



HURRICANE MARÍA

...CORE OF EXTREMELY DANGEROUS HURRICANE MARIA NEARING PUERTO RICO...

ADVISORY #17

5:00 AM AST
WED SEP 20 2017

COORDINATES

Lat: 17.9 N Lon: 65.6 W

LOCATION

15 mi SSW of Vieques
50 mi SE of San Juan PR

MOVEMENT

Northwest at 10 MPH

MAX SUSTAINED WINDS

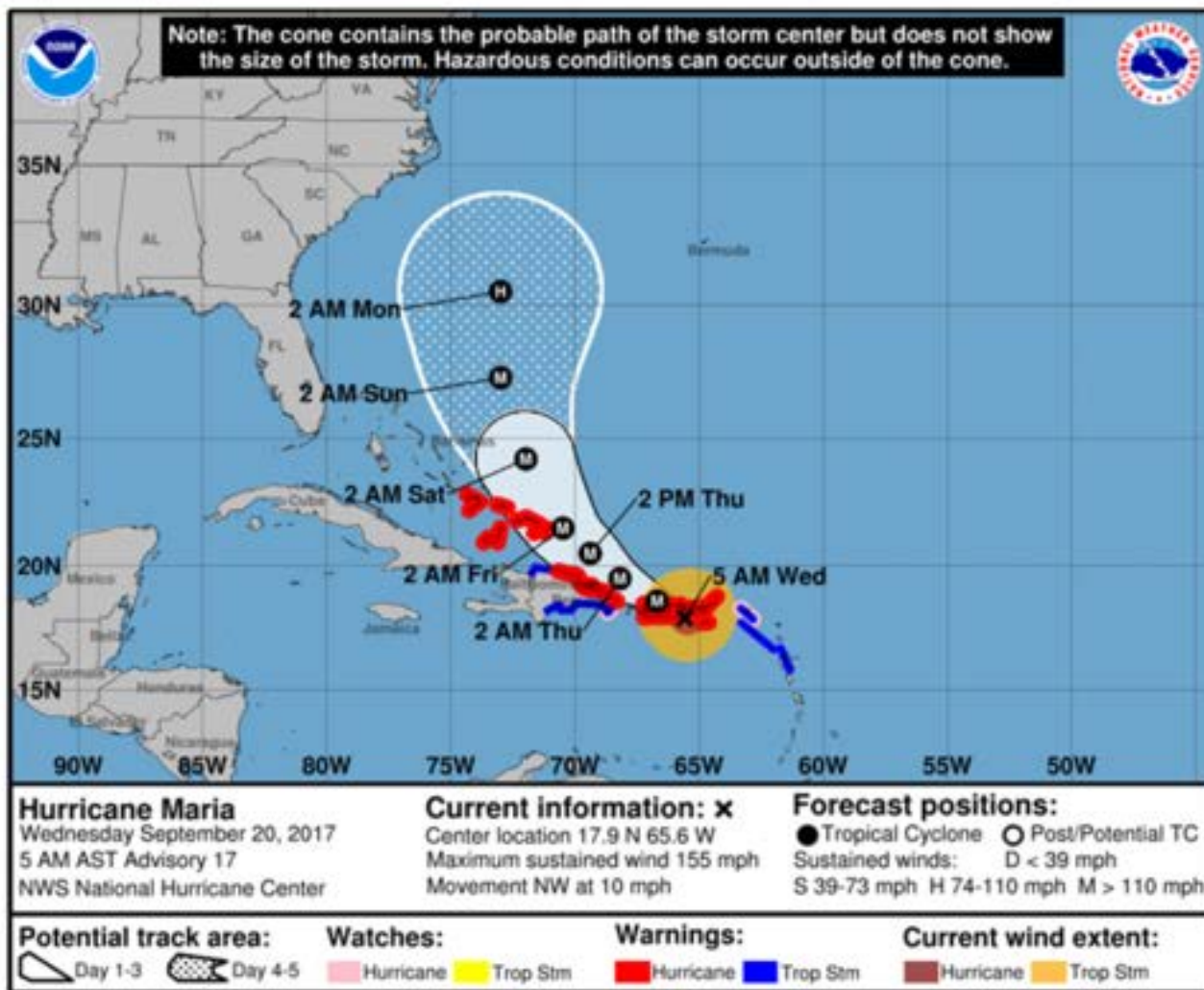
155 MPH

MIN CENTRAL PRESSURE

917 millibars

CATEGORY 4

Hurricane force winds extend up to **60 miles** from the center & tropical storm force winds extend up to **150 miles**.

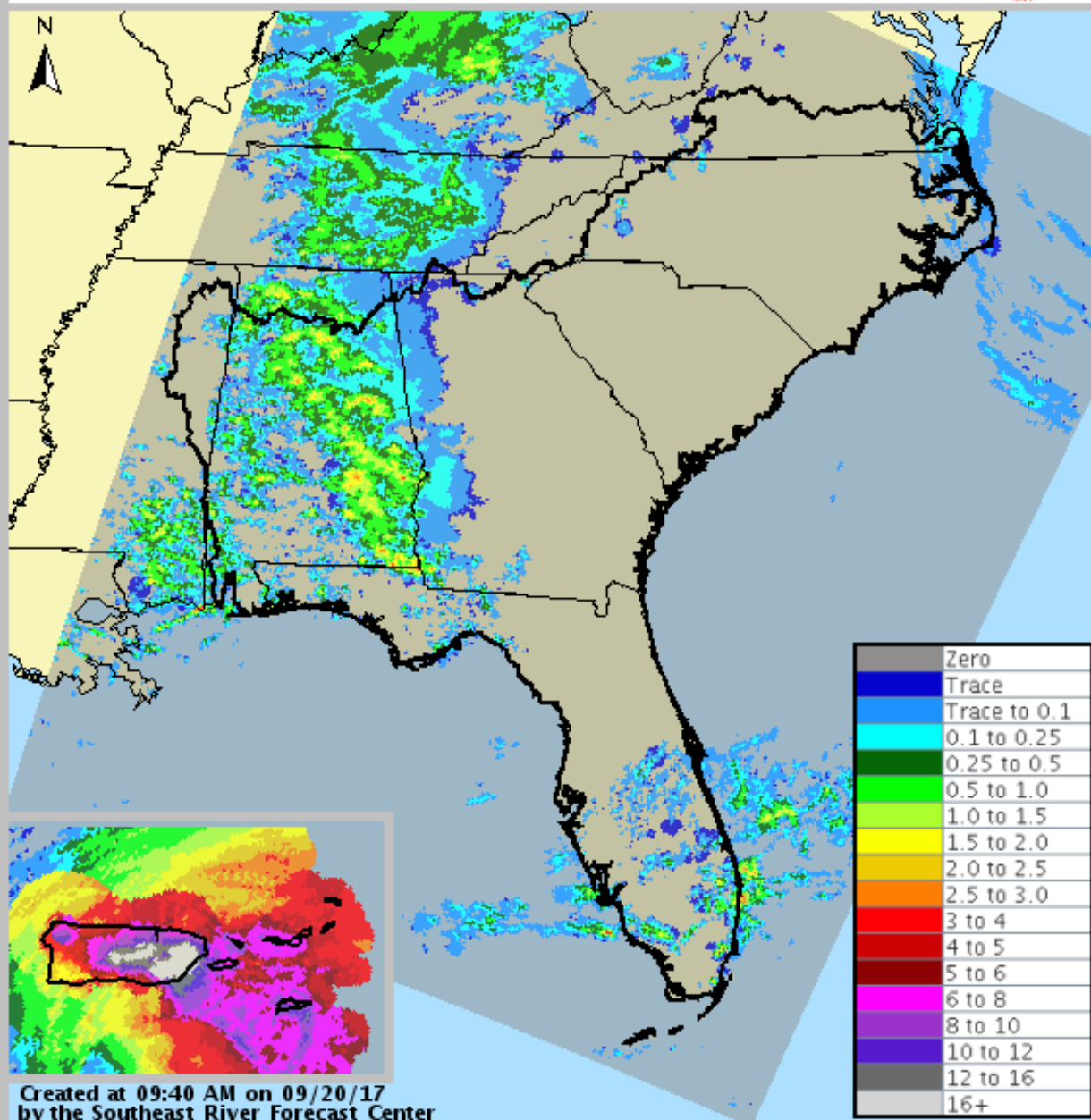


National Weather Service San Juan, PR
www.weather.gov/sanjuan www.nhc.noaa.gov



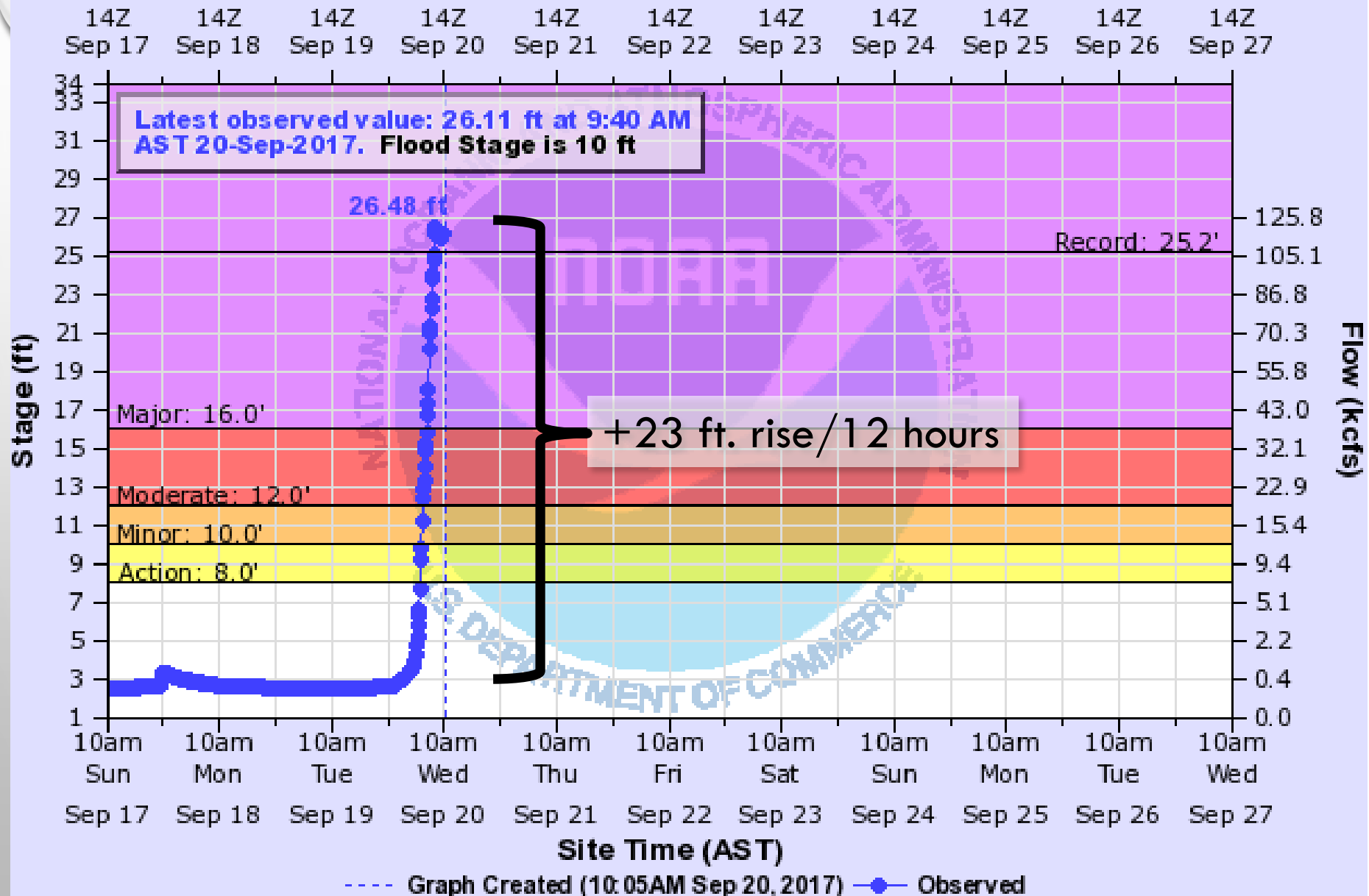
24-hour Precipitation

Ending Sep 20, 2017 at 9 am



RIO GRANDE DE MANATI NEAR CIALES

Universal Time (UTC)



CHEHALIS RIVER BASIN

GAGE MASTER PLAN

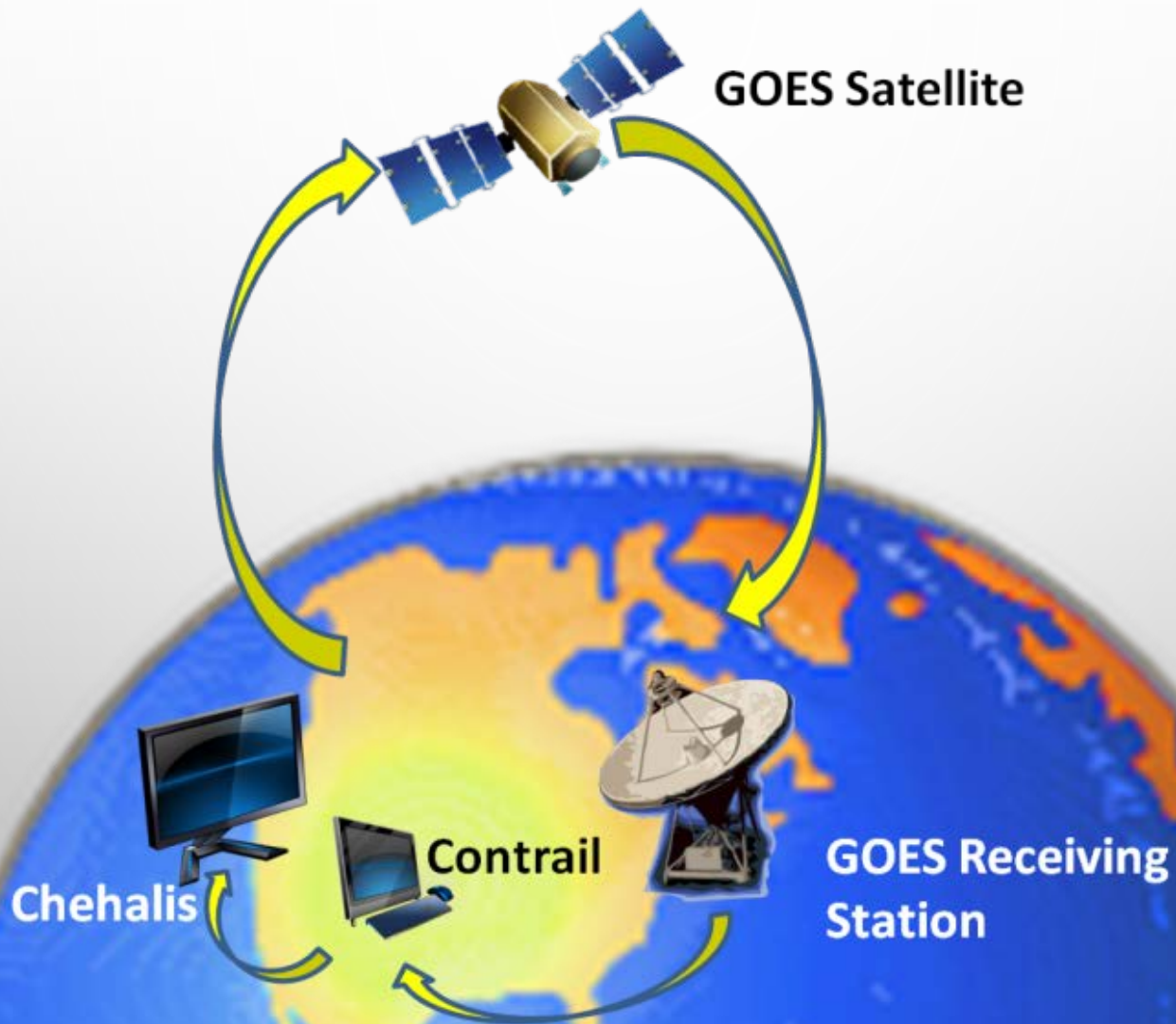
GAGE DATUM

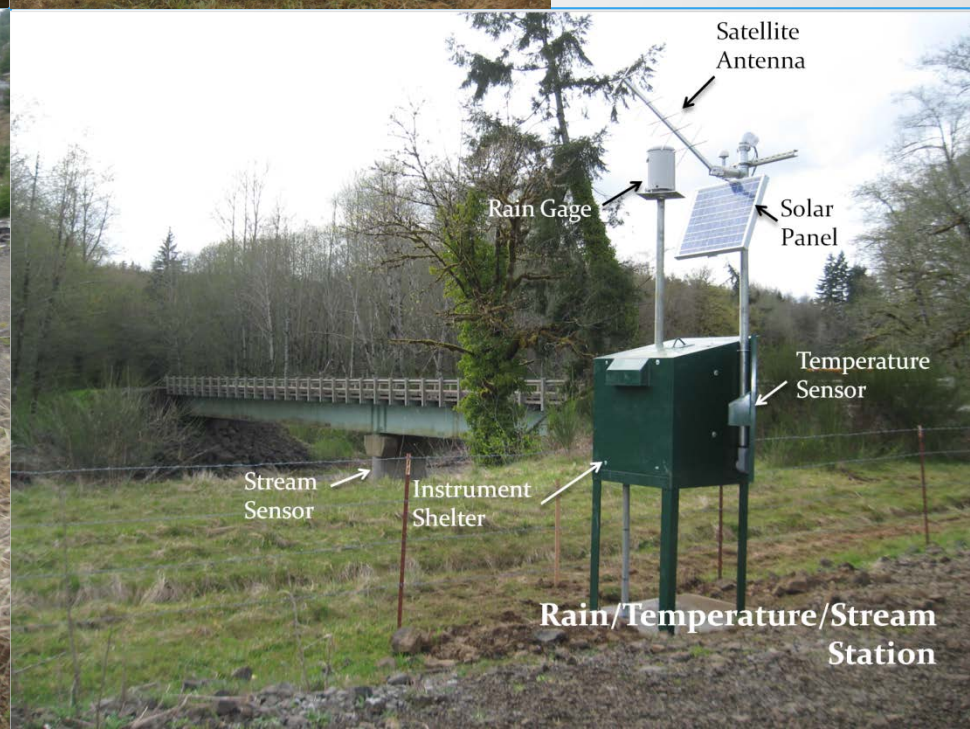
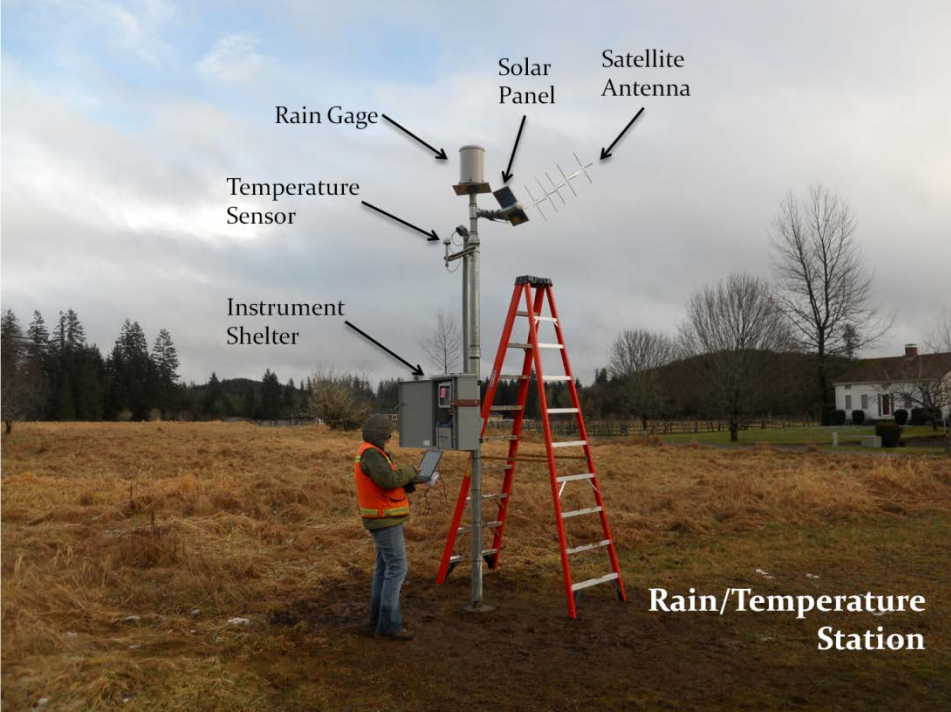
RATING CURVES

WEST CONSULTANTS

SEPTEMBER 20, 2017

DATA COLLECTION/MANAGEMENT

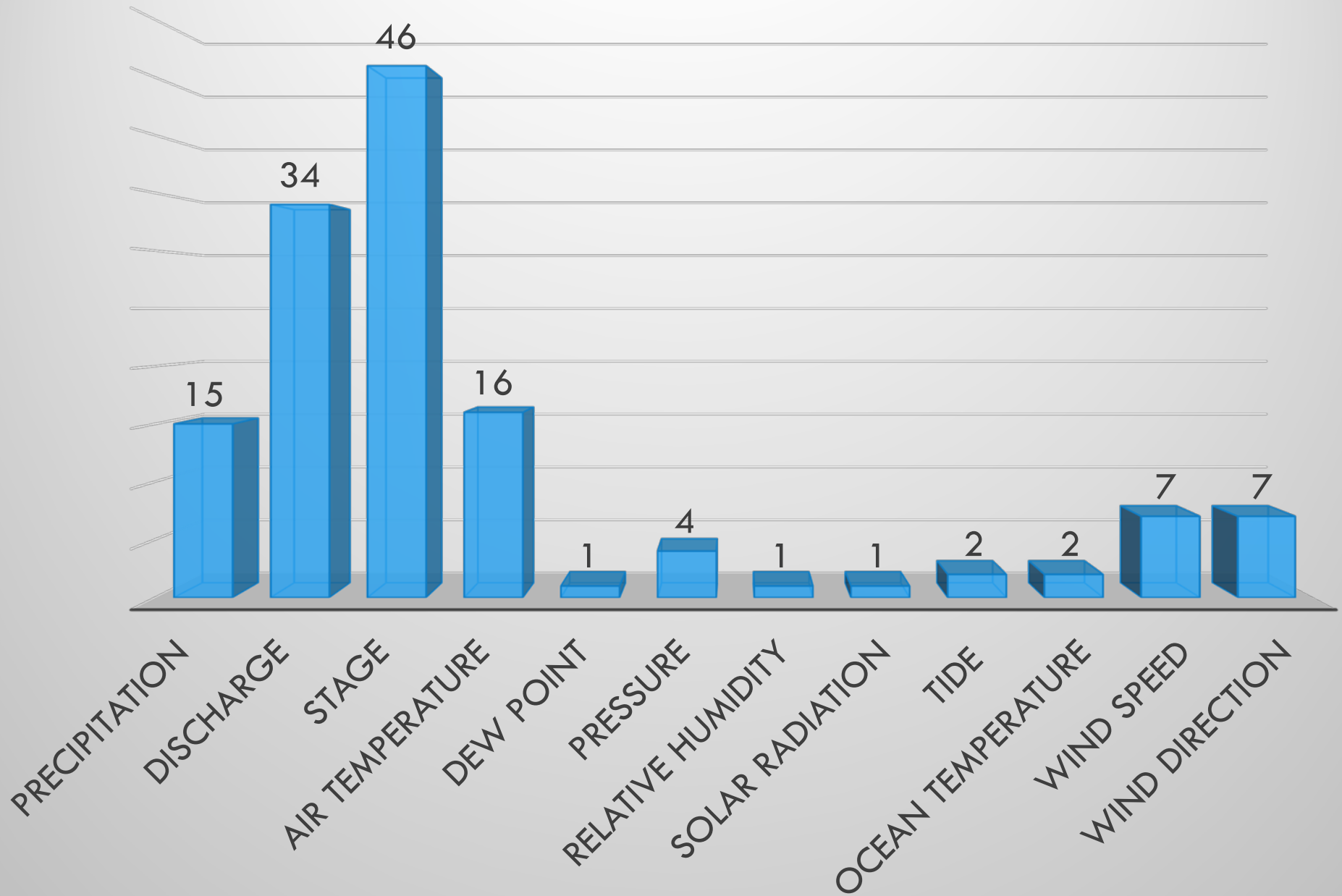




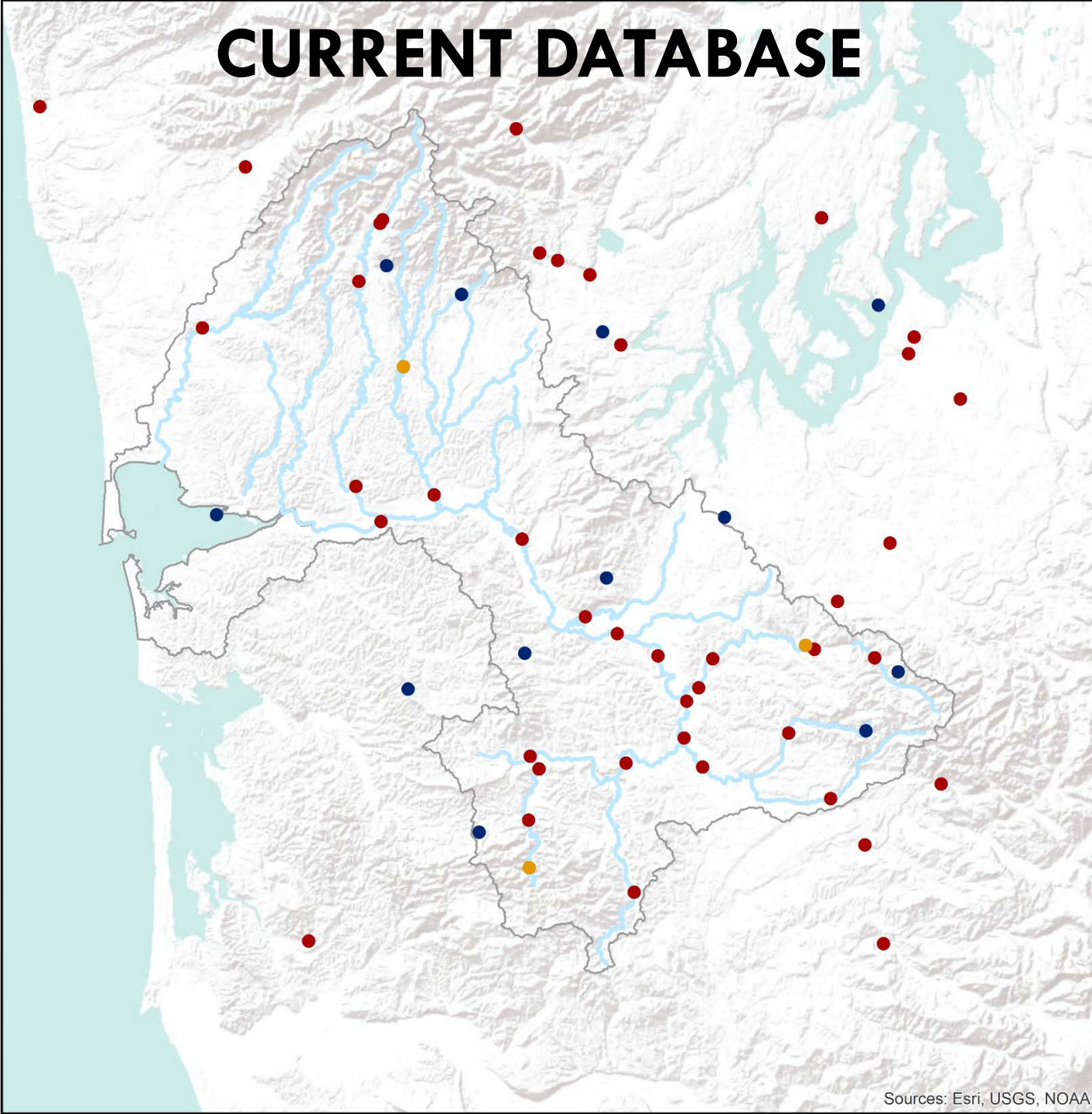
CURRENT DATABASE

Gage Type	HADS		USGS	METAR	TransAlta	TIDES	Total
	Flood Authority	WSDOE					
Precipitation	10	0	1	4	0	0	15
Discharge	0	0	34	0	0	0	34
Stage	2	2	40	0	2	0	46
Air Temperature	10	0	0	4	0	2	16
Battery	10	0	0	0	0	0	10
Dew Point	0	0	0	1	0	0	1
Pressure	1	0	0	1	0	2	4
Relative Humidity	1	0	0	0	0	0	1
Solar Radiation	1	0	0	0	0	0	1
Tide	0	0	0	0	0	2	2
Ocean Temperature	0	0	0	0	0	2	2
Wind	1	0	0	4	0	2	7
Total	36	2	75	14	2	10	139

Current Database



CURRENT DATABASE

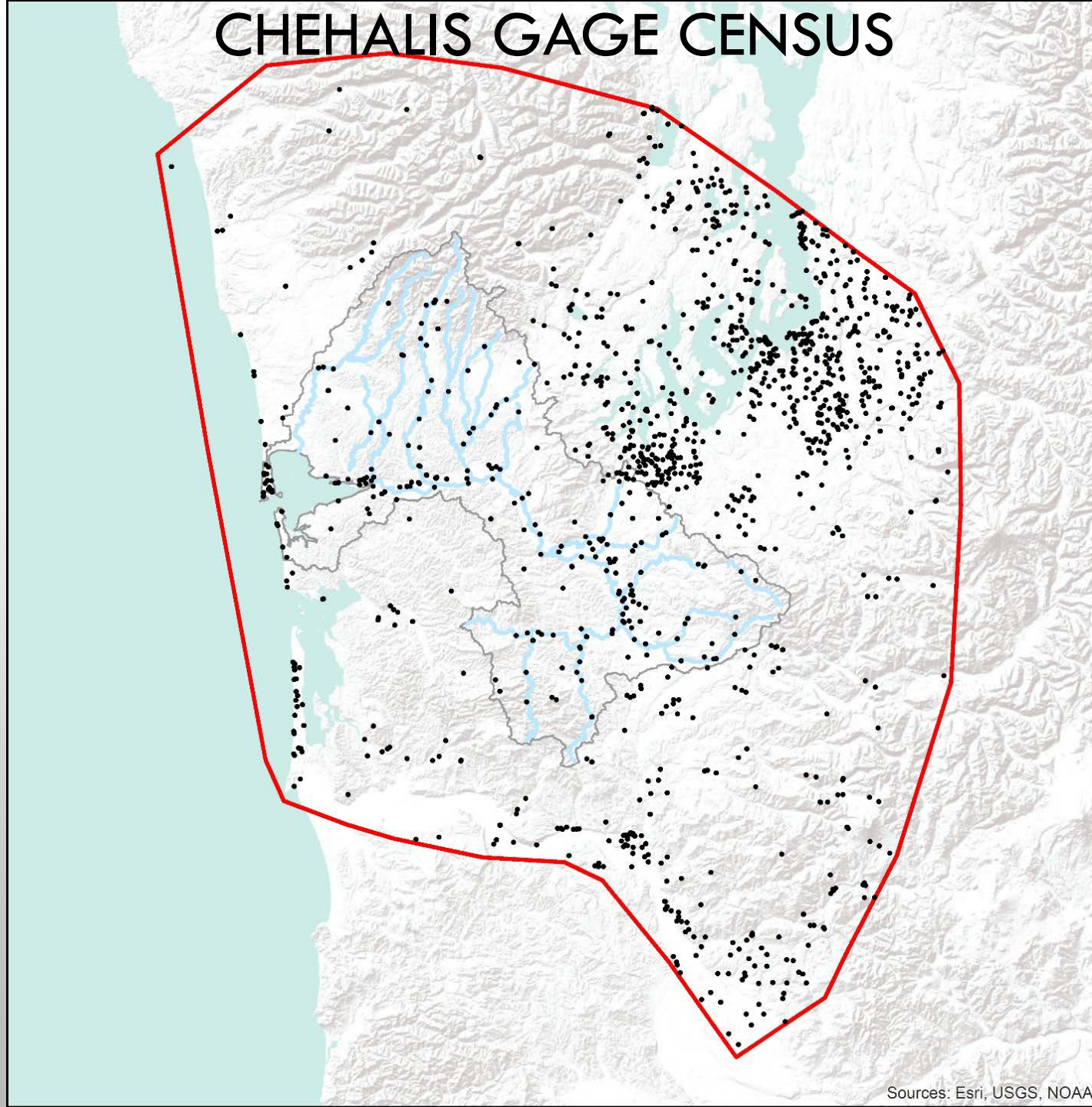


Sources: Esri, USGS, NOAA

GAGE INVENTORY

Precipitation	Pressure	Wind Speed
Discharge	Relative Humidity	Wind Direction
Stage	Solar Radiation	Wind Gust
Air Temperature	Tide	Snow Depth
Dew Point	Ocean Temperature	Other

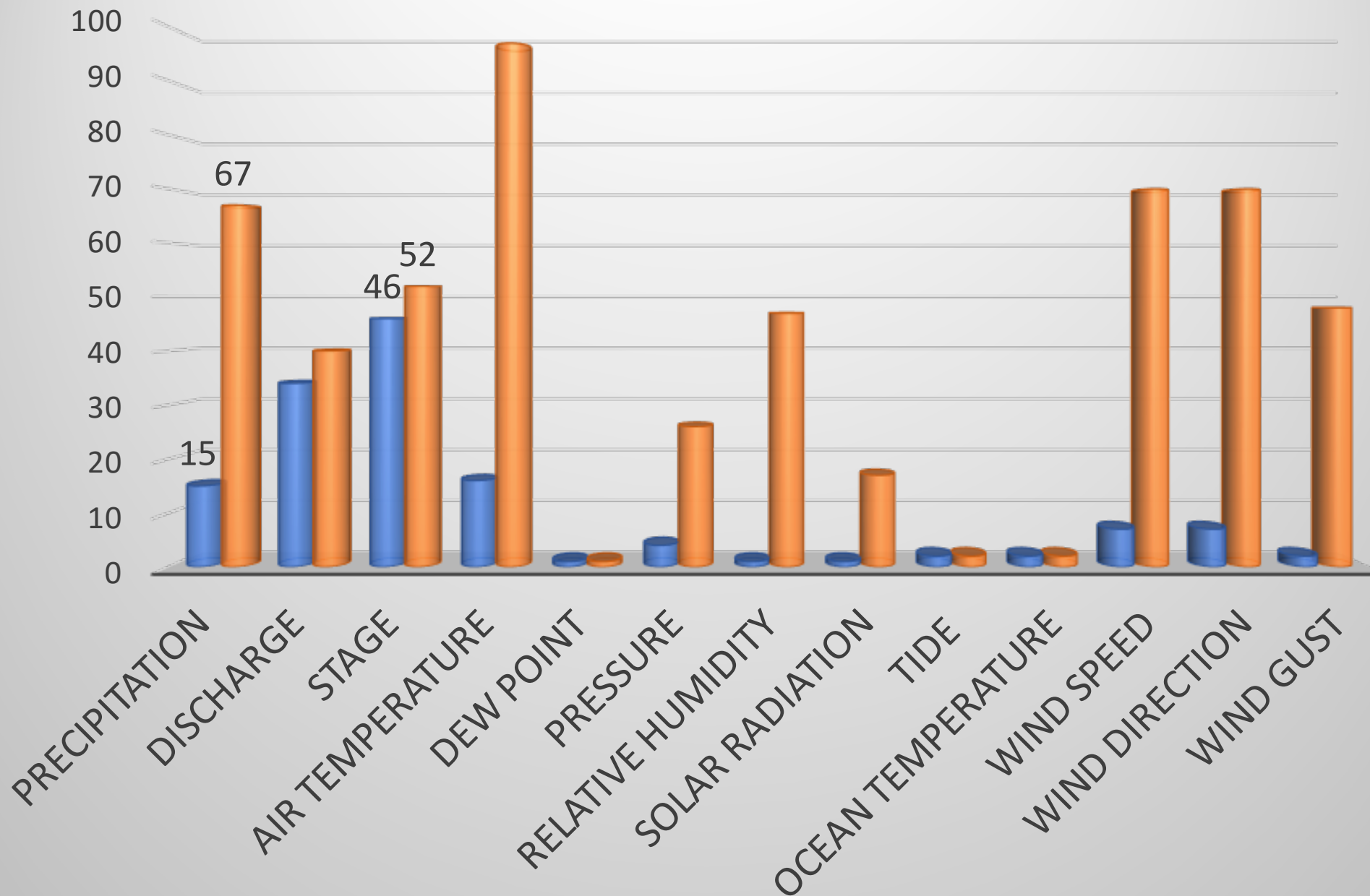
CHEHALIS GAGE CENSUS



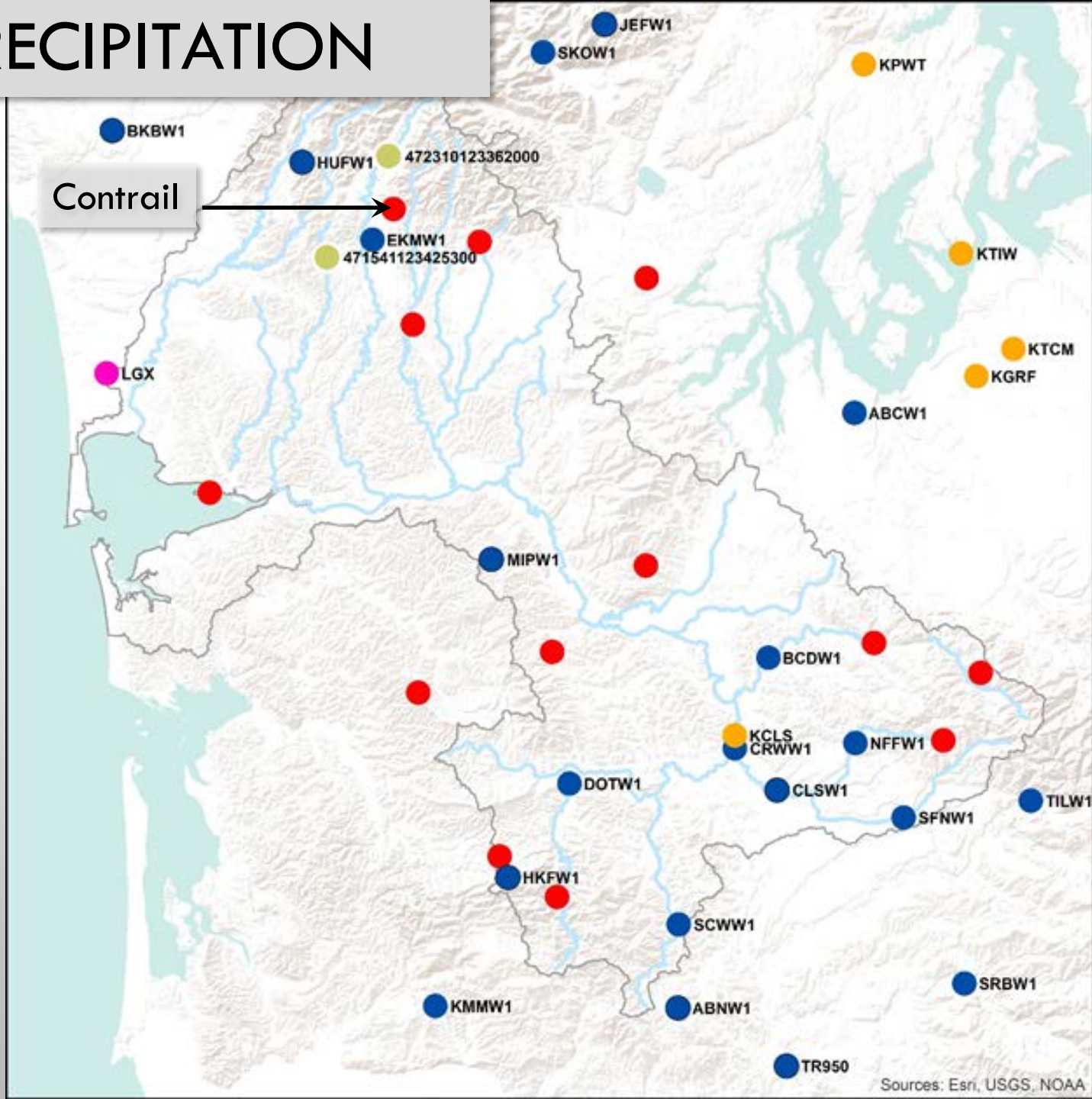
POTENTIAL SENSOR DATABASE

Gage Type	Professional Near-Real-Time with Systems Available In Contrail	Professional Not-Real-Time	Citizen Scientist	Total
Precipitation	67	265	541	873
Discharge	40	1	0	41
Stage	52	10	0	62
Air Temperature	97	40	615	752
Dew Point	1	0	0	1
Pressure	26	7	608	641
Relative Humidity	47	1	616	664
Solar Radiation	17	1	33	51
Tide	2	0	0	2
Ocean Temperature	2	0	0	2
Wind Speed	70	4	616	690
Wind Direction	70	4	616	690
Wind Gust	48	1	111	160
Snow Depth	4	17	0	21
Other	63	107	0	170
Total	606	458	3756	4820

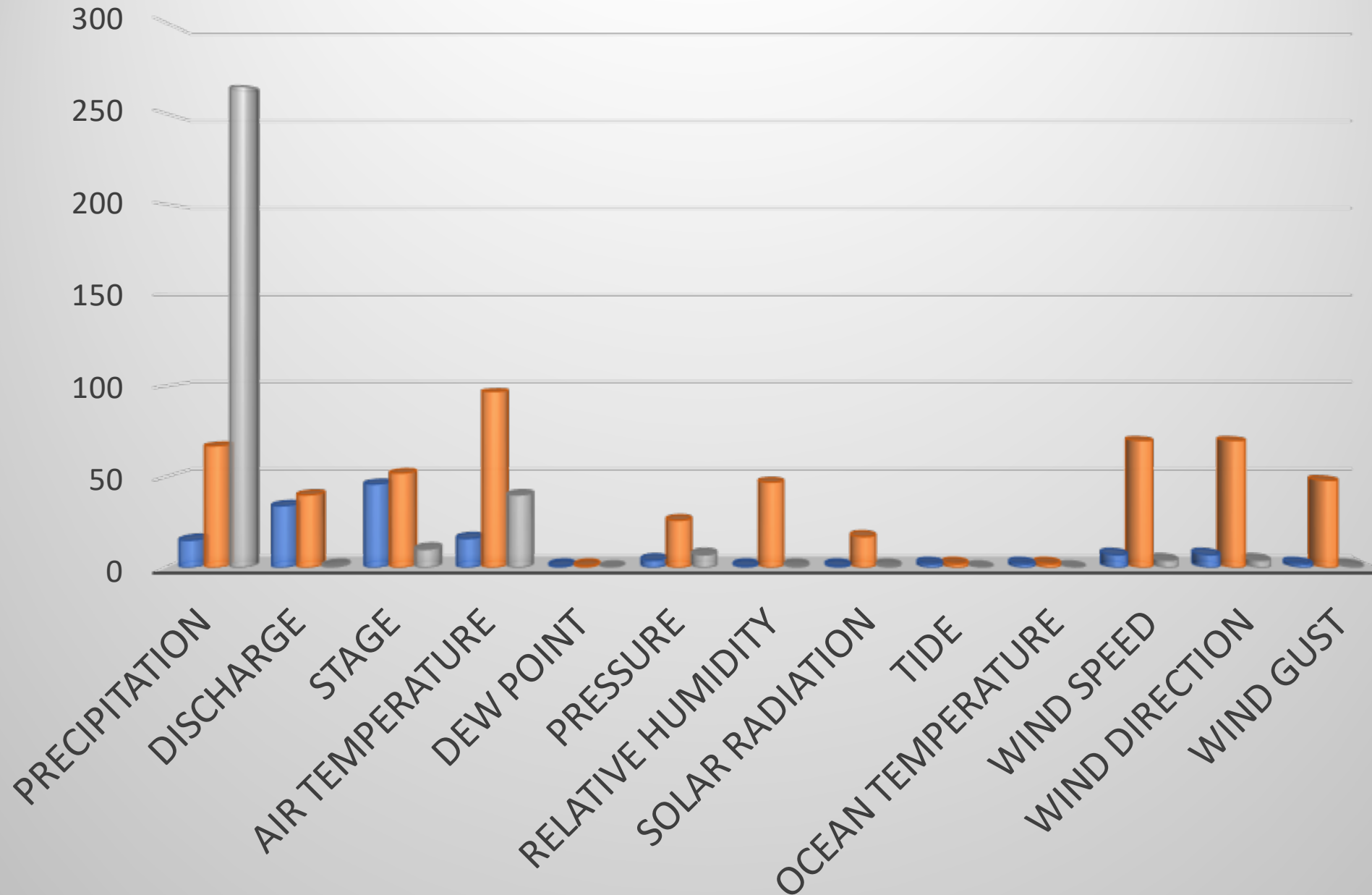
Potential Database - Near Realtime Sensors



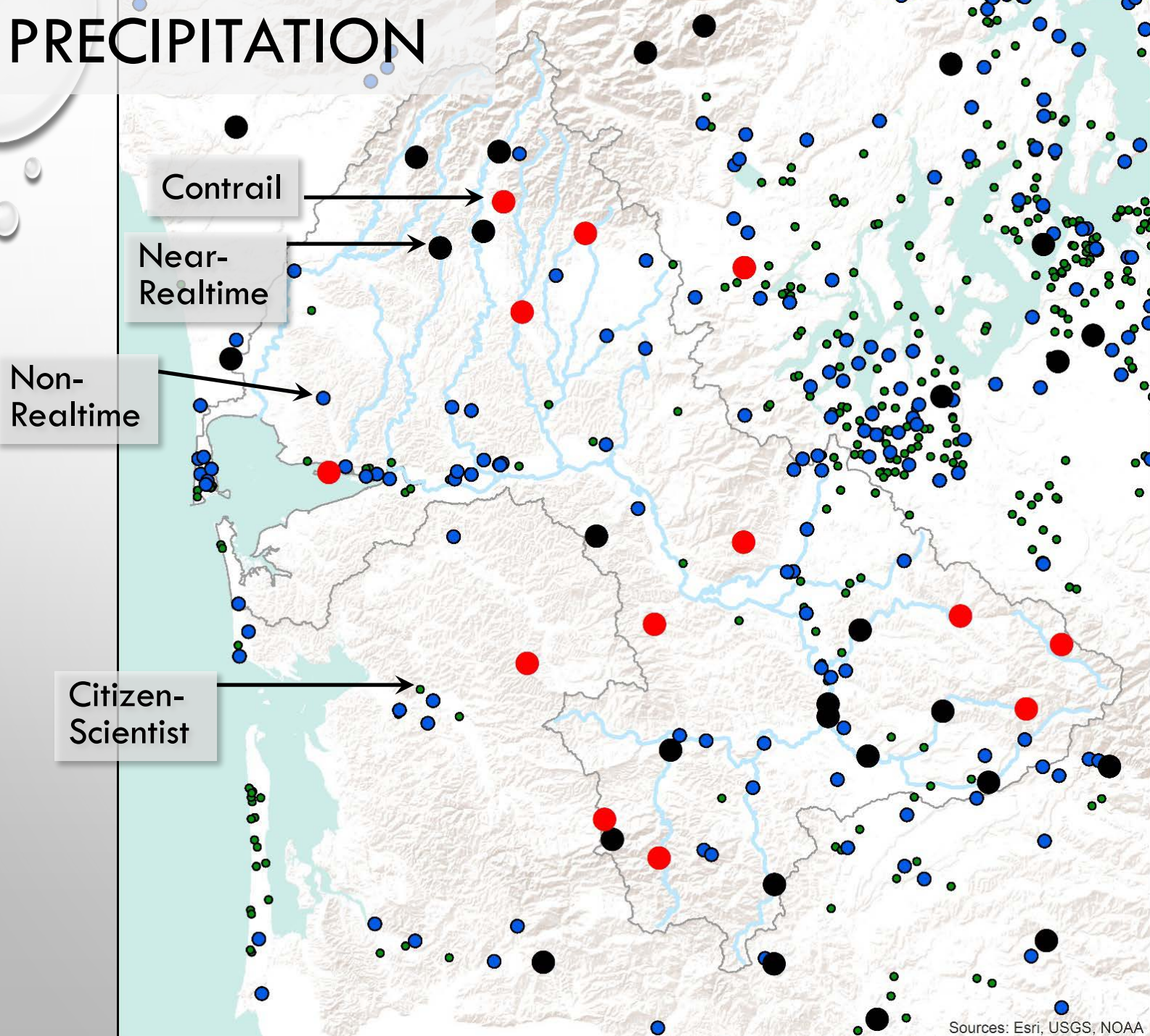
PRECIPITATION



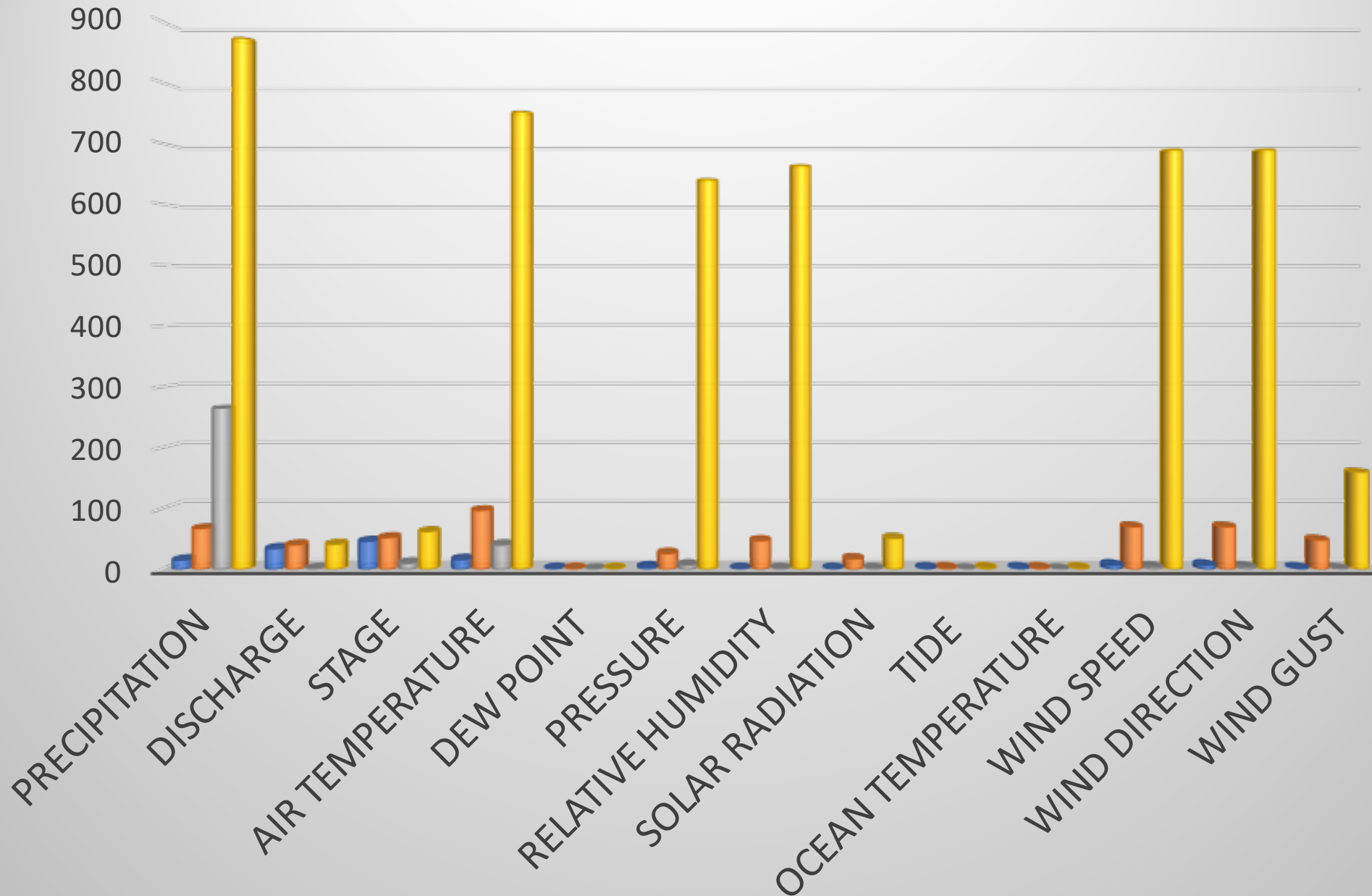
Potential Database - incl Non-Realtime Pro.



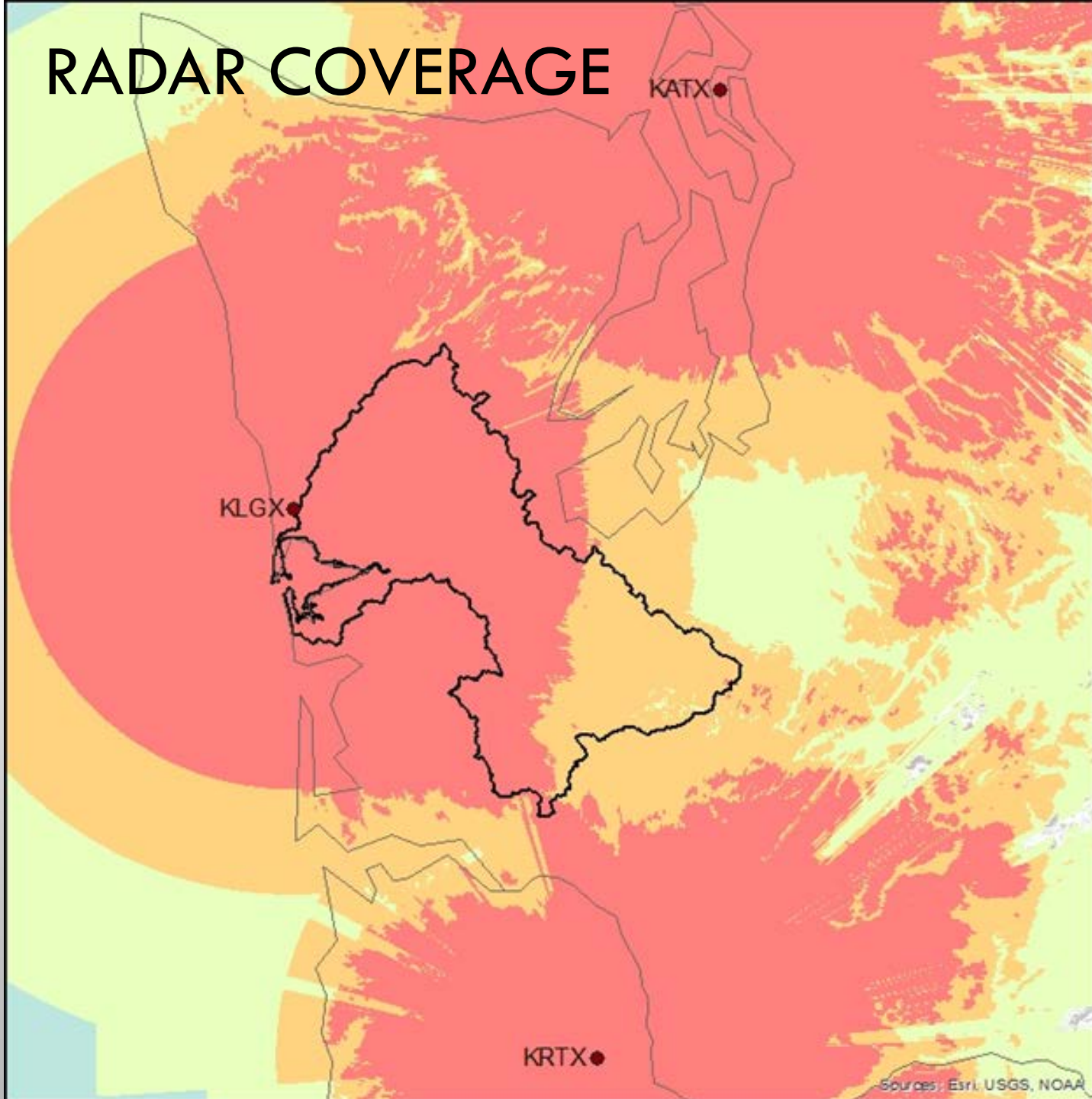
PRECIPITATION



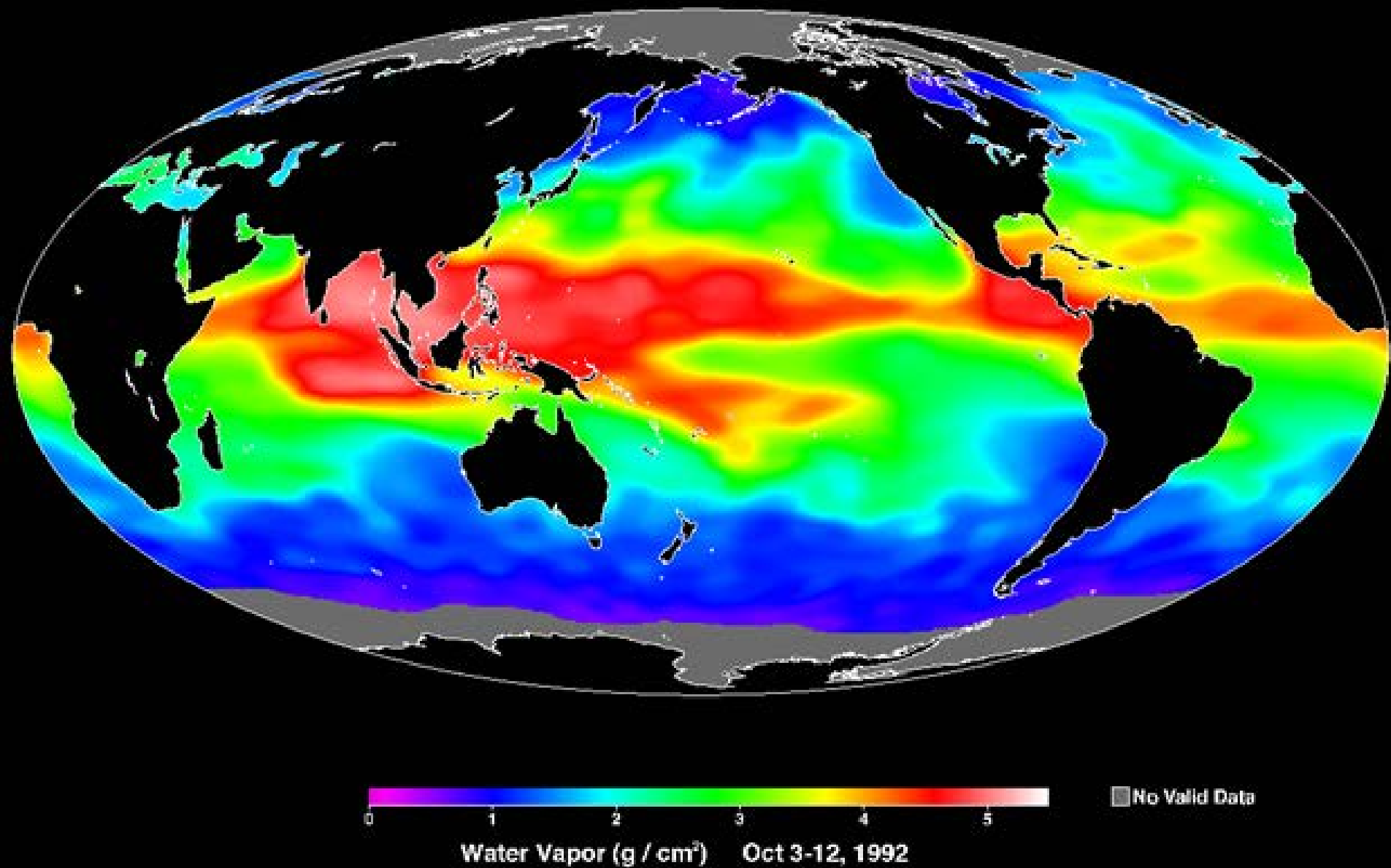
Potential Database

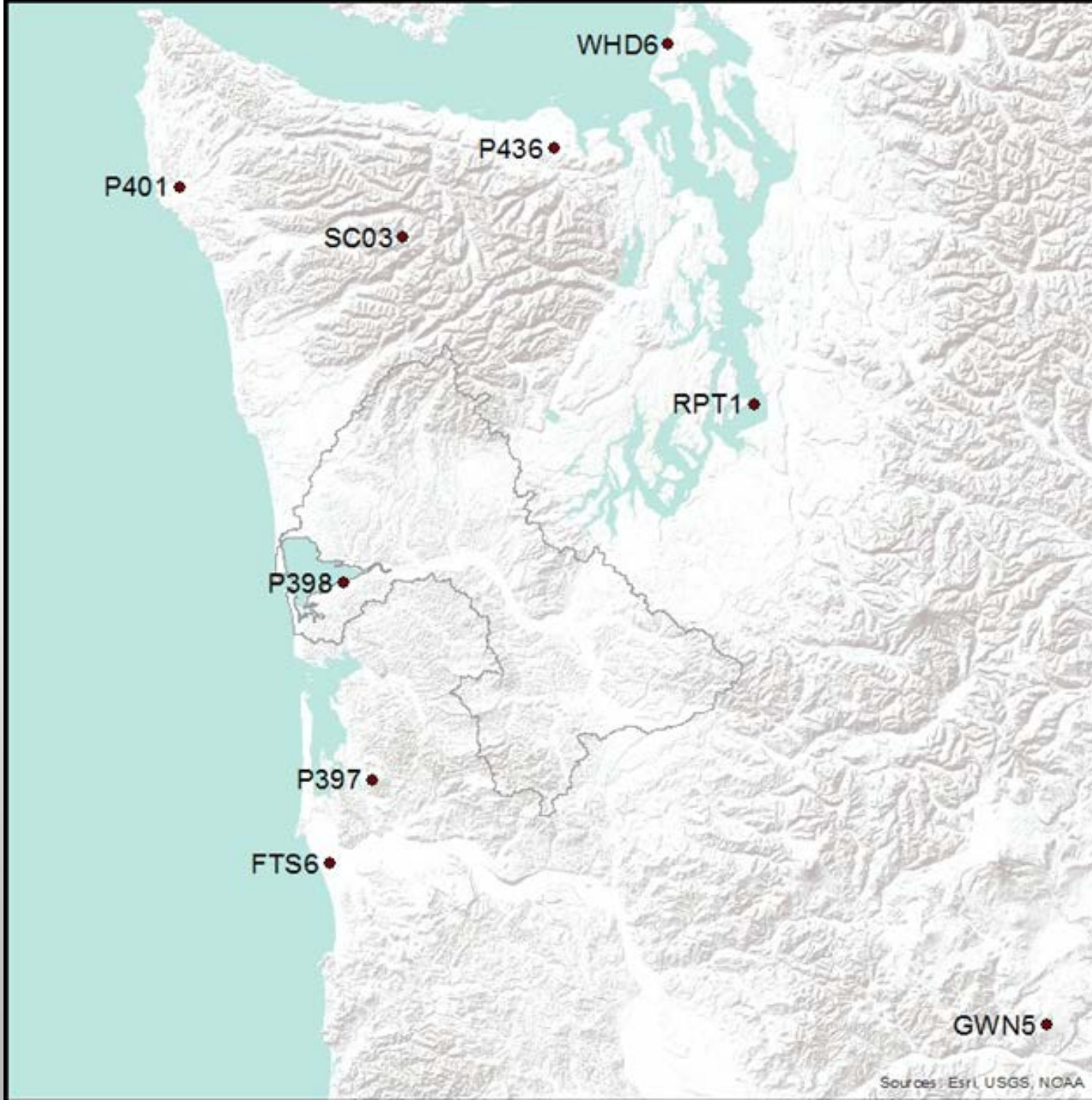


RADAR COVERAGE



WATER VAPOR



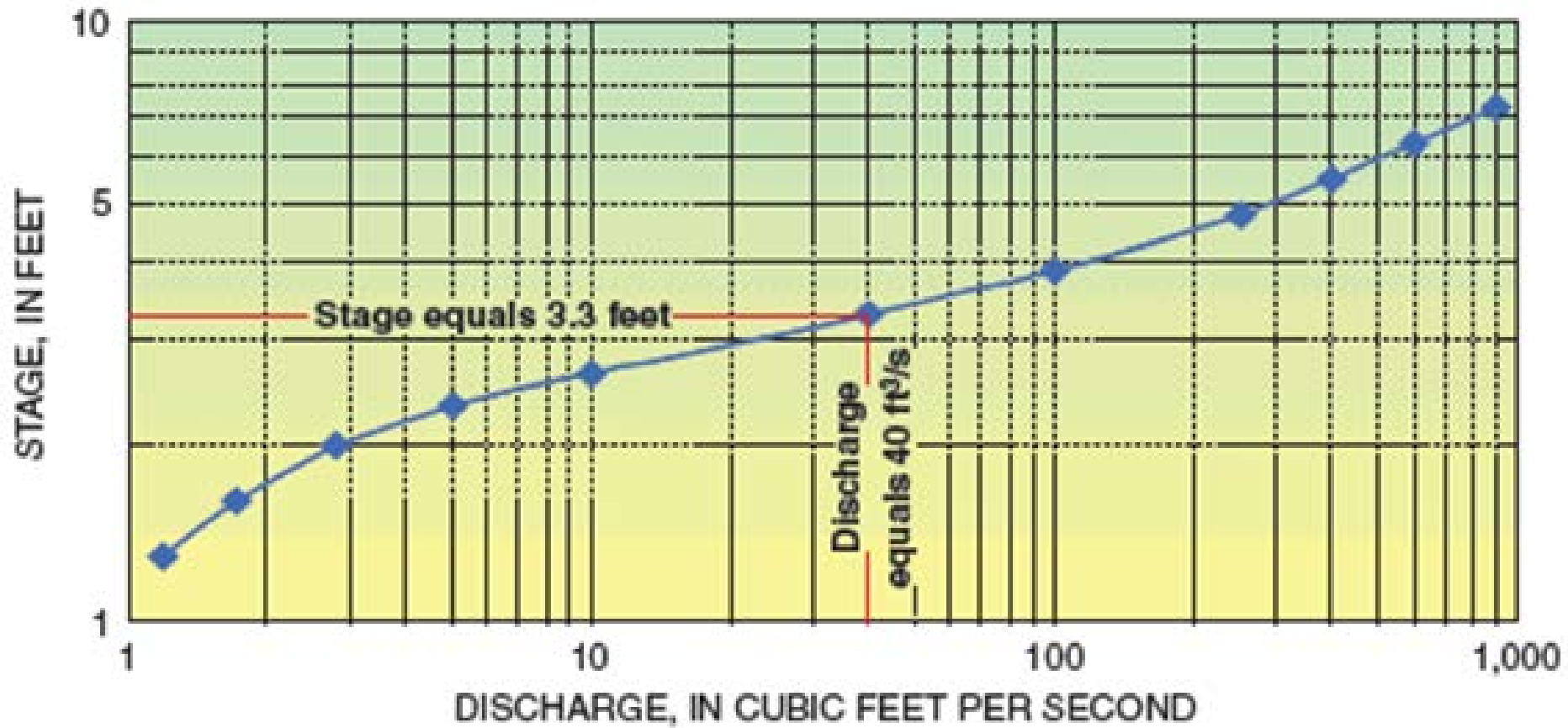


SUMMARY

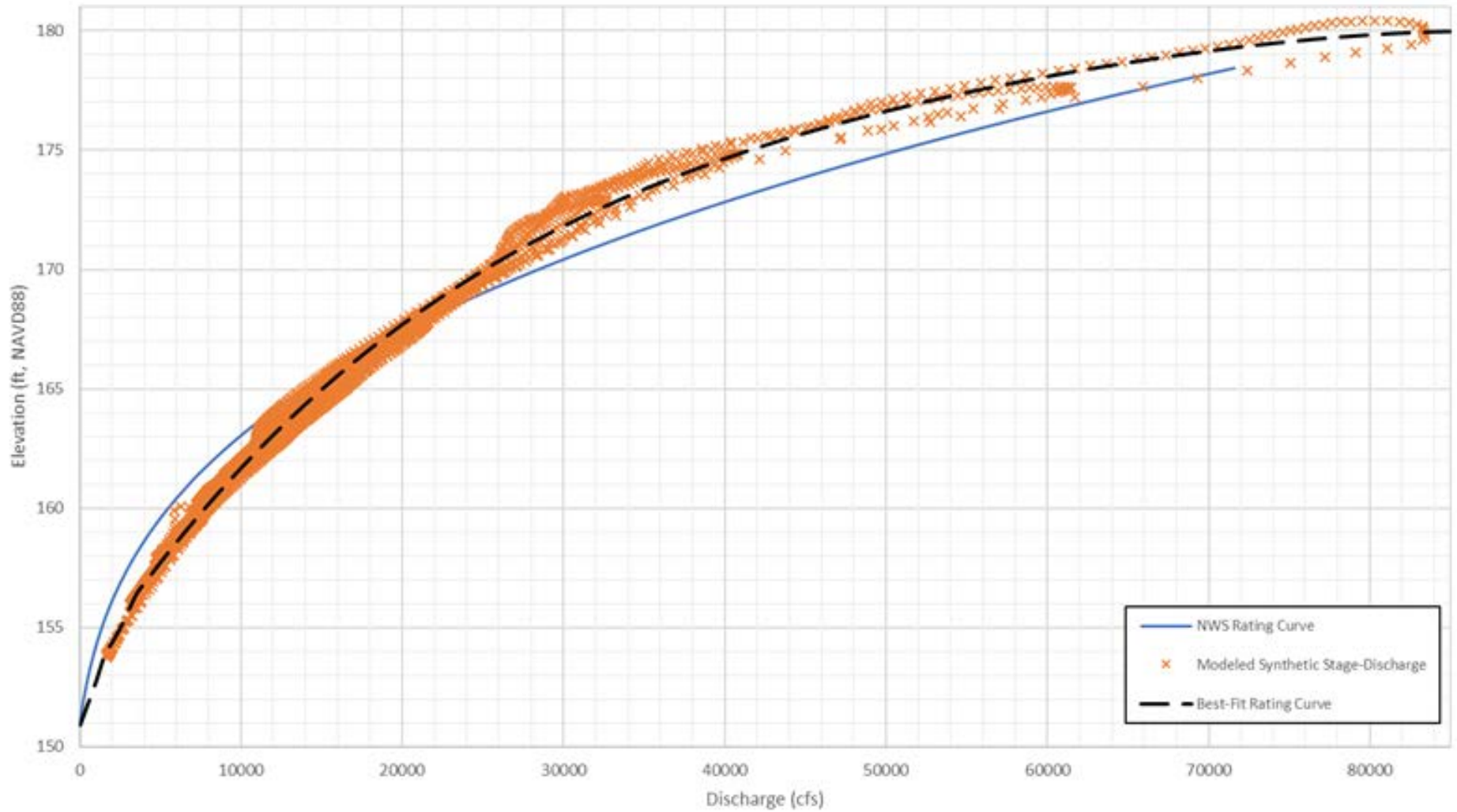
BEFORE ADDING, LOOK AROUND

Gage Type	Professional Near-Real-Time with Systems Available In Contrail	Professional Not-Real-Time	Citizen Scientist	Total
Precipitation	67	265	541	873
Discharge	40	1	0	41
Stage	52	10	0	62
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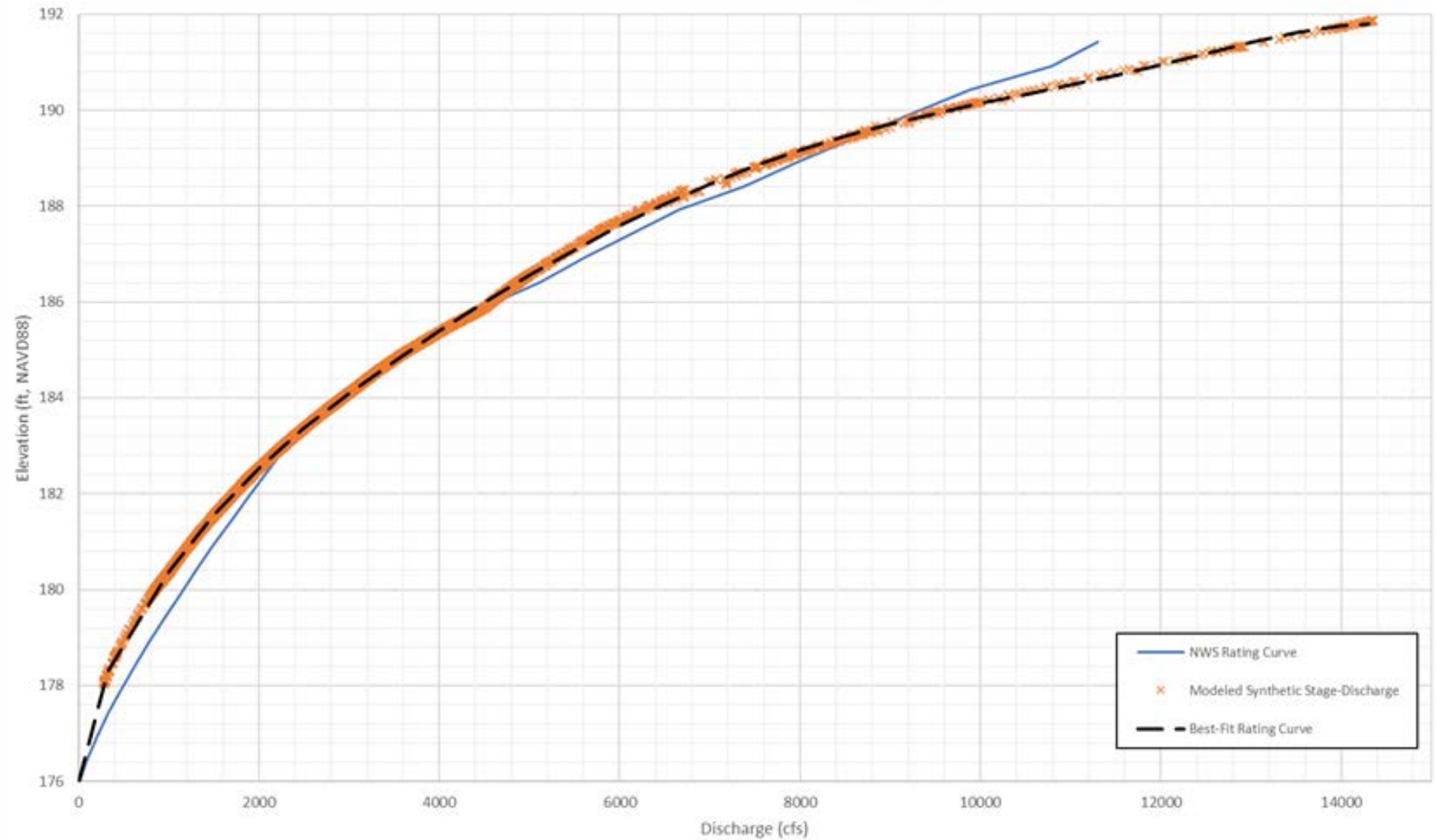
RATING CURVES



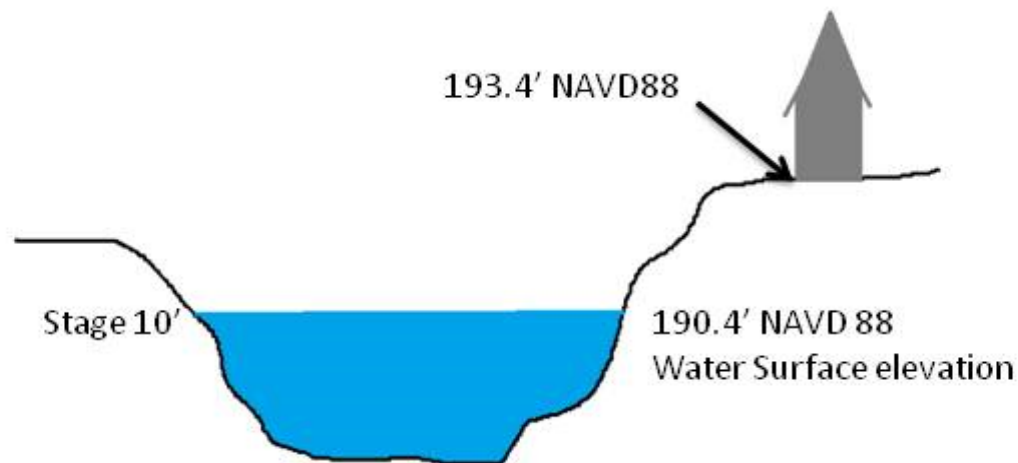
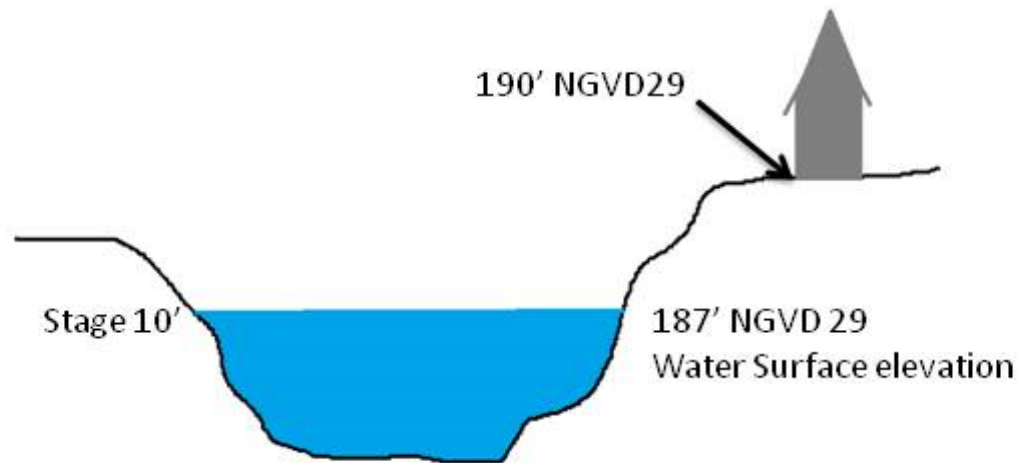
CHEHALIS--NEAR CENTRALIA (CENW1)



SKOOKUMCHUCK--AT CENTRALIA (CTAW1)



GAGE DATUM



USGS GAGES

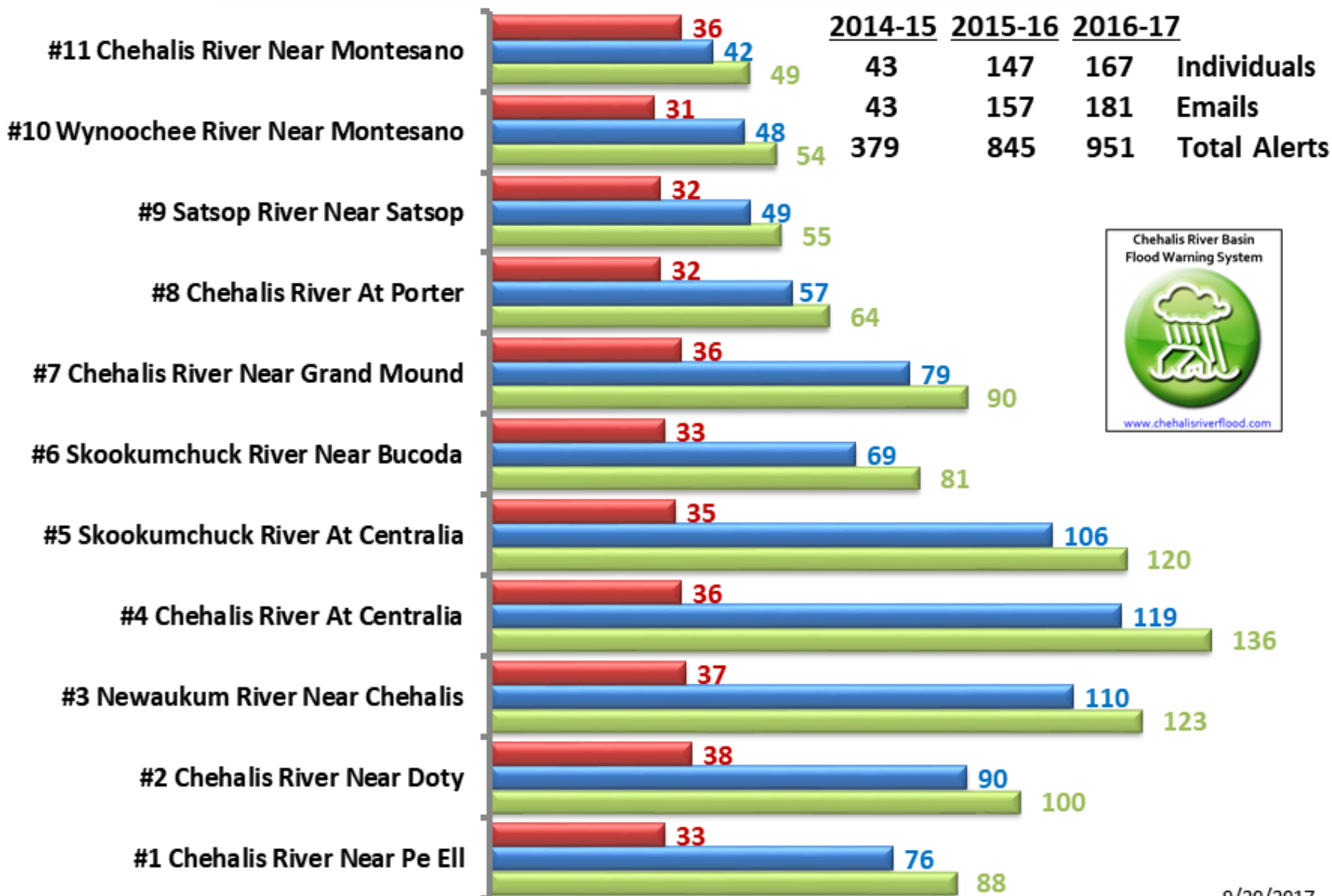
Station ID	Station Name	Vertical Datum	Offset (ft.)	Datum Method
12019310	CHEHALIS RIVER ABOVE MAHAFFEY CREEK NR PE ELL	NAVD88	432	USGS "Elevation"
12020000	CHEHALIS RIVER NEAR DOTY	NGVD29	301.1	USGS "Datum"
12020525	ELK CREEK BELOW DEER CREEK NEAR DOTY	NGVD29	0	USGS "Datum"
12020800	SOUTH FORK CHEHALIS RIVER NEAR WILDWOOD	NGVD29	0	USGS "Datum"
12021800	CHEHALIS RIVER NEAR ADNA	NGVD29	0	USGS "Datum"
12024000	SOUTH FORK NEWAUKUM RIVER NEAR ONALASKA	NGVD29	0	USGS "Datum"
12024400	NF NEWAUKUM RIVER ABOVE BEAR CREEK NEAR FOREST	NGVD29	0	USGS "Datum"
12025000	NEWAUKUM RIVER NEAR CHEHALIS	NGVD29	190	USGS "Elevation"
12025100	CHEHALIS RIVER AT WWTP AT CHEHALIS	NGVD29	0	USGS "Datum"
12025700	SKOOKUMCHUCK RIVER NEAR VAIL	NGVD29	710	USGS "Elevation"
12026150	SKOOKUMCHUCK RIVER BL BLDY RUN CR NR CENTRALIA	NGVD29	317.34	USGS "Datum"

NWS FORECAST POINTS

Operator	Station ID	Station Name	Vertical Datum
USGS	12020000	CHEHALIS RIVER NEAR DOTY	NGVD29
USGS	12025000	NEWAUKUM RIVER NEAR CHEHALIS	NGVD29
USGS	12026400	SKOOKUMCHUCK RIVER NEAR BUCODA	NGVD29
USGS	12027500	CHEHALIS RIVER NEAR GRAND MOUND	NGVD29
USGS	12031000	CHEHALIS RIVER AT PORTER	NGVD29
USGS	12035000	SATSOP RIVER NEAR SATSOP	NGVD29
USGS	12035380	WYNOOCHEE LAKE NEAR GRISDALE	NGVD29
USGS	12037400	WYNOOCHEE RIVER ABOVE BLACK CREEK NR MONTESANO	NGVD29
FLOOD AUTHORITY	12025500	CHEHALIS RIVER AT CENTRALIA- WA	NGVD29
FLOOD AUTHORITY	12026600	SKOOKUMCHUCK RIVER AT CENTRALIA- WA	NGVD29

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

Distribution of Requested Flood Alerts

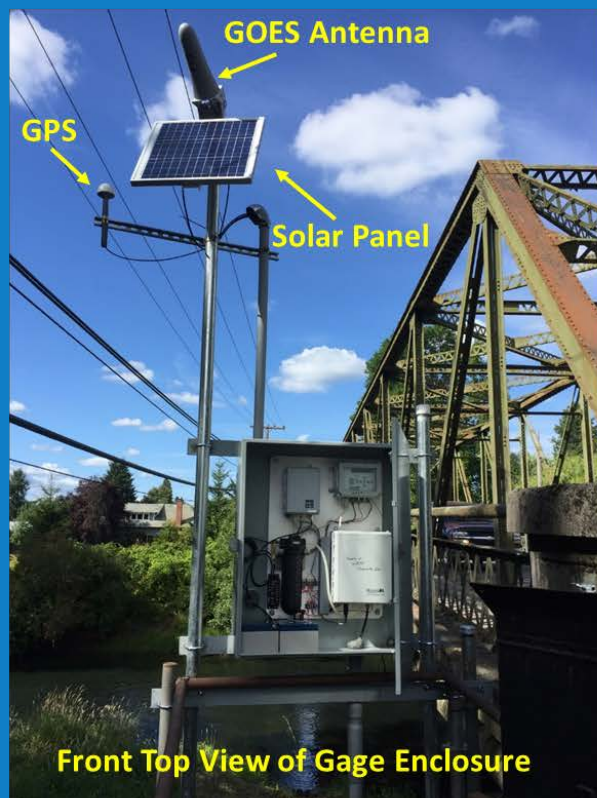


RECOMMENDATIONS

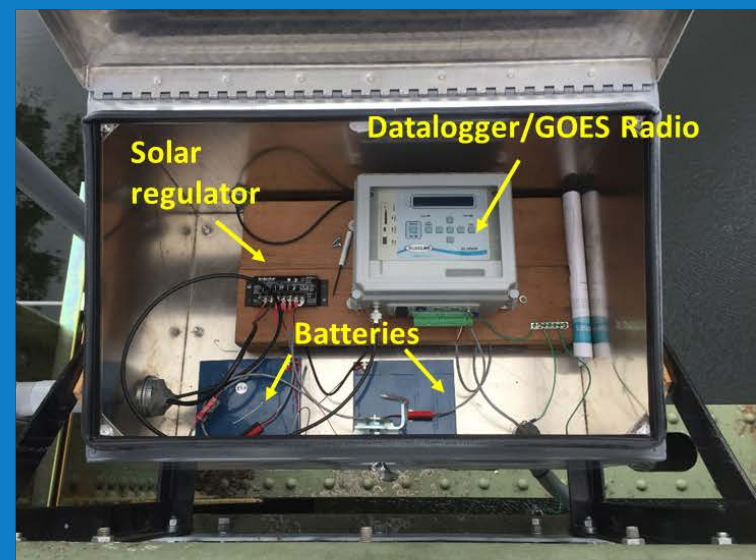
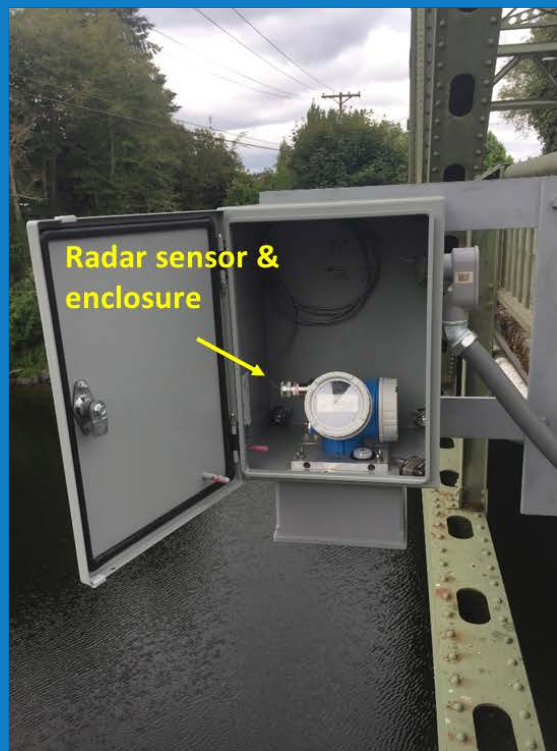
- ADD ADDITIONAL AVAILABLE HADS, USGS, AND METAR GAGES
- ADD WSDOE STREAM GAGES
- UPGRADE NWS STREAM GAGES
- SURVEY STREAM GAGES TO NAVD 88
- OUTREACH AND EDUCATION FOR DATUM CHANGE
- UPGRADE GOES DCS RADIOS
- ADD CITY OF ABERDEEN STREAM GAGE
- ADD NWS RIVER FORECASTS TO HIGH WATER ALERTS
- CONSIDER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



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



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



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 high-voltage power line towers stand on the horizon. The overall mood is serene and contemplative.

QUESTIONS?