G·A·B·B·S

geospatial data analysis building blocks

Broadening Access to Geospatial Capabilities

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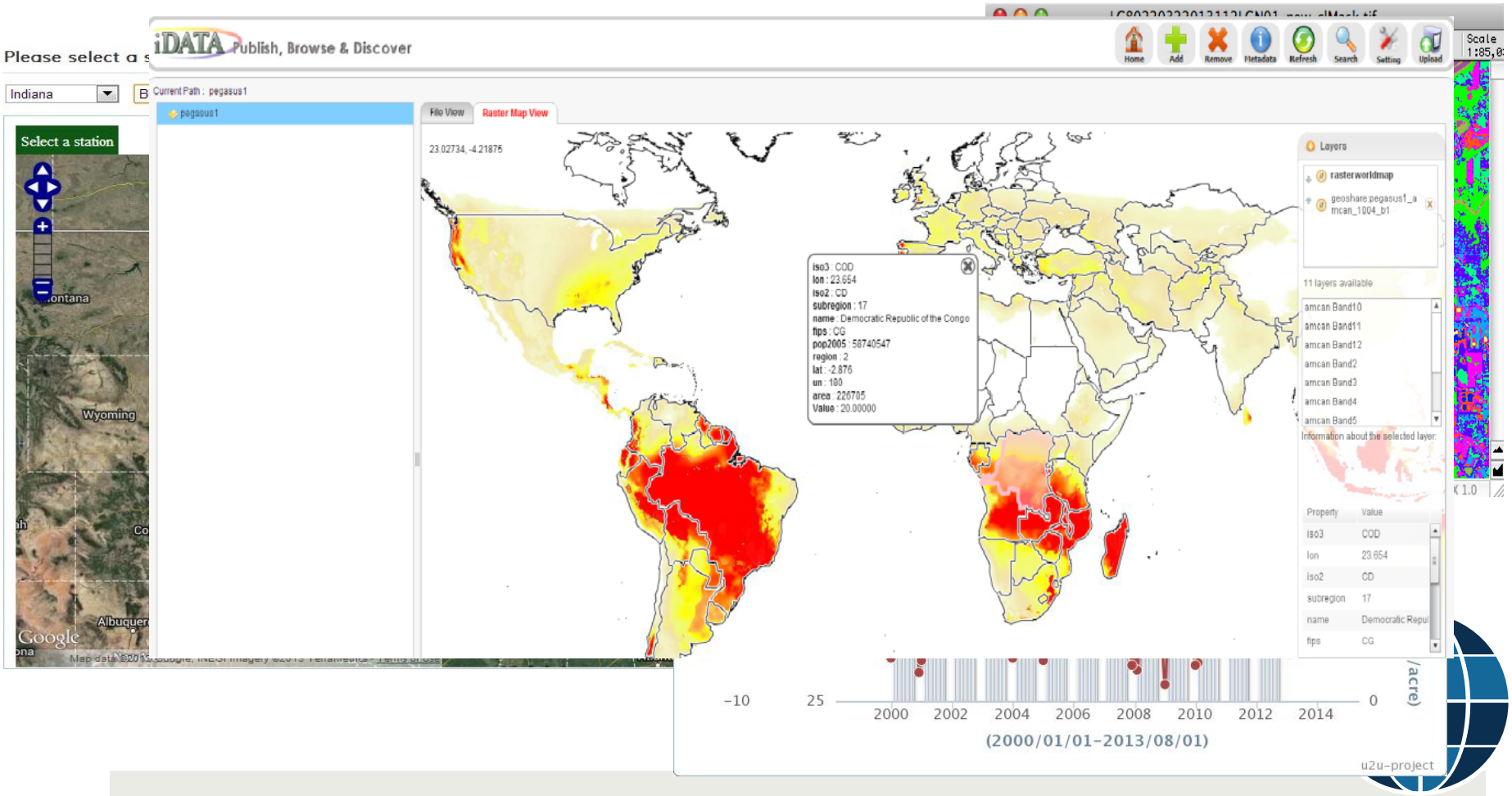
HUBbub 2014

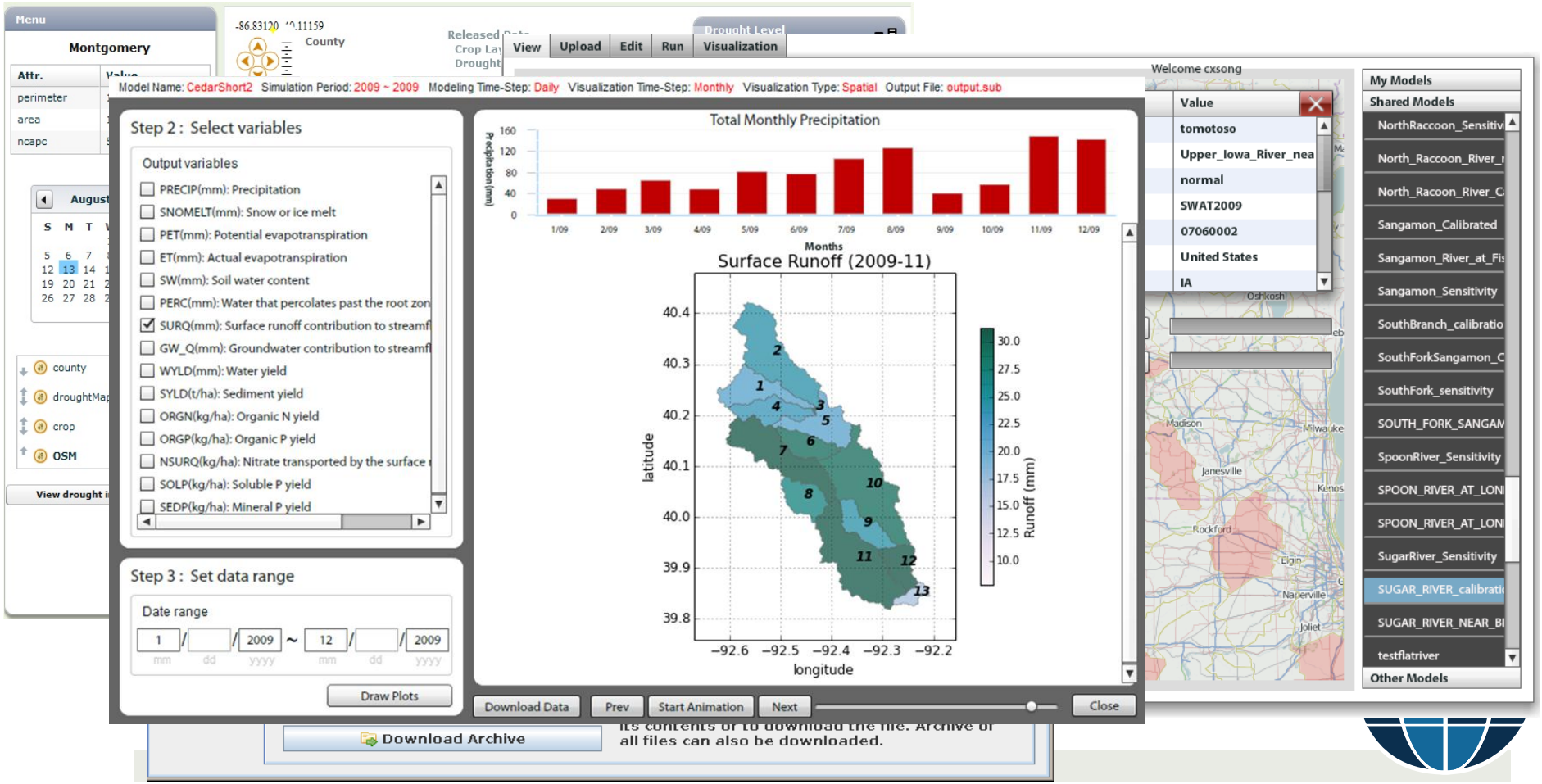
Driving Use Cases

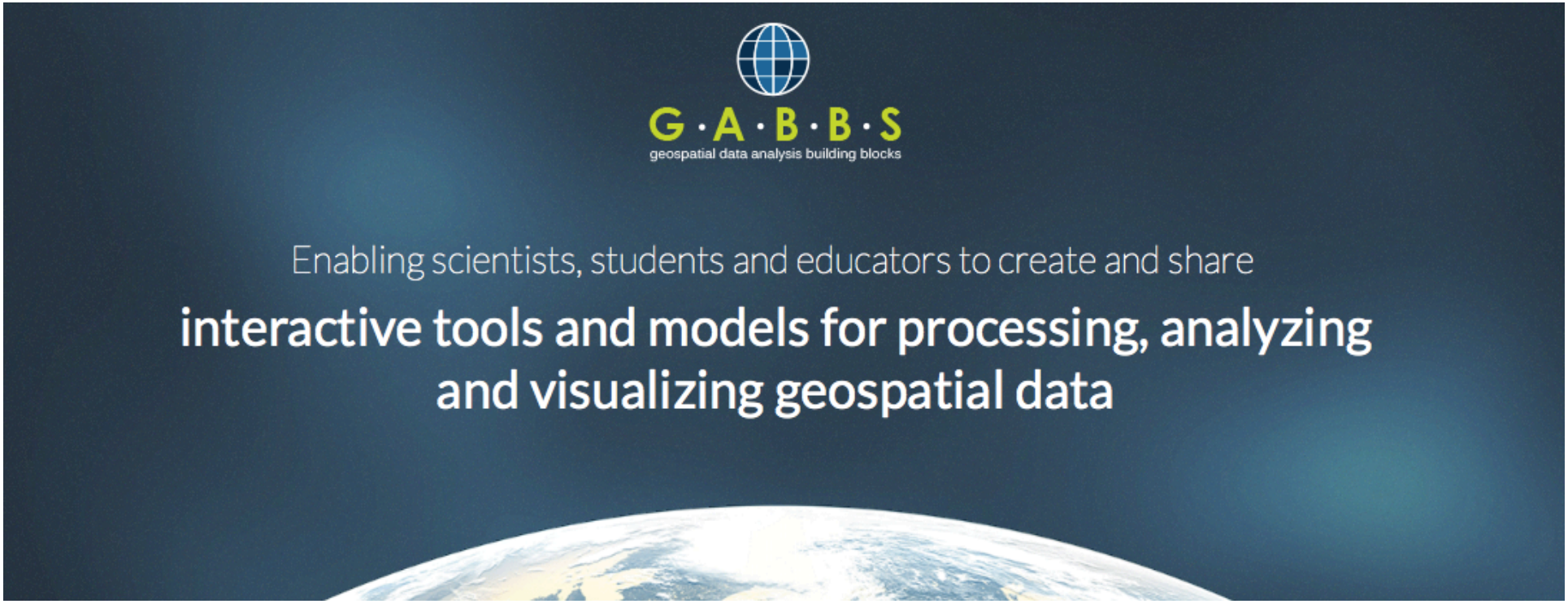
- Easy deployment of geospatial tools



Driving example

- Multi-scale and multi-disciplinary data and modeling for addressing hydrologic and ag economic issues





Overarching goal:

- Making it easy for scientists to share geospatial data and tools
- Reach broader user community
  - Anyone can create an online app and share
  - Anyone can share geospatial data

Outcome

- The rapid tool development library RAPPTURE will support
  - geo-referenced data objects (maps, images, etc)
  - Easy way to share geospatial data, both in raw data, and visually and interactively
  - Easy way to share interactive tools that uses, and produces geospatial data
- Tool builder that supports geospatial data to further lower the barrier of creating interactive online tools
- Service interfaces to upload and share geospatial and other types of data in HUBzero
- Service interfaces to link tools and data
- Geospatial capabilities as part of core HUBzero open source release

Funding

- A National Science Foundation grant
- Data Infrastructure Building Blocks (DIBBs) program
- GABBs: 1 of 4 implementation awards in 2013
- $4.5M, 4 years (10/2013 – 9/2017)
- Collaboration with other DIBBs and DataNet awards

Team (11+)

Carol Song, PI & Project Director

Larry Biehl (image processing and visualization)

Venkatesh Merwade (hydrologic modeling and data, apps)

Nelson Villoria (global geospatial data, applications)

Betsy Hillery (project manager)

Michael McLennan (HUBzero architect)

Rob Campbell (sr developer, data component)

Leif Delgass (sr developer, visualization)

George Howlett (sr developer, RAPPTURE extension)

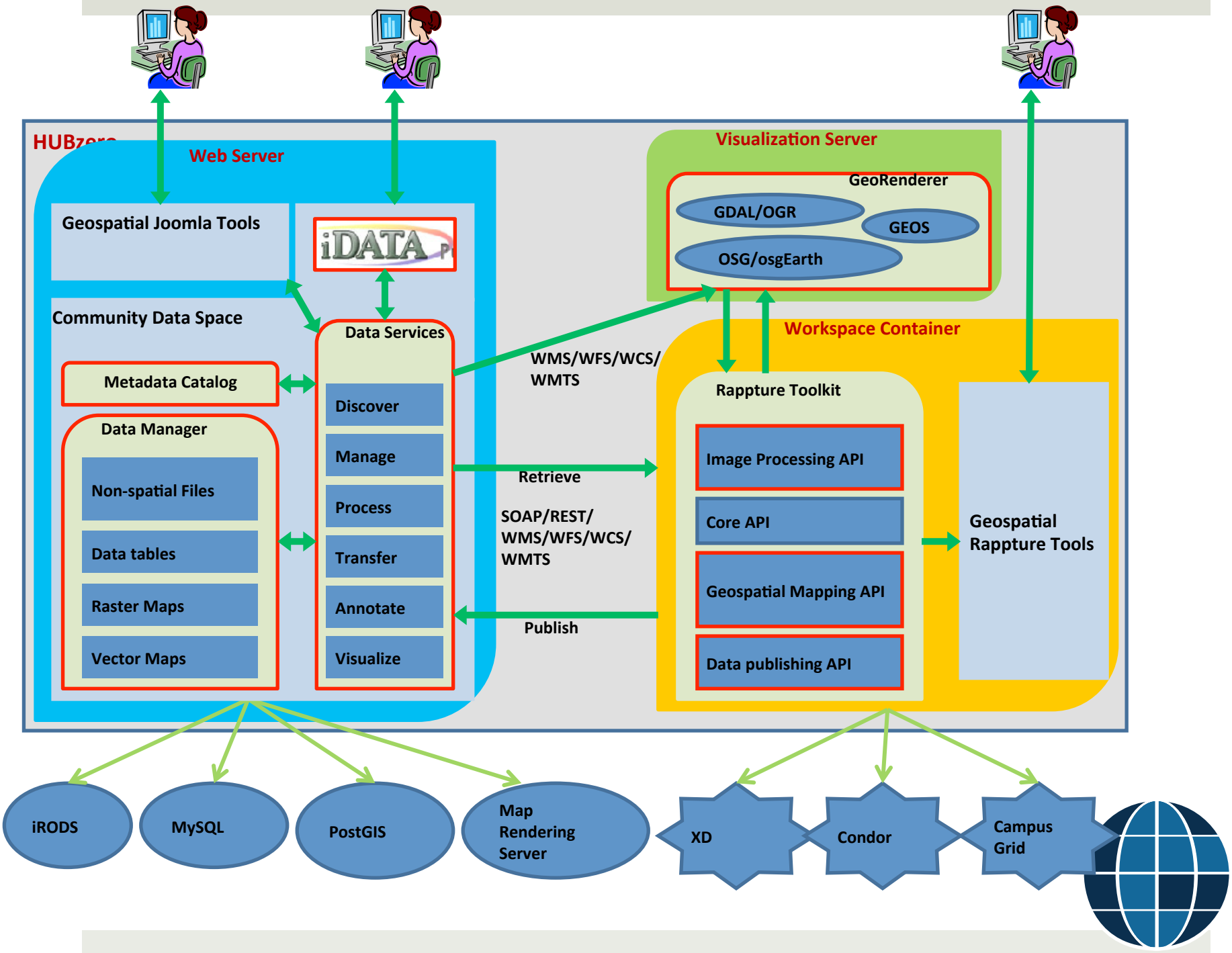
Lan Zhao (research scientist, geospatial applications, data management)

Rajesh Kalyanam (spatial processing, management)

Graduate students in scientific domains

Building on prior work

- **HUBzero** (Rappture, graphics rendering, collaborative tools)
- **iData** (tool for self service data sharing and management)
- **Multispec** (tool for analyzing multispectral/hyperspectral image data)
- **Geospatial hub projects** (DRINET, Geoshare, WaterHUB, U2U etc)
- Leveraging software developed elsewhere
  - iRODS
  - Globus data transfer


HUBzero
Web Server
Geospatial Joomla Tools
iDATA
Community Data Space
Data Services
Metadata Catalog
Data Manager
Non-spatial Files
Data tables
Raster Maps
Vector Maps
Discover
Manage
Process
Transfer
Annotate
Visualize
Visualization Server
GeoRenderer
GDAL/OGR
GEOS
OSG/osgEarth
WMS/WFS/WCS/
WMTS
Retrieve
SOAP/REST/
WMS/WFS/WCS/
WMTS
Publish
Workspace Container
Rappture Toolkit
Image Processing API
Core API
Geospatial Mapping API
Data publishing API
Geospatial
Rappture Tools
iRODS
MySQL
PostGIS
Map
Rendering
Server
XD
Condor
Campus
Grid

Challenges

- Dealing with large and complex (often non-standard) data sets
- Peculiarity in data
- Extending the existing RAPPTURE model to support the new requirements of geospatial data and interactivity
- Map and image rendering in hub VM workspace
- Service interfaces
- Linking data – tools

What's to come?

- New Super Hub for your geospatial needs
- Demonstration video