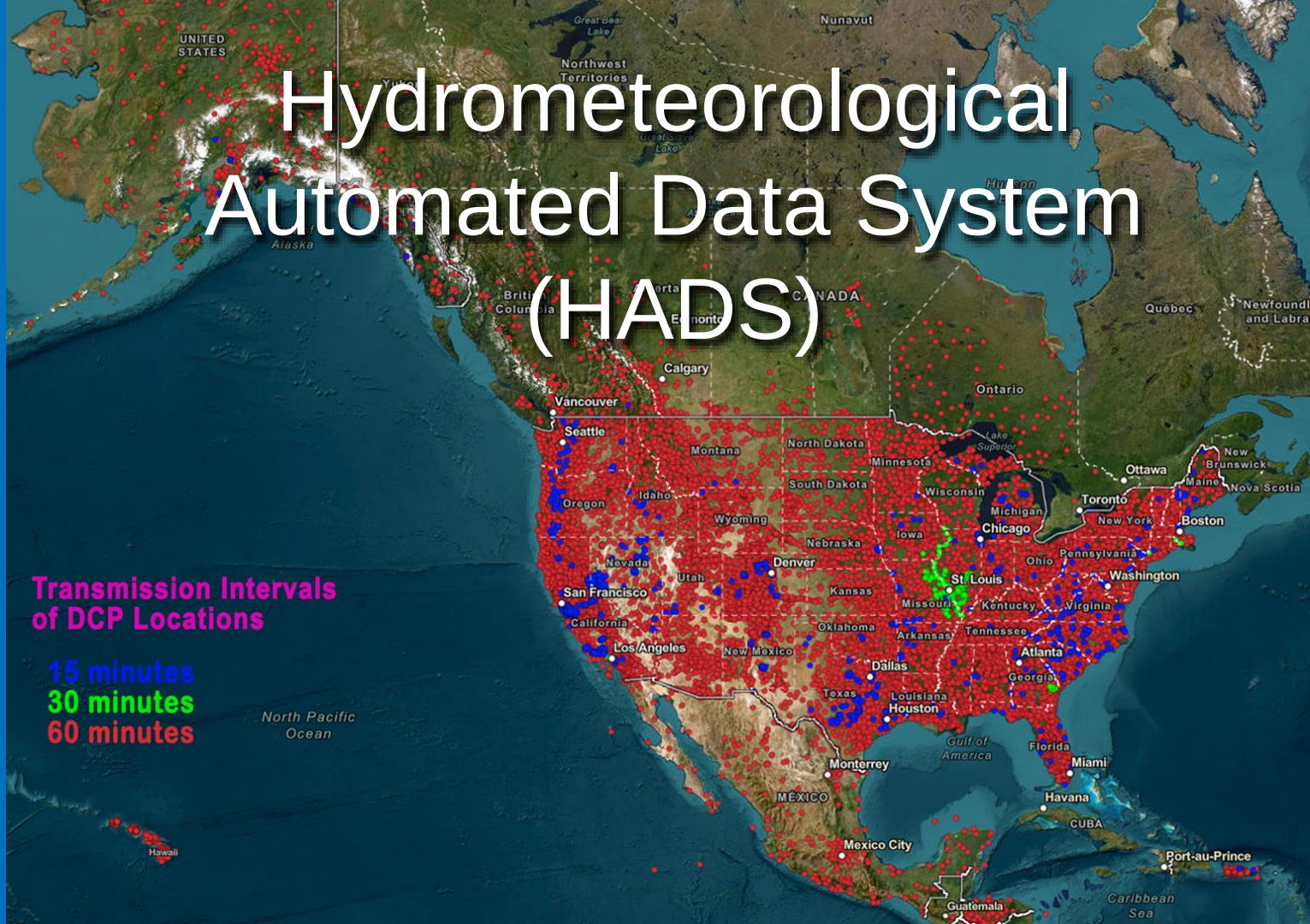
NATIONAL WEATHER SERVICE

Hydrometeorological Automated Data System (HADS)



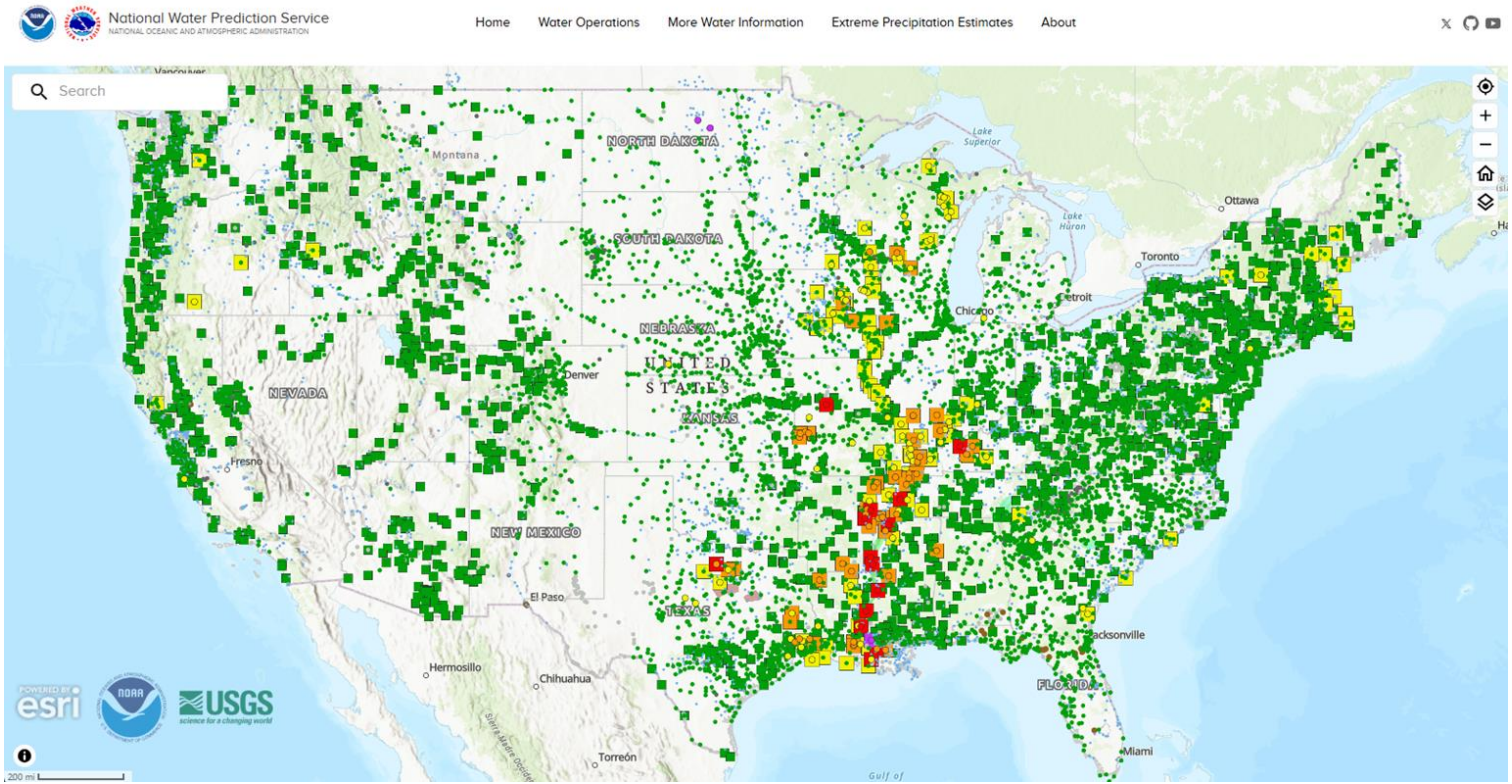
What is HADS?

- HADS is an operational ***near real-time*** hydrological and meteorological data acquisition, processing, and dissemination system. It process data for more than 18,000 sites and disseminates 4+ million observations per day.
  - These observations provide ~90% of the data used by NWPS (National Water Prediction Service).
  - Local data scrapes have been increasing resulting in a convoluted source for some NWPS locations.

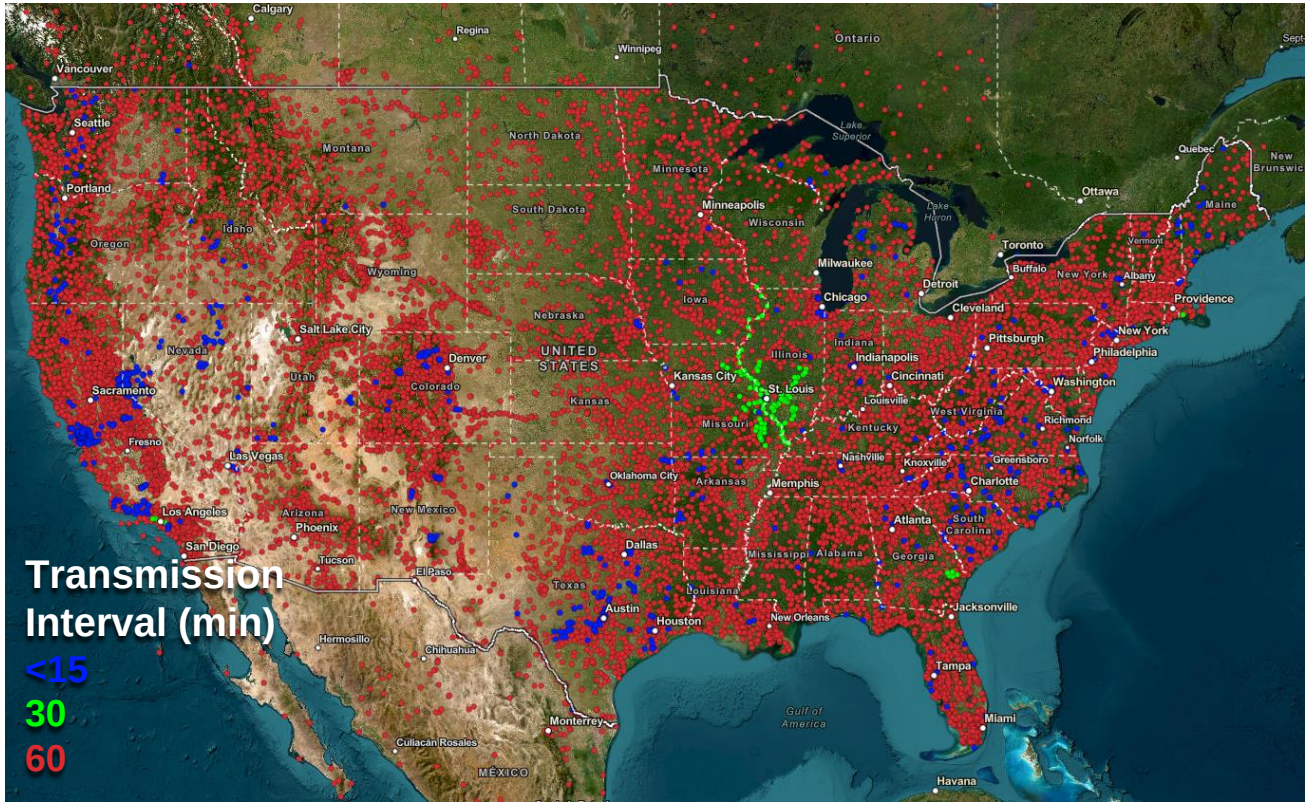
- HADS data primarily support Flood and Flash Flood Warning programs administered by the WFOs and RFCs throughout the US.
  - hydrologic modeling
  - fire weather support services
  - analysis of precipitation events
  - MRMS

On average, it takes 5 minutes for data transmitted from the gage to make it into AWIPS.

National Water Prediction Service (NWPS)

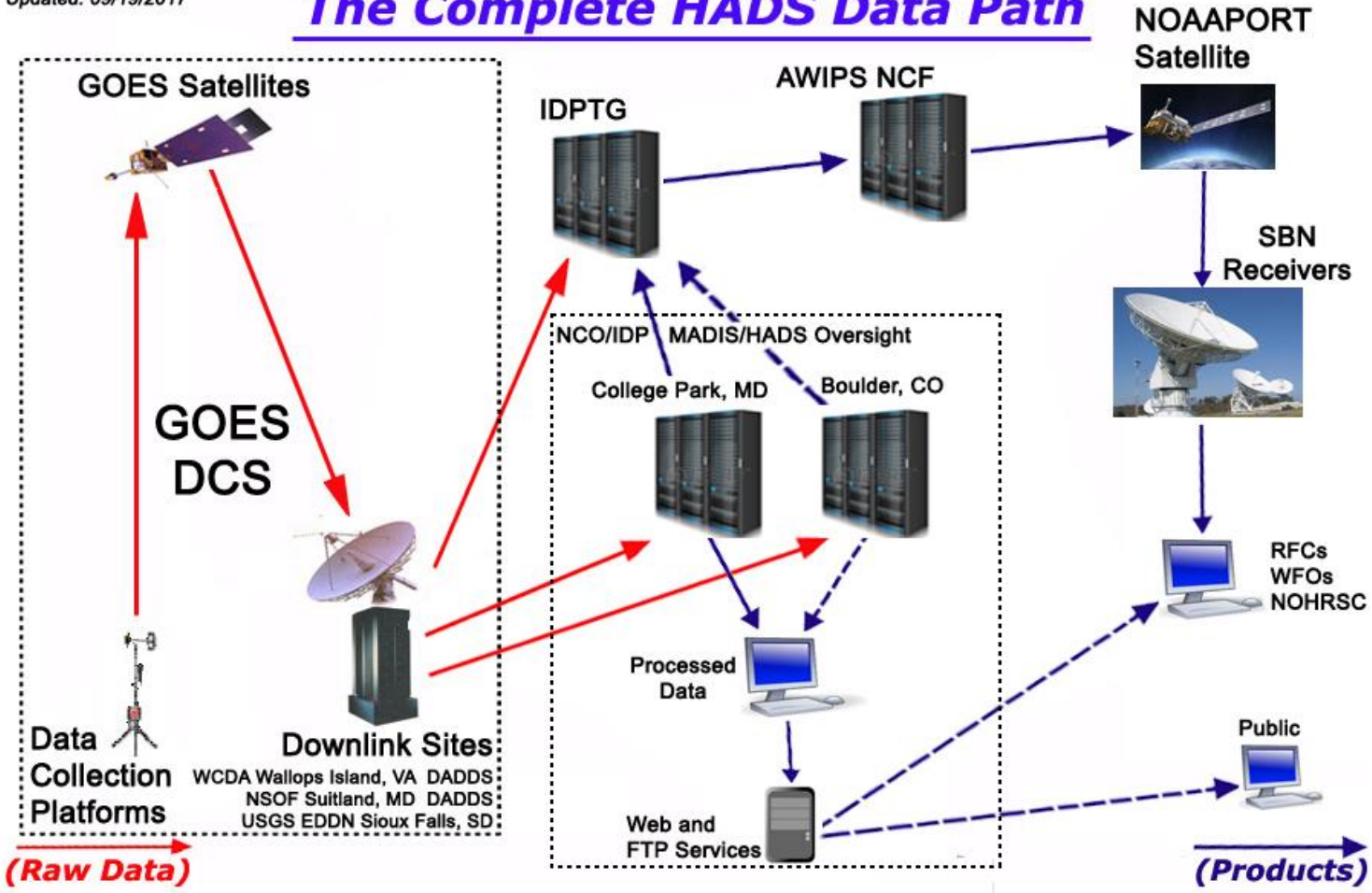


ALL CONUS HADS DCPs



Updated: 09/19/2017

The Complete HADS Data Path



Data Partners

The data originate from Data Collection Platforms (DCPs) owned and/or operated by more than 200 cooperators. The NWS operates a relatively small network of DCPs. The majority of the data acquired and processed by HADS come from DCPs owned and/or operated by the USGS, the Army Corps of Engineers, the Tennessee Valley Authority, the Bureau of Land Management, the U.S. Forest Service, the Bureau of Reclamation.

HADS Stations

HADS allows for the insertion of a new DCP or an update of metadata instantly. New station data can reach an office within five minutes of transmission and be available on NWPS in about 15 minutes.

"The RDGs were used for warnings, forecast, put on AHPS, shared with our user community via PowerPoint Briefings (sample attached), situational awareness (IE monitoring flood waves), etc. Their value to our operation was of incalculable value."

- *Hurricane Matthew (2017) review*

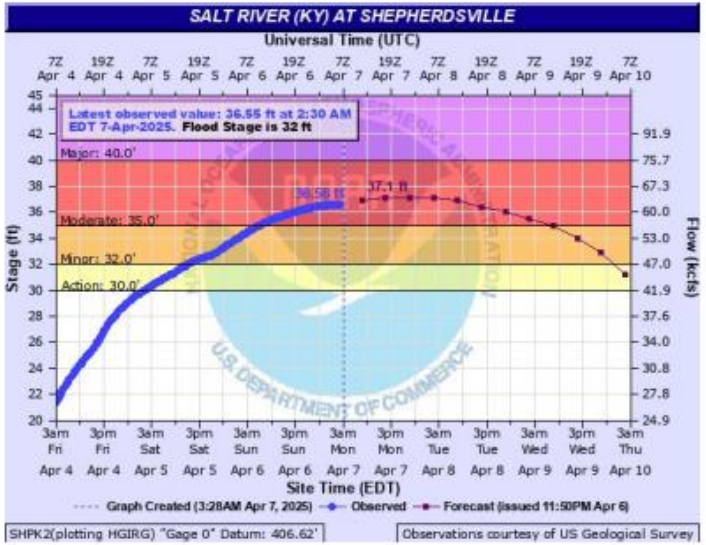
HADS Data in Operations

Dangerous River Flooding

April 7, 2025
5:07 AM

Life-threatening and Record Flooding spanning the course of several days.

The graphs on these slides were collected early this morning. For the latest stage information and forecasts, see https://water.noaa.gov/wfo/lmk



National Oceanic and Atmospheric Administration
U.S. Department of Commerce

National Weather Service
Louisville, KY

HADS Data in Operations

Major River Flooding Along the White and E.F. White

April 7, 2025
4:42 AM

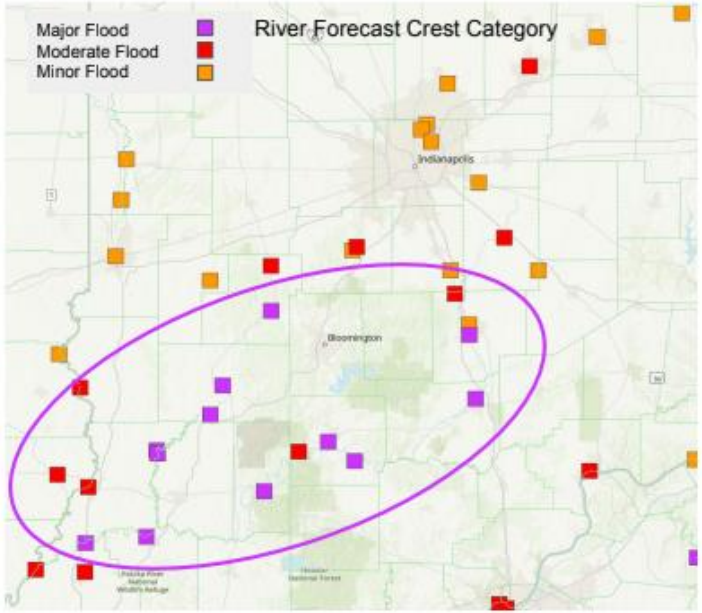
Rivers Expected to Remain in Flood Throughout This Week

Key Messages

- Major flooding has begun or is developing along the East Fork White and middle to lower White Rivers.
- Moderate flooding is expected along the lower Wabash and the upper White
- Some headwater crests have already occurred, but downriver locations will not reach crest until at least the end of the week

Suggested Actions

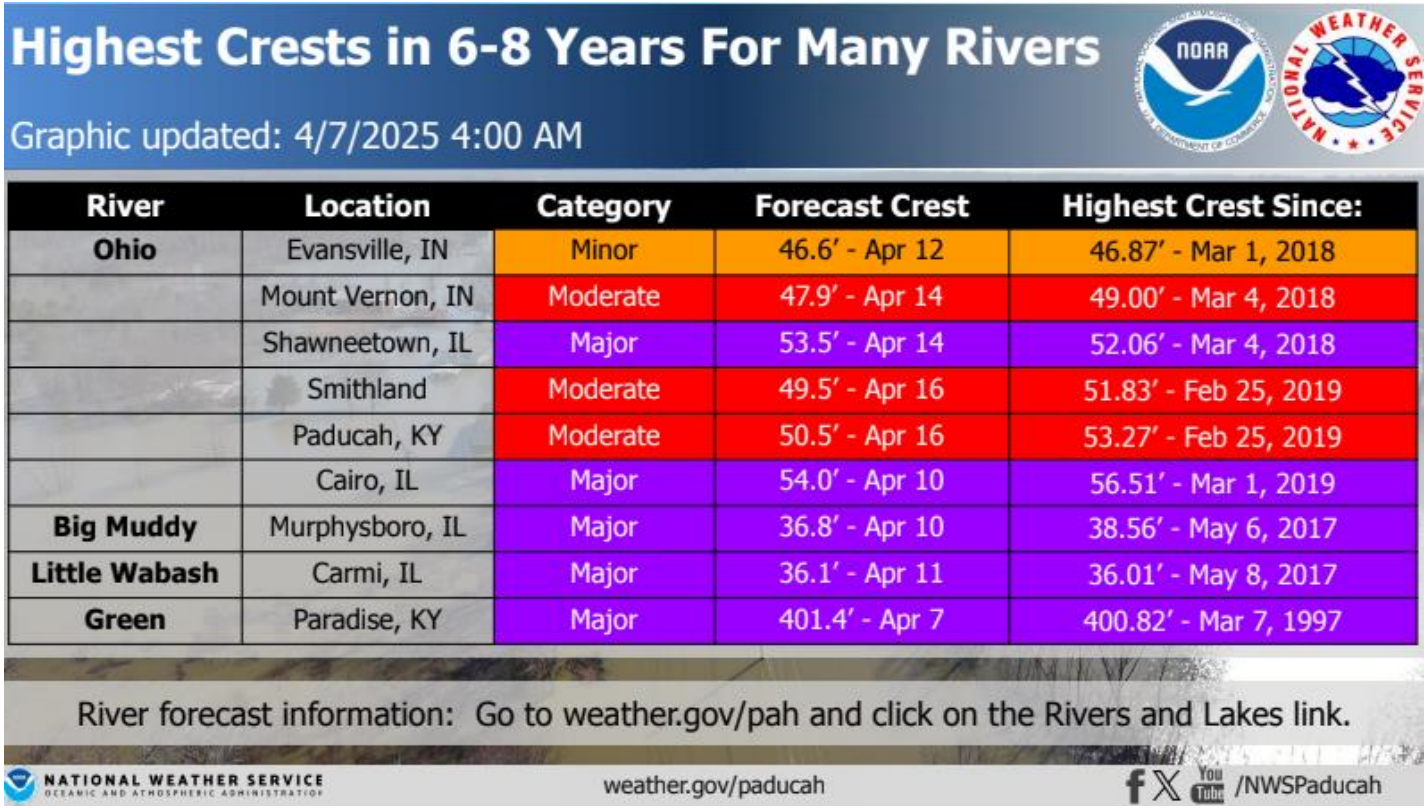
- Avoid flooded roads–Turn Around, Don't Drown! Find another route.
- Check the river forecast for your specific locations of interest at water.noaa.gov



National Oceanic and Atmospheric Administration
U.S. Department of Commerce

National Weather Service
Indianapolis, IN

HADS Data in Operations



Highest Crests in 6-8 Years For Many Rivers

Graphic updated: 4/7/2025 4:00 AM

River	Location	Category	Forecast Crest	Highest Crest Since:
Ohio	Evansville, IN	Minor	46.6′ - Apr 12	46.87′ - Mar 1, 2018
	Mount Vernon, IN	Moderate	47.9′ - Apr 14	49.00′ - Mar 4, 2018
	Shawneetown, IL	Major	53.5′ - Apr 14	52.06′ - Mar 4, 2018
	Smithland	Moderate	49.5′ - Apr 16	51.83′ - Feb 25, 2019
	Paducah, KY	Moderate	50.5′ - Apr 16	53.27′ - Feb 25, 2019
	Cairo, IL	Major	54.0′ - Apr 10	56.51′ - Mar 1, 2019
Big Muddy	Murphysboro, IL	Major	36.8′ - Apr 10	38.56′ - May 6, 2017
Little Wabash	Carmi, IL	Major	36.1′ - Apr 11	36.01′ - May 8, 2017
Green	Paradise, KY	Major	401.4′ - Apr 7	400.82′ - Mar 7, 1997

River forecast information: Go to weather.gov/pah and click on the Rivers and Lakes link.

NATIONAL WEATHER SERVICE
OCEANIC AND ATMOSPHERIC ADMINISTRATION

weather.gov/paducah

/NWSPaducah

Water levels dropped so low, the Omaha Public Power District took its coal-fired stations in North Omaha offline Dec. 24, and the Metropolitan Utilities District took steps to flush out ice that was blocking its intake pipes at the Florence Water Treatment Plant.

Access to water became such a concern that Douglas County Board Chair Mary Ann Borgeson, at the request of local utilities and other officials, submitted a disaster proclamation to the Nebraska Emergency Management Agency.

Monito

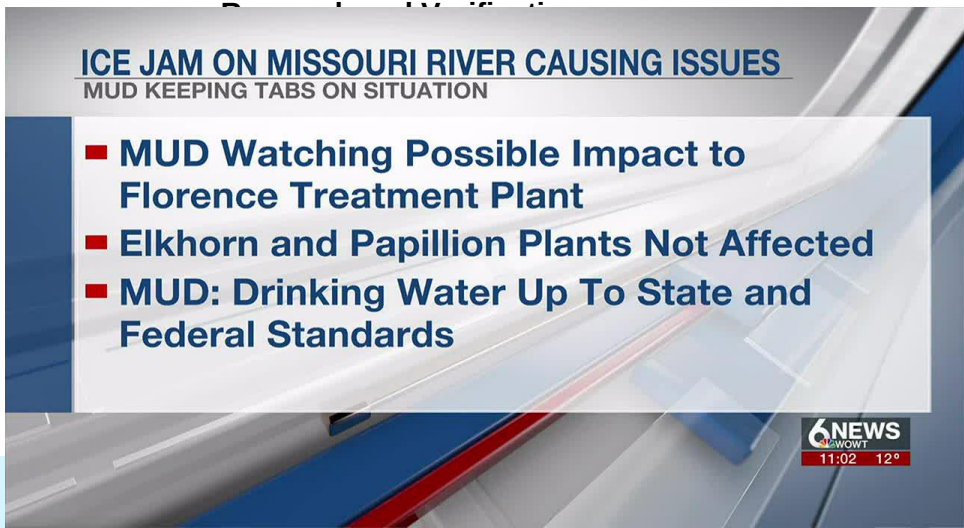
Foreca

ire, tropical events

· Center, NCEP)

People near the Platte to escape the worst of future food risks, meteorologists says

People near the Platte to escape the worst of future food risks



HADS Ingest

LRGS (OpenDCS)

- CDADATA (cdadata.wcda.noaa.gov)
- EDDN2 (lrgseddn2.cr.usgs.gov)
- CDABACKUP (cdabackup.wcda.noaa.gov)
- EDDN1 (lrgseddn1.cr.usgs.gov)
- EDDN3 (lrgseddn3.cr.usgs.gov)
- NLRGS1 (nlrgs1.noaa.gov)
- NLRGS2 (nlrgs2.noaa.gov)

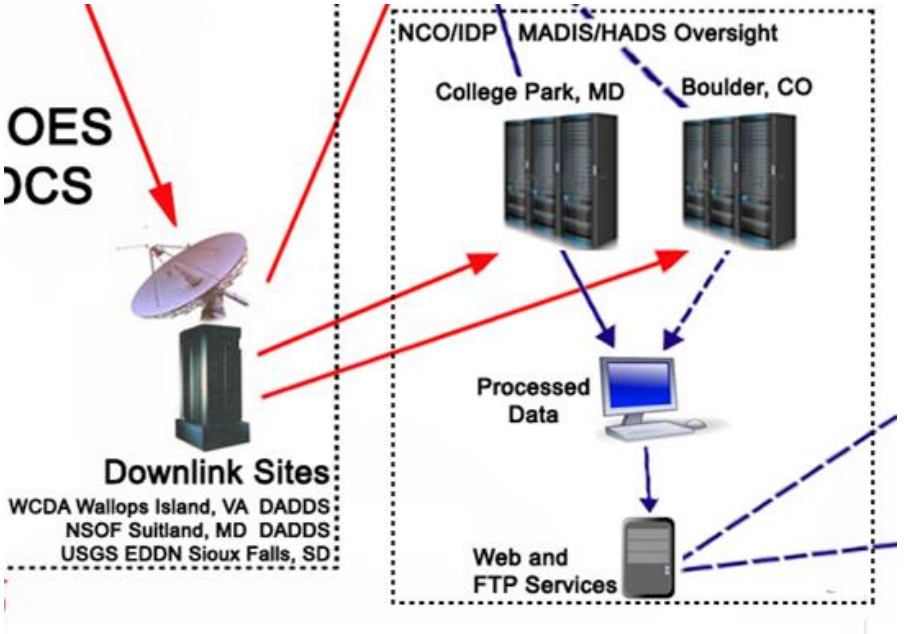
NWSTG Feed

- Primary backup to LRGS

USGS API

MADIS FTP

- AFWS



AFWS (Automated Flood Warning System) (IFLOWS, ALERT)

- AFWS is an operational ***near real-time*** hydrological and meteorological data acquisition, processing, and dissemination system. It process data for more than 4,000 sites and produces 150,000+ observations per day.
  - DCPs owned by 60+ owners/operators (typically state, county, or city).
  - Data are processed slightly differently but uses HADS database and intranet forms.
  - Integrated in HADS in 2013, taking the responsibility from WFO Louisville
  - Data types primarily include stage and precipitation. AFWS can handle almost any valid SHEF codes.
  - Data format highly controlled. (Not true SHEF)

Metadata

Metadata

NESDIS ID	CE5DF572	NWS Location ID	OMHN1	HSA	OAX	State	NE
Location	MISSOURI RIVER AT OMAHA					Source	GOES
Latitude	N 41°15'32" (41.2589)		Longitude	W 95°55'24" (-95.9233)			NWPS Point
Owner	CENWO1	Manufacturer	SI	Channel	58	Init. Transmit Time	00:00:30	Transmit Interval (min)	60
Next Xmit	GMT 18:00:30 GMT-0400 14:00:30						
Initially Inserted	01/01/1970 00:00:00 GMT	Last Updated	09/29/2017 20:55:14 GMT	Updated By		Matthew Jin	
Google Map	ESRI Map	PDT	Owner/Operator Data	Correction File		USGS DECAP	

Edit Metadata

Comments

Comment	Additional Comments

Edit Comment

Decode Formats

Decoder Type	Decoder ID	S_Format	R_Format
BINARY - No Offset	105	<8x0,1,2;1x103;	B-1x0,1,2,3;/
Last Updated	01/29/2025 17:36:28 GMT	Updated By	Matthew Jin

Edit Decode Format | Magic Bullet

Drawdown Gage Corrections

NWSLI	Stage1	Correction1	Stage2	Correction2	Stage3	Correction3

Edit Corrections

Decode Information

Order	NWSLI	Data Interval(min) Self-time,Random	PE Code	Coefficient Self-time,Random	Constant	Time Offset (min)	Base Elevation (ft)	Gage Correction
0	OMHN1	15,0	HG	0.01,0.01	0	0	0	0
1	OMHN1	15,0	HG2	0.01,0.01	0	0	0	0
2	OMHN1	15,0	PC	0.01,0.018	0	0	0	0
3	OMHN1	60,0	VB	0.3124,0.01	0.311	0	0	0
Last Updated	01/29/2025 17:39:05 GMT		Updated By			Matthew Jin		

<8x0,1,2;1x103;	B-1x0,1,2,3;/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R-DADDS

“Tons of issues with maintaining sites definitions”

- 1992-1996 History of HADS.

“A single repository of gauge quality information is necessary in order to improve the quality of the precipitation data. Many RFCs save manual gauge QC results for their service area, but do not share it with other communities, and some network owners apply extra QC measures unknown to other users. The gauge quality Web page can serve as a common tool for both end users and network operators.”

“Gauge metadata must be completed in order to assess quality issues. The metadata must include not only geospatial information, but instrument type and maintenance records, in order to understand the history of the quality problems.”

- ***Characteristics of reprocessed Hydrometeorological Automated Data System (HADS) hourly precipitation data (2009)***