Fostering the Use of Scientific Water Models from Different Stakeholder Perspectives through the **S**ustainable **W**ater **T**hrough **I**ntegrated **M**odeling (SWIM) Platform

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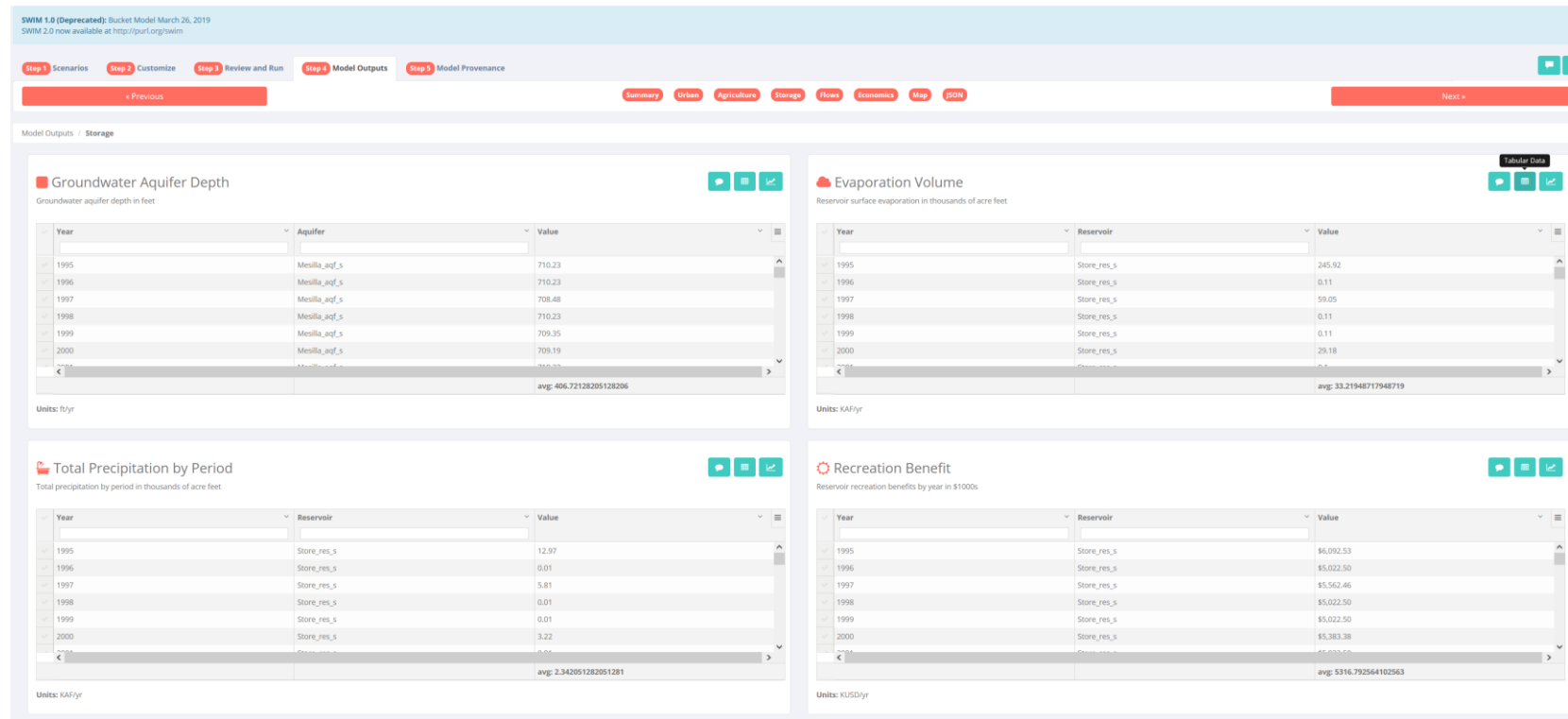
The University of Texas at El Paso

Challenges of using and understanding Water-related scientific models

Information Overload

Complexity

Uncertainty

Different Perspectives

Fig. 1. Screenshot of SWIM 1.0 – Custom Model Scenario Results

https://water.cybershare.utep.edu

Mitigation of Information Overload and Complexity
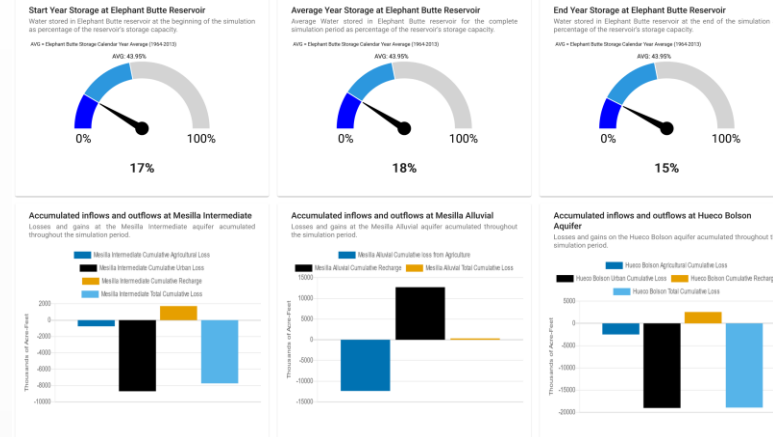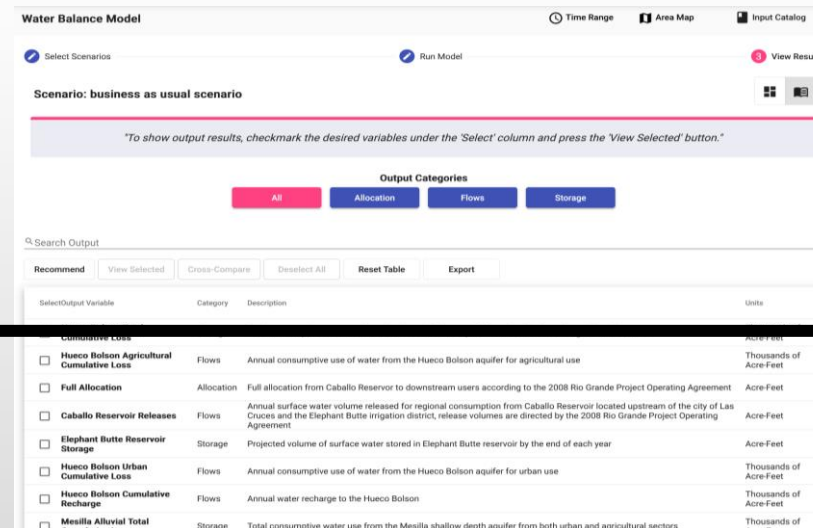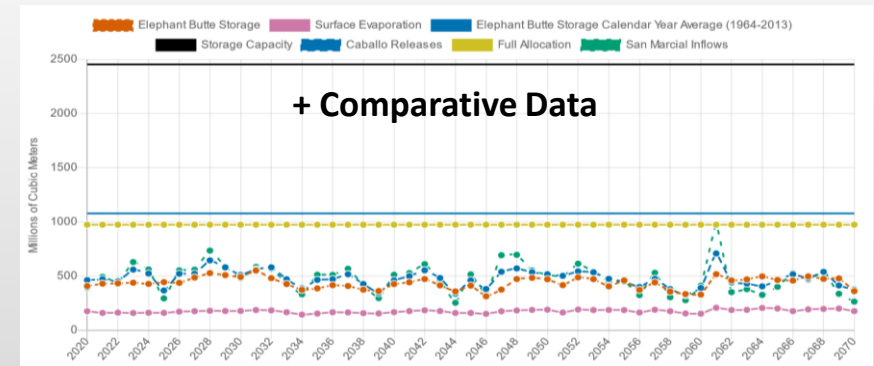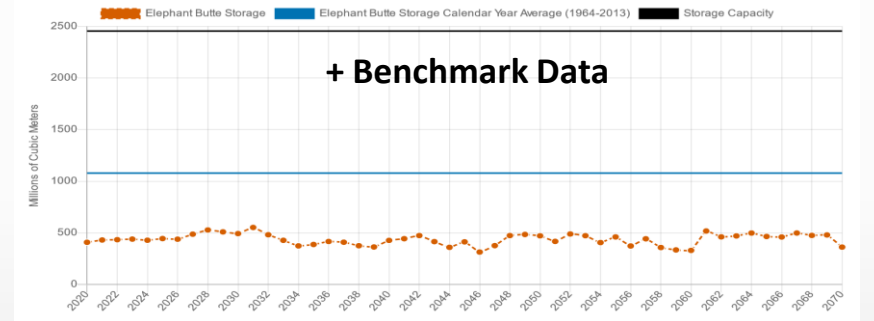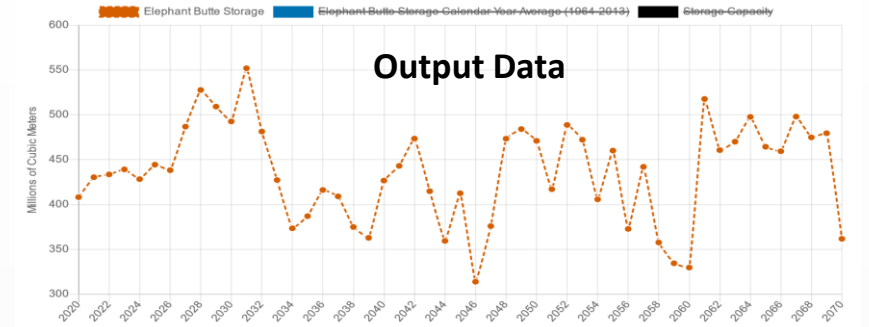
Fig. 2. Screenshot of SWIM 2.0 –Model Scenario Results

The SWIM 2.0 Stack for Modeling as a Service

Apps

Service Gateway

Webservice Pool

Metadata

RDF * JSON-LD *

Models

Middle Rio Grande Basin Water Balance Model | Middle Rio Grande Basin Hydro-economic Model

Data

Modeling Software and Programming Languages

python * Scilab * GAMS *

Fig. 3. The SWIM 2.0 Stack
Notes: Key elements of this talk are highlighted in green.

*Third party tools or languages leveraged.
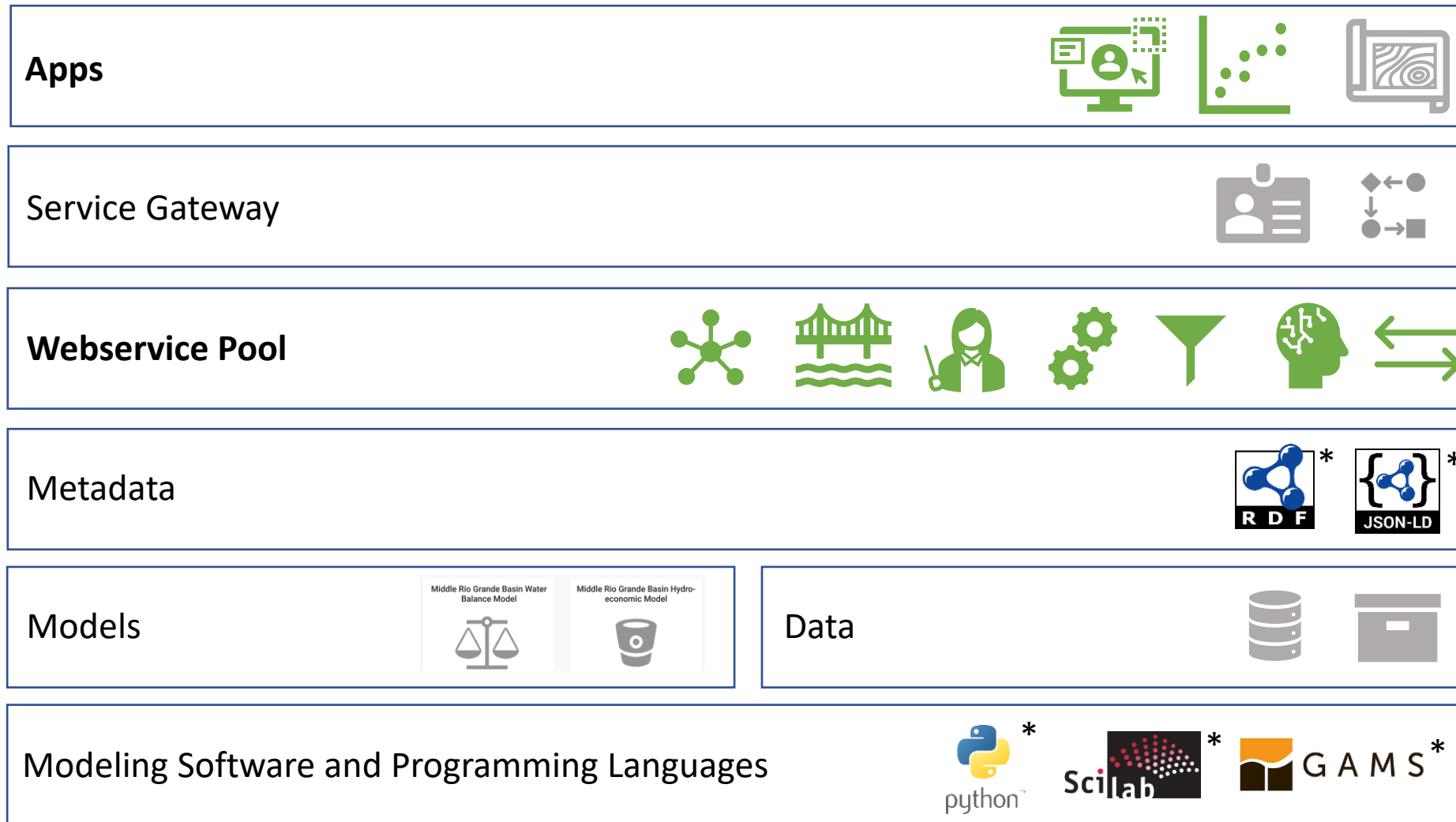
Legend:
- Graphical Interfaces
- Data Visualizations
- Geographic Visualizations
- Authentication
- Direction
- Semantic Services
- Bridge Services
- Orchestration Services
- Modeling Services
- Context Services
- Data Services
- Transformation Services

Interoperability

SWIM Broker Service (Modeling)

- Single Model Execution
- Model-to-model Integration
  - Automated workflow composition
  - Data Transformation
  - Workflow Provenance
- OpenAPI Specification 3.0

SWIM Broker Endpoints

https://services.cybershare.utep.edu/swim-broker/swagger

SWIM API (Data)

- Models, inputs, outputs, catalogs.
- Scenario results
- Cross-scenario comparison
- OpenAPI Specification 3.0

SWIM API Endpoints

https://services.cybershare.utep.edu/swim-api/api-docs/

HydroShare Bridge (Sharing)

- Integration with third-party CUAHSI HS services.
- Model Instance publication as a HS resource
- Seamless integration from the SWIM Web Interface
- Additional Metadata Capture

Hydroshare. Horsburgh, J. S, et al., (2016).
https://hydroshare.org

SWIM - First Splash

http://purl.org/swim/splash

Thoughts about SWIM?

Contact us at swim@utep.edu

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Cyber-ShARE

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