

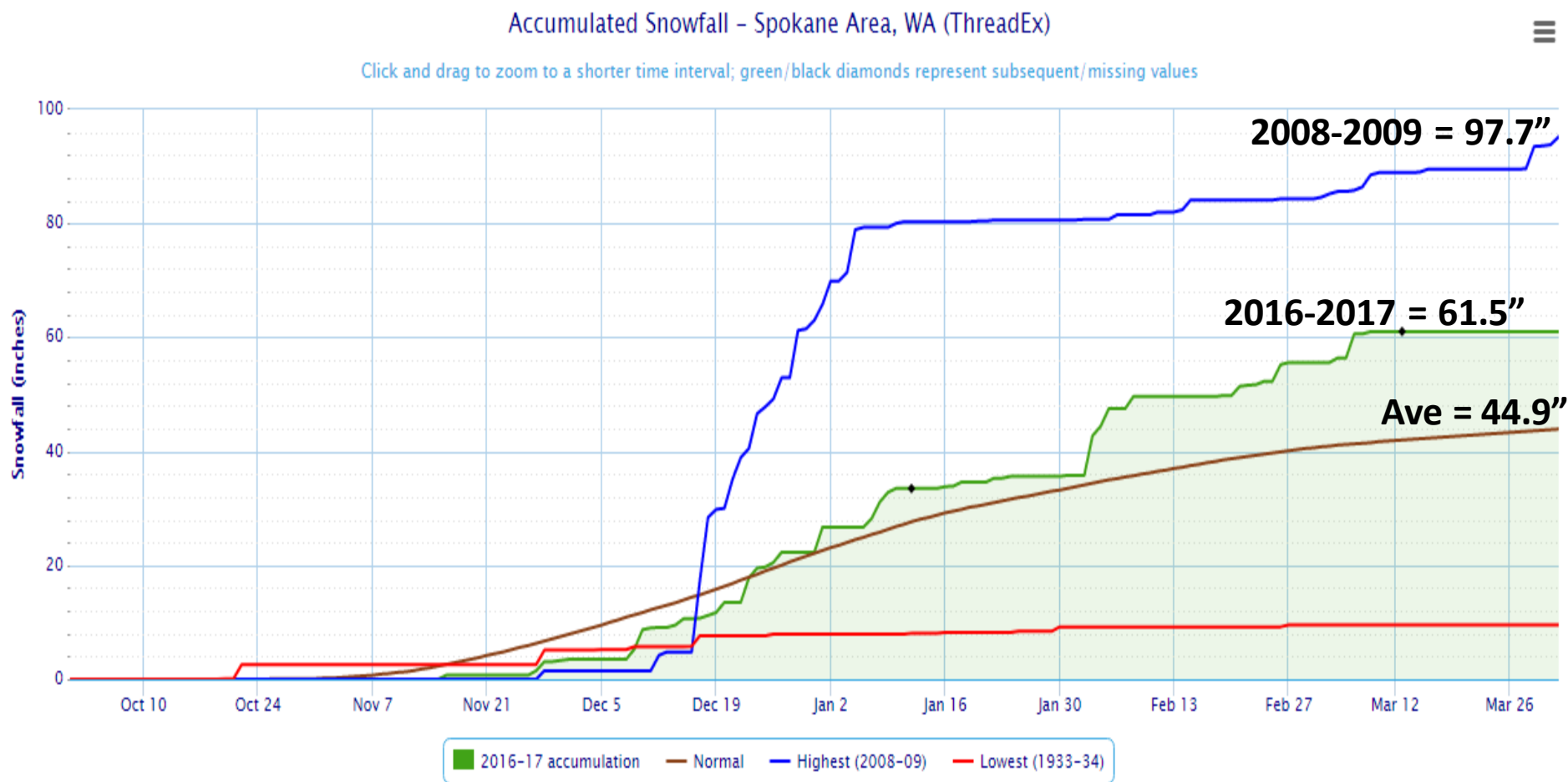


2017 Spokane River Water Year... So Far

June 8, 2017

Katherine Rowden
Service Hydrologist
National Weather Service
Spokane, WA

Spokane, WA snowfall through April 1 Records kept since 1893



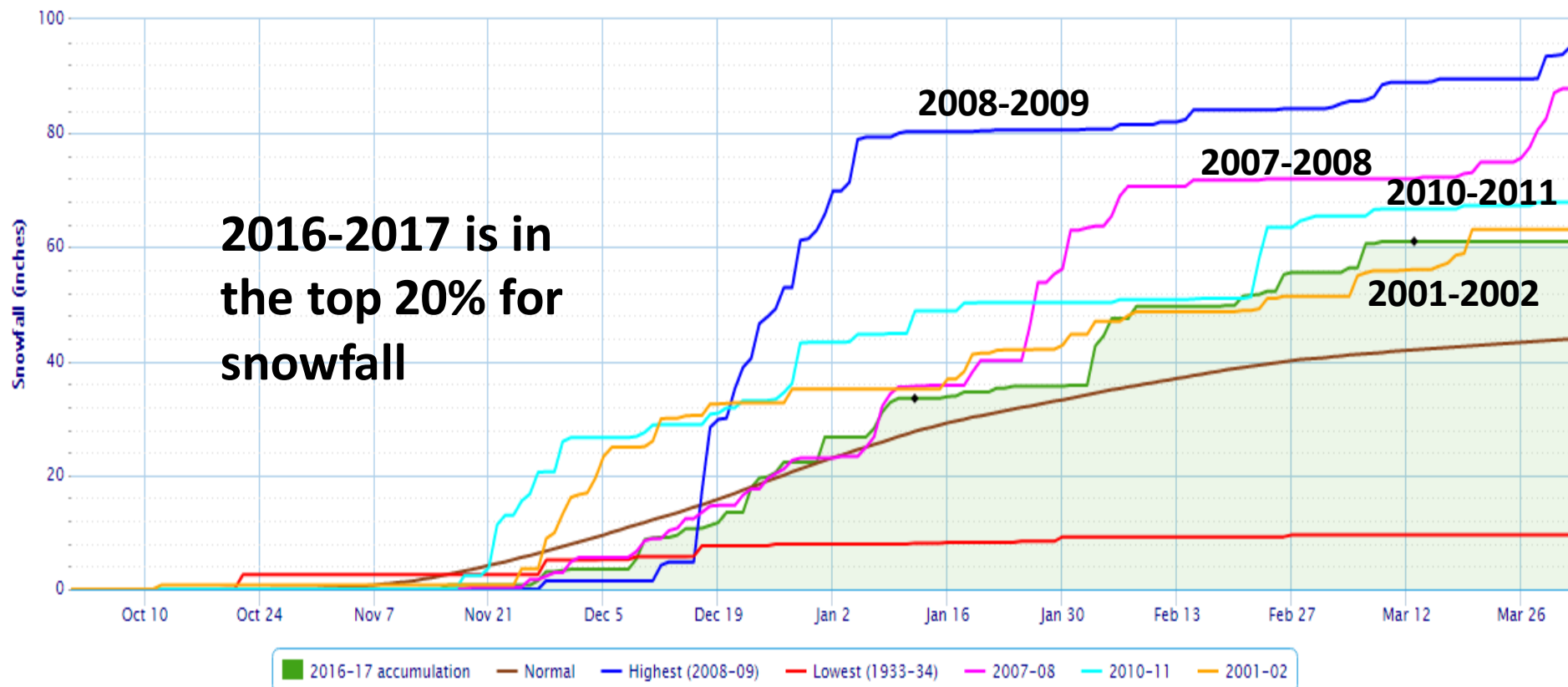
30-yr Normal 1981-2010

Spokane, WA snowfall through April 1

Records kept since 1893

Accumulated Snowfall - Spokane Area, WA (ThreadEx)

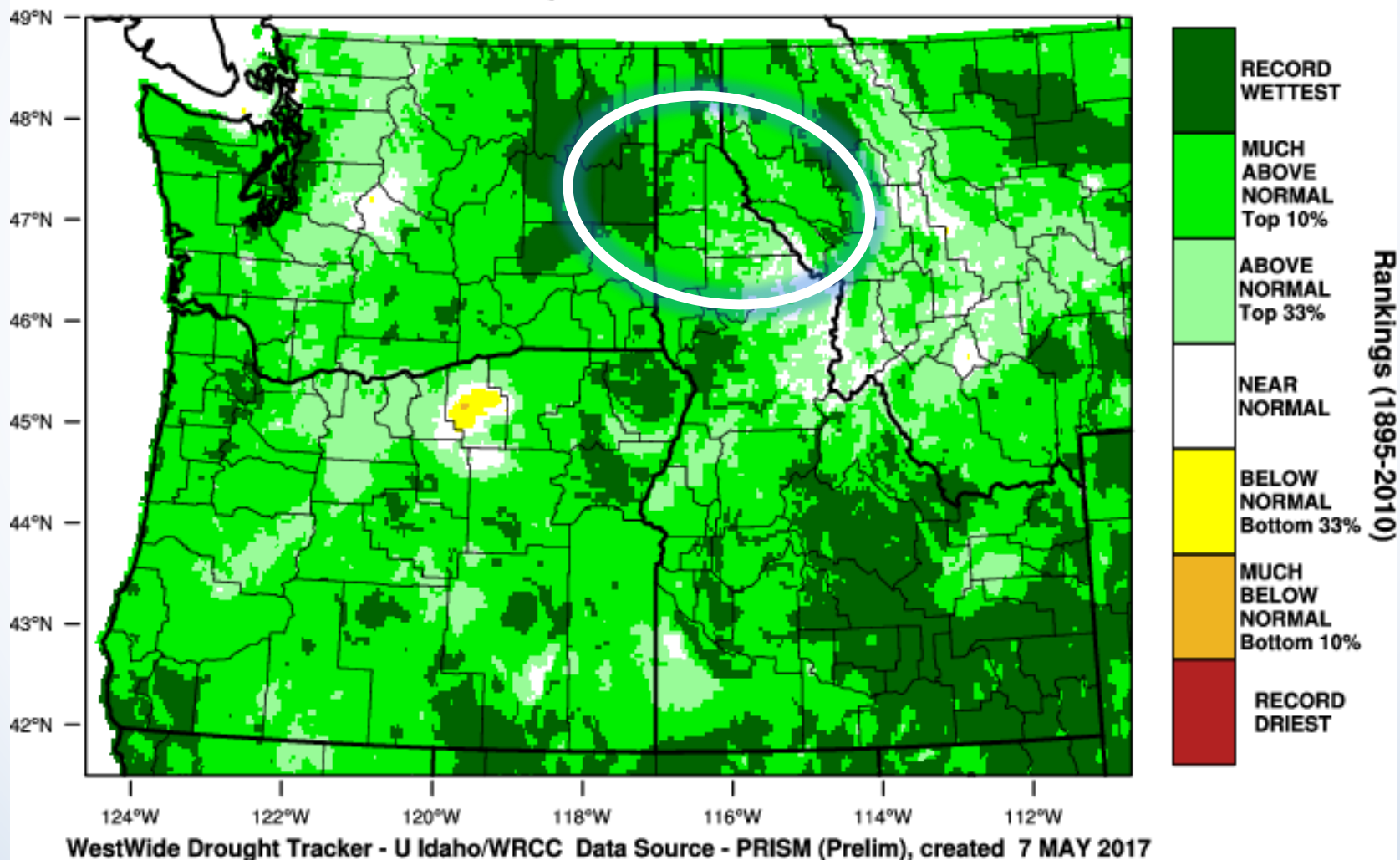
Click and drag to zoom to a shorter time interval; green/black diamonds represent subsequent/missing values



Oct – April Precip Percentile / Records

Pacific Northwest - Precipitation

October-April 2017 Percentile

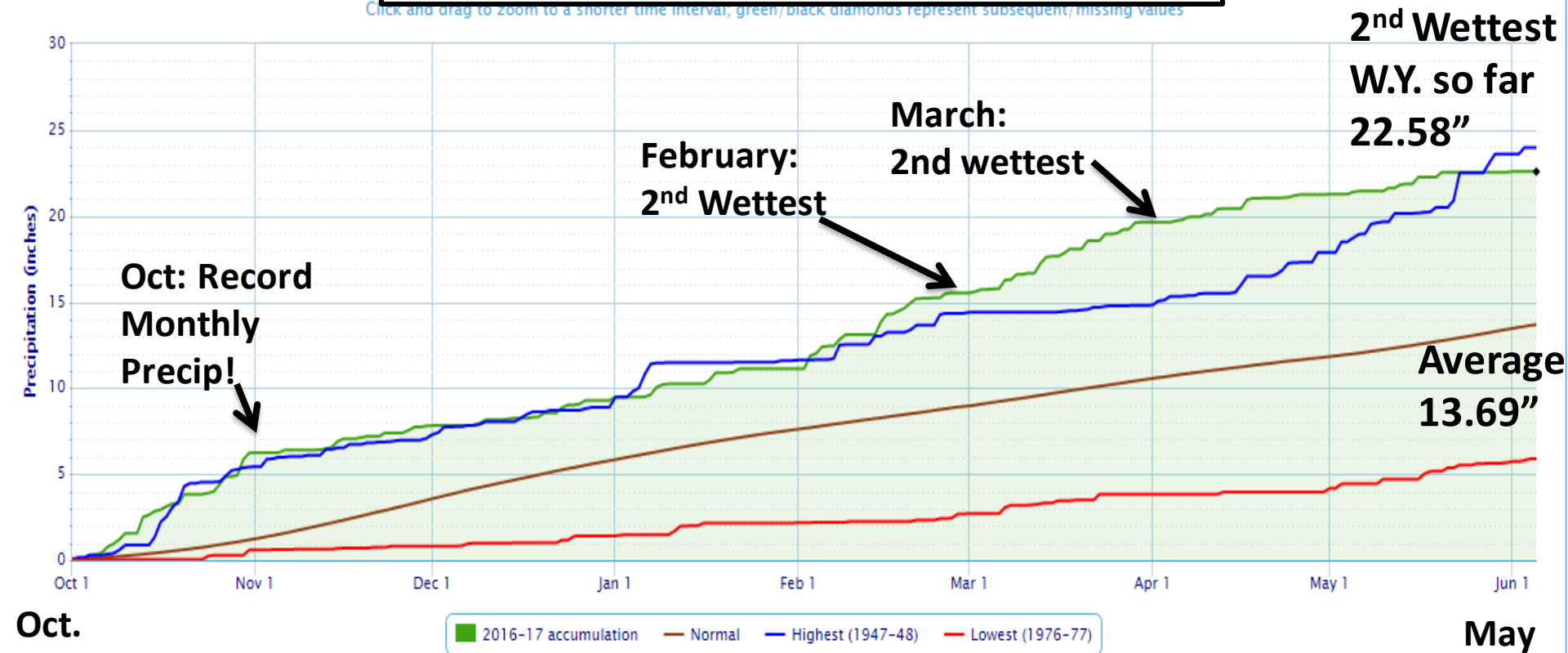


Spokane, WA Water Year Precip

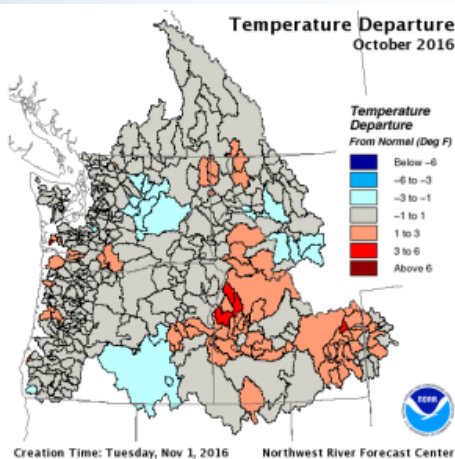
Records kept since 1881

Accumulated Precipitation since October, 2016

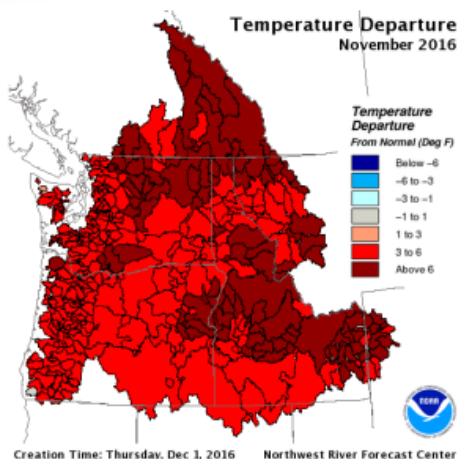
Click and drag to zoom to a shorter time interval, green/black diamonds represent subsequent/missing values



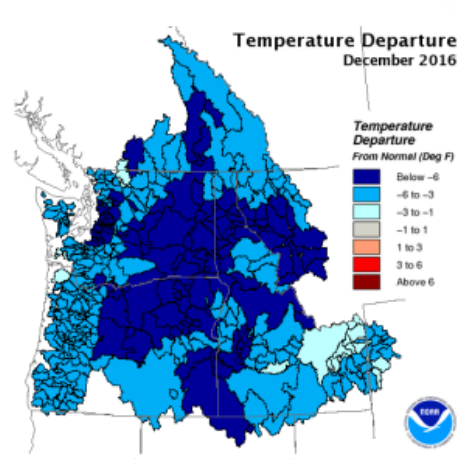
Temperatures by Month



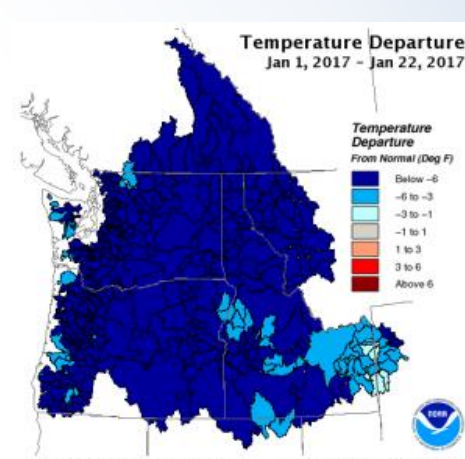
October



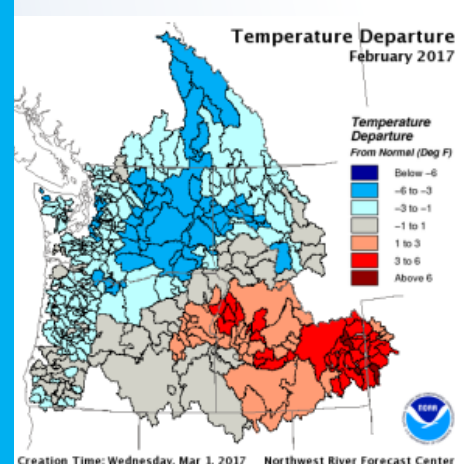
November



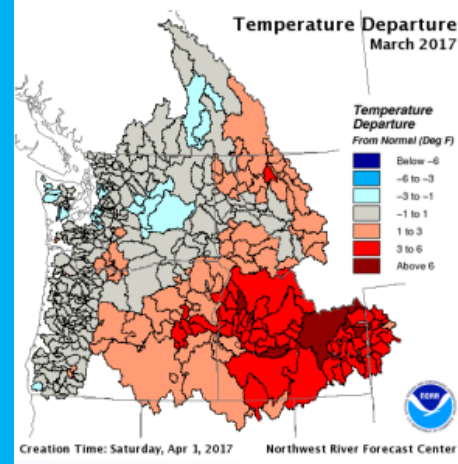
December



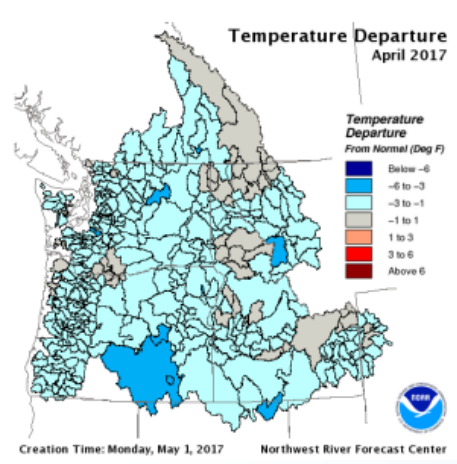
January



February

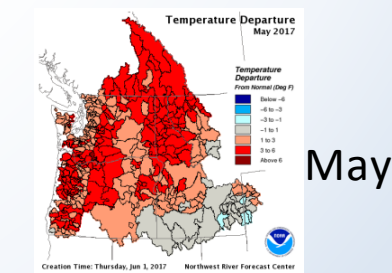


March



April

- Spokane**
- Coldest winter since 1992-1993
 - 10th coldest winter on record



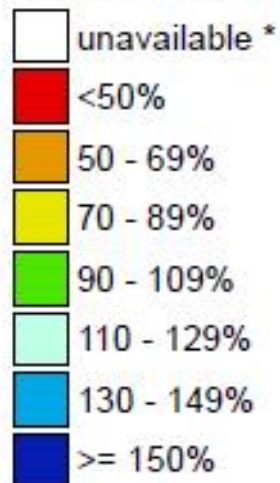
May

Pre-flood Snow pack

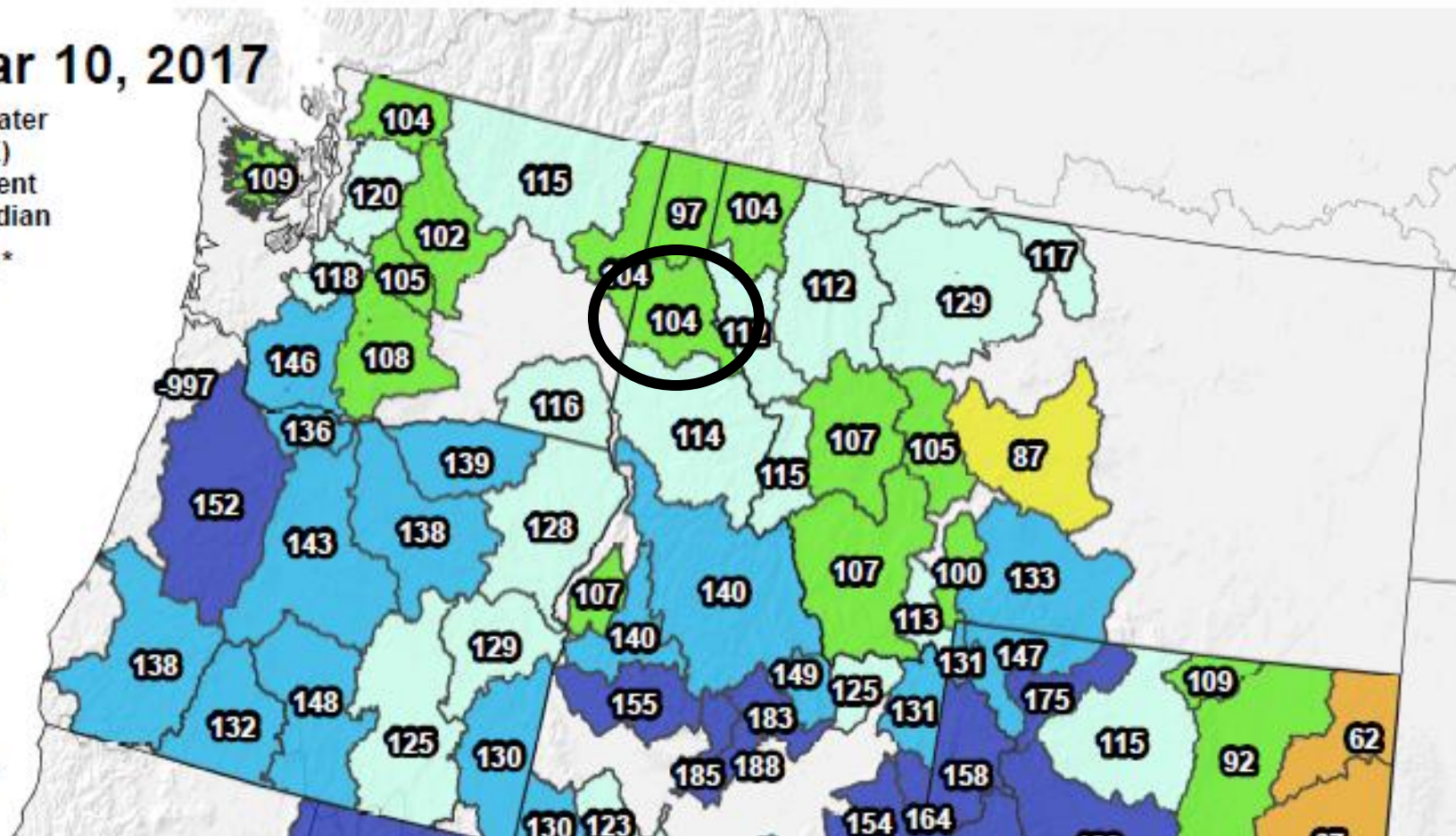
Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Mar 10, 2017

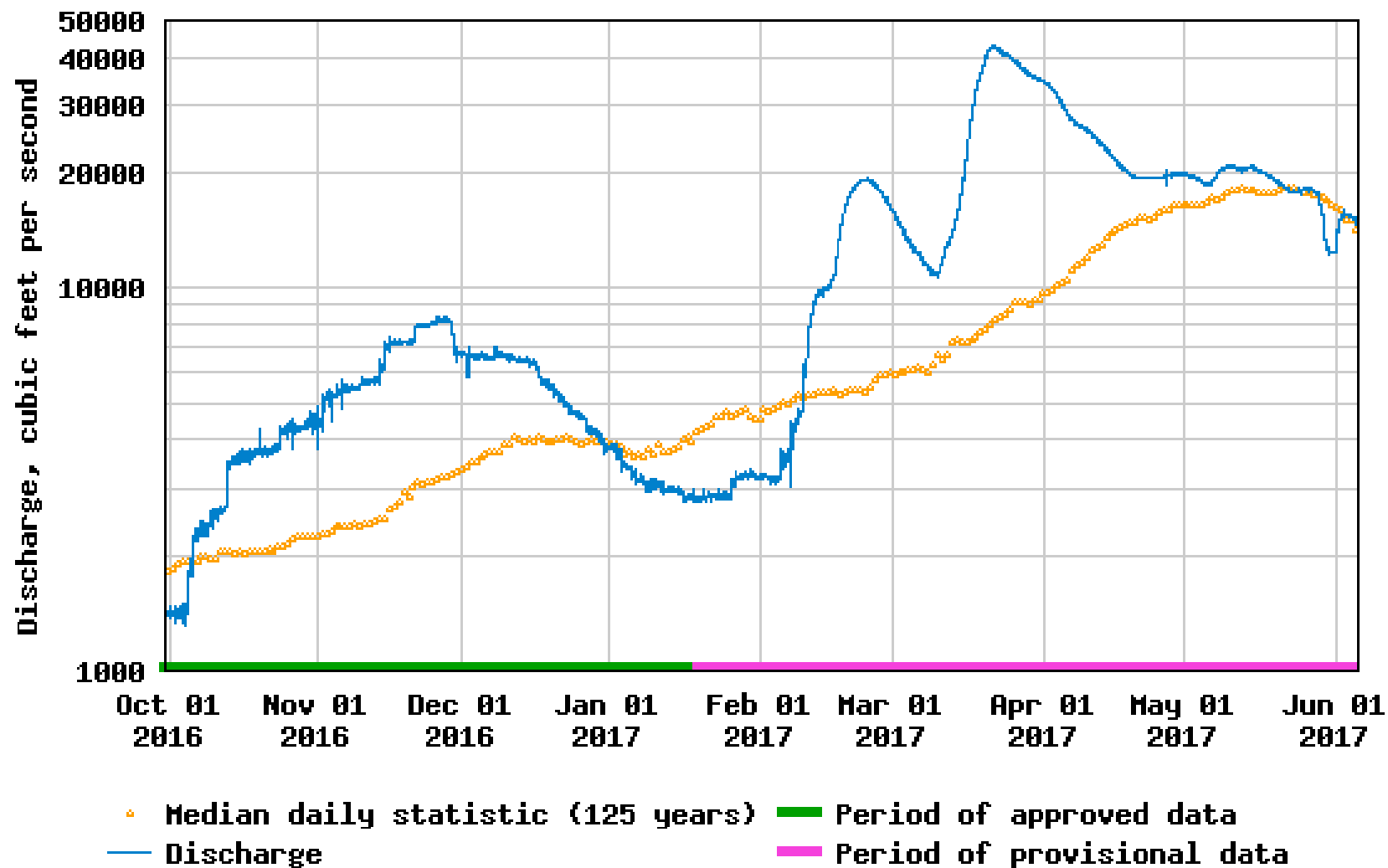
Current Snow Water Equivalent (SWE)
Basin-wide Percent
of 1981-2010 Median



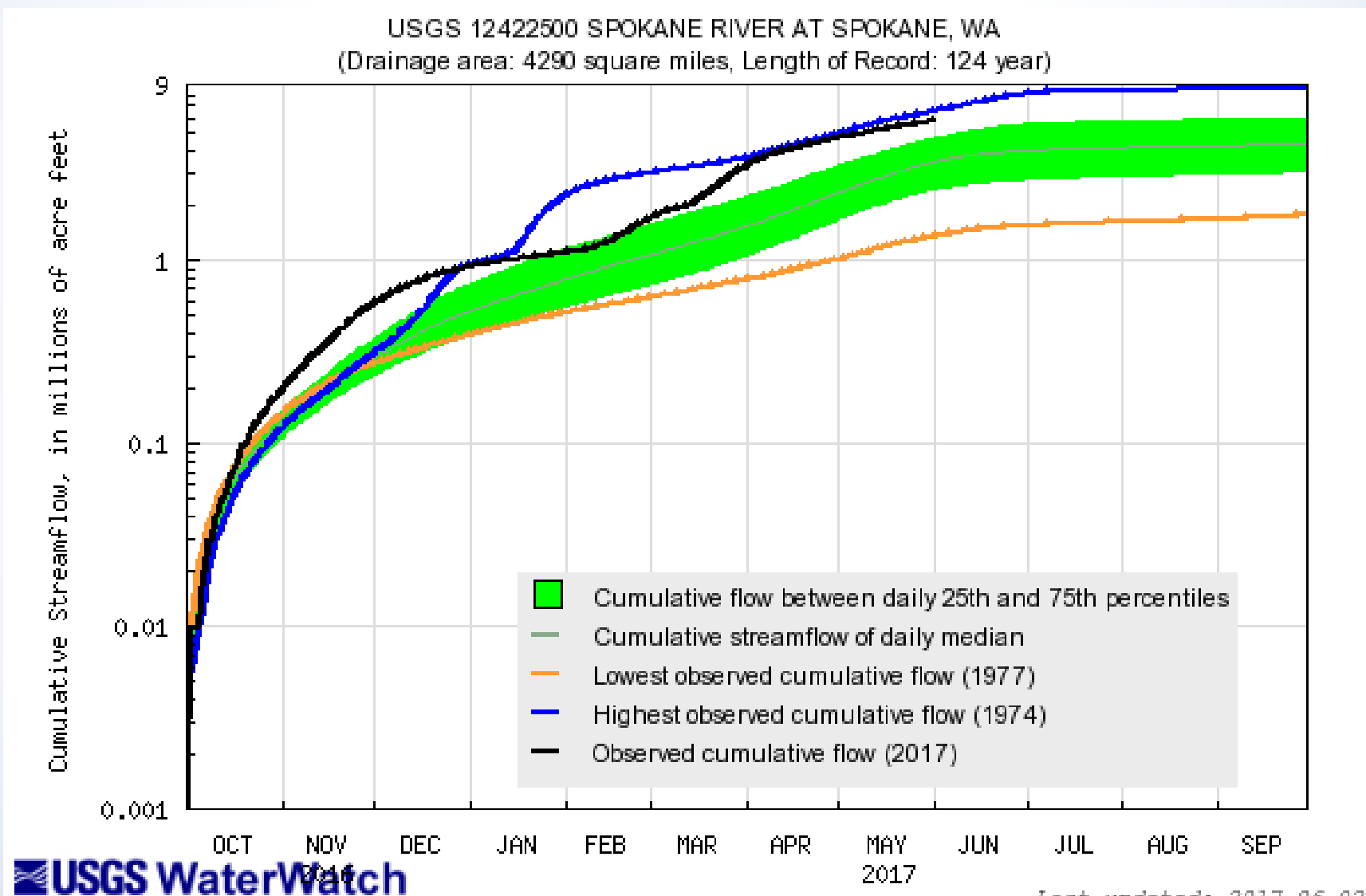
* Data unavailable
at time of posting
or measurement
is not representative
at this time of year



USGS 12422500 SPOKANE RIVER AT SPOKANE, WA



Usgs streamflow volume





Flood stats

USGS River Gage	Stage or Flow ¹	Highest Stage or Flow Since:	Rank in record	Records started in
Colville River near Kettle Falls	9.9 ft	April 1956	2nd	1923
Clearwater River near Spalding	16.96 ft	June 1974	2nd ²	1973 ²
Paradise Creek at Moscow	10.86 ft	February 1996	2nd	1979
Kettle River near Curlew	20.67 ft	June 1997	3rd	1929
Spokane River at Spokane	28.73 ft	May 1997	4th ³	1891
Little Spokane River	6.82 ft	March 1997	4th	1929
Entiat River at Ardenvoir	7.52 ft	May 1983	5th	1958
St Joe River at St Maries	38.42 ft ⁴	May 1997	7th ⁴	1933 ⁴
Methow River at Pateros	10.31 ft	May 2006	7th	1959
Lake Coeur d'Alene	2134.86 ft	May 1997	10th	1904
Coeur d'Alene River at Cataldo	46.13 ft	April 2002	11th ³	1911
Hangman Creek at Spokane	11.19 ft	January 1997	13th	1949
Stehekin River	12,500 cfs	November 2007	17th	1911
¹ All data is preliminary				
² Since Dworshak Dam went into operation				
³ Based on flow				
⁴ Based on Washington Water Power Datum. Record may have some gaps				



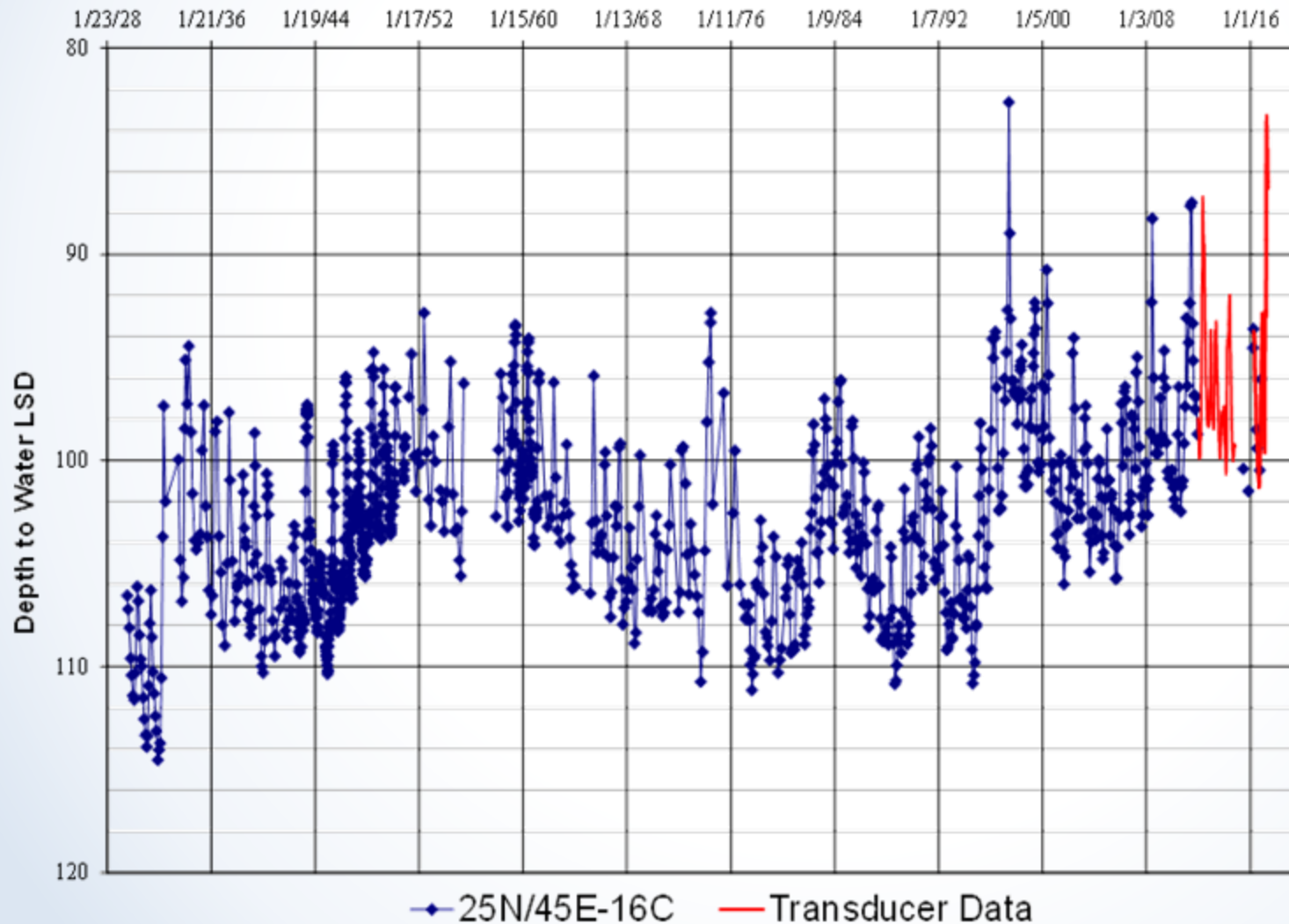
Flood stats

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SVRPA

data since late 1920's

Inland Empire Paper 25N/45E-16C01



Contact

John Covert or
Guy Gregory
with questions

Water Supply Forecast

SPOKANE - AT SPOKANE (SPOW1) Forecasts for Water Year 2017

Official Forecast

10 days QPF: Ensemble: 2017-06-06 Issued: 2017-06-06

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	3066	3081	122	3179	2530
APR-JUL	2934	2943	122	3031	2410
JAN-SEP	5862	5877	151	5975	3890
JAN-JUL	5730	5739	152	5827	3770
OCT-SEP	6672	6687	151	6785	4431

HANGMAN CREEK - AT SPOKANE (HAGW1) Forecasts for Water Year 2017

ESP Natural Forecast

10 days QPF: Ensemble: 2017-06-06 Issued: 2017-06-06

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	69	69	178	70	39
APR-JUL	65	65	181	65	36
JAN-SEP	358	358	252	358	142
JAN-JUL	354	354	254	354	139
OCT-SEP	368	369	238	369	155

LITTLE SPOKANE - AT DARTFORD (LSDW1) Forecasts for Water Year 2017

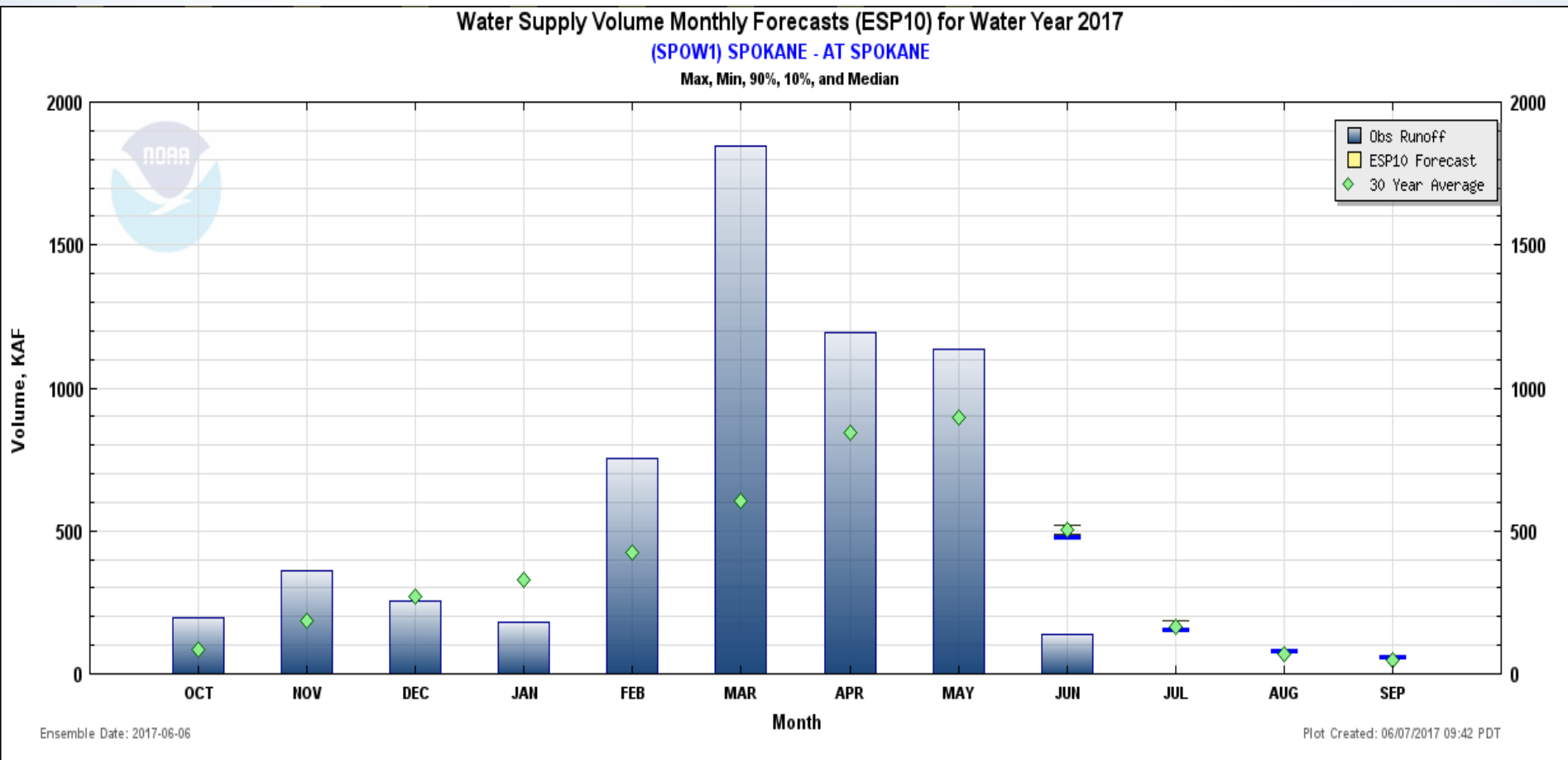
ESP Natural Forecast

10 days QPF: Ensemble: 2017-06-06 Issued: 2017-06-06

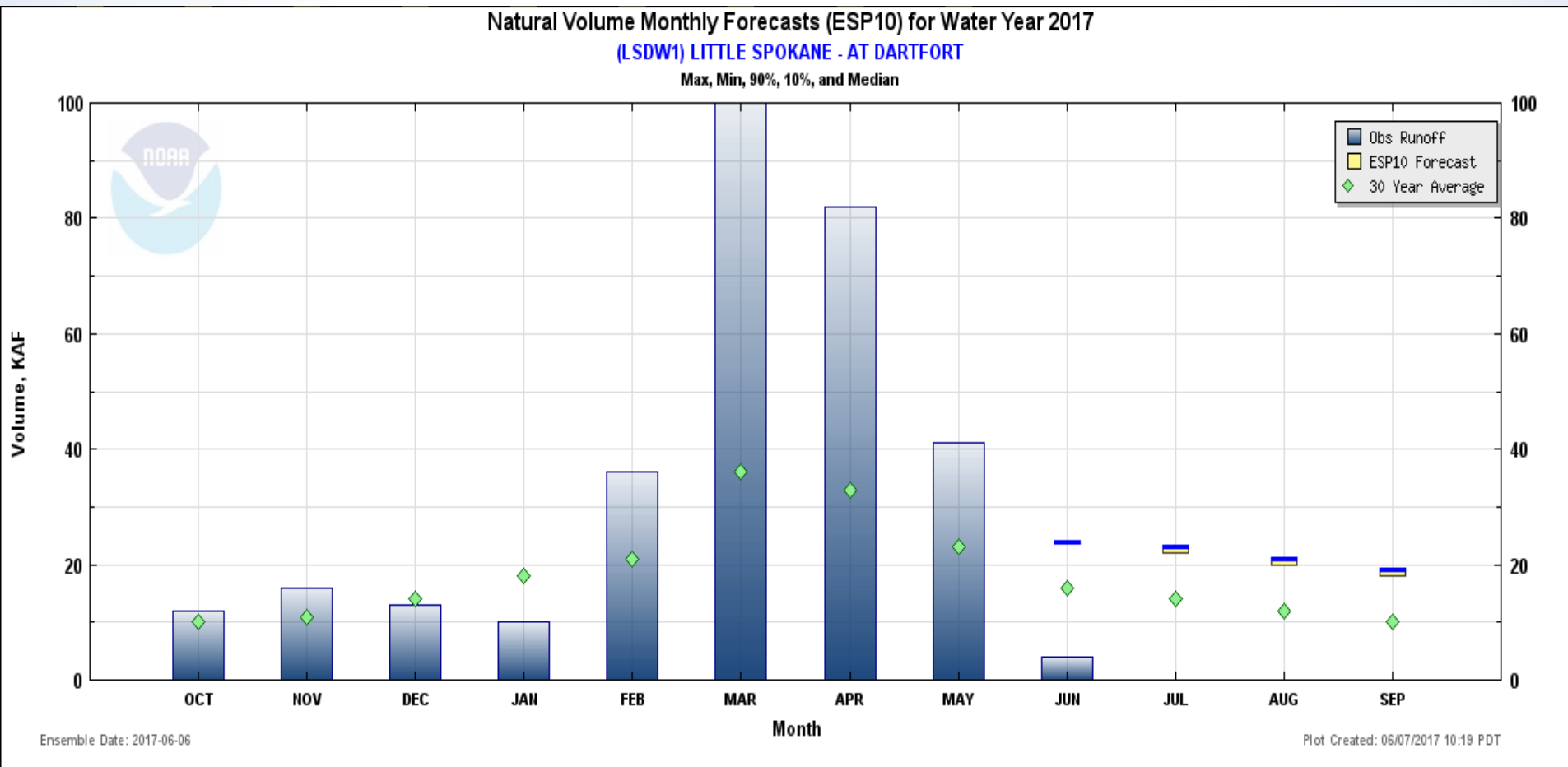
Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	206	208	192	209	108
APR-JUL	168	168	196	169	86
JAN-SEP	353	355	193	356	184
JAN-JUL	315	315	195	316	162
OCT-SEP	394	396	182	397	218

Currently flows are above the 75th percentile

Spokane River Monthly Volumes Observed & Forecast



Little Spokane Monthly Volumes Observed & Forecast

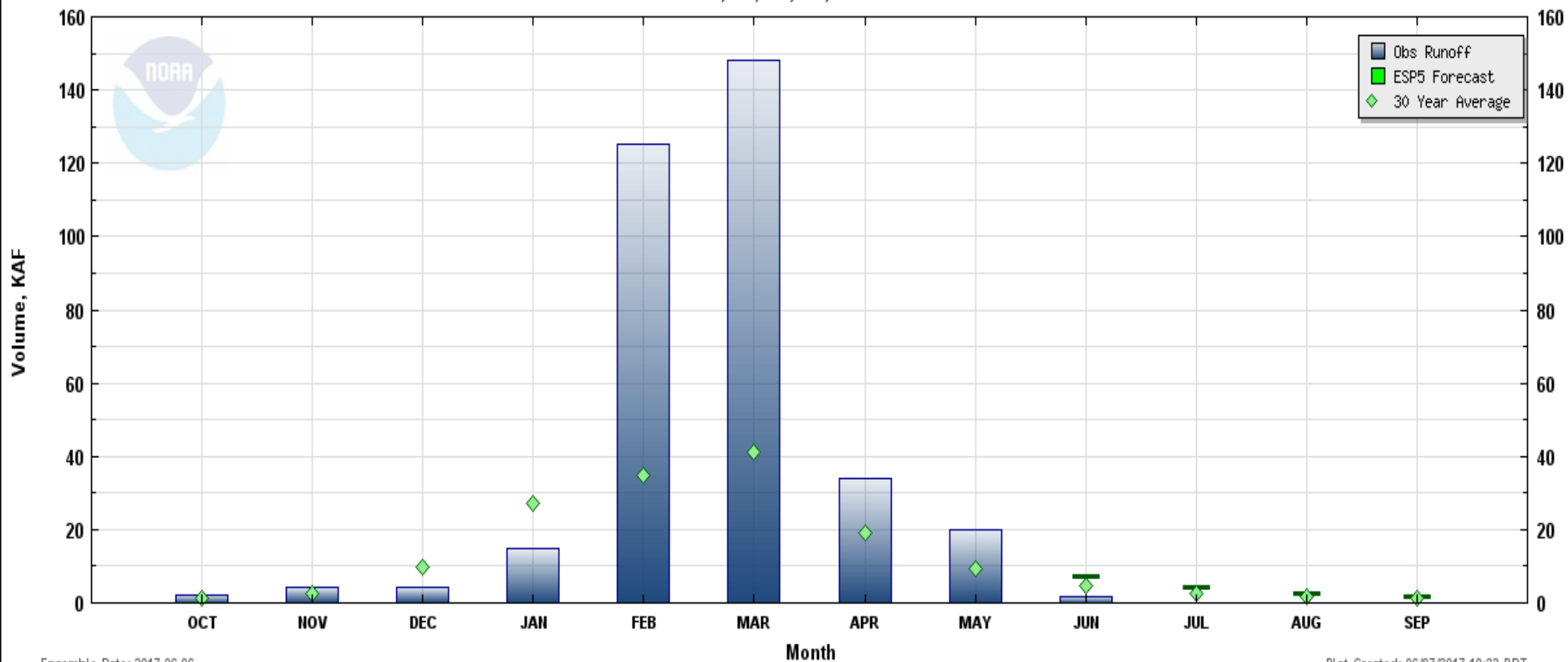


Hangman Monthly Volumes Observed & Forecast

Natural Volume Monthly Forecasts (ESP5) for Water Year 2017

(HAGW1) HANGMAN CREEK - AT SPOKANE

Max, Min, 90%, 10%, and Median



Ensemble Date: 2017-06-06

Plot Created: 06/07/2017 10:22 PDT



Northwest River Forecast Minimum Flow Forecast

Close Minimum Flow Climatology Description

NF COEUR D ALENE--AT ENAVILLE

State: Idaho County: SHOSHONE
Latitude: 47 34' 8" North Longitude: 116 15' 12" West
Elevation: 2100 feet
Supporting WFO: Spokane
Action Stage: 71' Flood Stage: 72' Moderate Flood Stage: 75'
Major Flood Stage: 77'

Historical Minimum Flow Statistics For Period Jun 6 thru Oct 1

POR: 1949 - 2016
Minimum Daily Observed Flow: 143 cfs
Date of Observation: Sep 29, 1994
Average of Minimum Daily Flows for Period: 239 cfs

River and Hydrology

Water Supply

Observations

Weather Forecast

Home

Zoom Out

--- Quick Zooms ---

Ensemble Date: 2017

Search by Name

GO

Map Overview

- ☒ NWRFC Bo
- ☐ NWRFC Ba
- ☐ NWS HSAs
- ☐ Counties

Map Type

Forecast S

- ☐ Peak Flow
- ☒ Minimum Flow

Legend

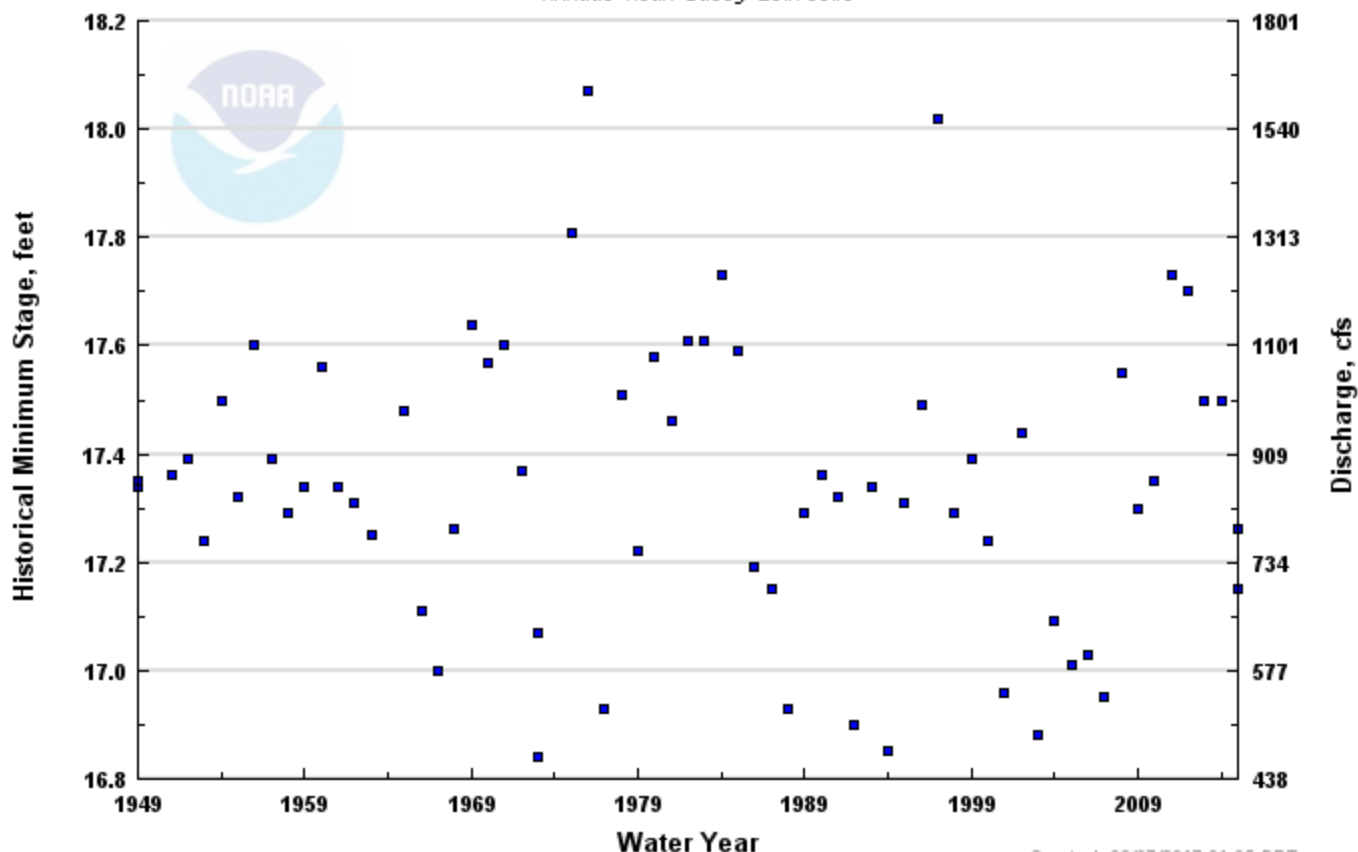
Minimum Flow
for 06/06/17 thru
as a % of the
for the same

- ☒ > 400
- ☐ 300 to <= 400
- ☐ 200 to <= 300
- ☐ 100 to <= 200
- ☐ <= 100
- ☐ Obs Data Missing

Stations Display

Historical Minimum Flows (SPOW1) SPOKANE-AT SPOKANE

Annual Mean Daily Lowflows



Created: 06/07/2017 01:05 PDT

Effects of potential low flows impacts.

LE ENVI1

2017

06

ber 1

Discharge

CFS

287

276

266

261

259

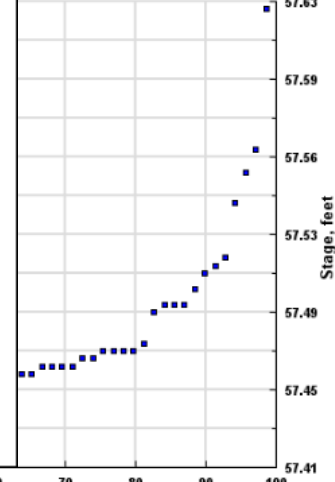
258

258

Stations

ENAVILLE

1



Ensemble Date: 06/07/2017

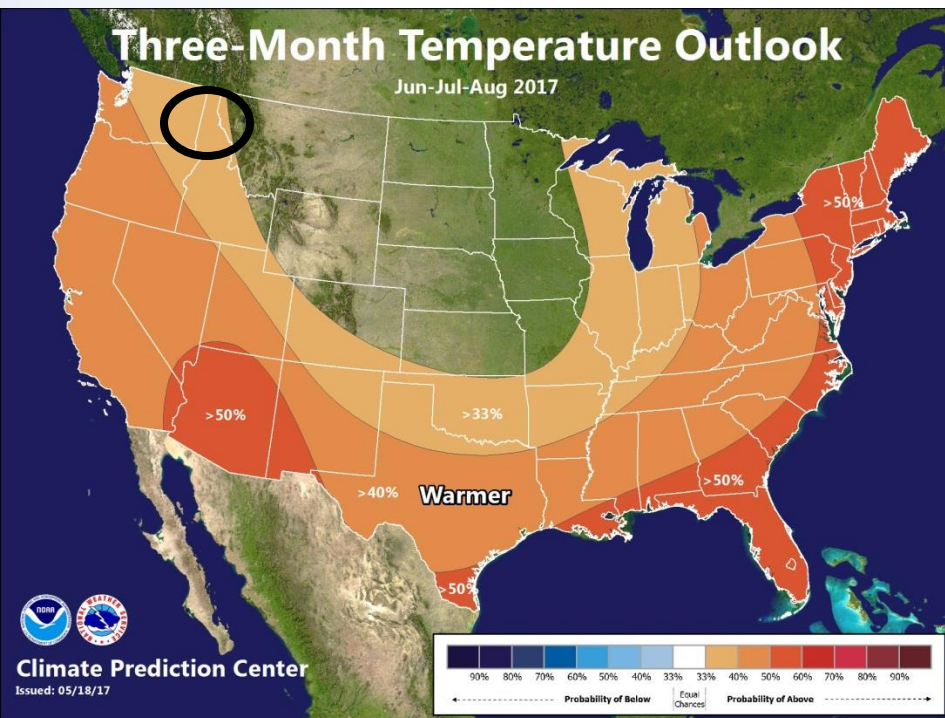
Probability of Occurrence, in percent

Plot Created: 06/07/2017 01:03 PDT

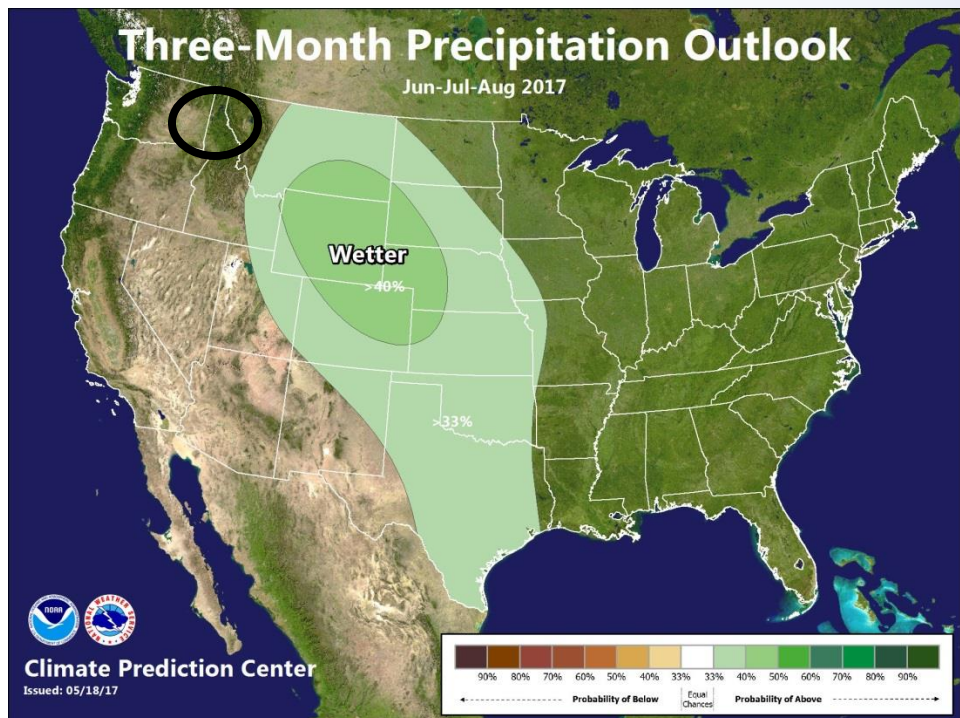
Click to download runoff traces used in forecast. Click for comma delimited data used in plot.

3 Month Climate Outlook

Temperature



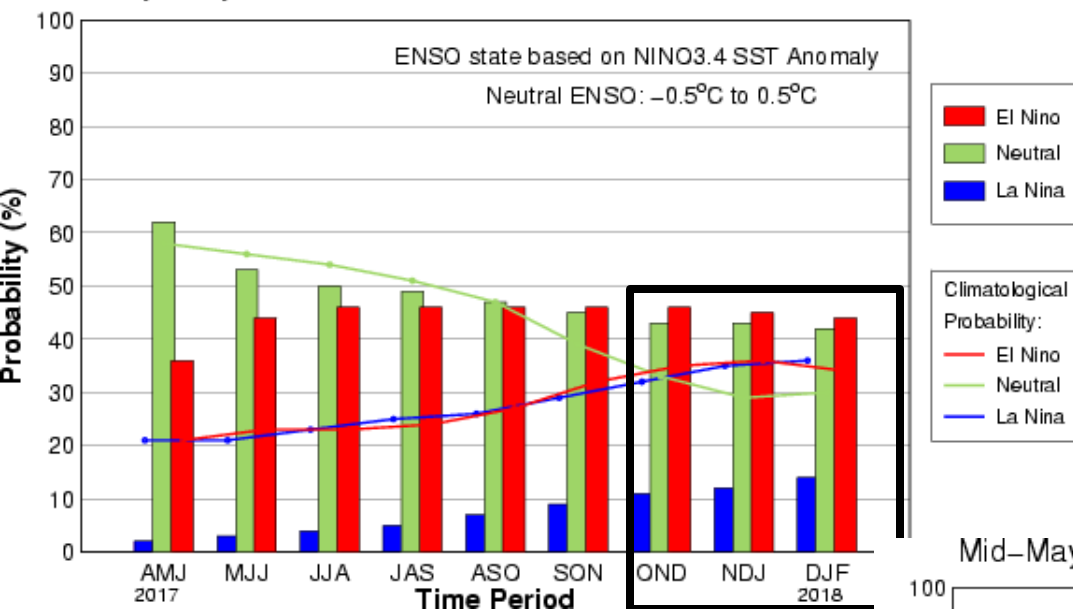
Precipitation



The Way-Out Look

2017-2018 ENSO Forecast

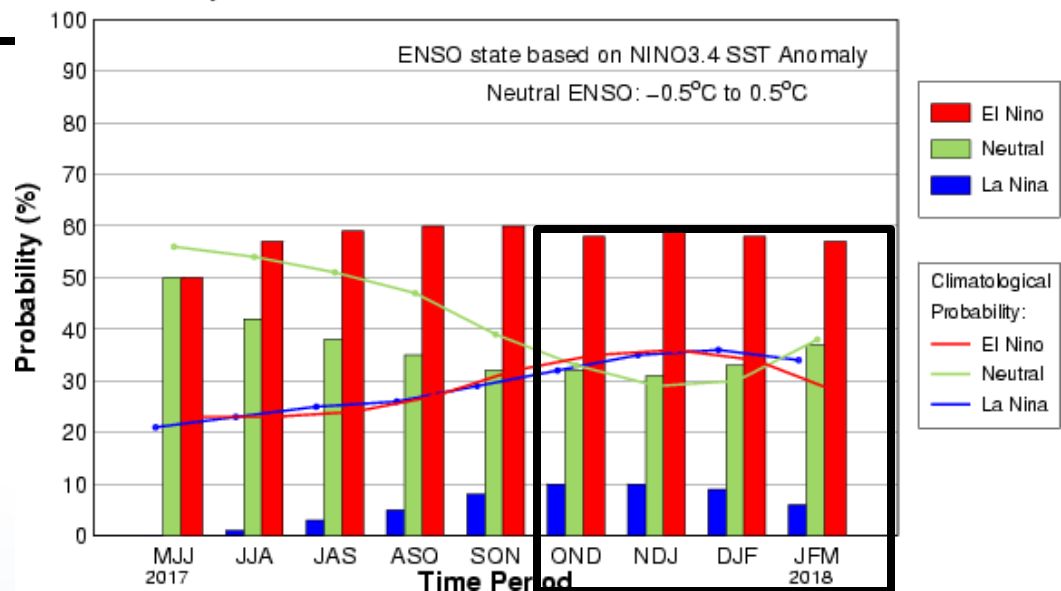
Early-May CPC/IRI Official Probabilistic ENSO Forecast



Early May Forecast

Mid-May Forecast

Mid-May IRI/CPC Model-Based Probabilistic ENSO Forecast





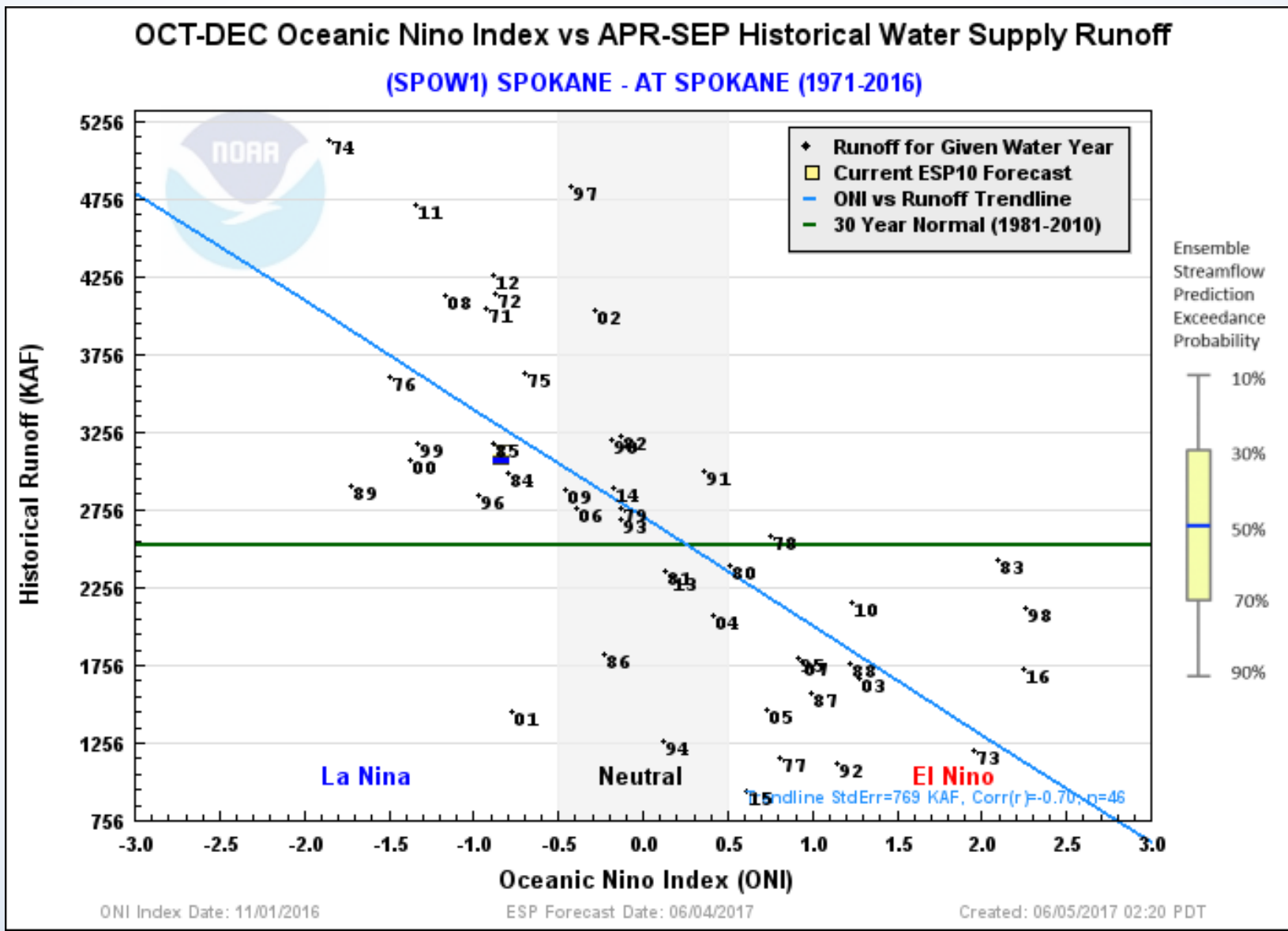
El Niño/La Niña Forecast



- Approximately 45% chance of El Niño by summer/fall
- El Niño typically brings warmer temps = lower snowpack
- Lower snowpack = less summer flow

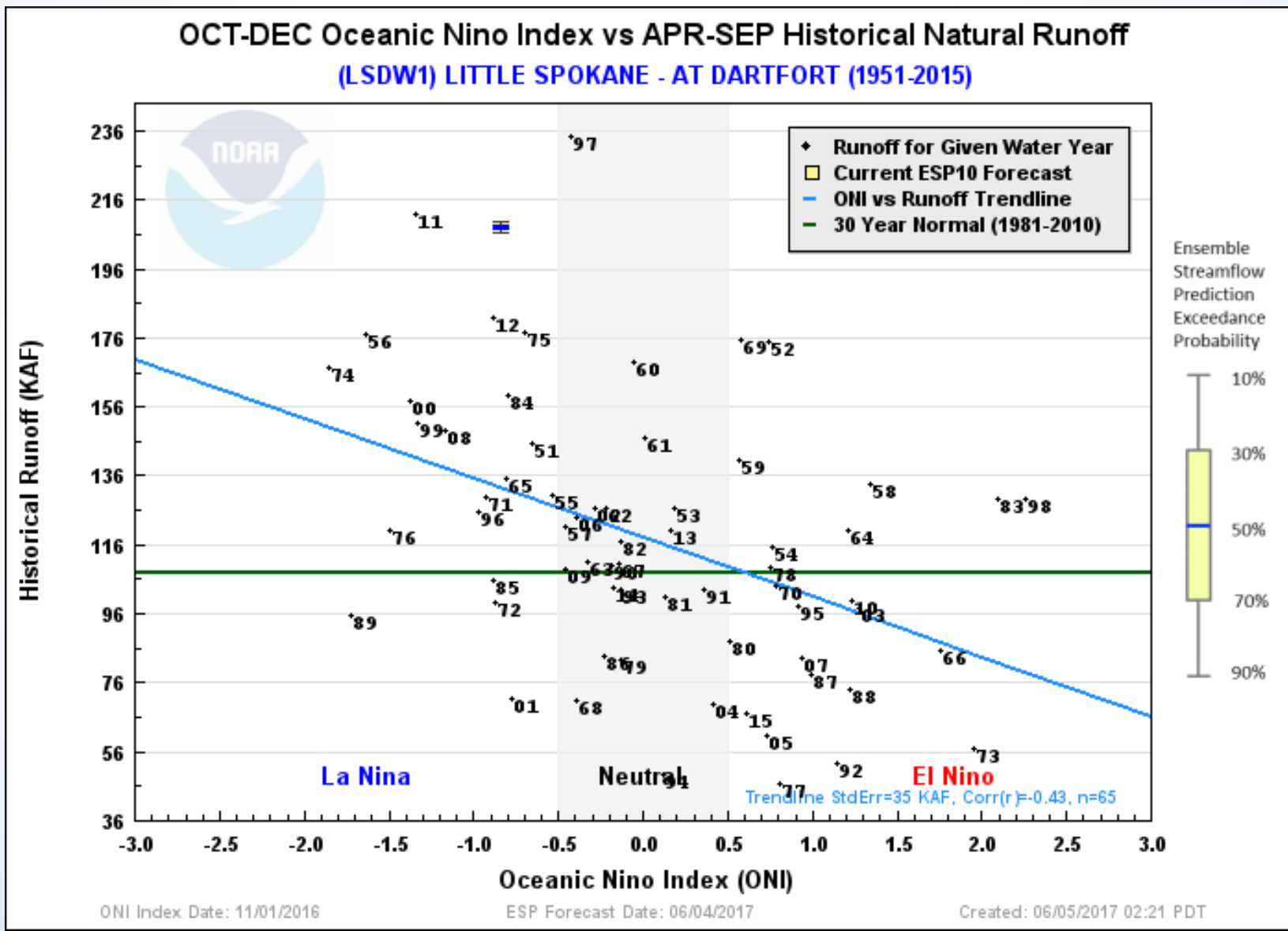
ENSO impacts on Spokane River

April – Sep Flow Volume



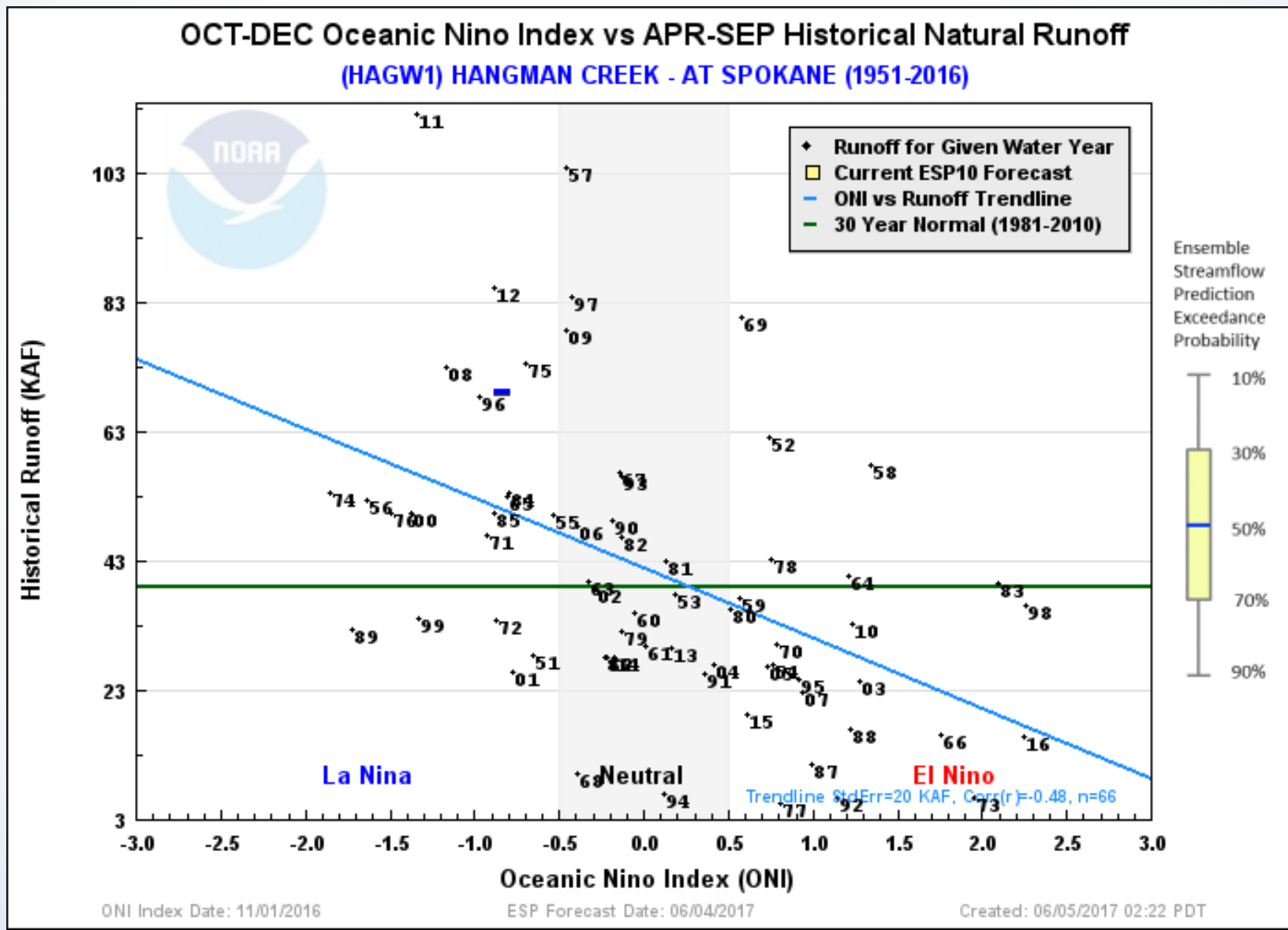
ENSO impacts on Little Spokane

April – Sep Flow Volume



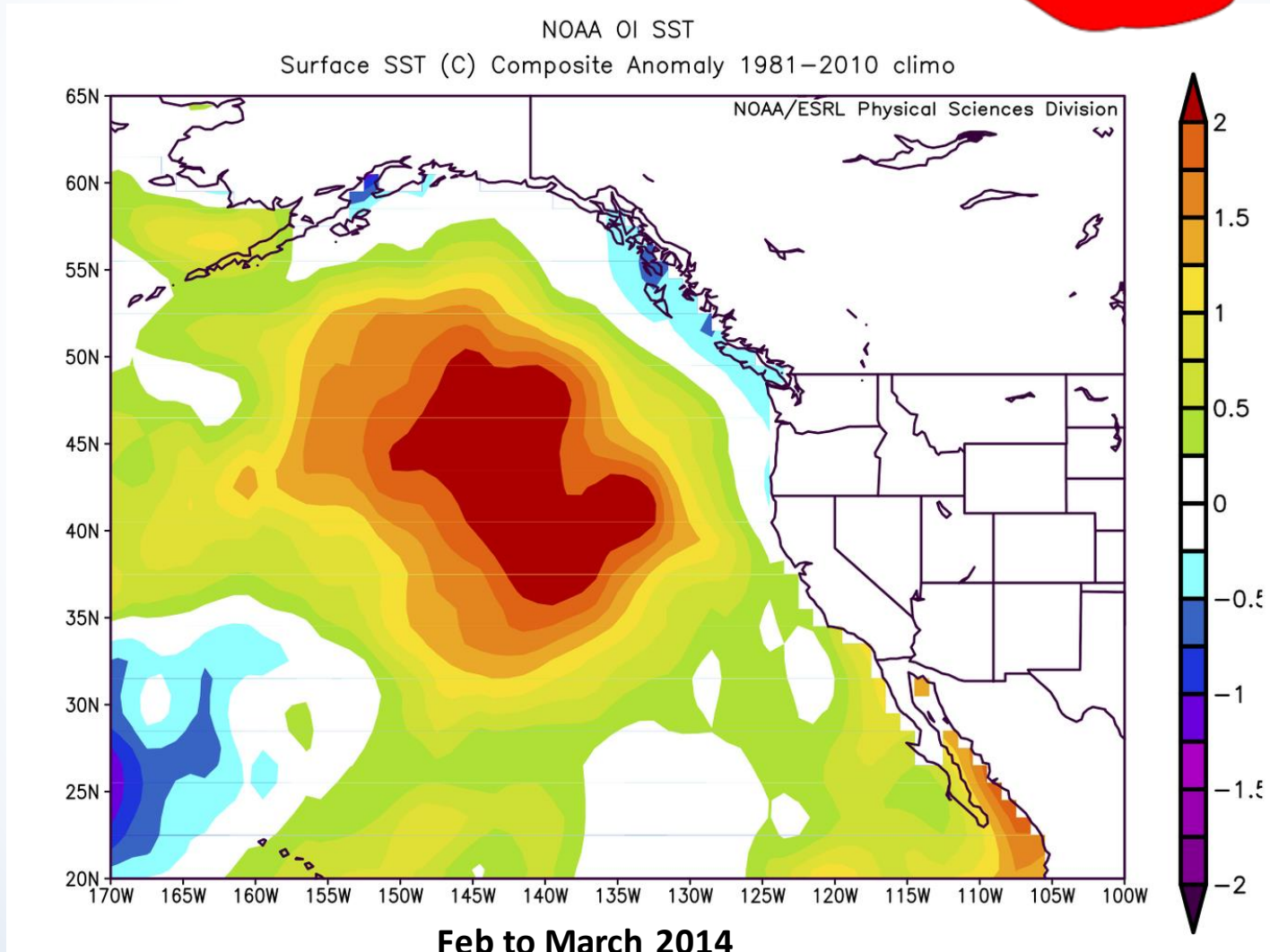
ENSO impacts on Hangman

April – Sep Flow Volume



The Blob

cliffmass.blogspot.com/2017/05/the-cold-blob-is-here-what-does-this.html



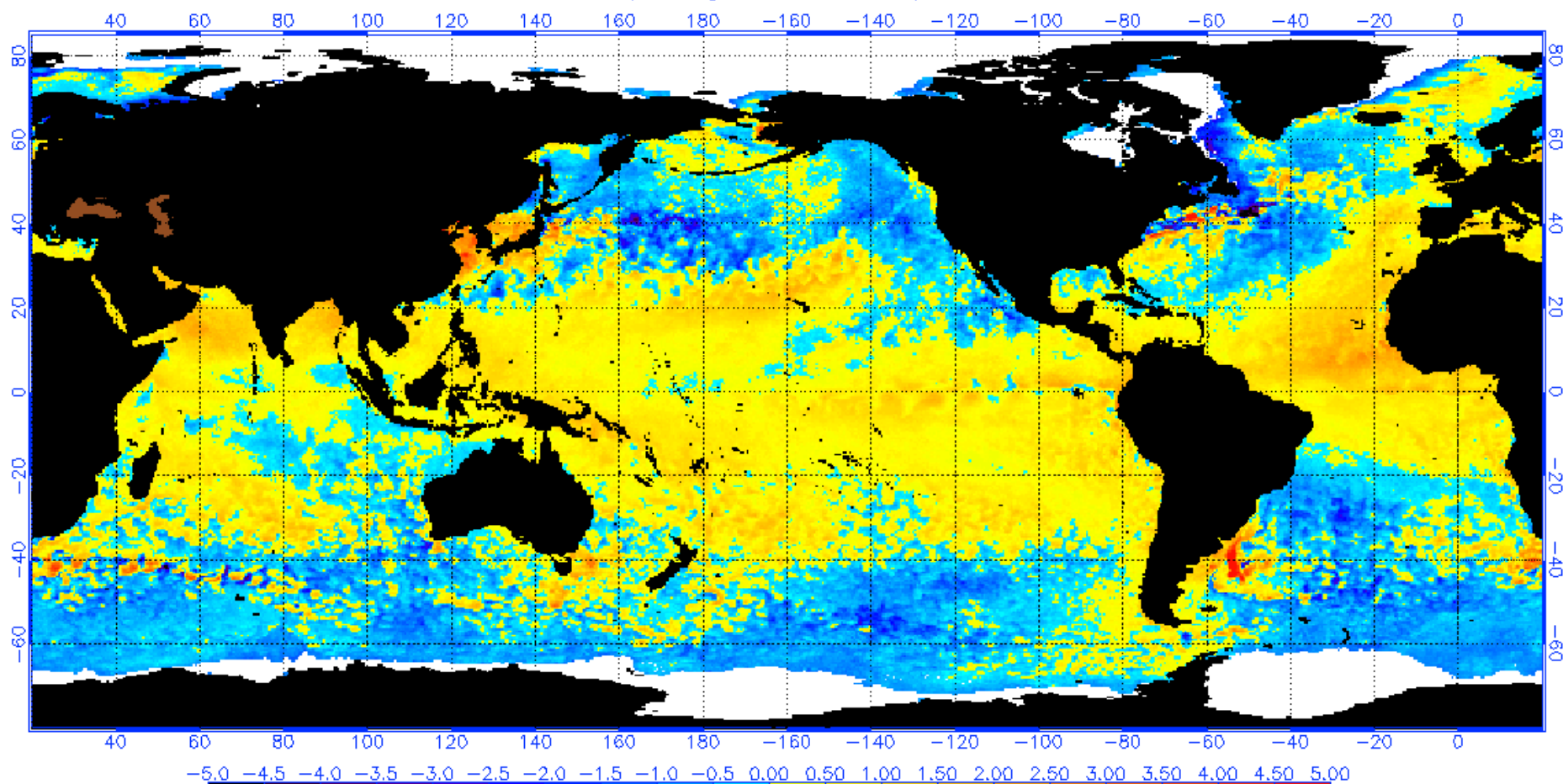
The Cold Blob

cliffmass.blogspot.com/2017/05/the-cold-blob-is-here-what-does-this.html



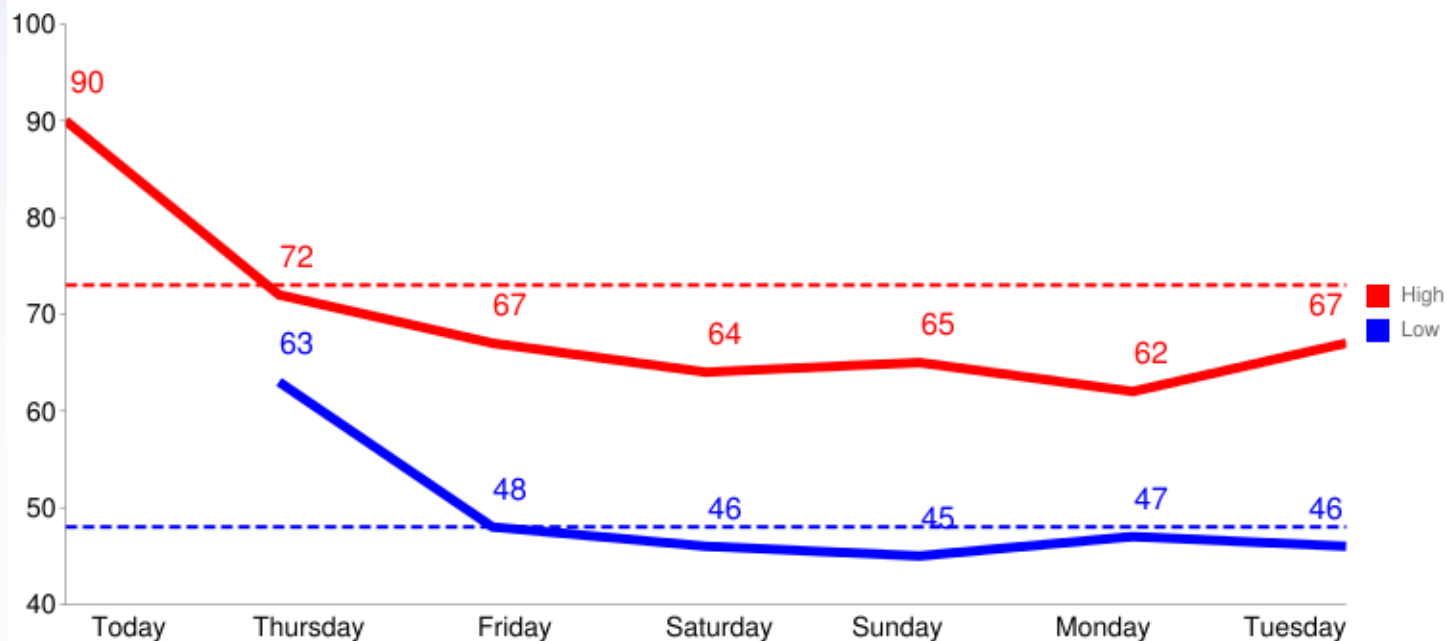
NOAA/NESDIS 50 KM GLOBAL ANALYSIS: SST Anomaly (degrees C),
(white regions indicate sea-ice)

May 25, 2017

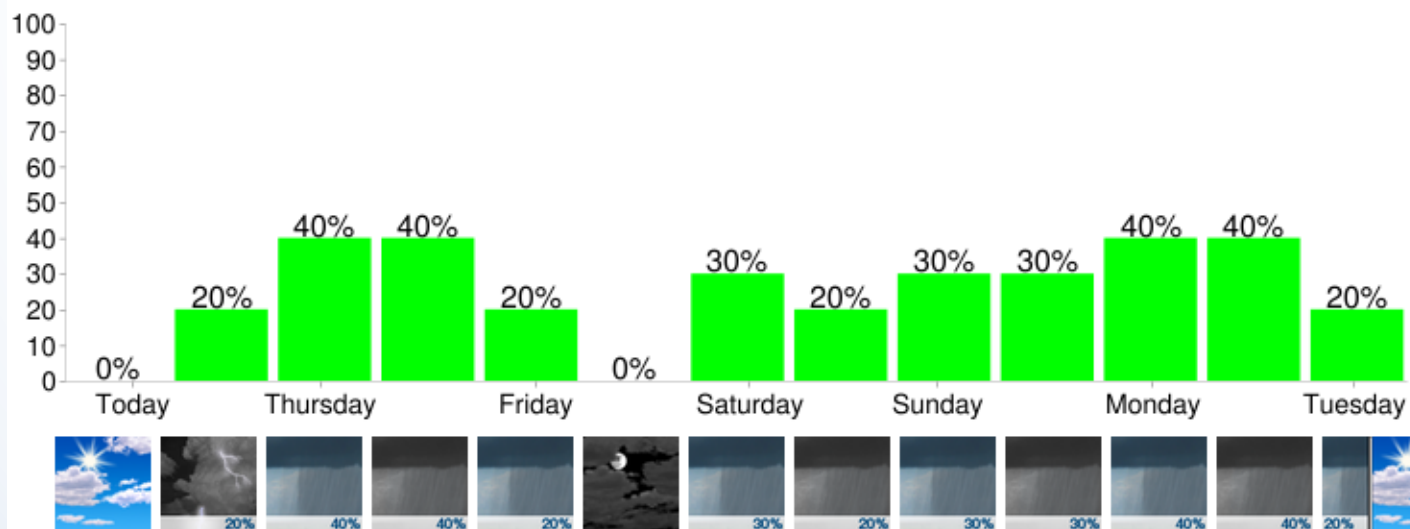




Spokane (2277 ft) 7 Day Temperature Forecast



Chance of Precipitation





Questions?

Katherine Rowden

katherine.rowden@noaa.gov

509.244.0110 x228

Weather forecasts: www.wrh.noaa.gov/otx

7-day River Forecasts <http://water.weather.gov/ahps2/index.php?wfo=otx>

Water Supply Forecasts www.nwrhc.noaa.gov