Challenge: Integrating Space and Time

Spatial Aggregation

Web Solution

Temporal Aggregation

Spatial Services

Temporal Services

Servers

Database
Fall 2014 we piloted two of the 13 areas
Next step... Scale to the US

~3 million river reaches calculated in April 2015 for a Summer Institute at the National Water Center
Bringing the pieces together...

Advanced flood modeling on consistent spatial domain

- **Process Geospatial Data**
  - NHDPlus

- **Model Stream Flows**
  - USACE Reservoir Releases
  - NWS Basin Forecasts
  - NCAR Gridded Forecasts
  - Localize Forecast (RAPID)

- **Create Flood Data**
  - Azure, Azure ML

- **Impact Assessment**
  - Local Alerts
  - Planning Mitigation Response

- **GeoProcessing**
  - Stream Flow
  - Flood Map
Calculating Soil Moisture Models

Source: Gonzalo Espinoza Davalos

http://statsnldas.azurewebsites.net
Machine Learning to Estimate Missing Values

Source: Tim Petty and Prashant Dinghra
Open Data and Interoperability

Enable us to be able to be proactive rather than reactive
Why is this Important?

Study Case: Huaraz-Peru

Estimated Flood Victims in Huaraz City, Peru

Source: Marcelo A Somos Valenzuela