Esri

Geothermal Data Resources

- Data Resources
  - National Geothermal Data System
    https://geothermaldata.org/

  - DATA.GOV
    https://www.data.gov/

  - National Renewable Energy Laboratory
    https://www.nrel.gov/gis/geothermal.html

Questions?

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