



G · A · B · B · S

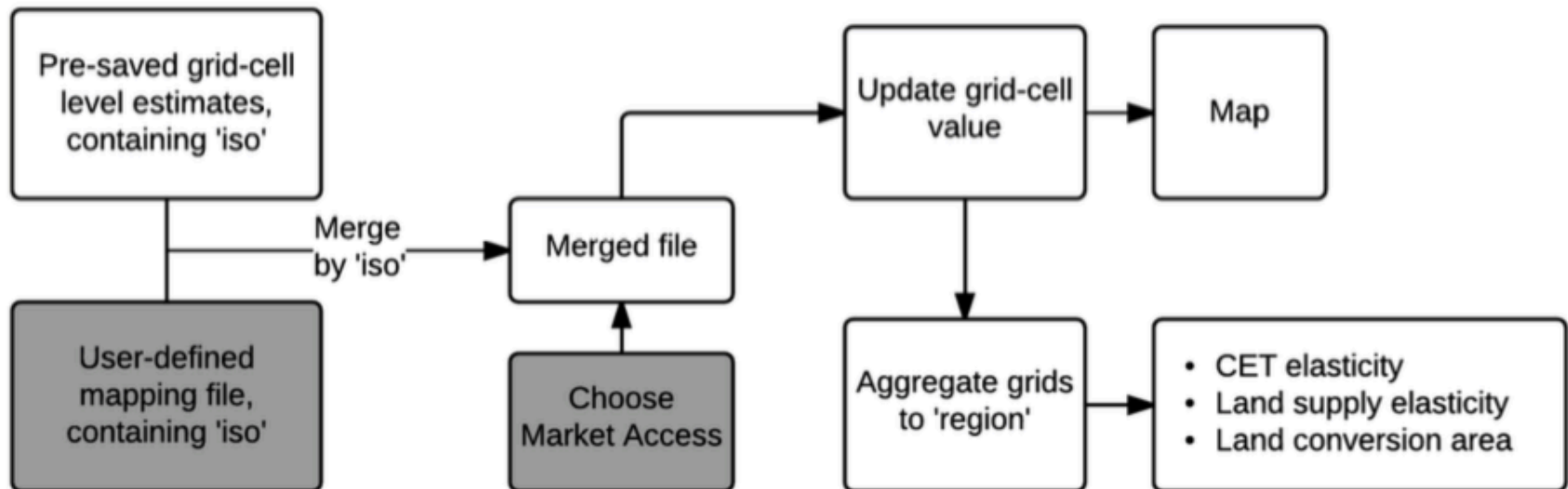
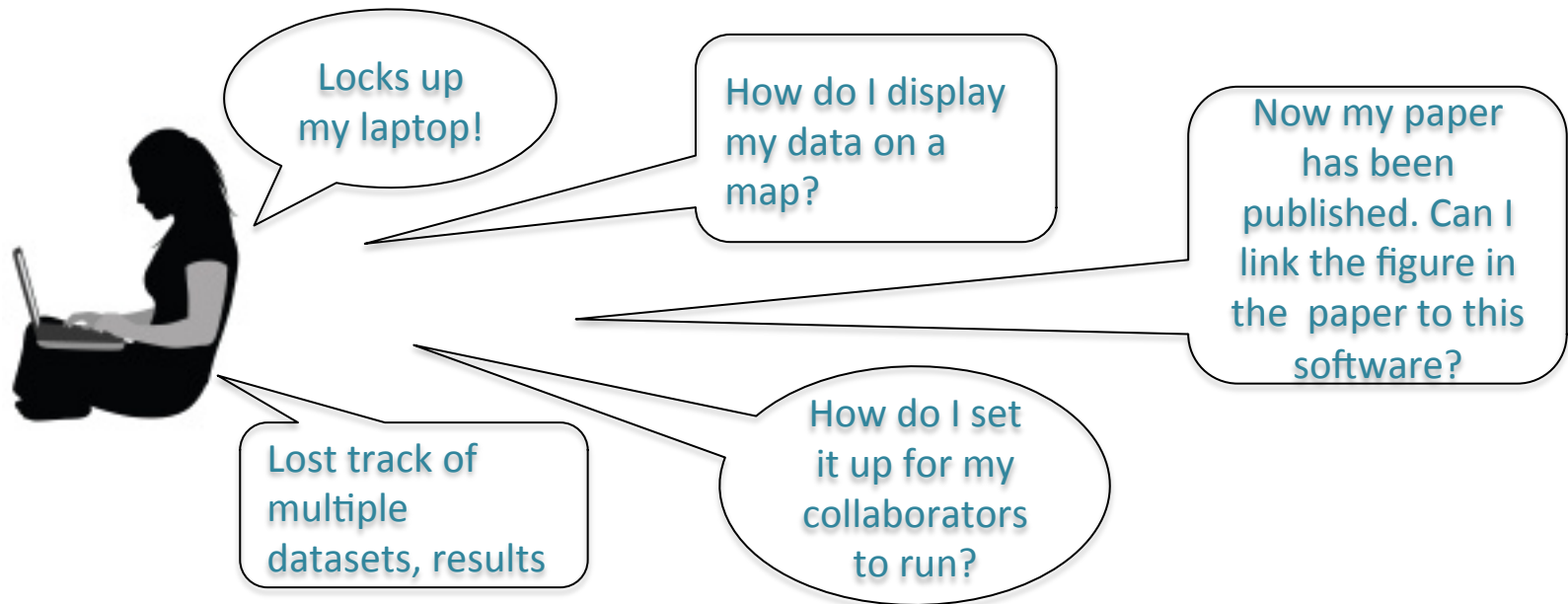
geospatial data analysis building blocks

Geospatial-enabled Data Exploration and Computation through Data Infrastructure Building Blocks

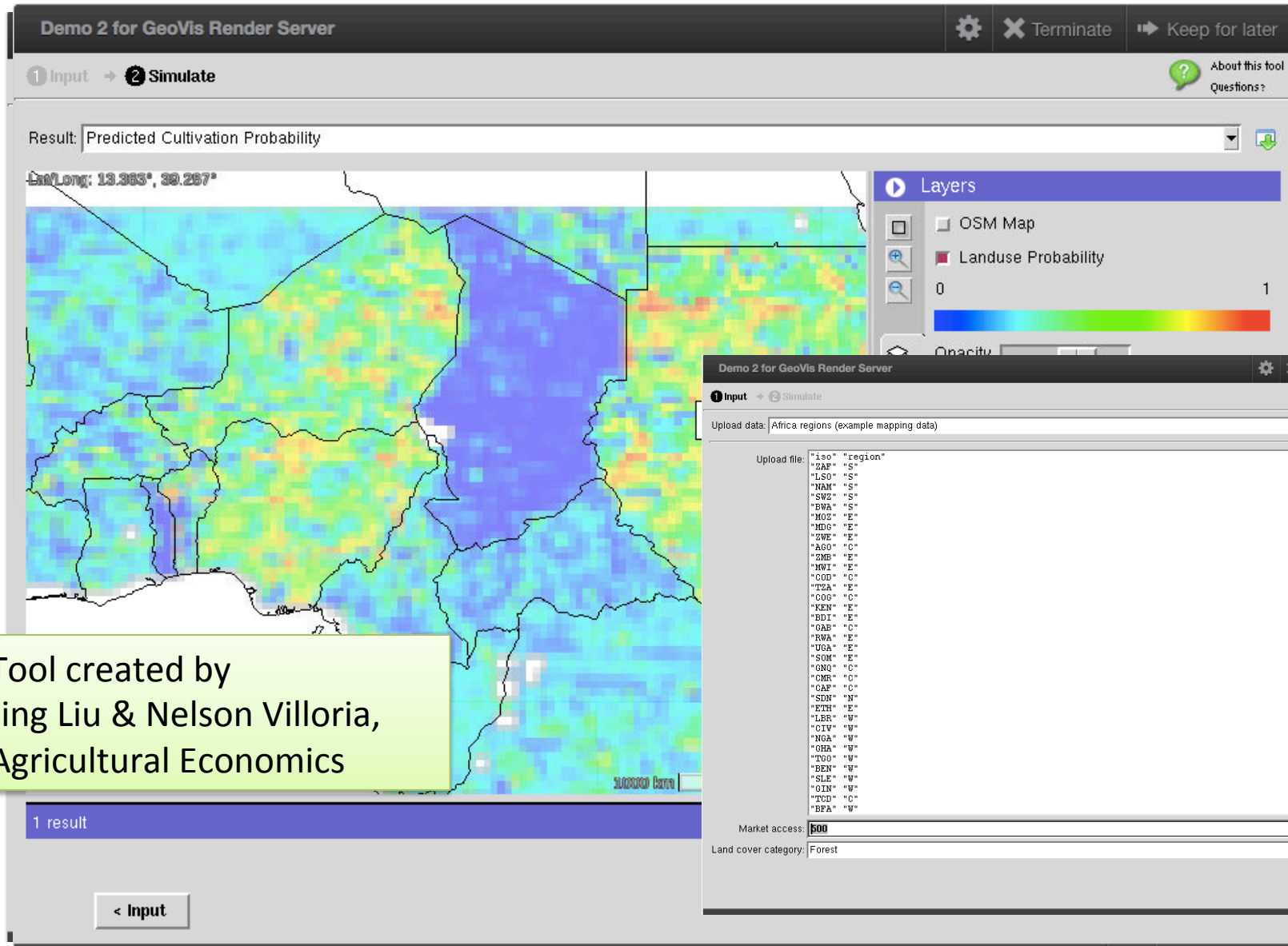
Carol Song
GABBS Principal Investigator
Purdue University

5th NDS Workshop, Chapel Hill, NC
April 6, 2016

Today, a scientist... ..



What if ...



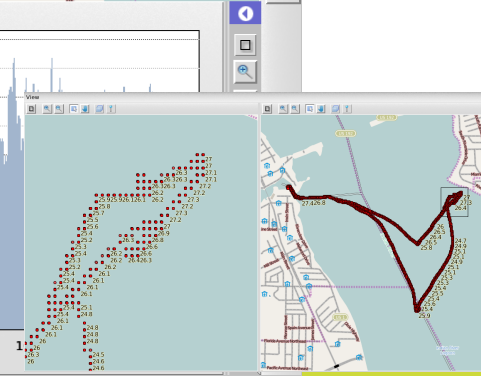
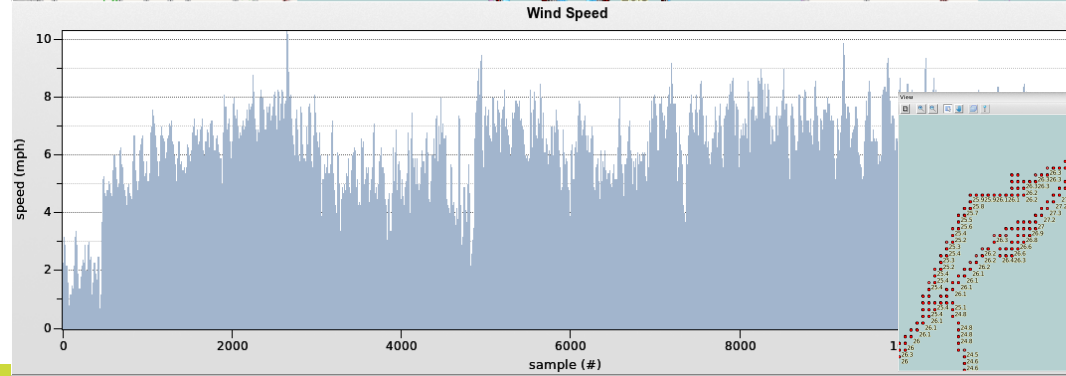
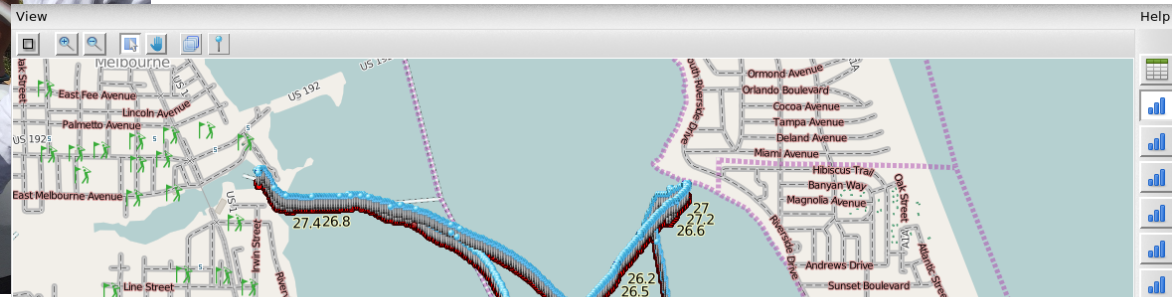
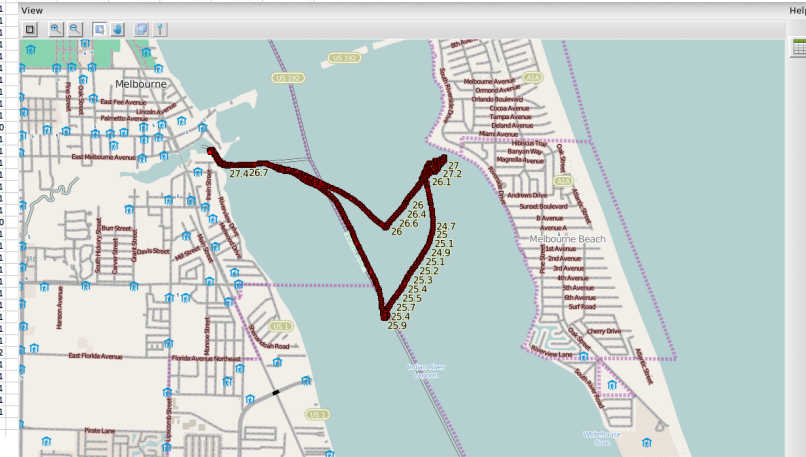
Tool created by
Jing Liu & Nelson Villoria,
Agricultural Economics



Data exploration & sharing



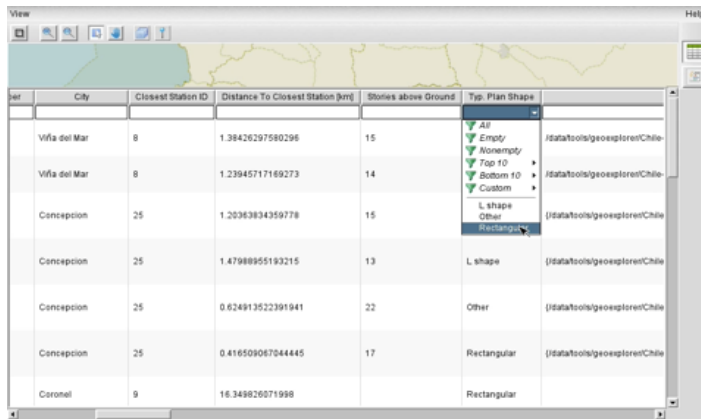
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11921													
11922													



- No programming
- Almost instant visualization & data sharing

Users need more than maps

Systems to support various computation paradigms

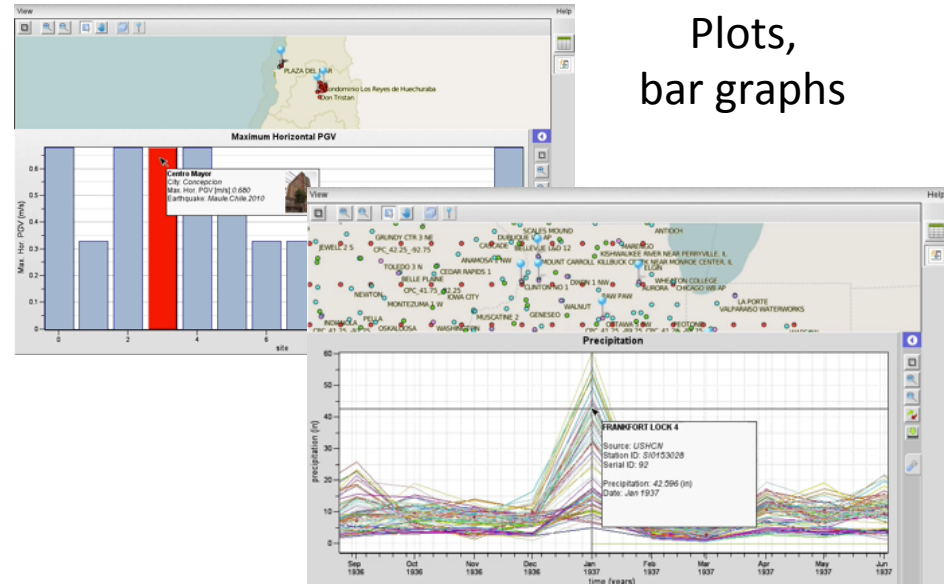


City	Closest Station ID	Distance To Closest Station (km)	Stories above Ground	Typ. Plan Shape	
Vila del Mar	8	1.38426297580296	15	All	/data/tools/geosexplorer/Chile
Vila del Mar	8	1.23945717169273	14	Empty	/data/tools/geosexplorer/Chile
Concepcion	25	1.26363834359778	15	Top 10	/data/tools/geosexplorer/Chile
Concepcion	25	1.47988955193215	13	Bottom 10	/data/tools/geosexplorer/Chile
Concepcion	25	0.624913522391941	22	Custom	/data/tools/geosexplorer/Chile
Concepcion	25	0.41650908704445	17	L shape	/data/tools/geosexplorer/Chile
Coronel	9	16.349826071998		Other	/data/tools/geosexplorer/Chile
				Rectangular	/data/tools/geosexplorer/Chile

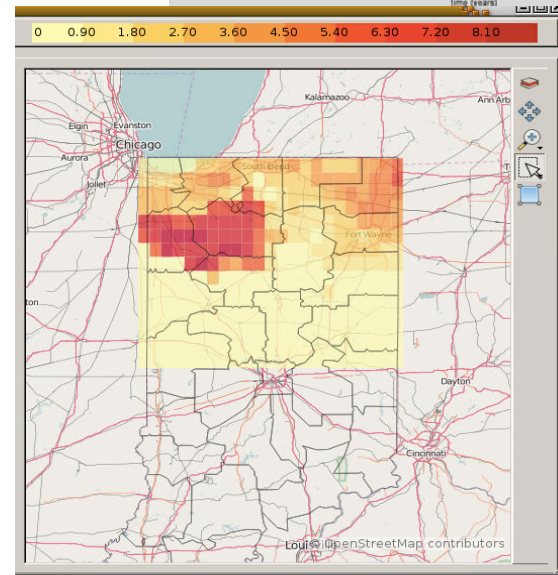
Spreadsheets



Image galleries



Plots,
bar graphs



Spatial-
temporal
data



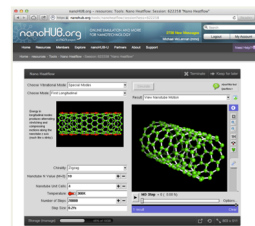
Geospatial Data Analysis Building Blocks



Geospatial data and computing building blocks – NSF DIBBS project

- Geospatial data processing, analysis and visualization support inside HUBzero
- Map library, Rapid Tool Development API (Rappture) with geospatial extension for developing online applications without web programming
- Online data management system linked to user tools
- DIY online interactive tool and data publishing (with DOI), publications linked to viewers and interactive tools

hubzero Platform for Scientific Collaboration

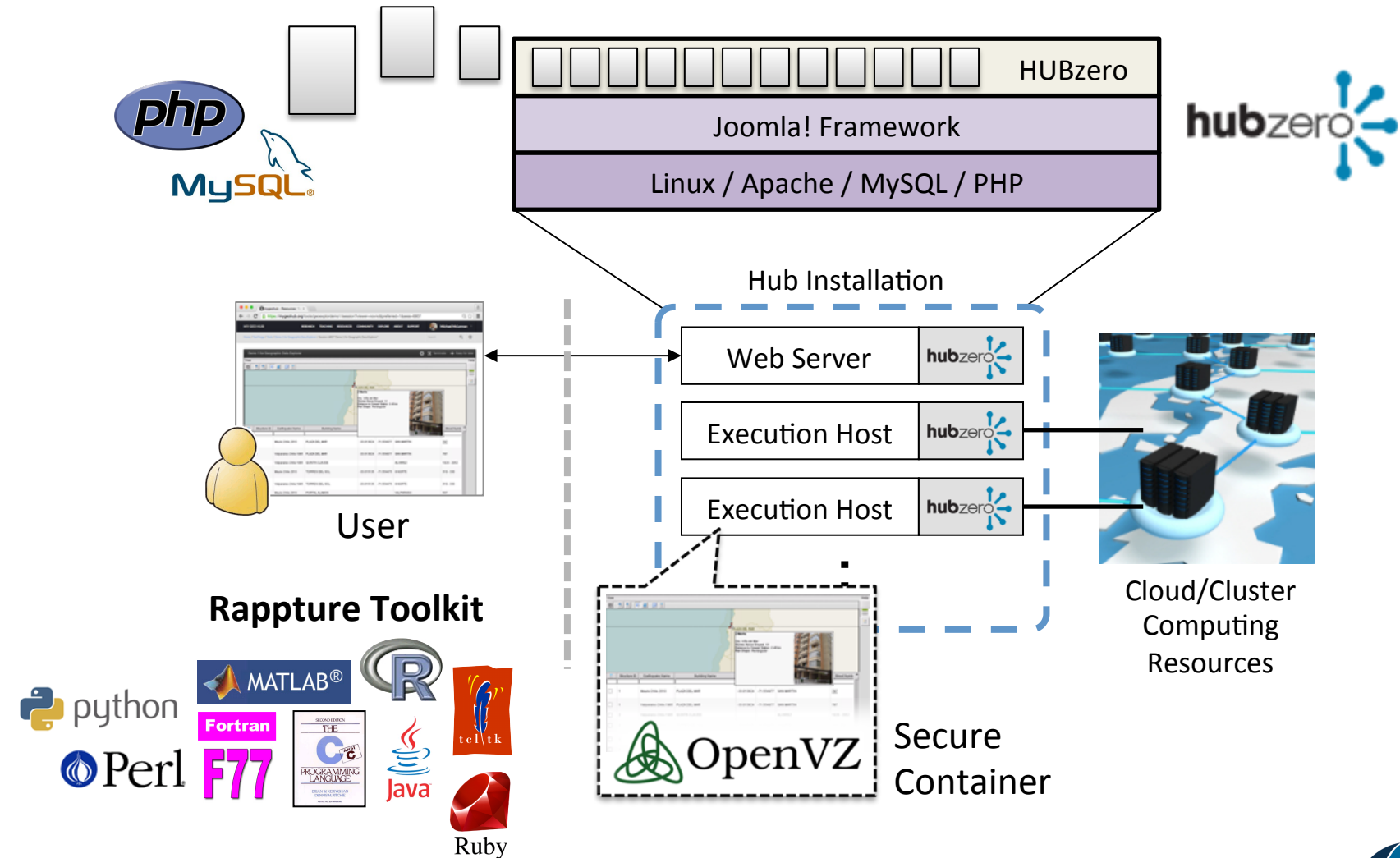


Computing Resources
High-performance
High-throughput
Cloud

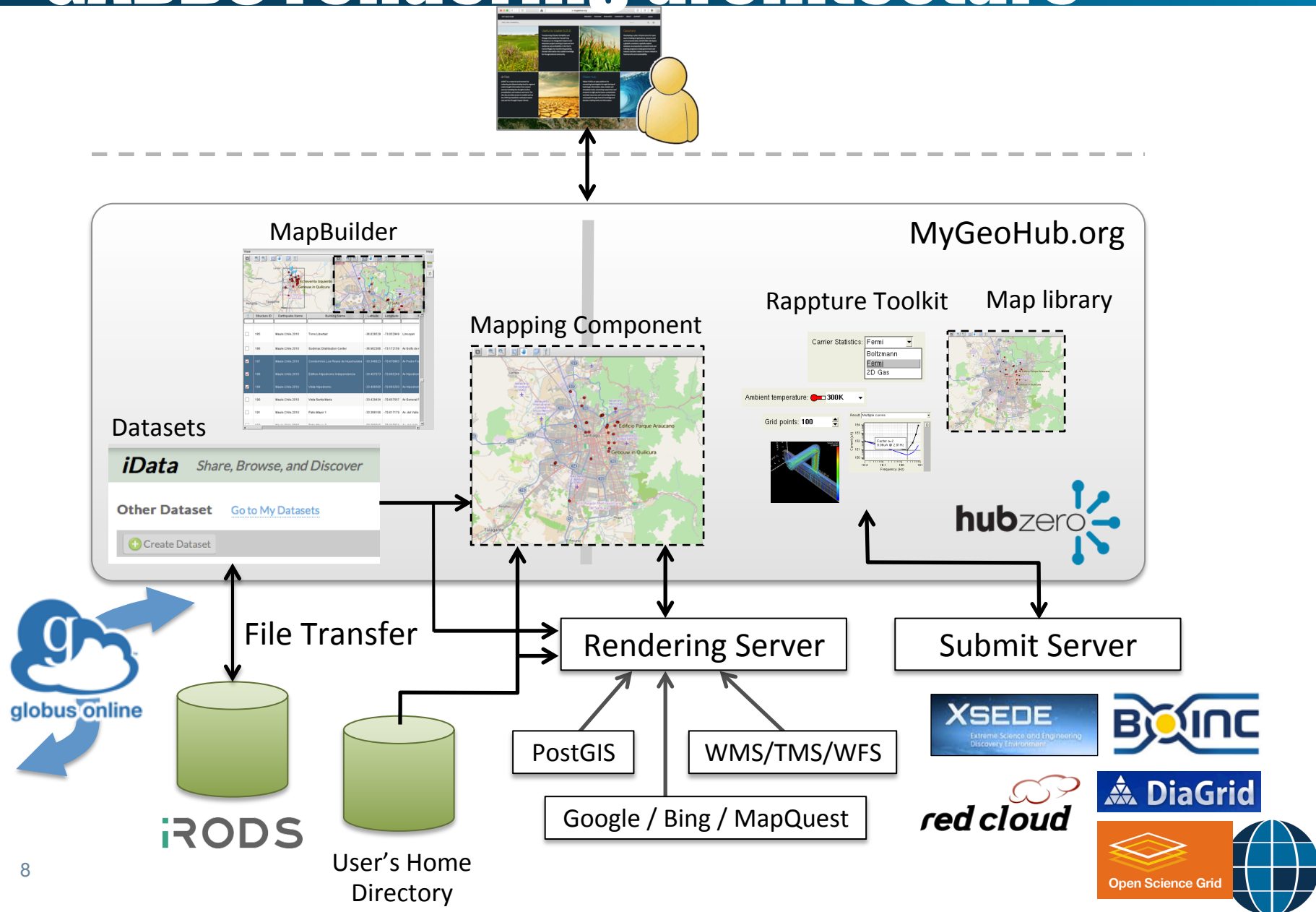
**GeoVis
Renderer**



HUBzero Platform for Scientific Collaborations

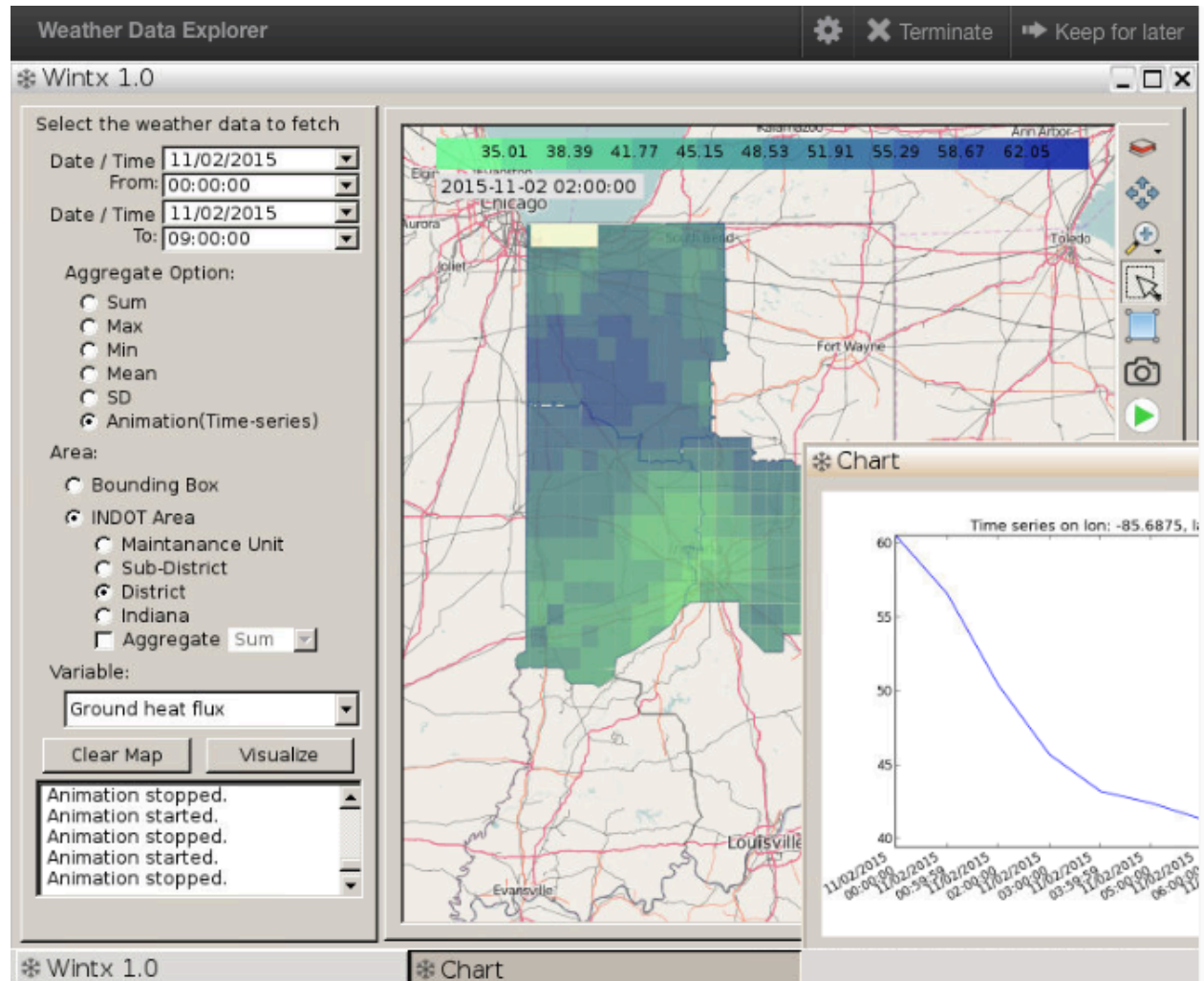


GABBS rendering architecture



Versatile Map Library

- ✓ Python wrapper of QGIS for creating basic map objects
- ✓ Built-in map controls for user interaction
- ✓ Map widgets that can be embedded in user-created online tools without programming



[illegible]

Working with broader communities



Project information

- 10/2013 – 9/2017
- Partial releases 2015-2016
- Full release: late 2016
- 2nd release: 2017
- GABBS deliverables
 - Map builder, data explorer tools
 - Image processing tools
 - Geospatial data management and publishing, service API
 - Libraries and APIs for building geospatial tools
 - Scientific use cases in multiple disciplines
 - Open source software, Amazon AWS instances, hosting service
- Collaborating with other CI projects on interoperability



Thank you!

Questions, suggestions,
and feature requests
are welcome!

carolxsong@purdue.edu

NSF project info: <http://mygeohub.org/groups/gabbs>

Join us on MyGeoHub.org!



Acknowledgement



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