Hydrometeorological Automated Data System
HADS

Secondary Processors of GOES DCS Data
&
The Problems Encountered

Presented by Brian Jackson
March 22, 2018

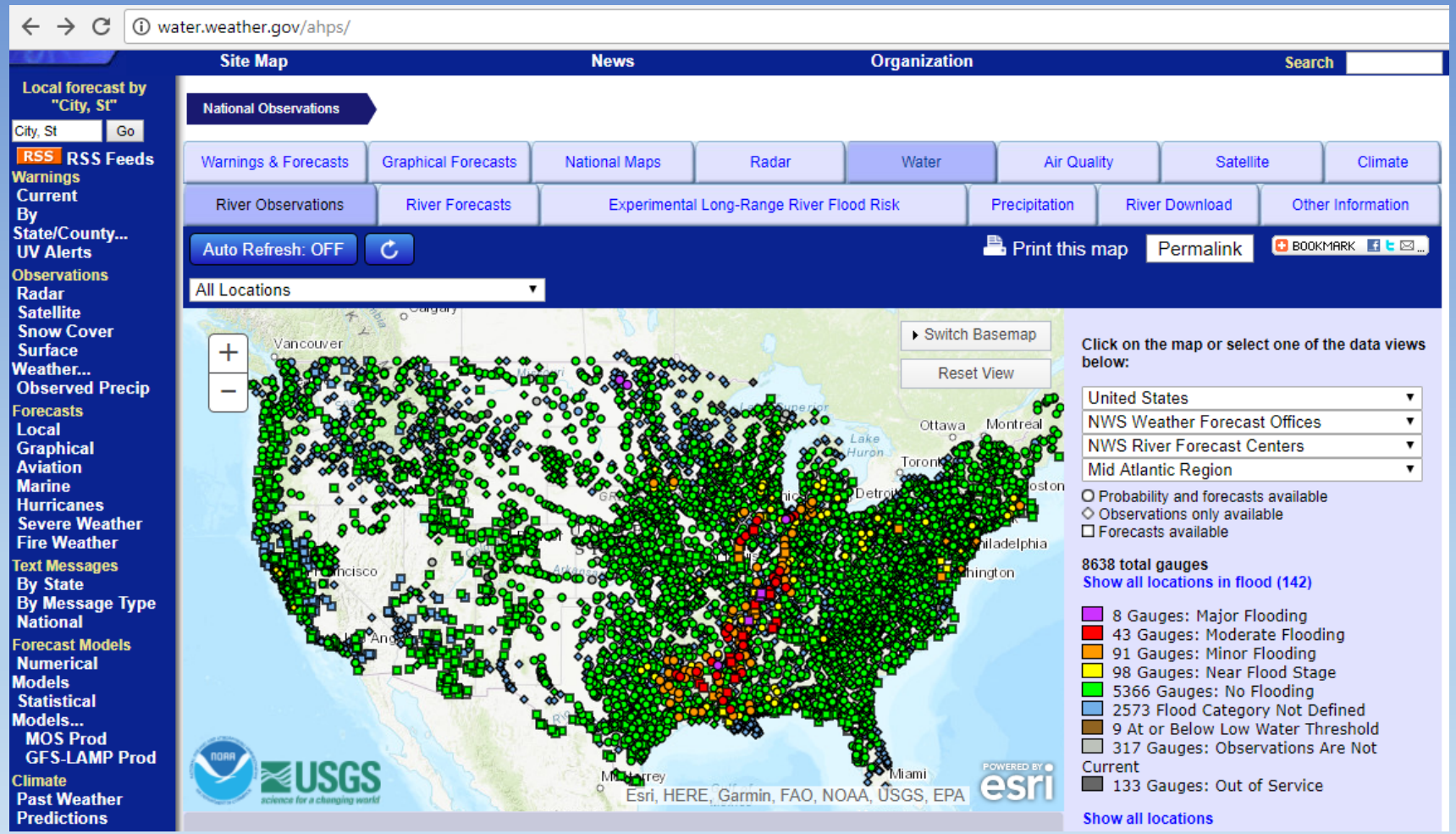
Hydrometeorological Automated Data System HADS

HADS Background

- Secondary Processors of GOES DCPS, HADS owns no DCPs
- National Weather Service system
- NOAA Mission Essential Function
- Operational since 1992
- Stakeholders
  - 122 Weather Forecast Offices
  - 13 River Forecast Centers
  - National Centers for Environmental Prediction (NCEP)
  - National Operational Hydrologic Remote Sensing Center (NOHRSC)
  - National Centers for Environmental Information (NCEI)
  - Multi-Radar/Multi-Sensor System (MRMS)
  - Advanced Hydrologic Prediction System (AHPS)
  - Other agencies via HADS Public Website
- In December 2016, HADS was integrated into MADIS and now runs in NCEP Central Operations
- HADS processes more than 17,000 DCPs from more than 220 owners.

Hydrometeorological Automated Data System HADS

AHPS Website



Hydrometeorological Automated Data System HADS

USGS Floods Website

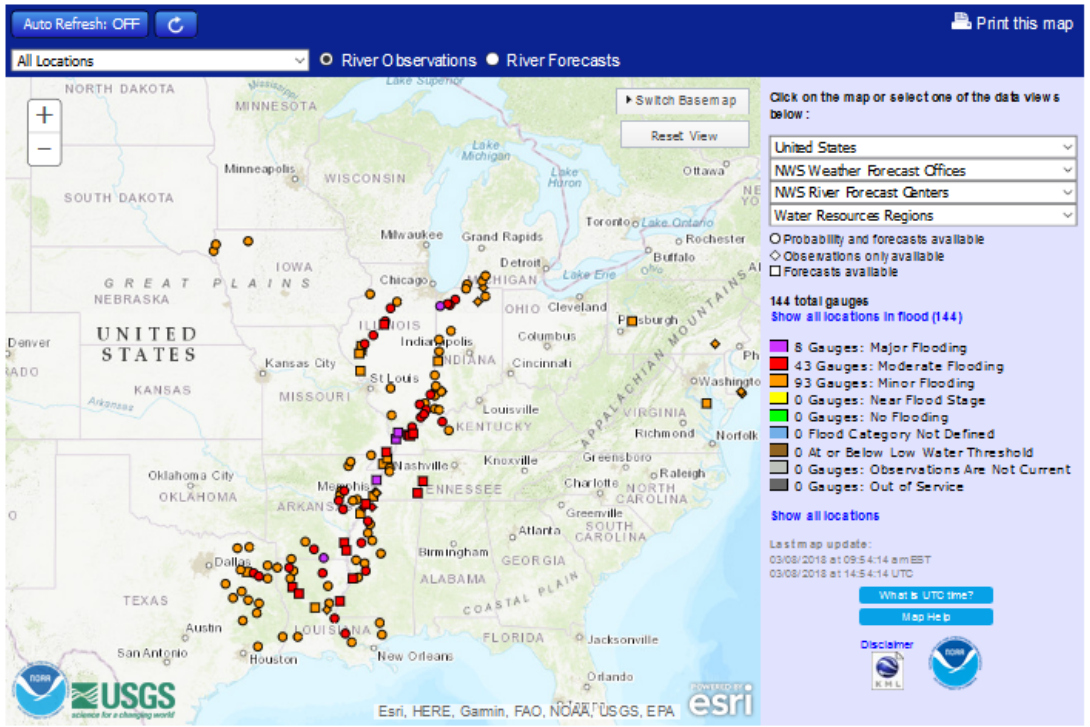
https://water.usgs.gov/floods/

Additional Resources for Current Conditions and Forecasts

- USGS FLOOD EVENT VIEWER
- USGS FLOOD INUNDATION MAPPING
- USGS SURGE, WAVE, AND TIDE HYDRODYNAMICS (SWaTH) NETWORK
- U.S. WATER MONITOR
- NWS RIVERWATCH FORECASTS:
  - Missouri River Basin
  - Upper Mississippi River Basin
  - Ohio River Basin
  - Lower Mississippi River Basin

NWS River Observations and Forecast.

Use the interactive map below or click here to jump to the National Weather Service AHPS site for a larger version.



Hydrometeorological Automated Data System
HADS

The Problems

- There are no standards for programming GOES DCPs

  Makes it difficult to decode, unless accurate and current metadata exists somewhere

- Metadata sources often outdated, incomplete, and/or difficult to find
- HADS not always alerted when a DCP is reprogrammed, moved, decommissioned. If possible, we would welcome notification of changes by sending email notifications to hadsteam@noaa.gov
- We are losing institutional knowledge, making maintenance more difficult.

Hydrometeorological Automated Data System HADS

Sources of Metadata Include:

- DADDS
- Platform Description Table
- DECODES XML files
- Owner Websites

Hydrometeorological Automated Data System HADS

HADS First Source of DCP Metadata is DADDS and PDTs

- As of 3/6/2018
  - 6,106 DCPs (72 owners) PDT last update date on 2009 day 295, 4,670 defined in HADS
  - 4,236 DCPs (290 owners) which are transmitting have no lat/lon in PDT, 757 defined in HADS
  - 6,795 DCPs (305 owners) which are transmitting have no SHEF Codes in PDT, 2,585 defined in HADS
  - 2,597 DCPs (224 owners) which are transmitting have no Location in PDT, 586 defined in HADS

Hydrometeorological Automated Data System HADS

Problem Solving - Low Hanging Fruit

- Improve PDTs by requesting updates from owners whose
  - PDT has not been updated since 2009 day 295
  - DCPs are transmitting, but have an incomplete PDT
  - DCPs are transmitting, but have no latitude/longitude in the PDT
  - PDT has no contact information

- Willing owners can work with Brian Jackson (Brian.Jackson@noaa.gov) and Paul Fajman (Paul.Fajman@noaa.gov) to identify and update PDTs.

- If possible, institute a process within NESDIS to request an annual update of the PDT by the owner.

Hydrometeorological Automated Data System HADS

XXXXXXXX 067183942
0.76 6.47 14.82
0.77 6.47 14.82
0.76 6.47 14.82
0.76 6.47 14.82
0.77 6.47 14.82
0.76 6.47 14.82
0.77 6.47 14.82
0.77 6.47 14.82 51-0NN 89E

PDT Shows SHEF Codes as

SHEF CODES : HG VB

HADS Support observations and questions

- PDT says 2 sensors, but raw data has 3 sensors
- Which is HG, which is VB, and what is the 3rd sensor?
- What is the order of the data? First the latest reading or the oldest reading?
- What is the interval of the data? 15 mins and 2 hours of obs? 30 minute and 4 hours of obs? 60 minute with 8 hours of obs?
- Are there any adjustments necessary to the data, like Celsius to Fahrenheit, meters to feet?

Hydrometeorological Automated Data System HADS

XXXXXXXX 067195002bBST@GHAEV`@W@GHAE@`@W@GHADh`@W@GHADJ`@Wm 49-1NN 172W

```
5   8    11  14  17   20  23  26   29  32  35   38
@GH AEV  `@W @GH AE@  `@W @GH ADh  `@W @GH ADJ  `@W
456      -23     4416     456      -23     4362
    4438     456      -23     4392     456      -23
```

PDT Shows SHEF Codes as SHEF CODES : HK Q HE HE

HADS Support observations and questions

- PDT says 4 sensors, with one repeated? why repeated?
- Translated pseudobinary data indicates 3 sensors. What are they?
- What is the order of the data? First the latest reading or the oldest reading?
- What is the interval of the data? 15 mins? 30 minute and 2 hours of obs? 60 minute with 4 hours of obs?
- Are there any adjustments necessary to the data, like Celsius to Fahrenheit, meters to feet?

Hydrometeorological Automated Data System
HADS

OPEN DISCUSSION

What can we do to start improving metadata and raw data?

- We should improve SHEF Codes in DADDS with accurate descriptions.
- We could make the SHEF Codes 3 characters to account for secondary and tertiary sensors.
- We should add a field to DADDS where the owner can provide a website of their data or metadata.
- Could we add a character to the PDT or to the raw data to indicate the time order of the data?
  perhaps < could indicate latest observation first to oldest
  perhaps > could indicate oldest observation first to latest