



FLOOD SEASON PREPAREDNESS FLOOD WARNING SYSTEM UPDATE

WEST CONSULTANTS

DAVID C. CURTIS, PH.D, F.EWRI

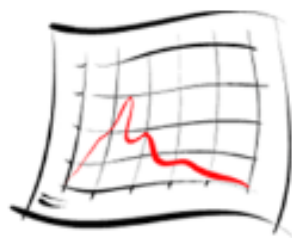
Chehalis River Basin Flood Warning System



Weather Forecast



Rainfall Forecast



River Forecast



Flood Maps



Gage Data Graphs



Gage Data Maps



Chehalis Flood Authority



Road Conditions



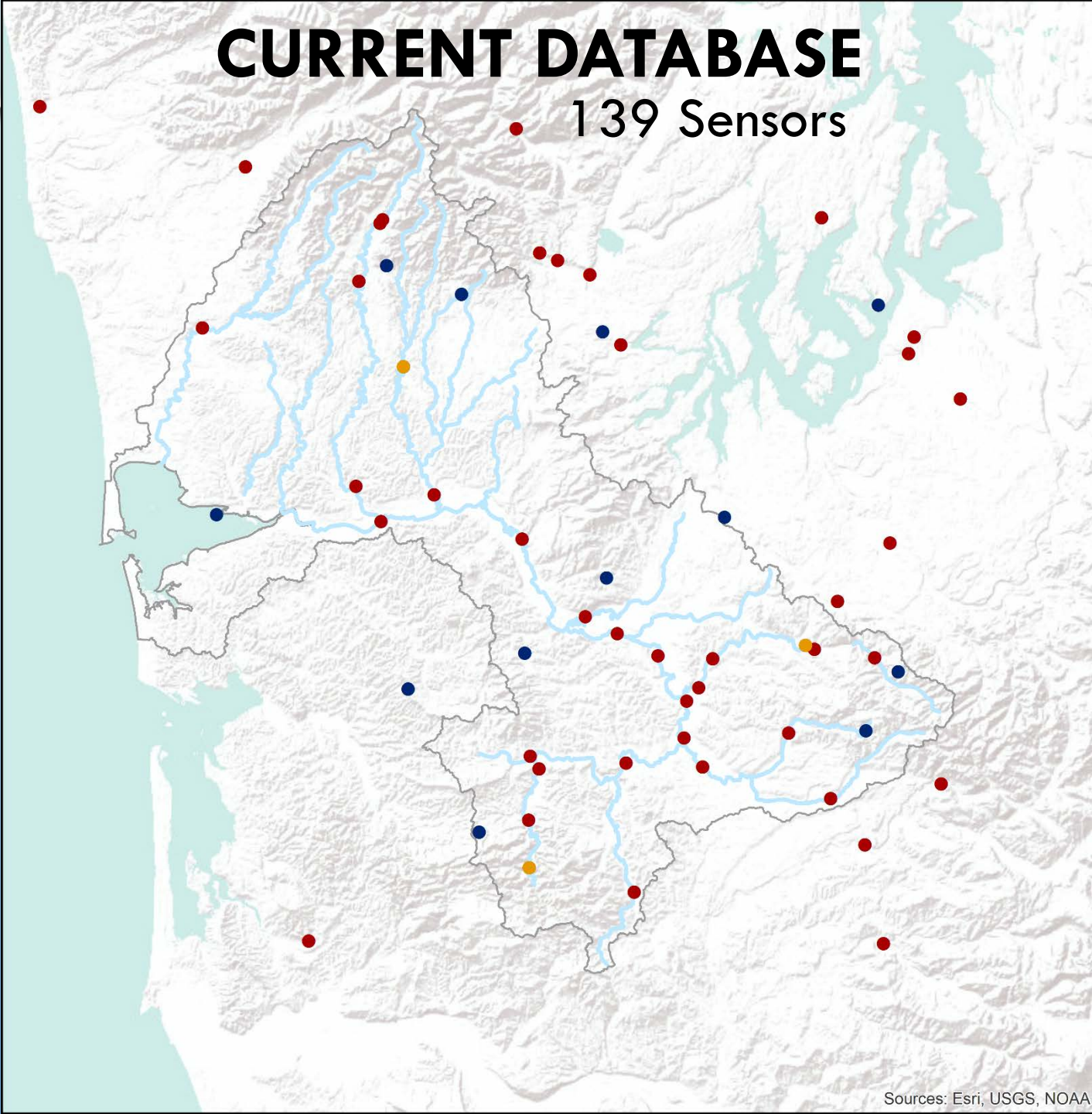
USGS Gages



Question?

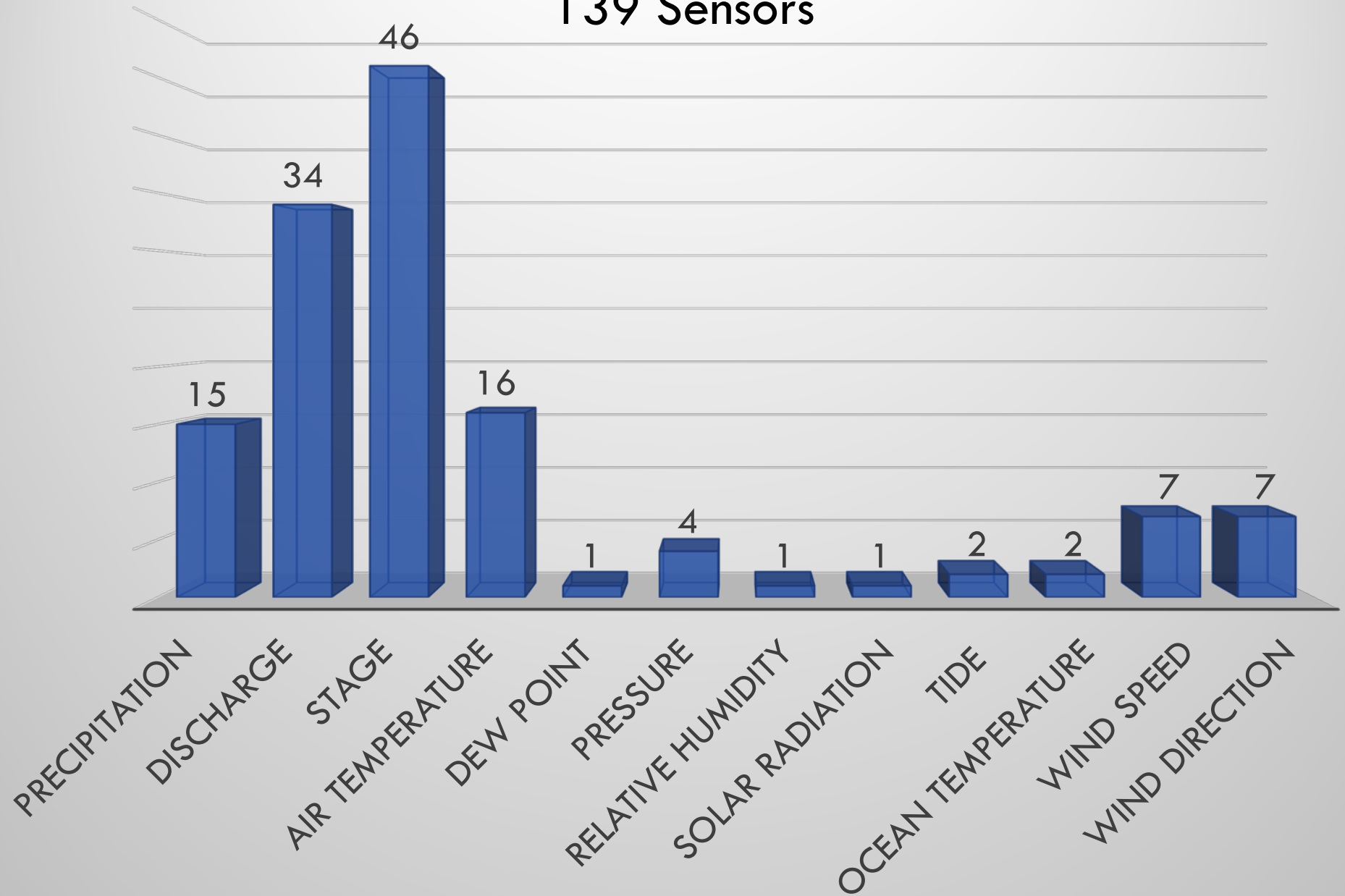
CURRENT DATABASE

139 Sensors



Current Database

139 Sensors



TOPICS FOR TODAY

- **FLOOD WARNING SYSTEM WEBSITE**

- QUICK REVIEW
- KEY FEATURES
- NEW FEATURES

- **SYSTEM IMPROVEMENTS**

- GOES RADIO UPGRADE
- GAGE DATUM UPGRADE
- UPGRADED STREAM GAGES
 - NEW EQUIPMENT
 - RATING CURVES
- GAGE/SENSOR INVENTORY

- **USER ENGAGEMENT**

Select Dashboard

Chehalis River Shared

RainTiles

NOAA nowCOAST

Visualization of global weather

Climate Reanalyzer

Landslide Threat Map

CoCoRAHS

USGS Landslide Monitoring

Frequently Asked Questions

Chehalis River

Warning System



Weather Forecast



Rainfall Forecast

Visualization of global weather
Climate Reanalyzer
Landslide Threat Map
CoCoRAHS
USGS Landslide Monitoring
Frequently Asked Questions

River Forecast



Flood Maps



Gage Data Graphs



Gage Data Maps



Chehalis Flood Authority



Road Conditions



USGS Gages



Question?

BOOKMARK

Shallow Landslide Hazard Forecast Map



WASHINGTON STATE DEPT OF
**NATURAL
RESOURCES**



LAST UPDATED: MONDAY, NOVEMBER 06, 2017 10:03 AM

The modeled shallow landslide hazard map shown below is based on antecedent rainfall, 24-hour, and 48-hour predicted rainfall.

Click on a zone within a county for more information about the general landslide hazard forecasted for that area.

This landslide hazard information is produced in a partnership between the Washington State Department of Natural Resources—Washington Geological Survey and NOAA—National Weather Service.

IMPORTANT NOTE: This Website is a beta version and is under construction. Timely delivery of data and products

RAINFALL DASHBOARD “TILES”

RainTiles

3 Hr Rainfall



6 Hr Rainfall



12 Hr Rainfall



24 Hr Rainfall



HAYWIRE RIDGE RAIN GAGE (D1...
Rain Increment (PC)



0.00 in

In Last 3 Hour

HAYWIRE RIDGE RAIN GAGE (D1...
Rain Increment (PC)



0.00 in

In Last 6 Hour

HAYWIRE RIDGE RAIN GAGE (D1...
Rain Increment (PC)



0.92 in

In Last 12 Hour

HAYWIRE RIDGE RAIN GAGE (D1...
Rain Increment (PC)



1.12 in

In Last 24 Hour

BEEVILLE RAIN GAGE - (MATLO...
Rain Increment (PC)



0.00 in

In Last 3 Hour

BEEVILLE RAIN GAGE - (MATLO...
Rain Increment (PC)



0.00 in

In Last 6 Hour

BEEVILLE RAIN GAGE - (MATLO...
Rain Increment (PC)



0.71 in

In Last 12 Hour

BEEVILLE RAIN GAGE - (MATLO...
Rain Increment (PC)



0.78 in

In Last 24 Hour

RAINFALL SUMMARY TABLE

Site ^	1 Hour ^	3 Hour ^	6 Hour ^	12 Hour ^	24 Hour ^	48 Hour ^
BEEVILLE RAIN GAGE - (MATLOCK 3NE)	0.00	0.00	0.00	0.00	0.00	0.68in
BROOKLYN RAIN GAGE	0.00	0.00	0.00	0.00	0.00	0.87in
CEDAR CREEK RAIN GAGE NR LITTLEROCK, WA	0.00	0.01in	0.01in	0.01in	0.01in	0.60in
CHEHALIS BLW THRASH CRK	0.00	0.00	0.00	0.00	0.00	0.40in
HAYWIRE RIDGE RAIN GAGE	0.00	0.00	0.00	0.56in	0.60in	1.15in
Hoquiam	0.00	0.00	0.00	0.00	0.00	0.41in
NEWAUKUM-WEYCO RAIN GAGE	0.00	0.00	0.00	0.00	0.00	0.84in
Olympia	0.00	0.00	0.00	0.00	0.00	1.03in
RIVERSIDE RAIN GAGE (RFA-STa8)	0.00	0.00	0.00	0.00	0.00	1.05in
ROCK-WEYCO RAIN GAGE	0.00	0.00	0.00	0.00	0.00	0.24in

RIVER DASHBOARD



-0.99 ft

40 minutes ago



WYNOOCHEE RIVER AB...

Gage height (150645_00065)

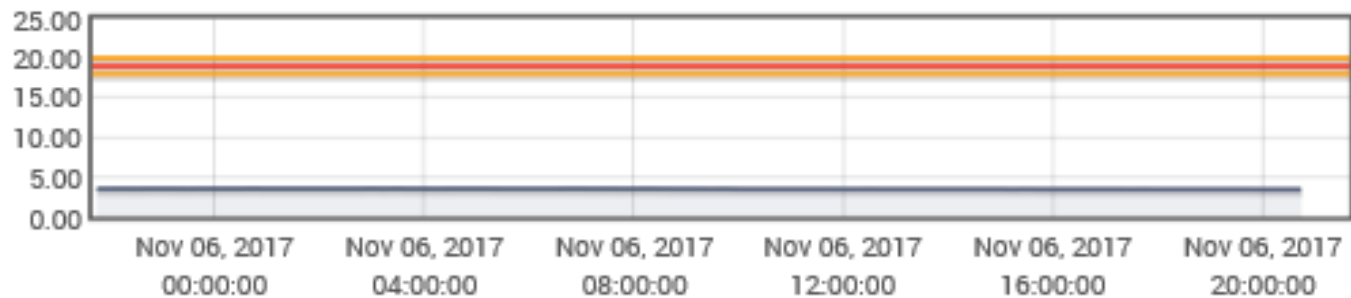


3.48 ft

about an hour ago

WYNOOCHEE RIVER ABOVE BLACK CREEK NR MONTESANO, WA (12037400)

Gage height (150645_00065)



SATSOP RIVER NEAR S...

Gage height (150624_00065)

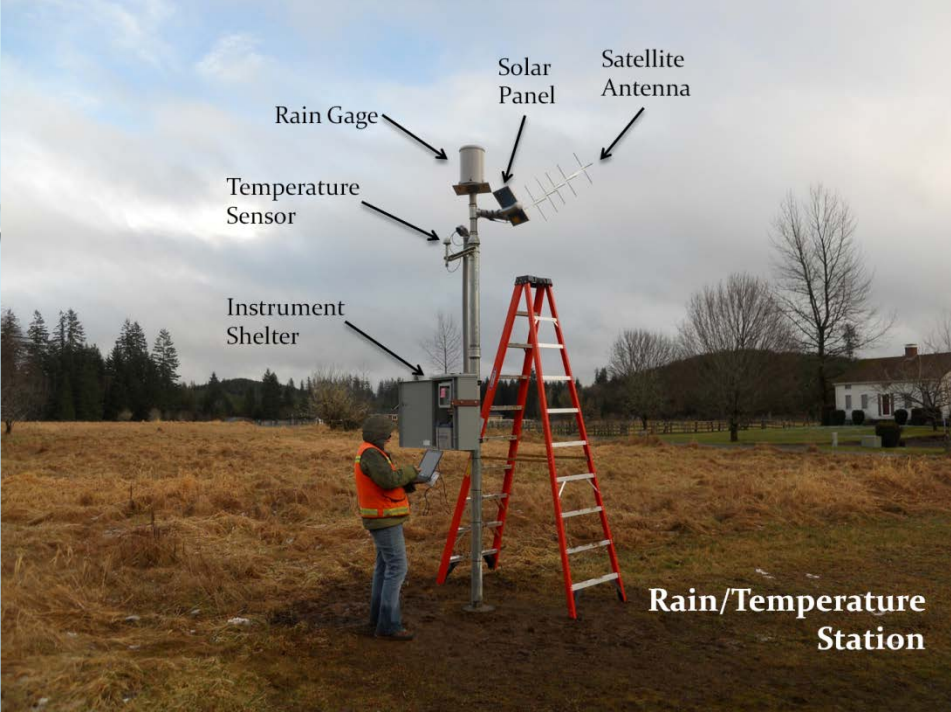


26.10 ft

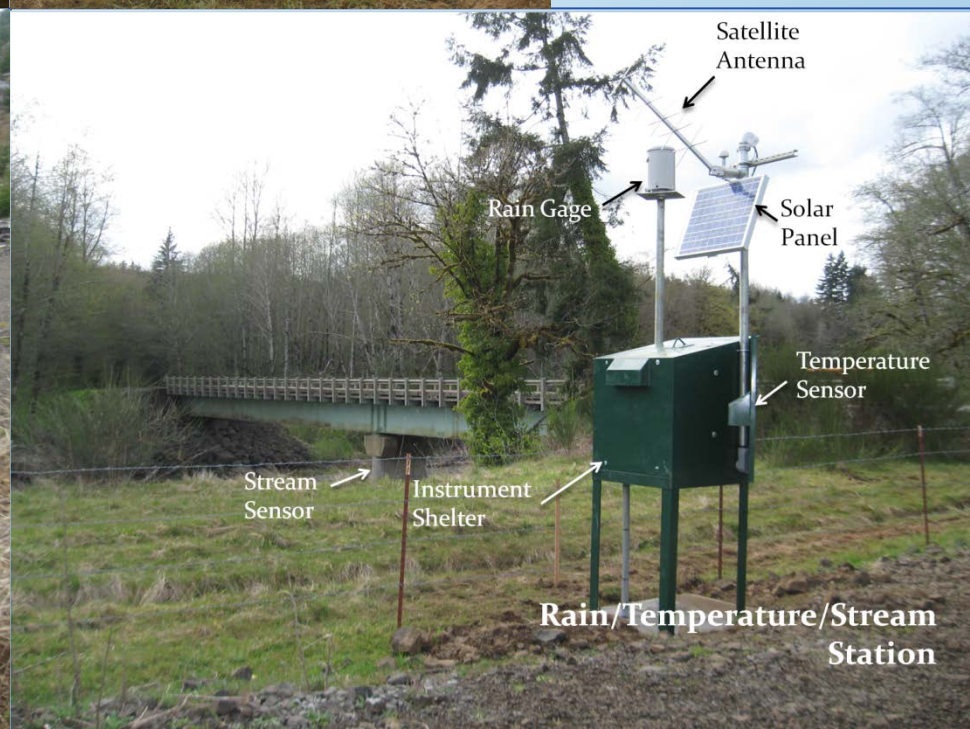
25 minutes ago

SATSOP RIVER NEAR SATSOP, WA (12035000) Gage height (150624_00065)

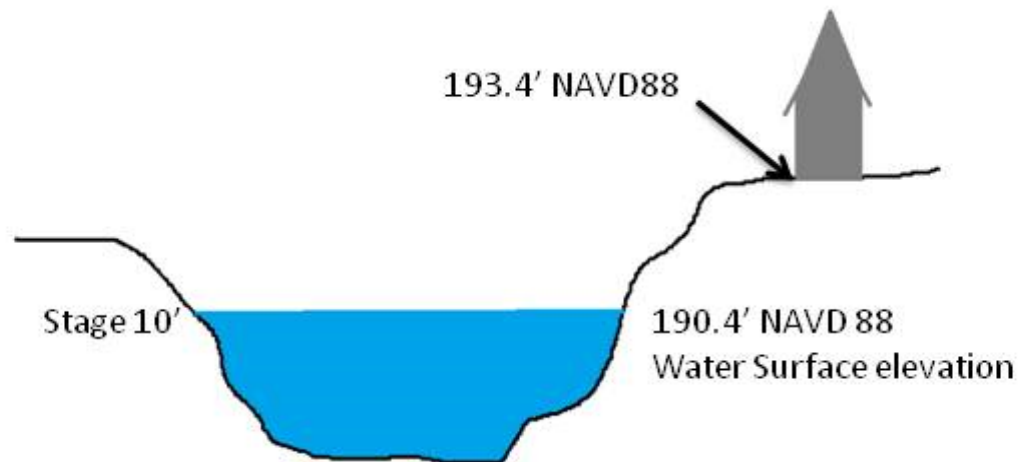
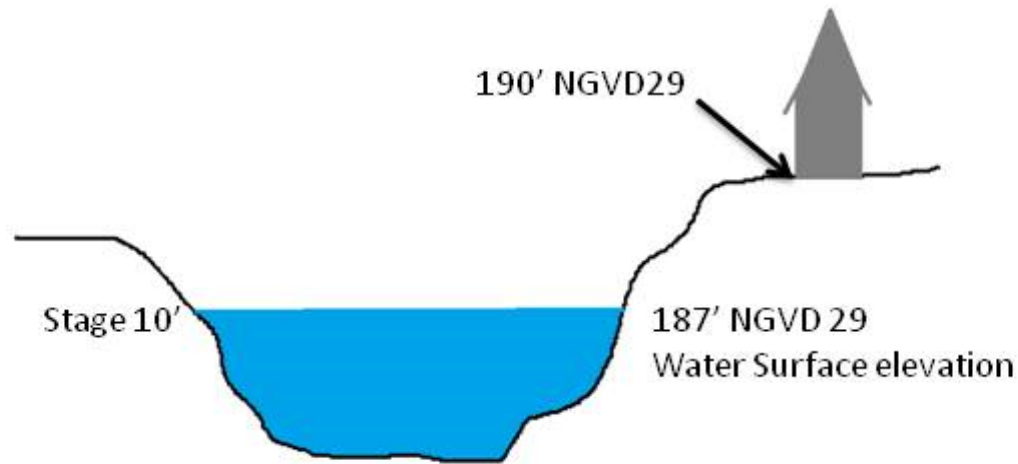




UPGRADE GOES RADIOS

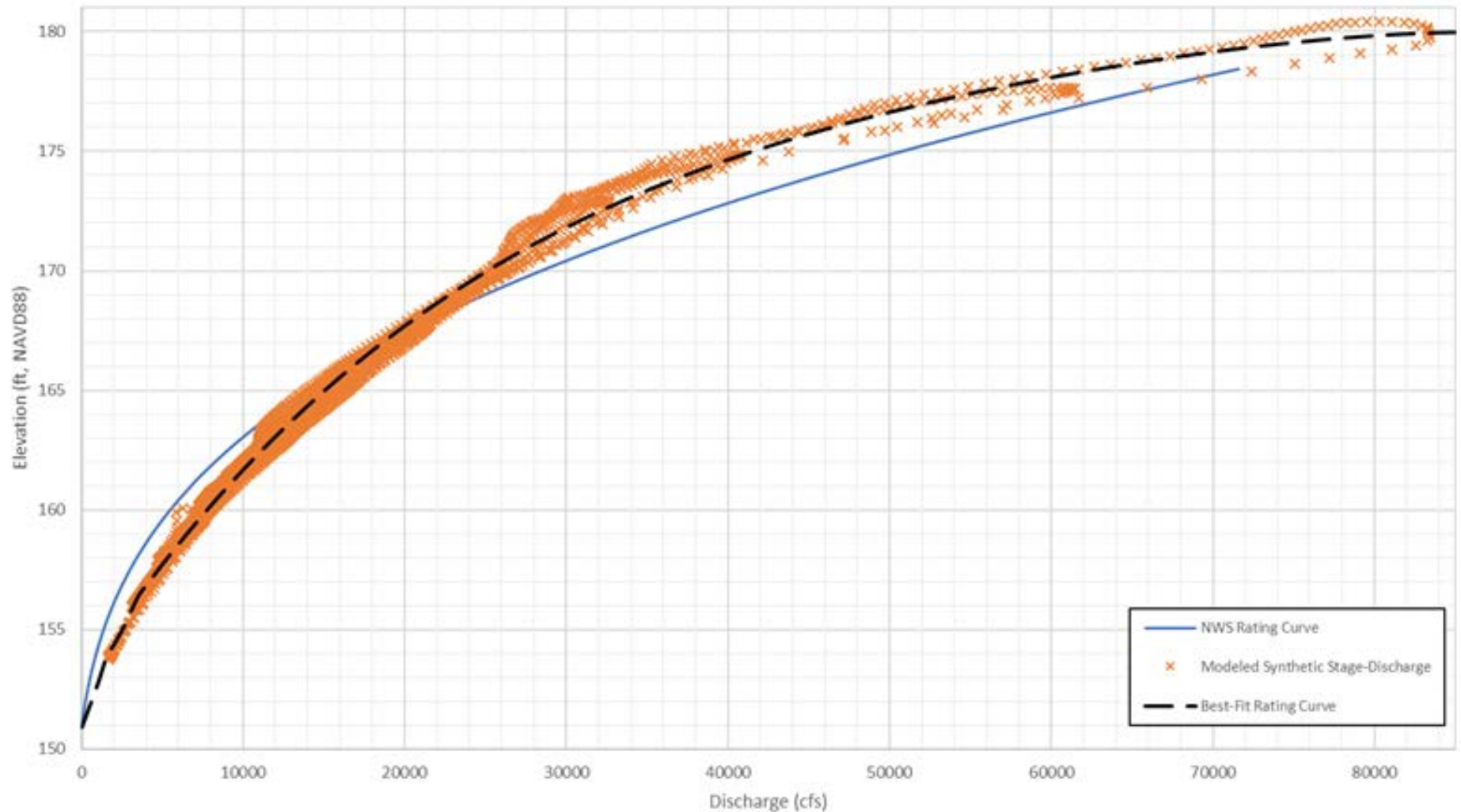


GAGE DATUM



RATING CURVES

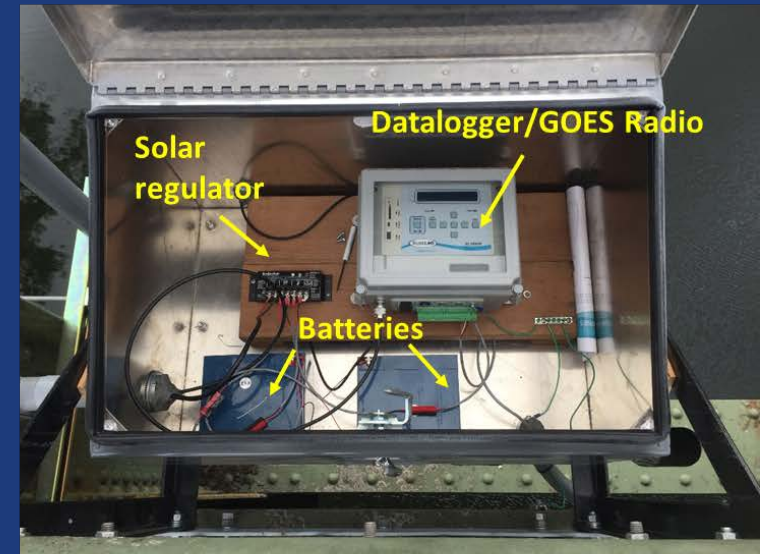
CHEHALIS--NEAR CENTRALIA (CENW1)



UPGRADE STREAM GAGES



NWS GAGE UPGRADE - CHEHALIS RIVER AT CENTRALIA, WA - 12025500



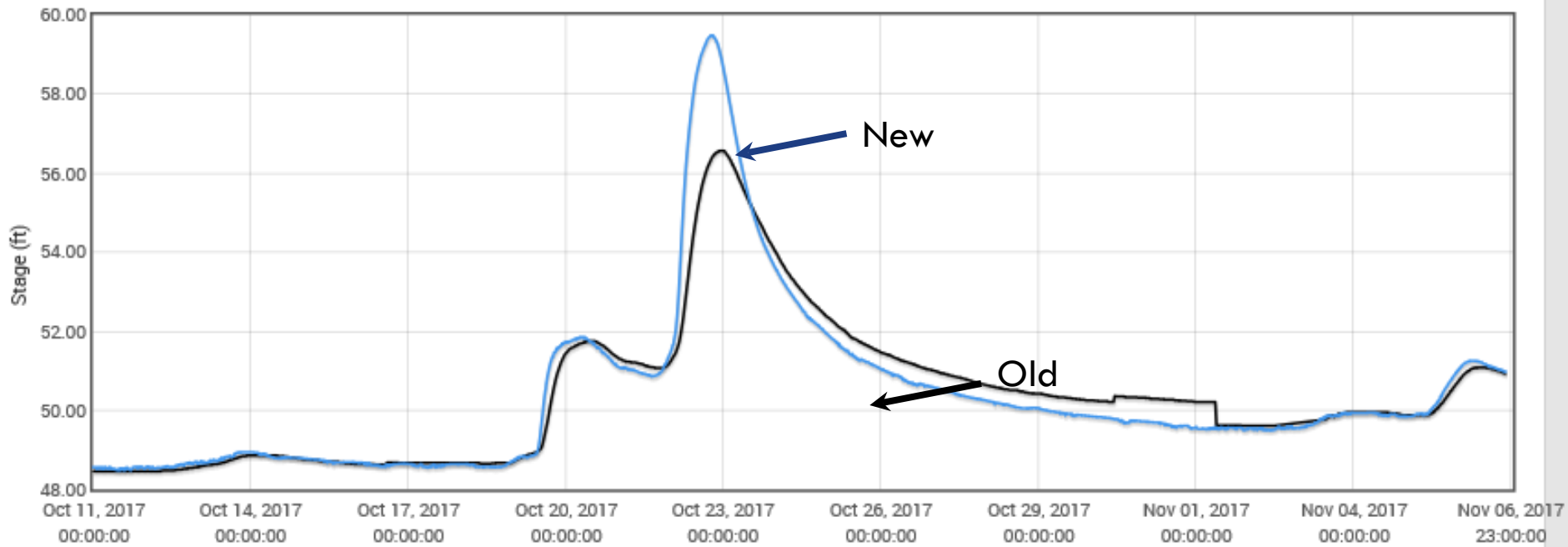
CHEHALIS RIVER AT CENTRALIA

October 11, 2017 - November 6, 2017

● Markers Legend

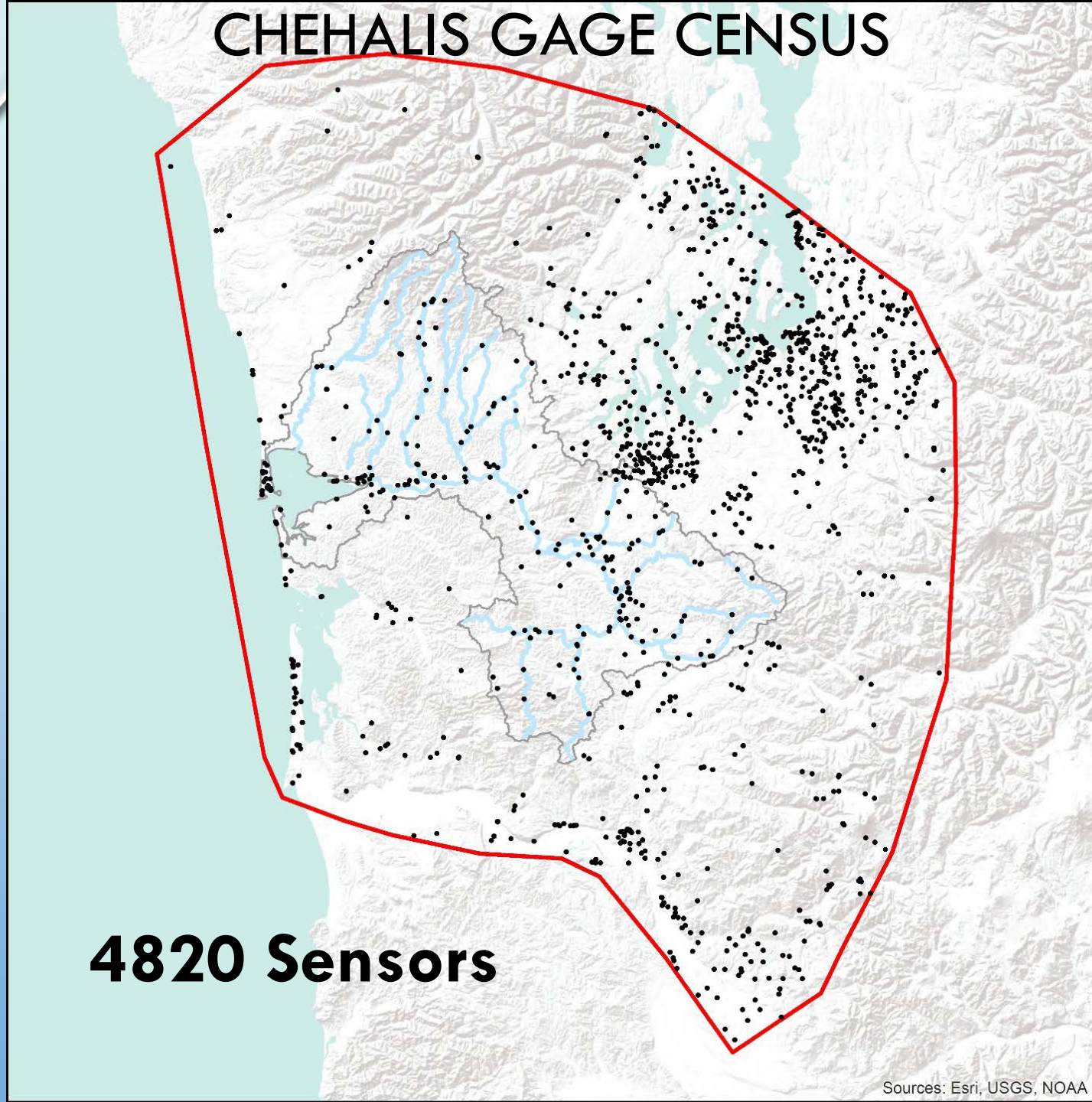
fill by Type

Latency



CHEHALIS GAGE CENSUS

4820 Sensors



PRECIPITATION

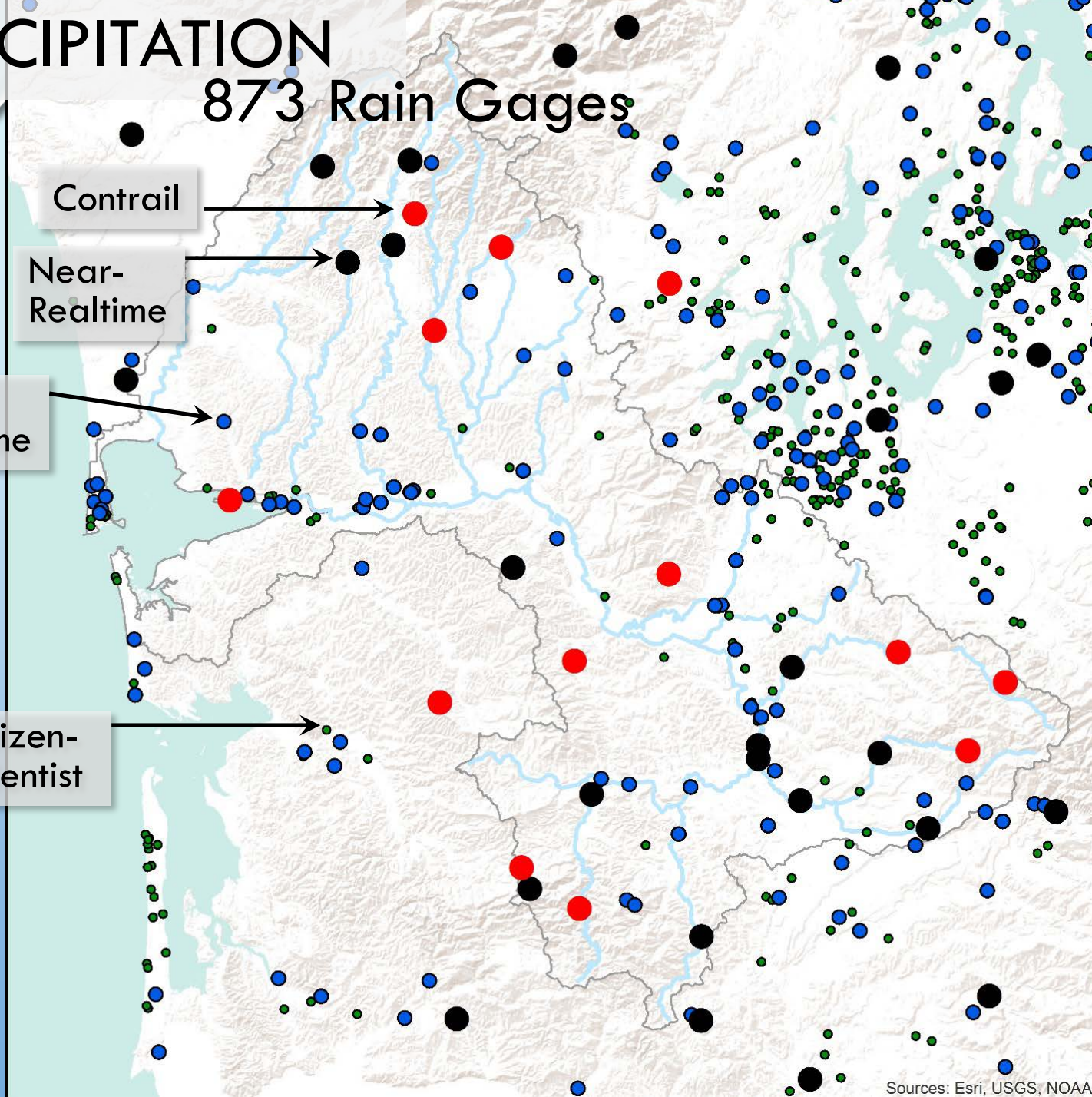
873 Rain Gages

Contrail

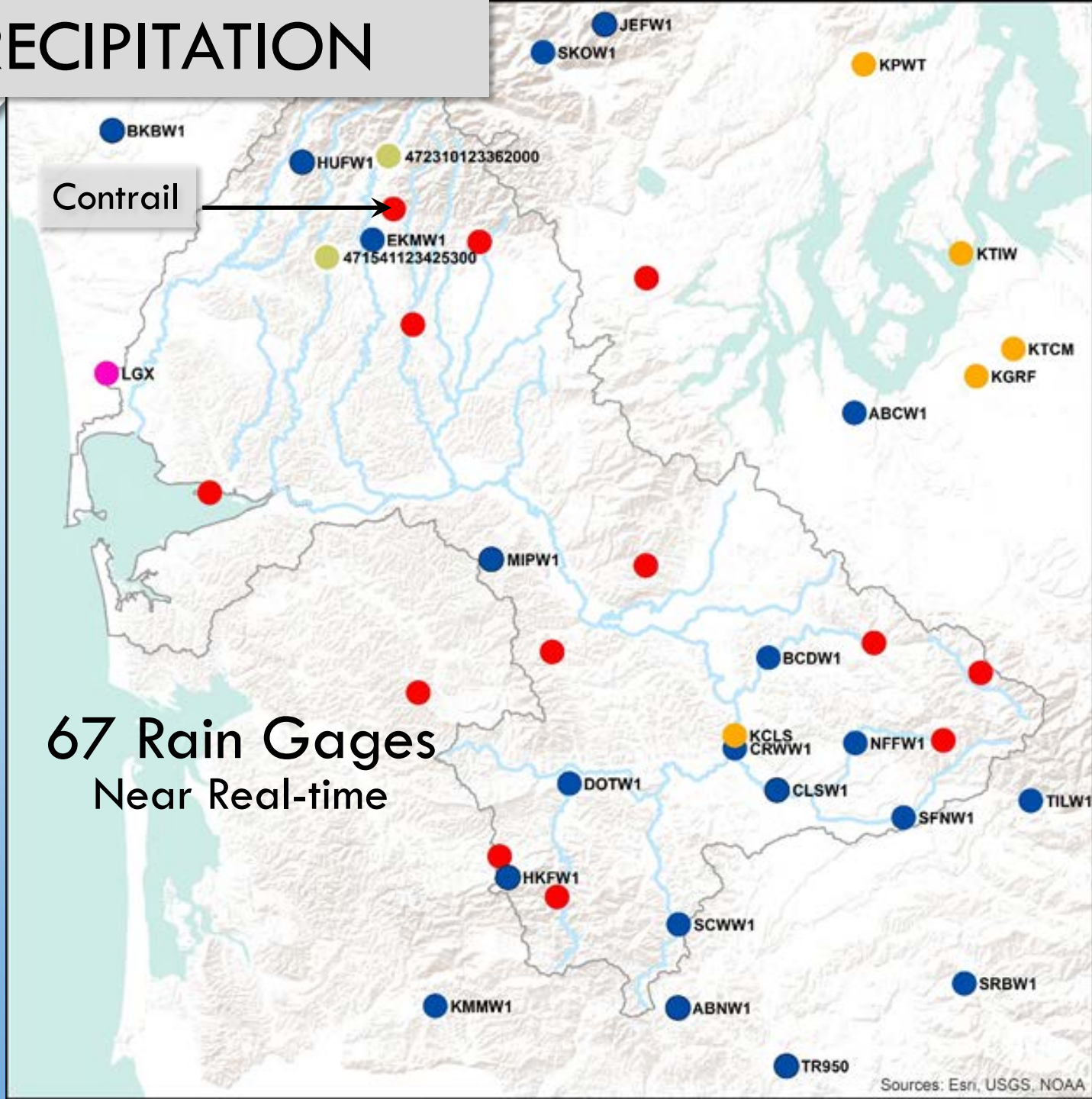
Near-
Realtime

Non-
Realtime

Citizen-
Scientist



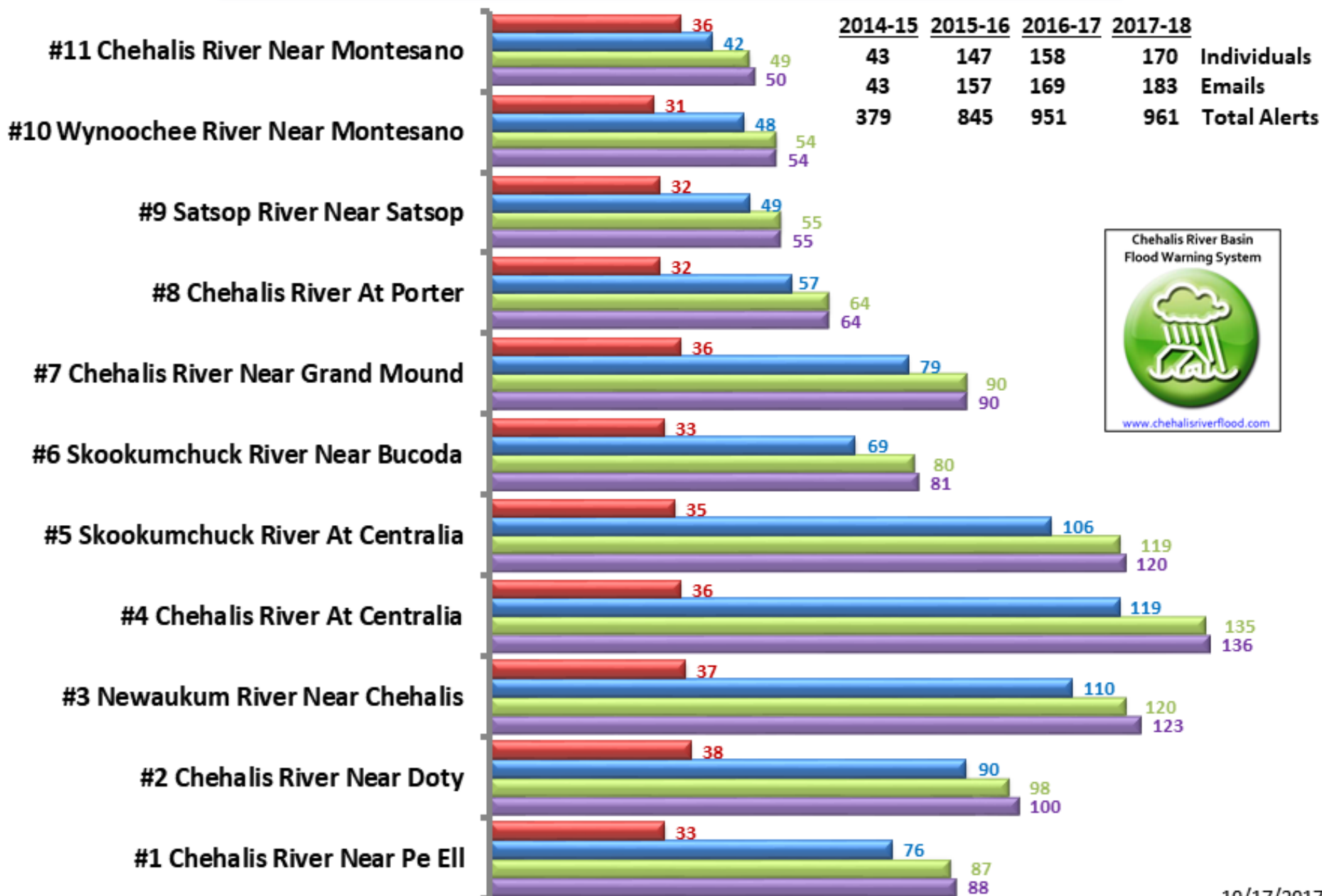
PRECIPITATION



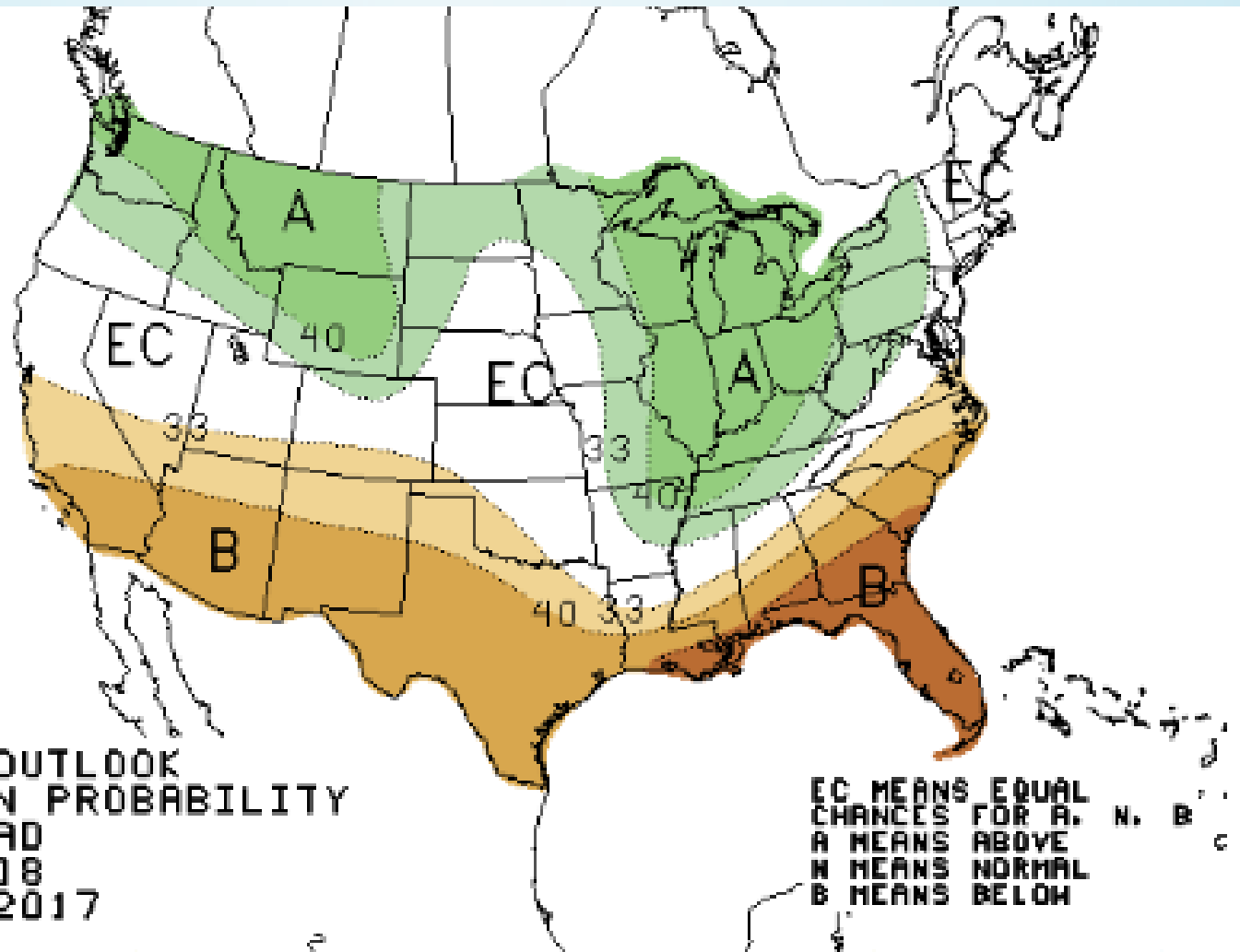
ENGAGEMENT

- NEW WEBSITE FEATURES
- HIGH WATER ALERTS
- WEBINAR
- PUBLIC OUTREACH (ESPECIALLY DATUM CHANGE)

Distribution of Requested Flood Alerts



JAN-FEB-MAR OUTLOOK



THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
2.5 MONTH LEAD
VALID JFM 2018
MADE 19 OCT 2017

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



A wide-angle photograph of a sunset over a large body of water. The sky is filled with horizontal bands of orange, red, and pink clouds, with a bright yellow-orange glow from the setting sun. In the foreground, dark silhouettes of trees and bushes are visible. In the middle ground, the calm water reflects the colors of the sky. In the far distance, two tall power line towers stand against the horizon, and faint mountains are visible on the left side.

QUESTIONS?

Chehalis River At Centralia (CENW1)

[Return to Top](#)

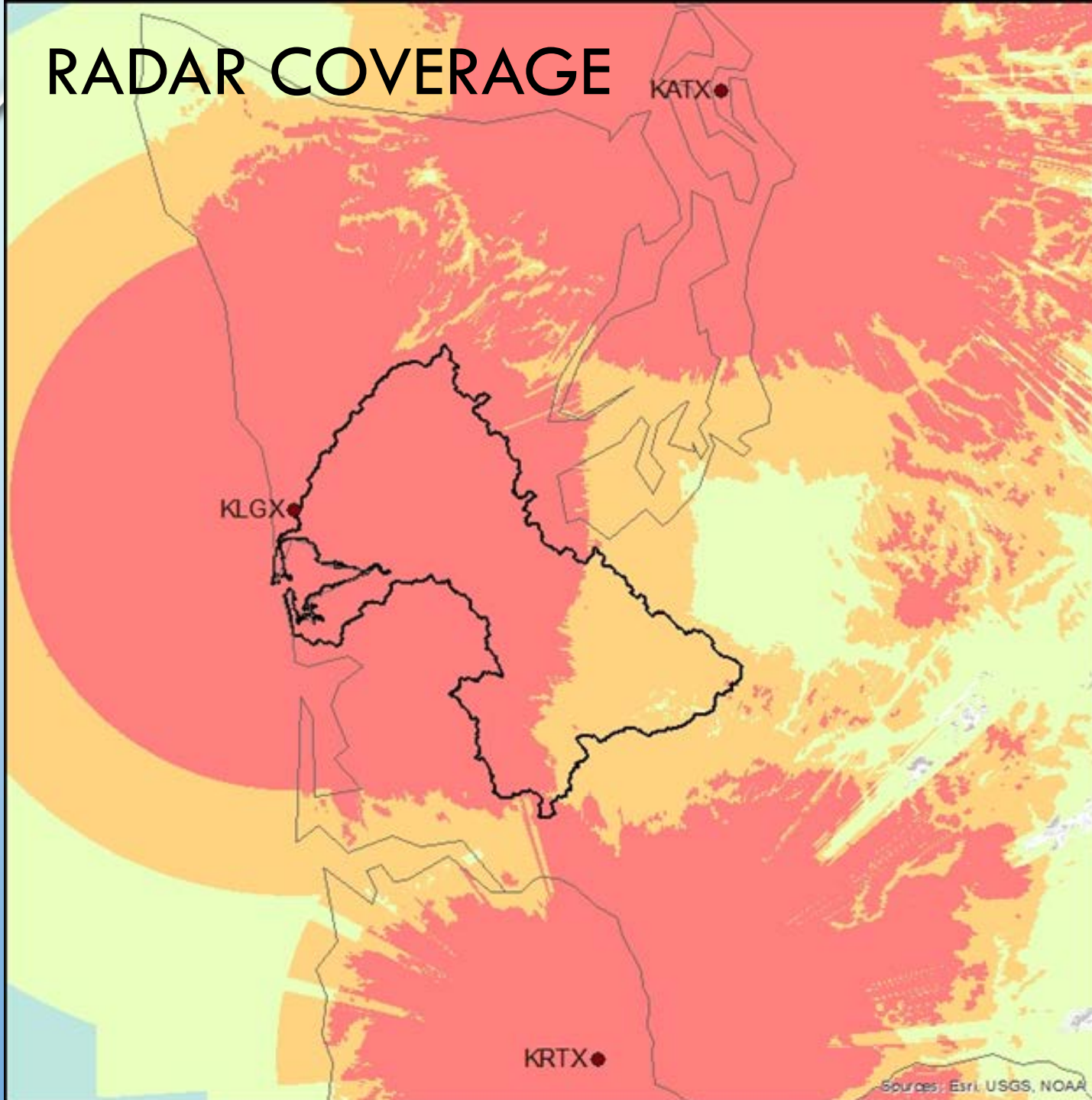
Flood Stage: 65 Feet Latest Stage: 55.39

Current Warnings/Statements/Advisories: None currently.

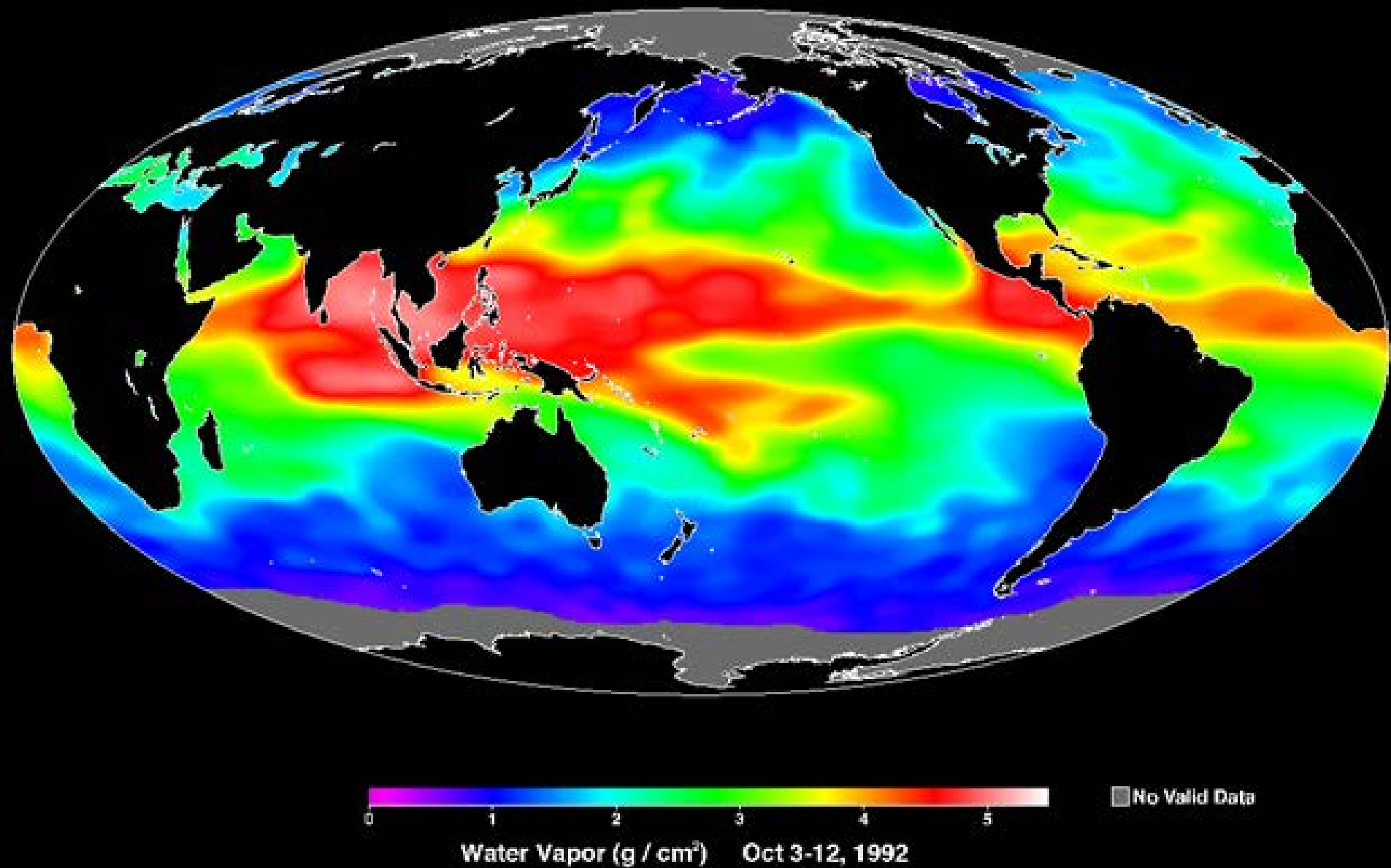
Complete information about the Chehalis River at Centralia available from [NWS Seattle, WA](#)



RADAR COVERAGE

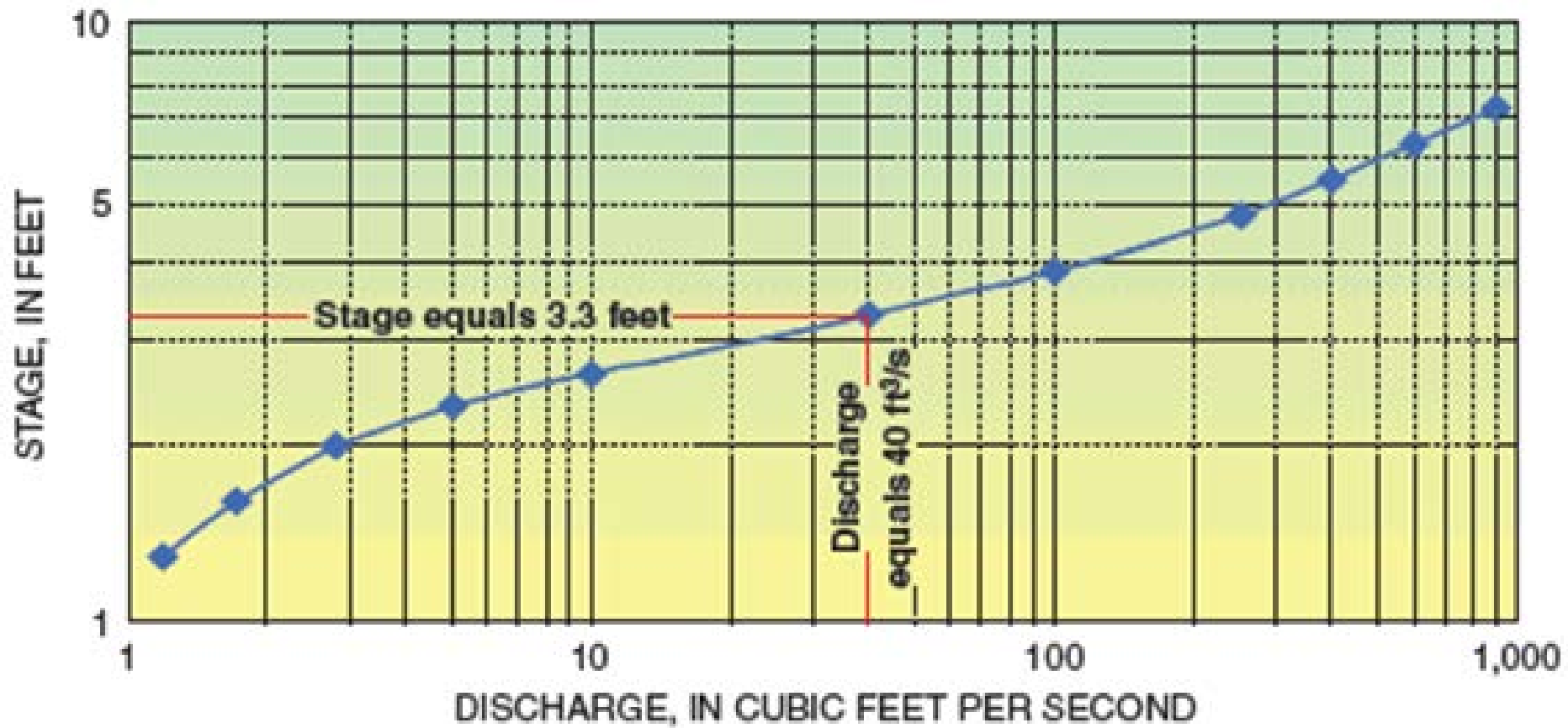


WATER VAPOR

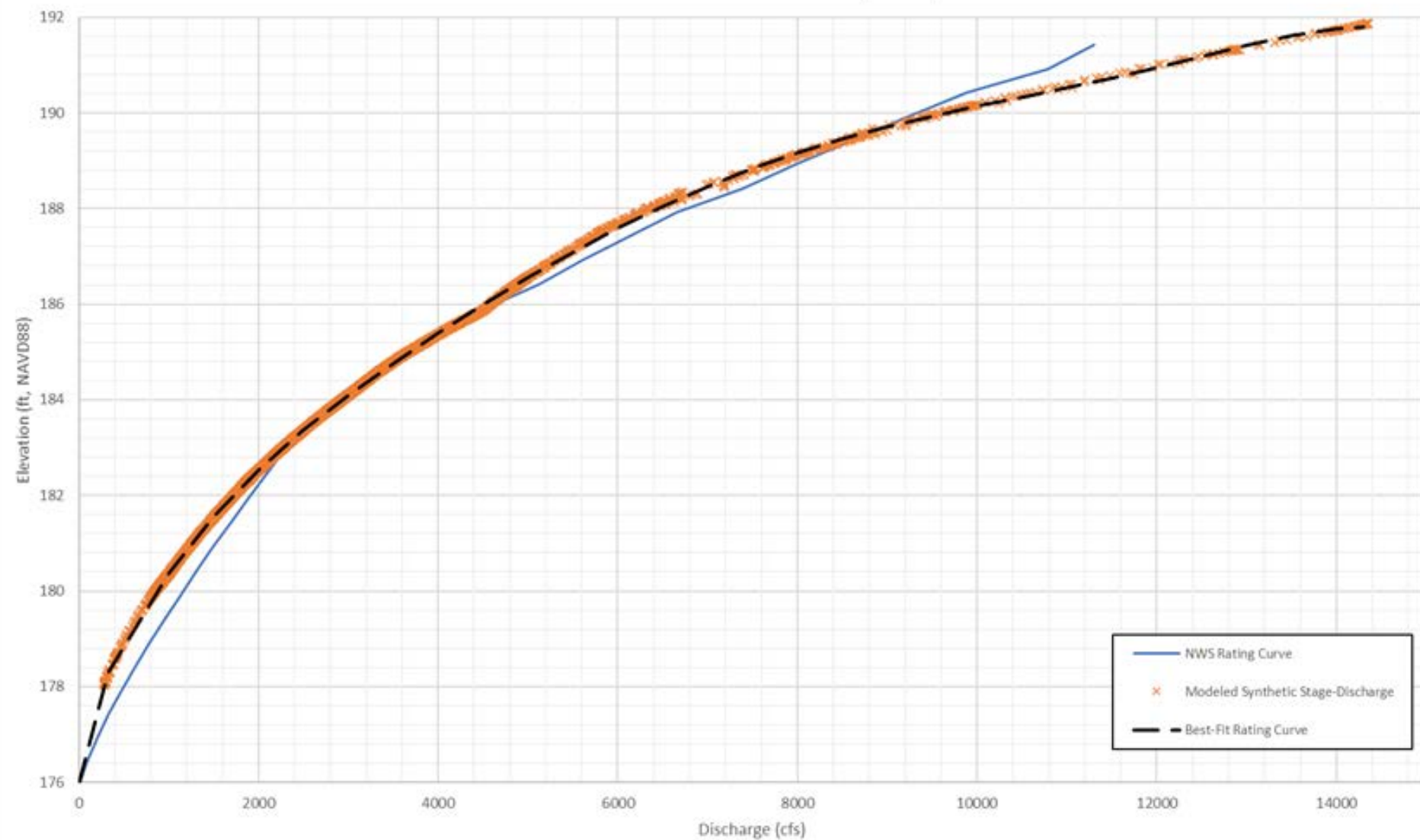




RATING CURVES

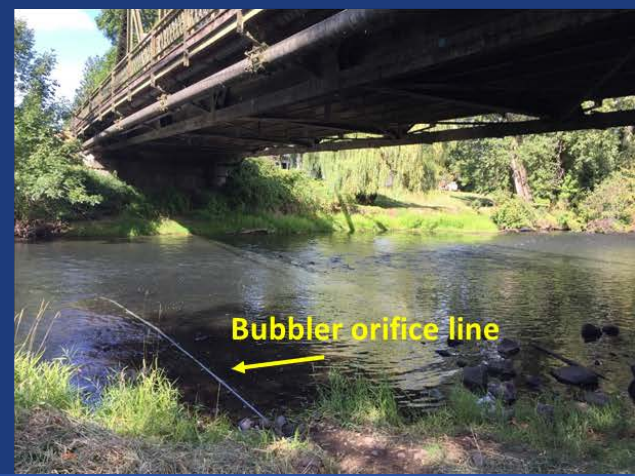
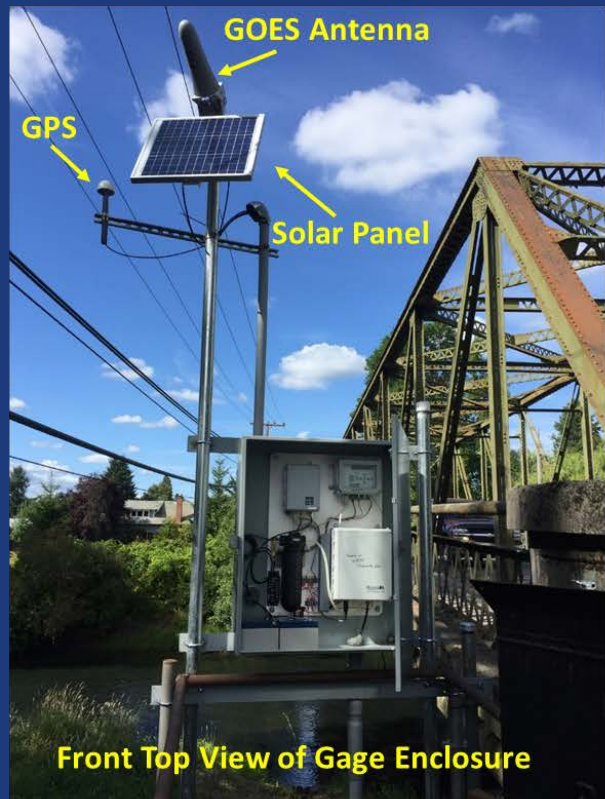


SKOOKUMCHUCK--AT CENTRALIA (CTAW1)






NWS GAGE UPGRADE – SKOOKUMCHUCK RIVER AT CENTRALIA, WA - 12026600



Identified Organizations and Counties Affected by Change
National Weather Service
United States Geological Survey
Chehalis River Basin Flood Authority
Washington State Department of Ecology
Washington State Department of Transportation
Federal Emergency Management Agency
US Army Corps of Engineers
Confederated Tribes of the Chehalis Reservation
Quinault Indian Nation
Lewis County
Jefferson County
Mason County
Grays Harbor County
Thurston County
Cowlitz County
Pacific County



● GAGE INVENTORY RECOMMENDATIONS

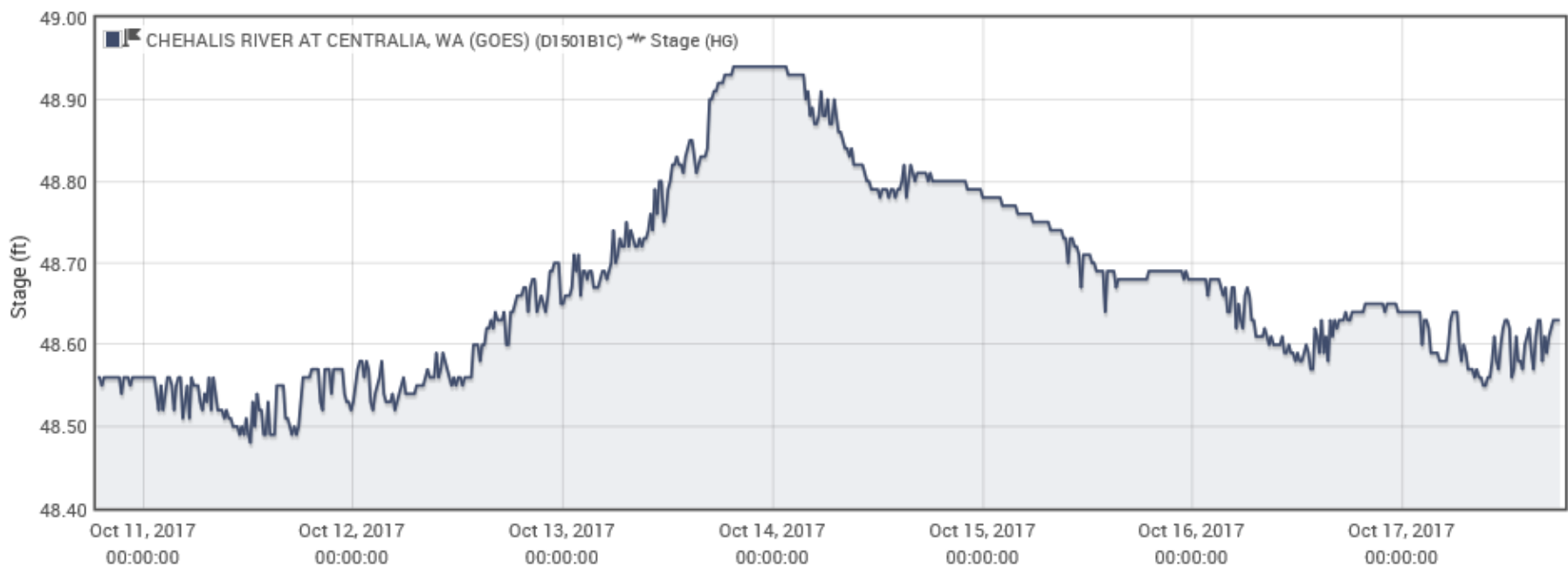
- ADD ADDITIONAL AVAILABLE HADS, USGS, AND METAR GAGES
 - ADD WSDOE STREAM GAGES
 - UPGRADE NWS STREAM GAGES
 - SURVEY STREAM GAGES TO NAVD 88
 - OUTREACH AND EDUCATION FOR DATUM CHANGE
 - UPGRADE GOES DCS RADIOS
 - ADD CITY OF ABERDEEN STREAM GAGE
 - ADD NWS RIVER FORECASTS TO HIGH WATER ALERTS
 - CONSIDER GAGE ADJUSTED RADAR RAINFALL DATA
- 

CHEHALIS RIVER AT CENTRALIA, WA (GOES) (D1501B1C)

October 10, 2017 - October 17, 2017 ▾

● Markers 📄 Legend

⌛ Latency +



WHAT'S NEXT?

- OUTREACH
 - EMAILS TO HIGHWATER ALERT LIST
 - PROMOTE HIGHWATER ALERTS
 - UPDATE FREQUENTLY ASKED QUESTIONS HANDOUT
- WEBINAR (NOV 14TH)
- EMERGENCY PREPAREDNESS MEETING
- WINTER WEATHER OUTLOOK

‘The Big Dark’: Satellite image shows future rain clouds stretching from China to Puget Sound

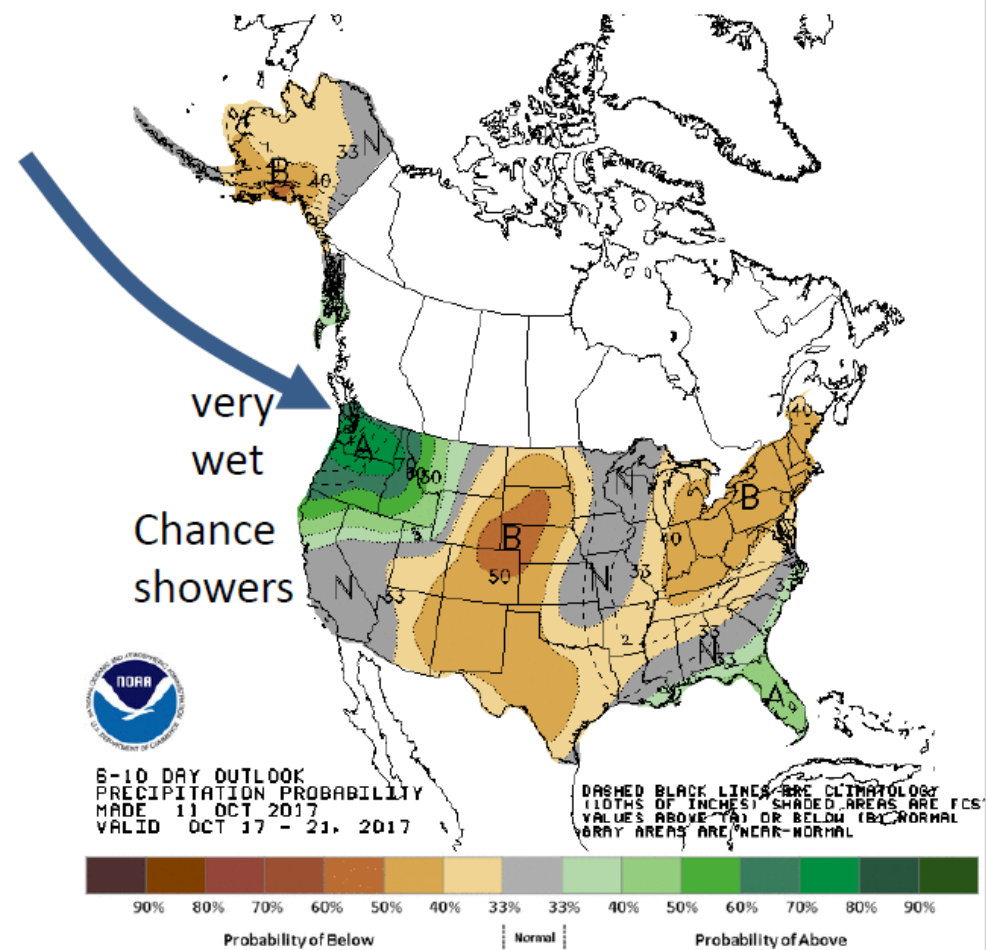
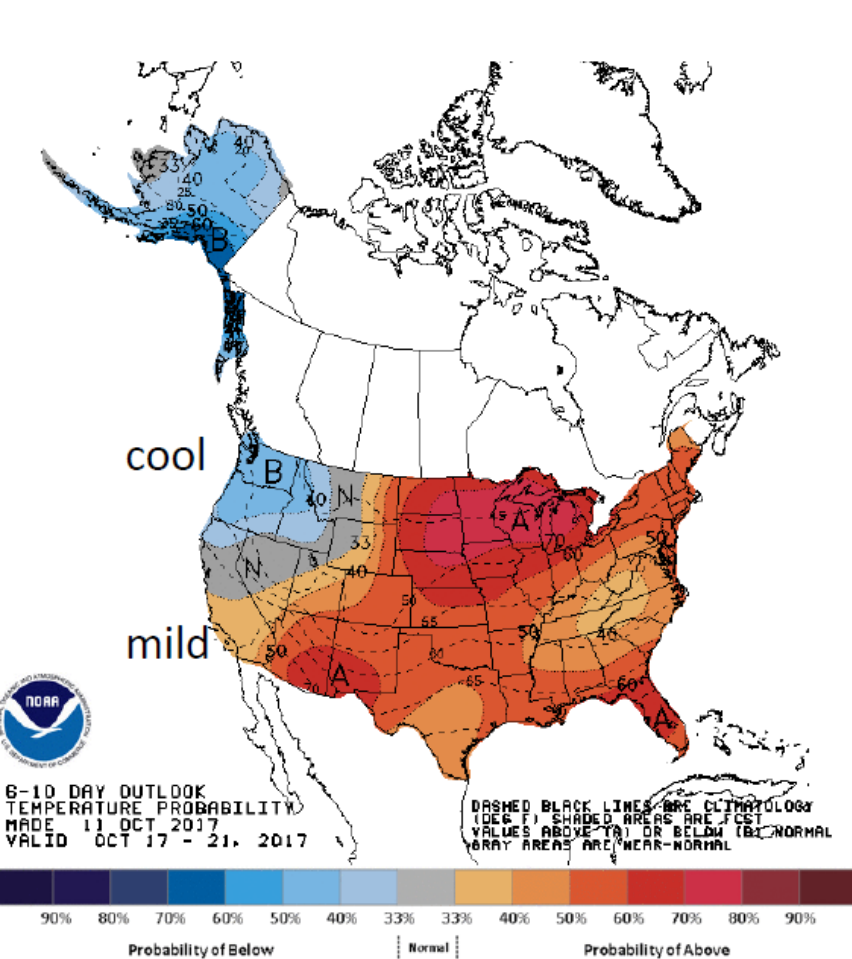
Originally published October 16, 2017 at 6:51 am | Updated October 16, 2017 at 4:24 pm



Satellite imagery shared by the National Weather Service shows clouds, full of moisture, stretching from China to British Columbia. (NASA)

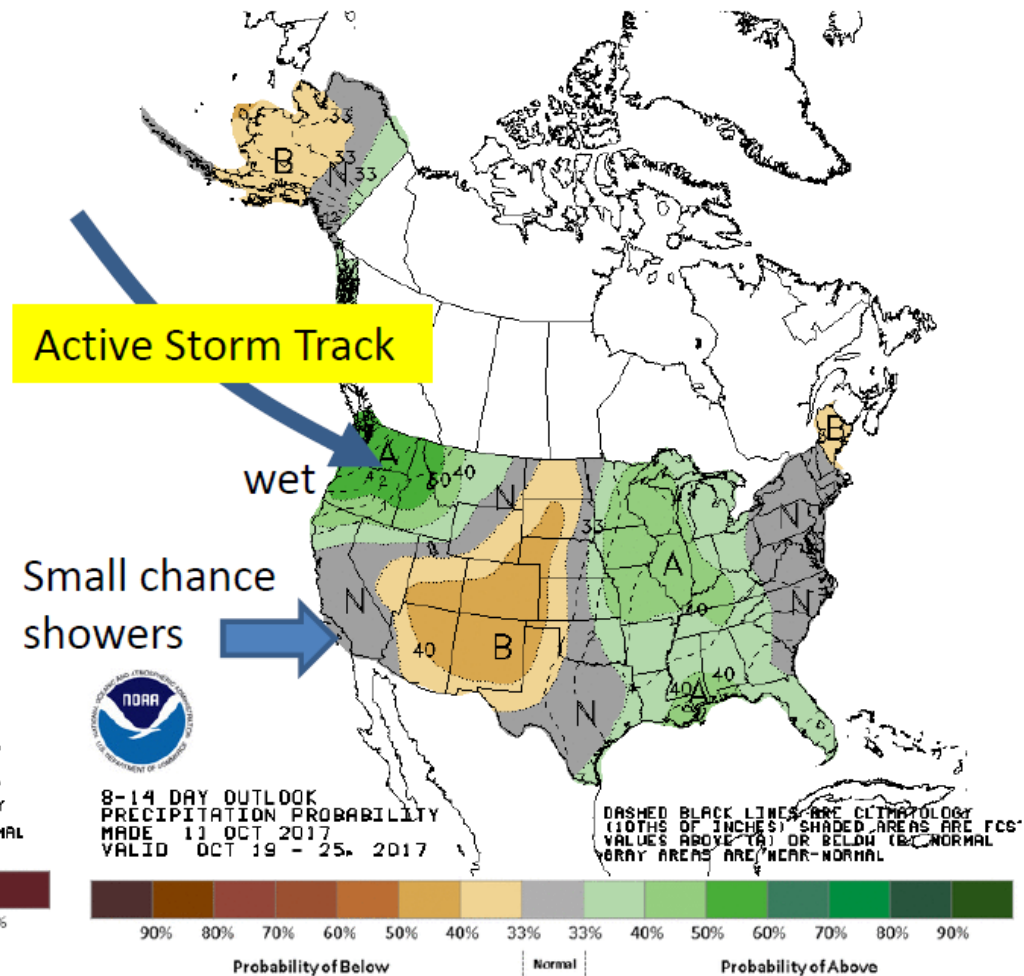
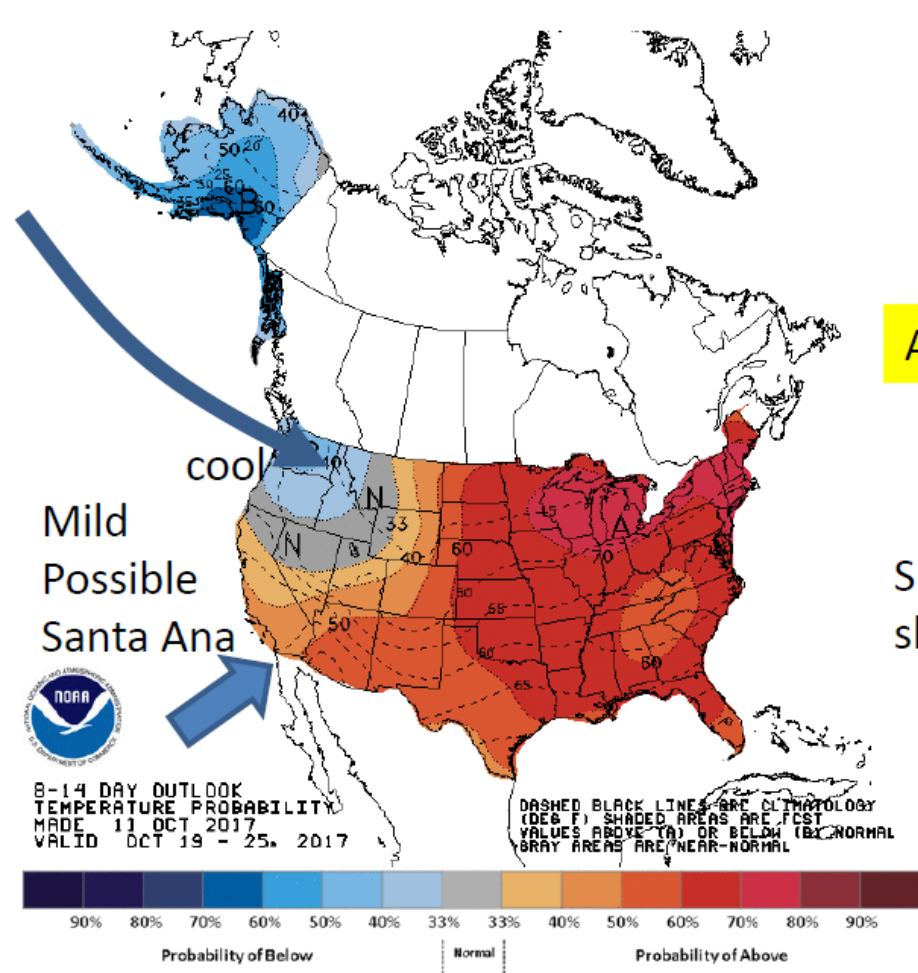
Active storm track to the north

October 17-21, 2017



Storm Track to the north

October 19-25, 2017

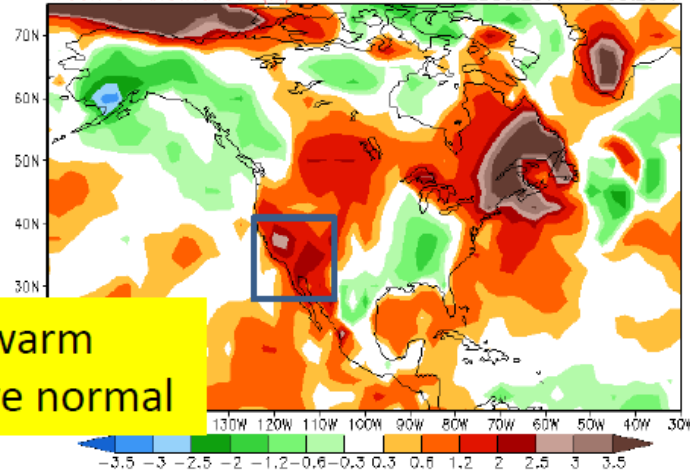


Late October through early November above normal temperatures

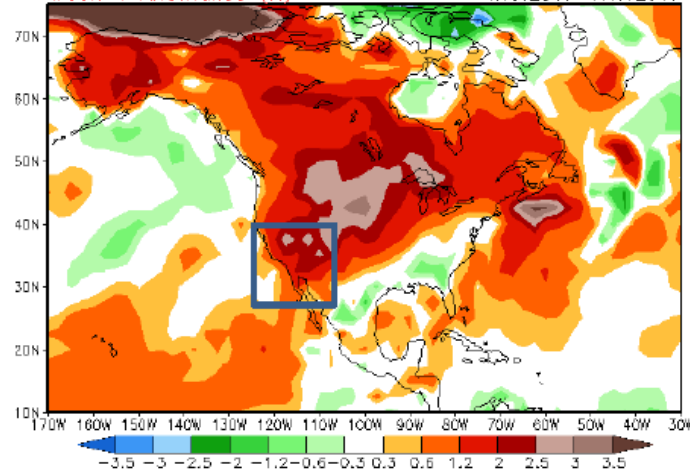
CFSv2 Extended Range Temperature

16 Member Ensemble Mean Forecast from 10Oct2017

Week 3 Anomalies (K) 25Oct2017–31Oct2017



Week 4 Anomalies (K) 1Nov2017–7Nov2017

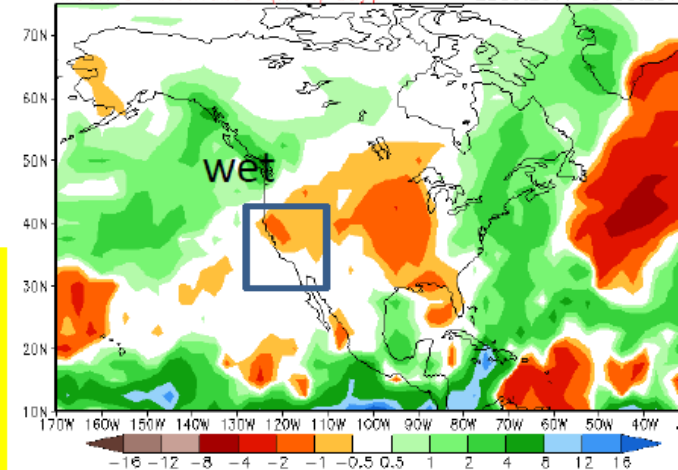


Continued
wet PacNW
and only
chance of
showers in
Socal

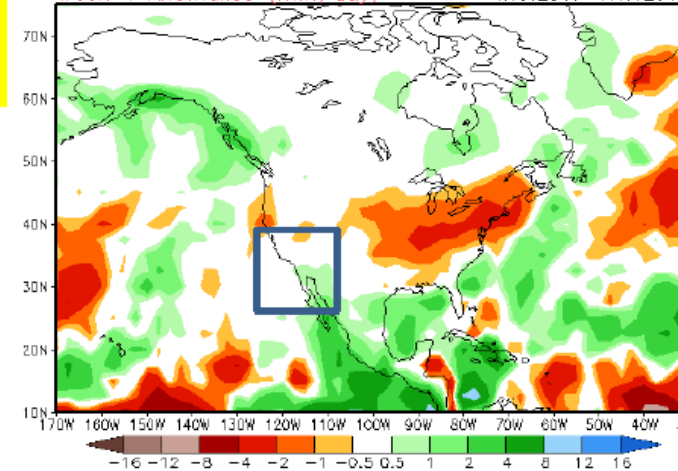
CFSv2 Weeks 3 & 4 Precipitation

16 Member Ensemble Mean Forecast from 10Oct2017

Week 3 Anomalies (mm/day) 25Oct2017–31Oct2017



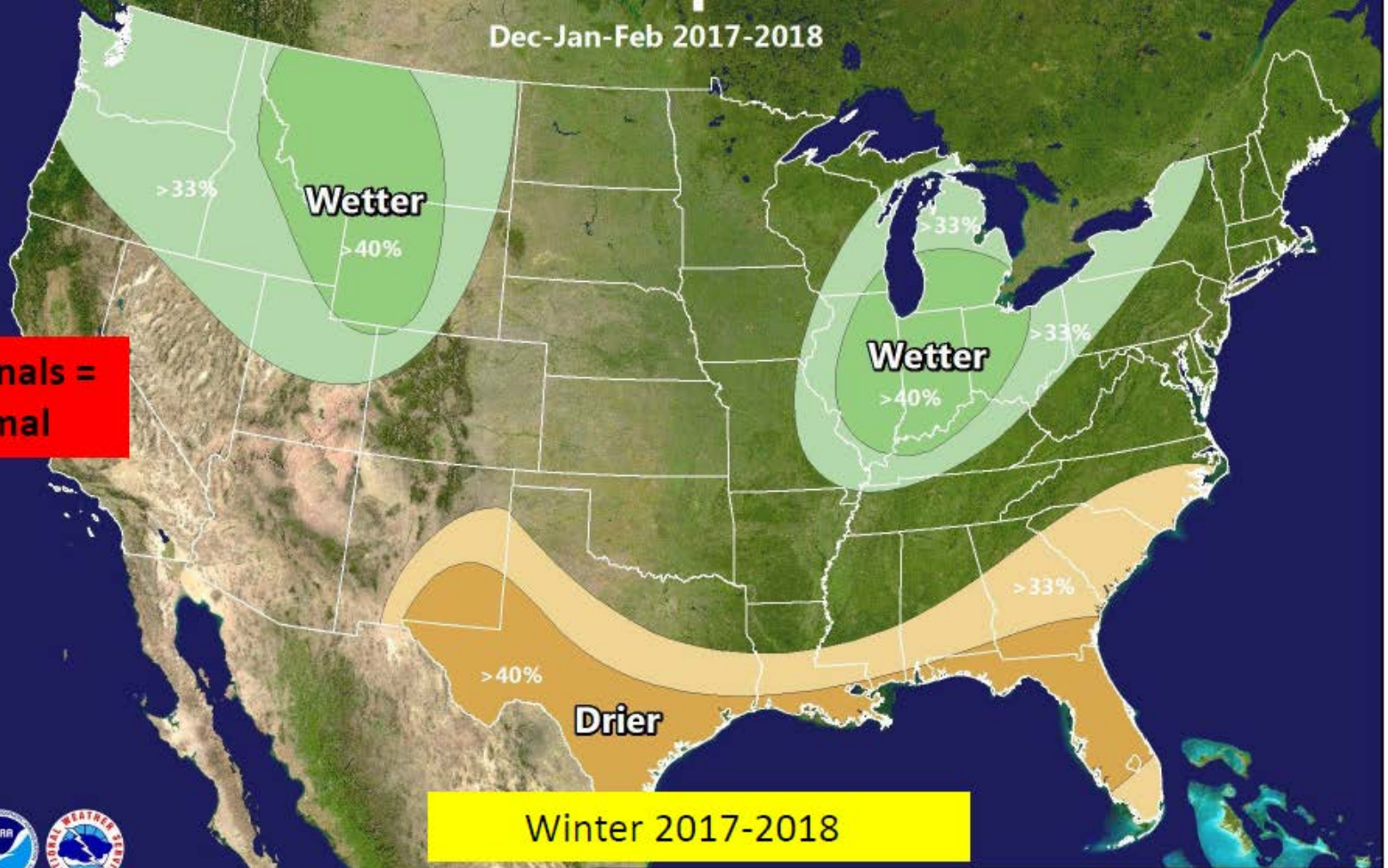
Week 4 Anomalies (mm/day) 1Nov2017–7Nov2017



December through February 2017-18

Three-Month Precipitation Outlook

Dec-Jan-Feb 2017-2018



Weak Signals =
near normal

Winter 2017-2018



Climate Prediction Center

Issued: 09/21/17

