RIMORPHIS

River Morphology Information System

1st Annual Stakeholder Workshop

May 12 & 19, 2021

OWP
OFFICE OF WATER PREDICTION

NOAA/NWS Office of Water Prediction (OWP)

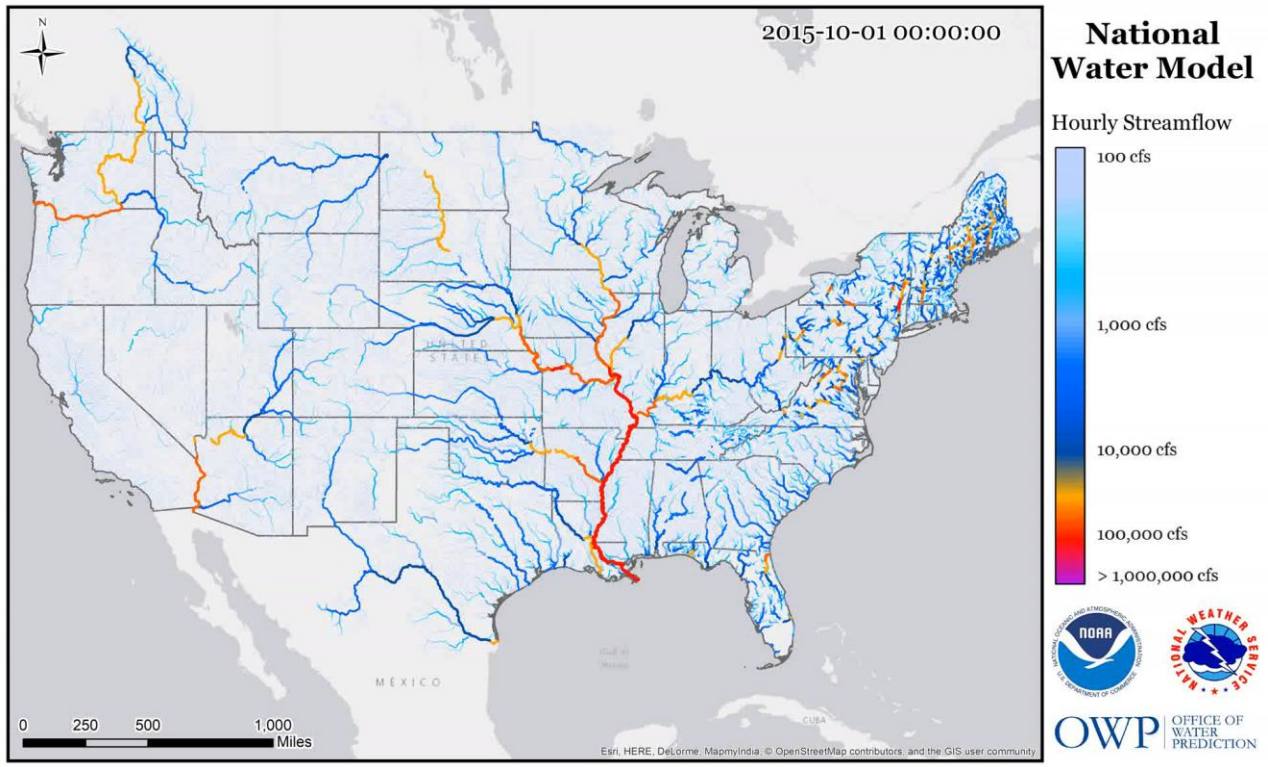
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OWP and the National Water Center

- **Mission –** Collaboratively research, develop and deliver timely and consistent, state-of-the-science national hydrologic analyses, forecast information, data, guidance, and decision-support services to inform essential emergency management and water resources decisions across all time scales.
- **Strategy (not comprehensive)**
  - **Water Modeling Services -** Centralized summit to sea water prediction capability through the establishment of the National Water Model.
  - **Water Resources Data Services -** Spatial and temporal data services providing access to multidimensional hydrologic datasets and value added information.
  - **Impact-Based Decisions Support Services -** Operational support helping partners understand depth of hydrologic forecasts across scales of space and time.

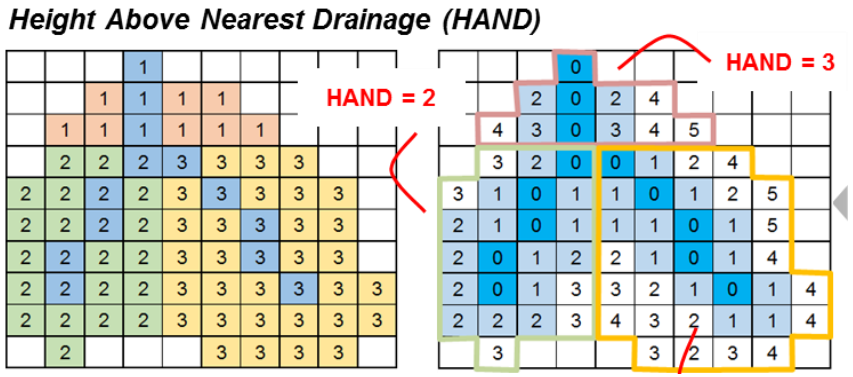
NOAA/NWS National Water Model

- **Domains (v2.1)**
  - Contiguous U.S.
  - Hawaii
  - Puerto Rico and Virgin Islands
- **Operational Configurations (v2.1)**
  - Analysis (Nowcast)
  - Short-Range
    - Contiguous U.S. (18-hr forecast)
    - Hawaii and PR/VI (60-hr forecast)
  - Medium-Range (10-day ensemble forecast)
  - Long-Range (30-day ensemble forecast)
- **Future**
  - NWM v3.0 and the Next Gen

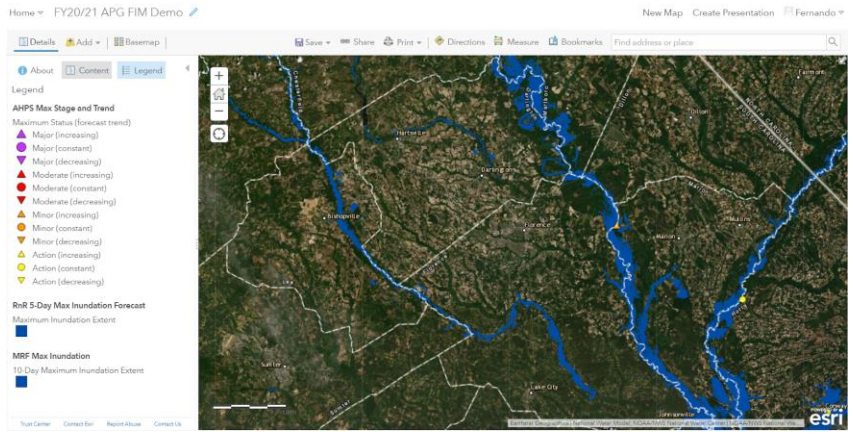


Multi-decade Reanalysis Simulation
Driven by 1 km Analysis of Record for Calibration atmospheric forcing dataset developed internally.

Forecast Flood Inundation Map Services

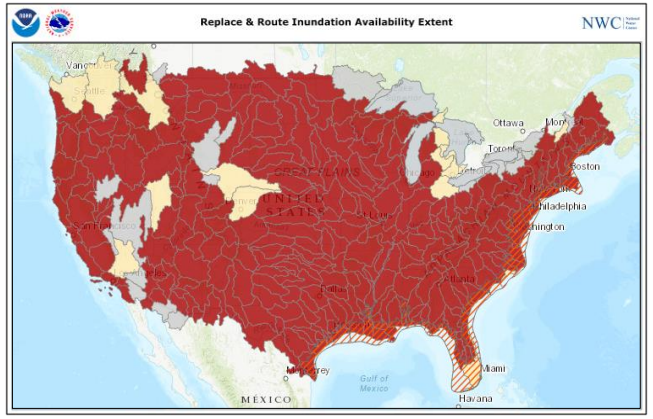


HAND Derived Inundation Maps

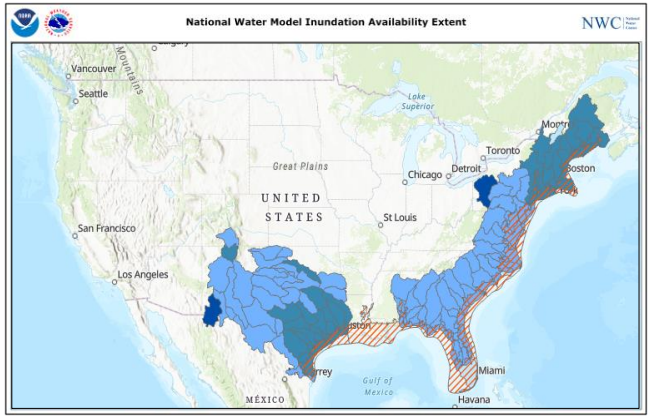


Spatial Coverage of Forecast FIM Demonstration Services

Replace and Route FIM Services



National Water Model FIM Services



Replace and Route

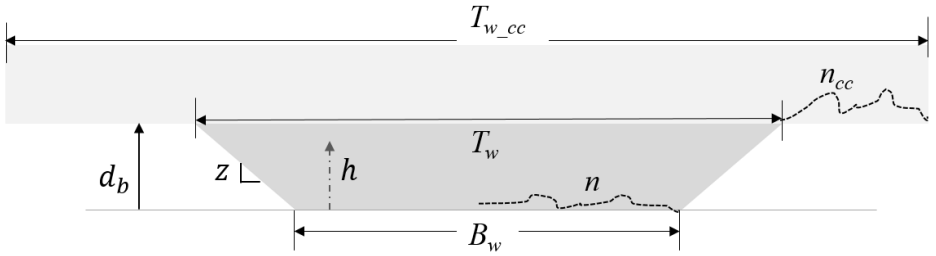
- 5-day Forecast Maximum Inundation Extent

National Water Model

- Analysis Inundation Extent (Nowcast)
- 18-hour Forecast Maximum Inundation Extent
- 3, 5, 10-day Forecast Maximum Inundation Extent

NWM and FIM Channel Representation

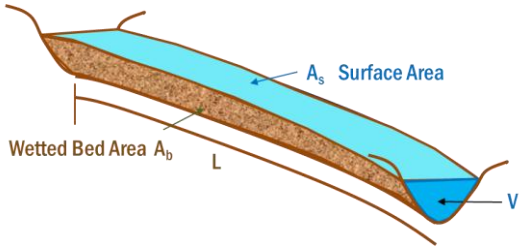
National Water Model v2.1

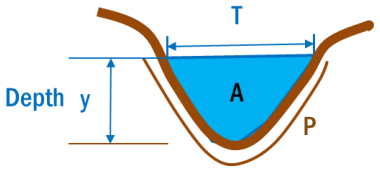


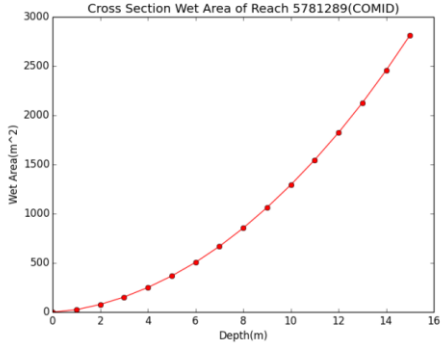
Trapezoidal cross section for each river reach in modeling domain with compound floodplain.

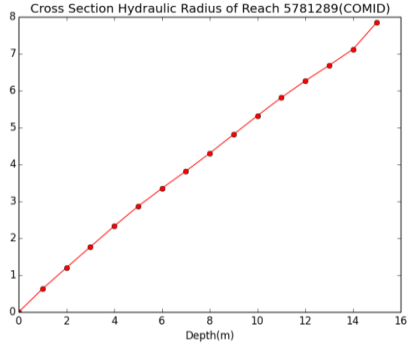
Parameters derived from regressions against channel observations as well as literature.

Flood Inundation Mapping









Synthetic hydraulic properties/ratings for each reach in modeling domain.

River Morphology Data and Tools

- **Data:** National Water Model reach-based synthetic cross-sections
  - Available for download at https://water.noaa.gov

    Note: Forecasts available at https://nomads.ncep.noaa.gov/pub/data/nccf/com/nwm/prod and https://ncics.org/data/noaa-big-data-project/ (NOAA Big Data Project)
- **Data:** HAND derived reach-based hydraulic geometry relationships
  - Data not currently available publicly
  - **Tools:** Code to create hydraulic geometry available at https://github.com/noaa-owp/cahaba
- **Tools:** Next Generation National Water Model
  - https://github.com/noaa-owp/ngen

Wish List for River Morphology Data & Tools

- **Point Locations:** Cross-sections and hydraulic properties at existing observation locations and hydraulic features that alter flow (e.g. bridges, culverts etc.)
- **NHDPlus Reaches:** Synthetic cross-sections and/or hydraulic properties for NHDPlus river reaches.
- **NHDPlus Reaches:** Observed elevation-derived hydrography and hydraulic properties.

…tools for subsetting and navigating through datasets above…