SWATFlow: A New Platform for Communicating High Resolution River Information to Public Domain for Enhanced Water Resources Management, Research and Education

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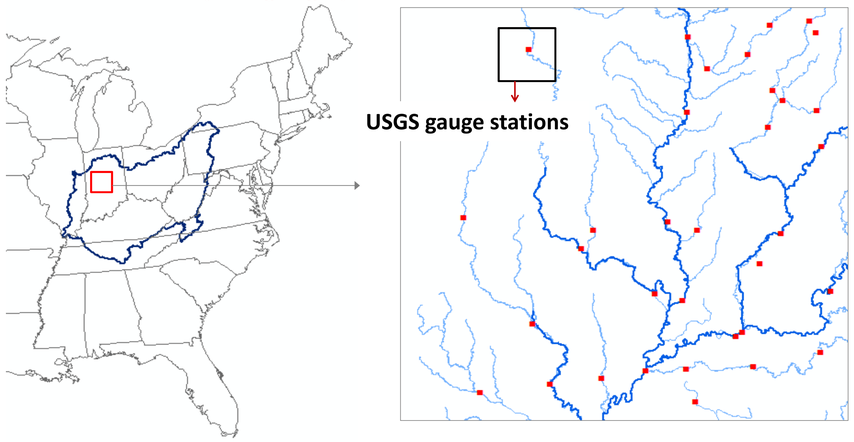
1. Motivation

Ohio Basin: 490,000 km^2
Drains through 11 US states

Ohio Basin has more than 100,000 river reaches

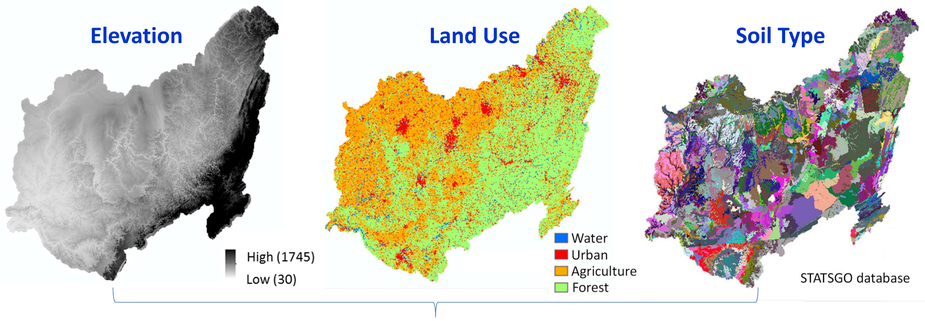
Only 797streamflow gauging stations within the basin: majority of the stations have less than 15 years of continuous record

Information Density ~ 1 gauge per 700 km^2

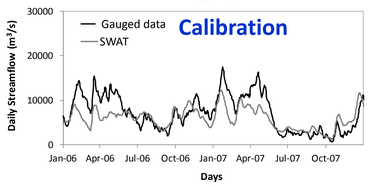


- **How can we generate long-term river information for every river reach?**
- **How to translate information for easy and rapid usage in public domain?**

2. Methodology: Hydrologic Modeling



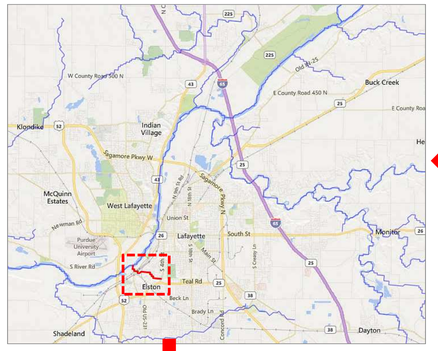
- Multi-gauge calibration: 9 USGS stations
- Daily time-step, 70 year simulation

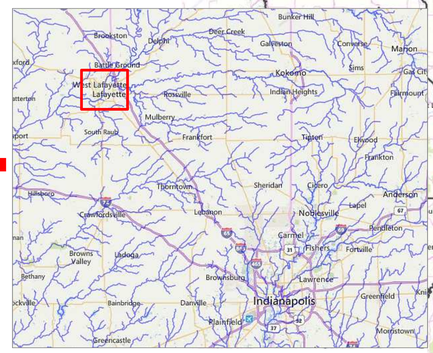


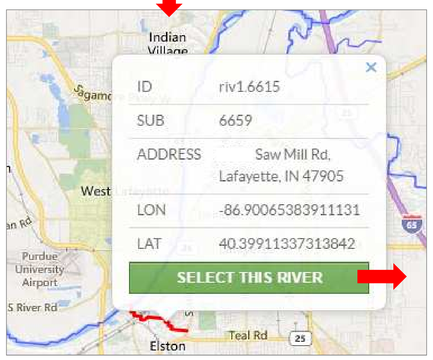
Since the proposed platform is fed with SWAT-derived streamflow data, it is named as **SWATFlow**

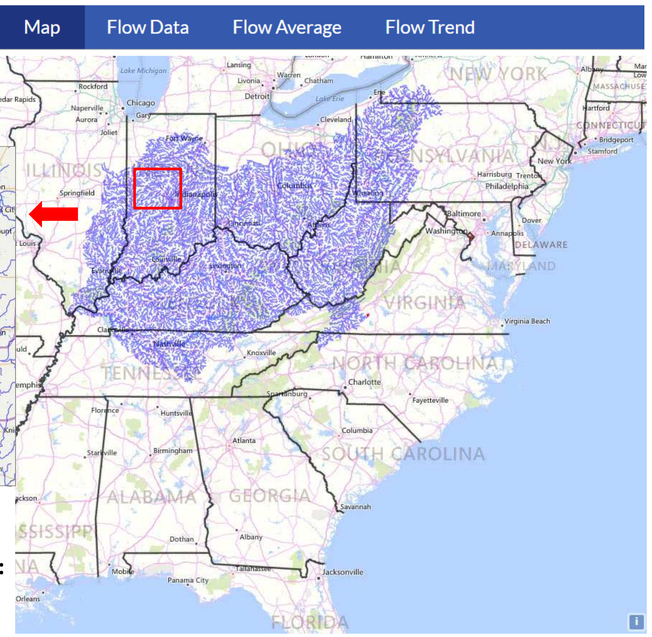
3. SWATFlow Interface

Link to the open-access platform:
https://mygeohub.org/groups/water-hub/swatflow







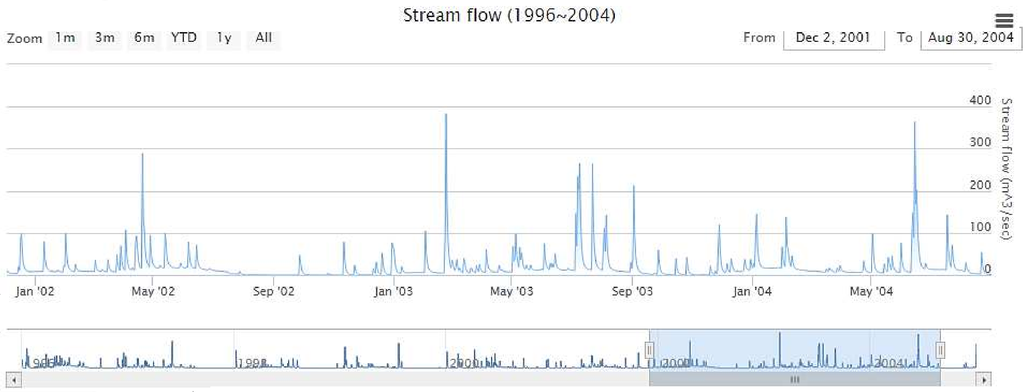


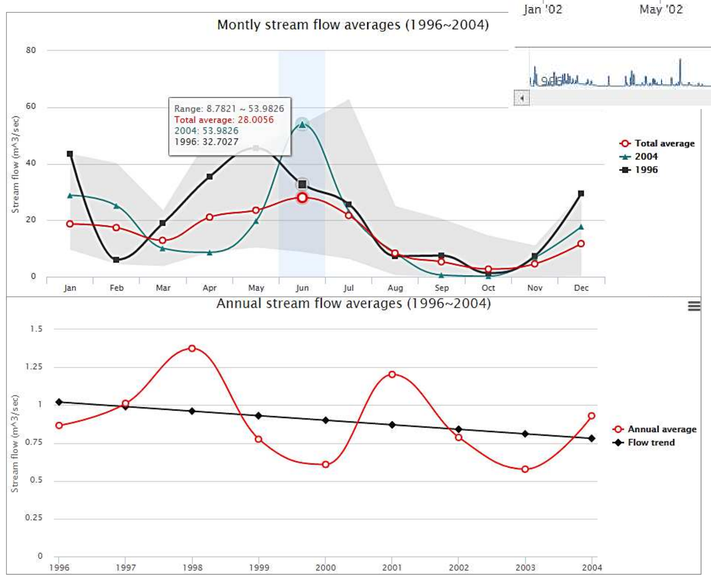
Where is your river?

- Easy-to-browse map interface

- Upon selecting a river, SWATFlow provides:

- Road, City, County, State Name
- Zip Code
- Latitude, Longitude





Advantages

- Fully open-access
- Provides long-term daily streamflow data, which can be dynamically zoomed-in over a specific duration of interest for more vivid understanding
- Statistical interpretation of monthly/annual averages, annual trend of change
- Useful for local-scale study on the effects of climate and land use change
- Allows downloading and printing of data/image in user-friendly formats
- Flexible architecture; hence can be populated for any river system in the globe

4. Future Work

- The ultimate goal is to bring in the entire Mississippi Basin into the system. The work is currently in progress.
- Eventually, SWATFlow will be used to disseminate near real-time forecasts of streamflow, which would help emergency preparedness in case of flooding