

WINTER 2021-2022

Mark Nelsen

A MILD LA NIÑA WINTER



FOX 12
OREGON

FOX 12
PLUS 

Winter 2021-22

- Near normal temperatures & precipitation in the end, but...
- Tons of mountain snow mid/late December,
then mid-winter lull with no storminess lasted 7 weeks!
- Poor snowpack across the state as of mid-March
- Still waiting for regional arctic blast.
8th consecutive winter without a widespread arctic outbreak.
(December 2013 was the last)



Waiting on the
“winter storm”
the day after
Christmas

OFFICIAL SNOW TOTAL: 4.4”

at PQR (NWS Office)

1.1” Downtown (KGW-TV)

PORTLAND THIS WINTER

FIRST. LIVE. LOCAL.
WEATHER

2021-22



4.4
inches
WINTER
SNOWFALL

5 measurable snow events

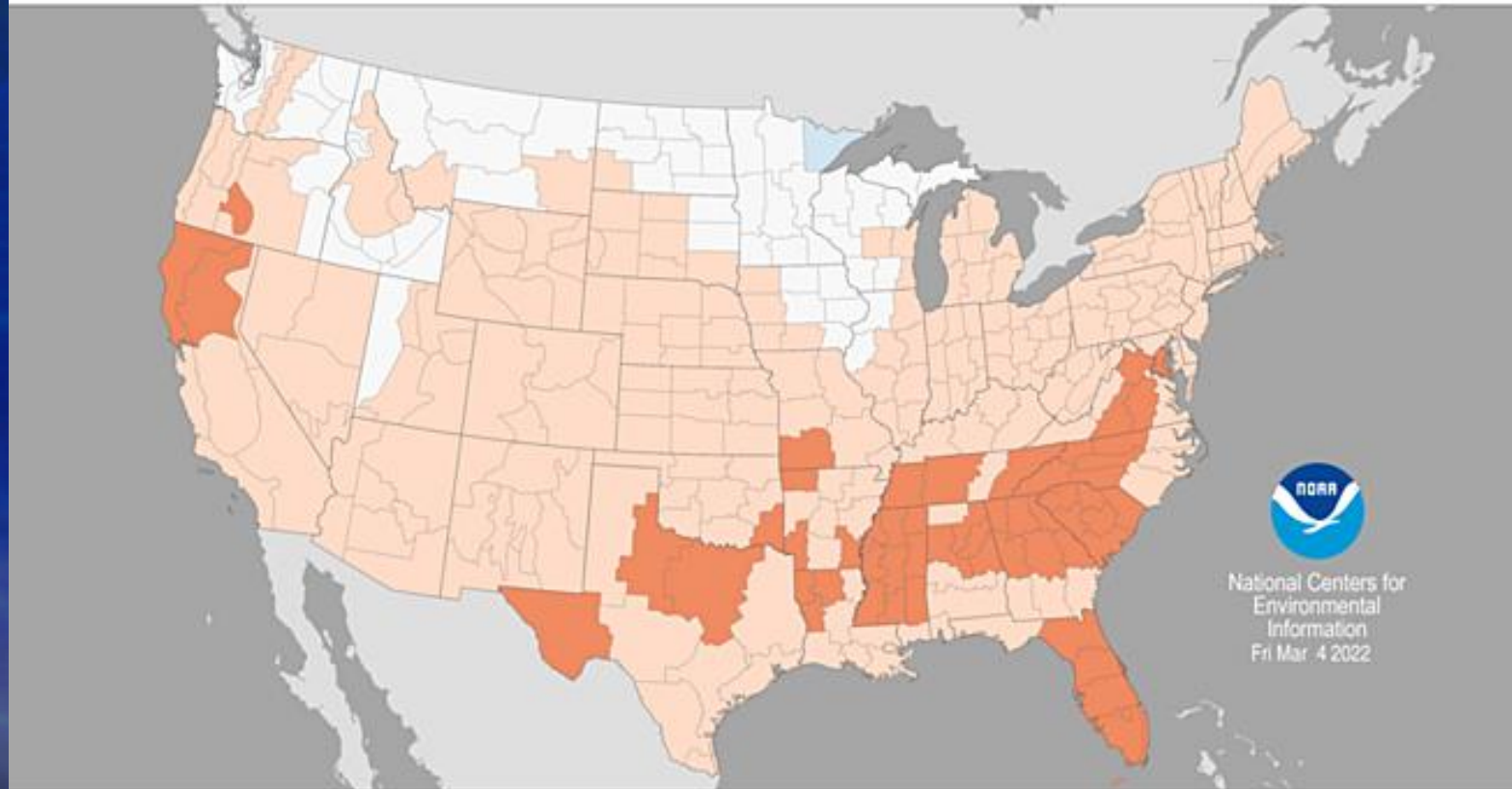
SNOW	FRZ RAIN/ICE
.4" Dec 19	NONE
.7" Dec 26	
2.5" Dec 27	
.3" Dec 30	
.5" Feb 24	

Winter Temperature Anomaly

Divisional Average Temperature Ranks

December 2021–February 2022

Period: 1895–2022



National Centers for
Environmental
Information
Fri Mar 4 2022

Record
Coldest

Much
Below
Average

Below
Average

Near
Average

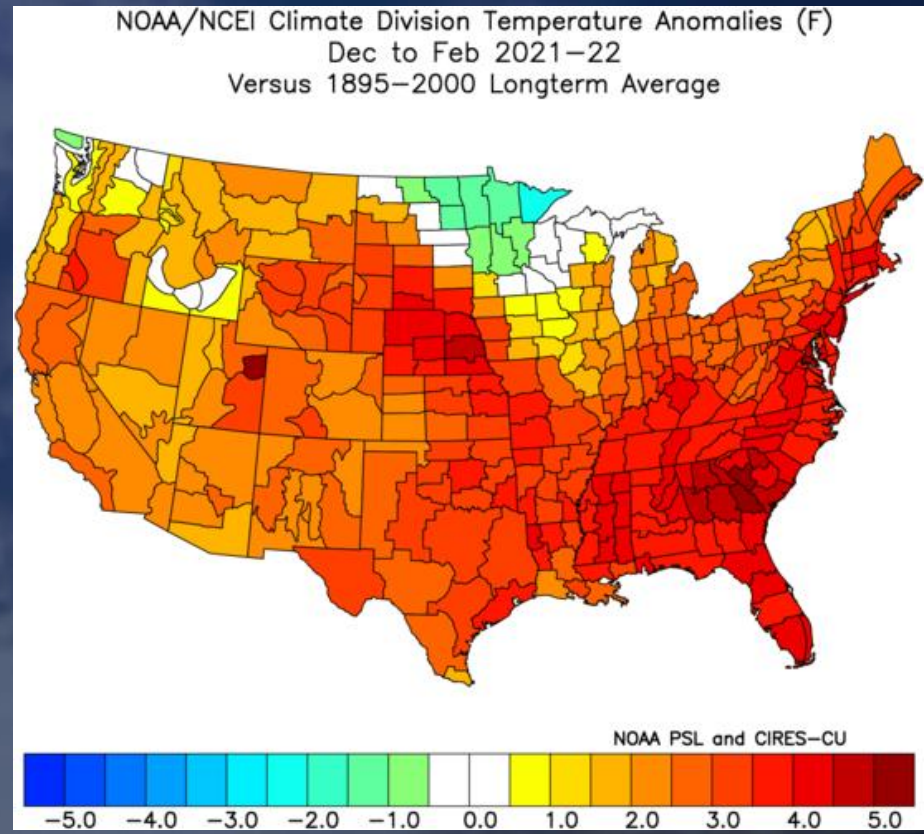
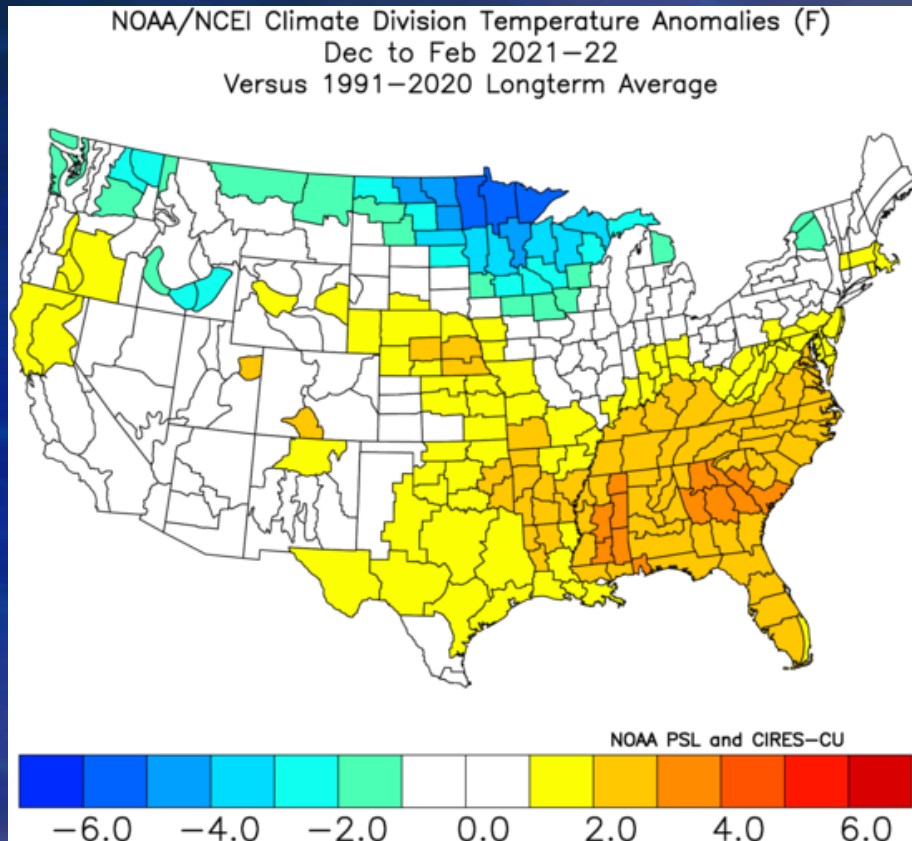
Above
Average

Much
Above
Average

Record
Warmest

30 year vs. 20th Century anomalies

Looks different!

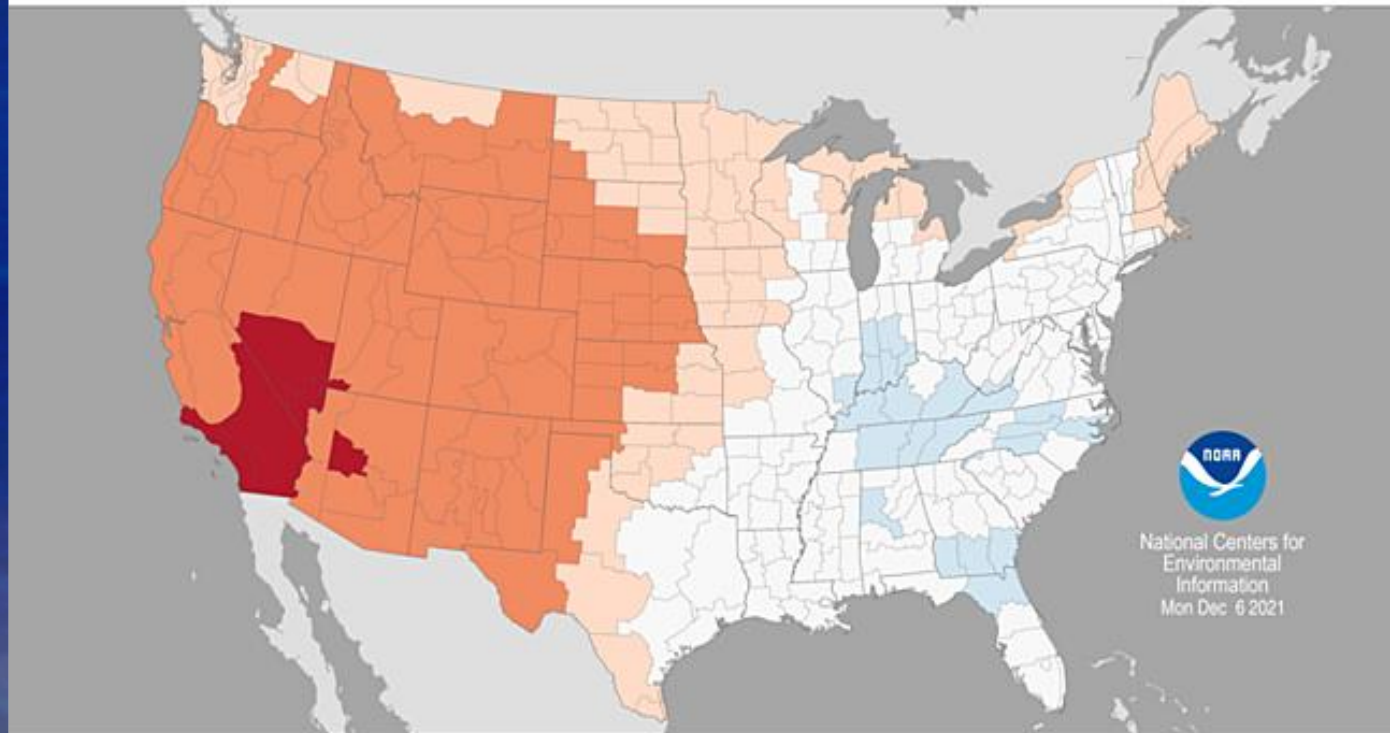


THE USA VIEW

Divisional Average Temperature Ranks

November 2021

Period: 1895–2021



National Centers for
Environmental
Information
Mon Dec 6 2021

Record
Coldest

Much
Below
Average

Below
Average

Near
Average

Above
Average

Much
Above
Average

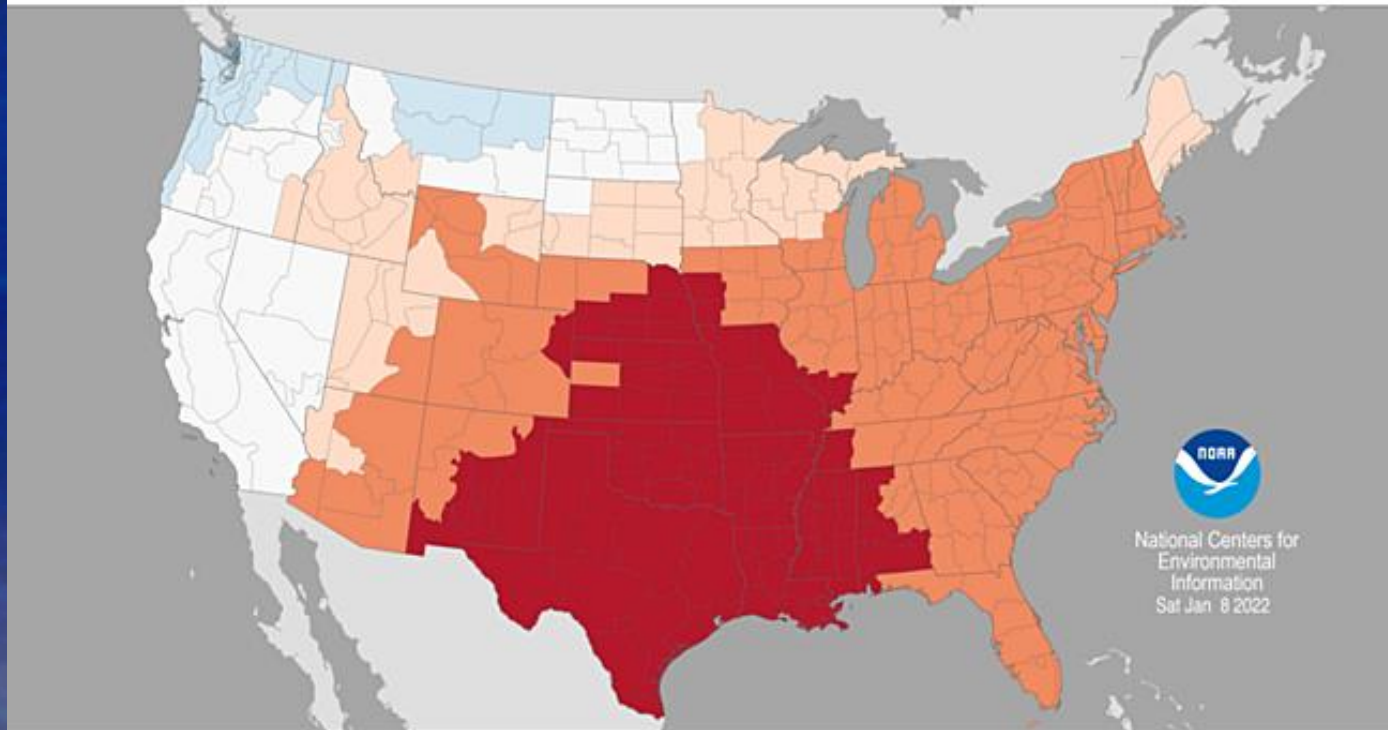
Record
Warmest

THE USA VIEW

Divisional Average Temperature Ranks

December 2021

Period: 1895–2021



National Centers for
Environmental
Information
Sat Jan 8 2022

Record
Coldest

Much
Below
Average

Below
Average

Near
Average

Above
Average

Much
Above
Average

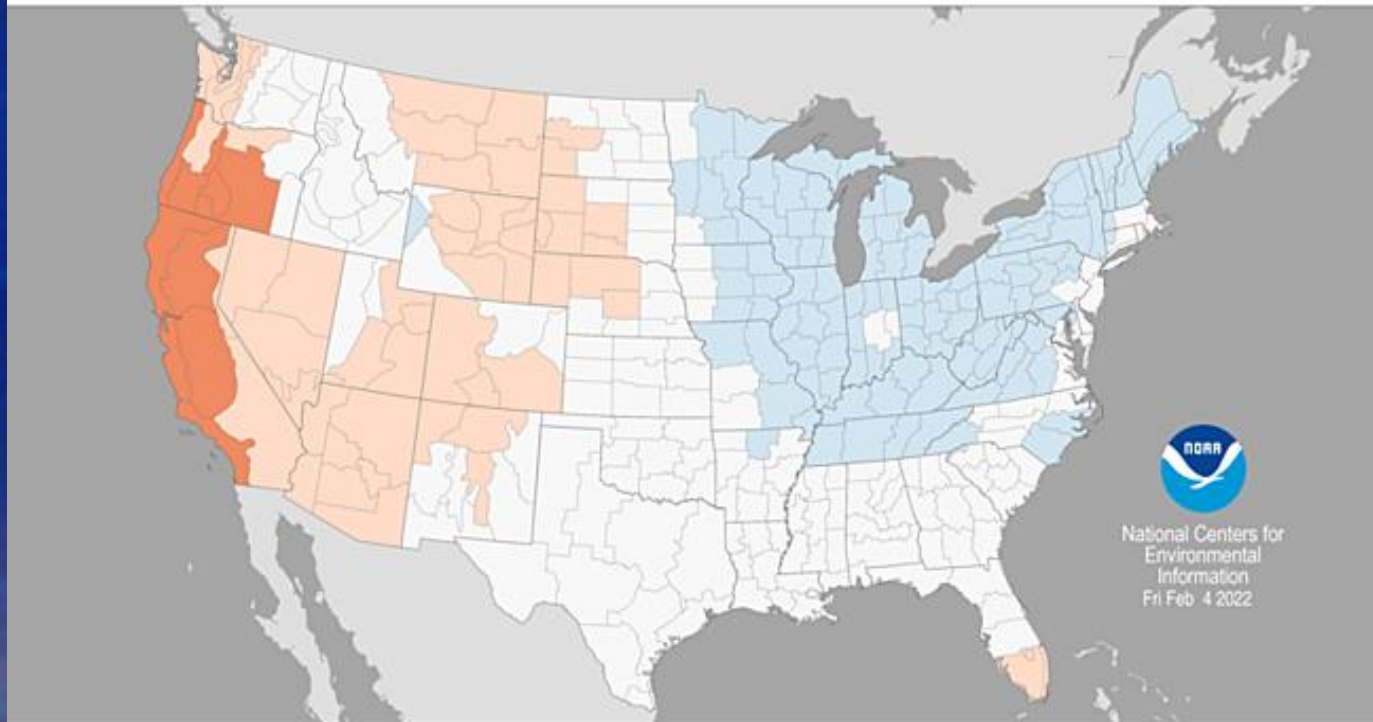
Record
Warmest

THE USA VIEW

Divisional Average Temperature Ranks

January 2022

Period: 1895-2022



National Centers for
Environmental
Information
Fri Feb 4 2022

Record
Coldest

Much
Below
Average

Below
Average

Near
Average

Above
Average

Much
Above
Average

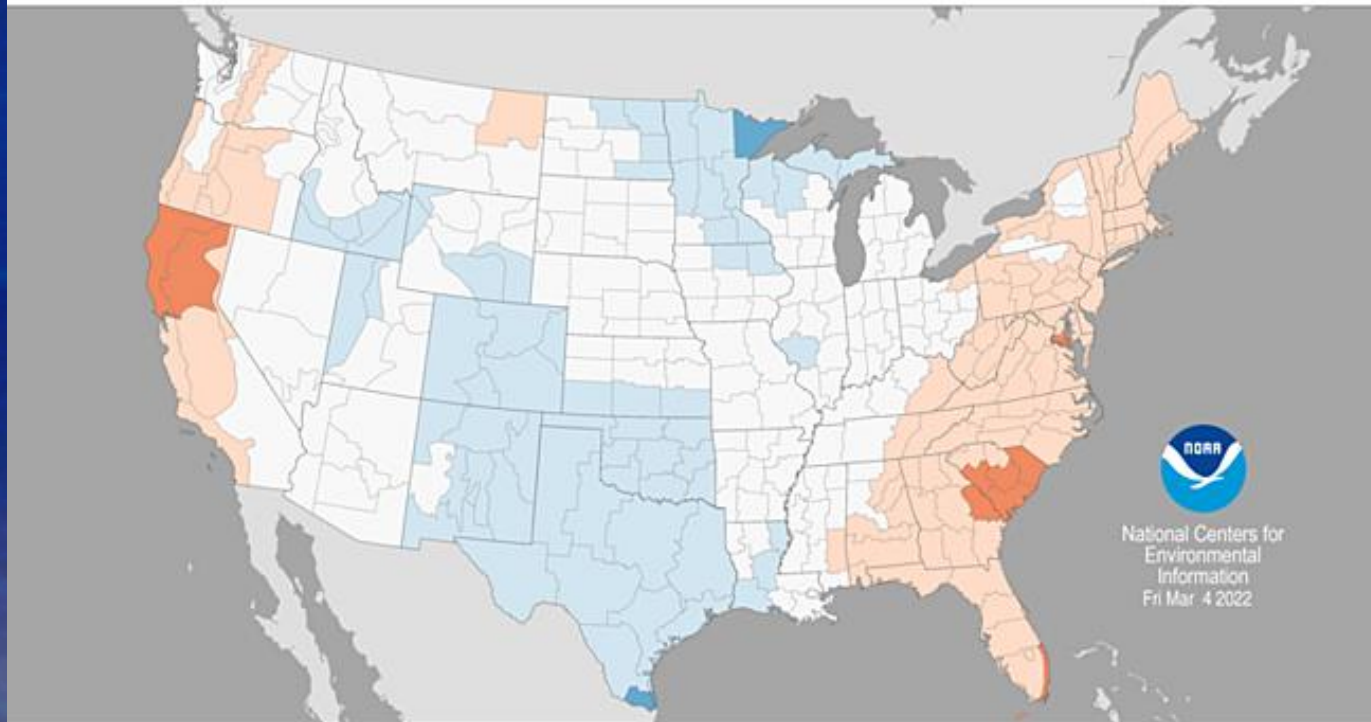
Record
Warmest

THE USA VIEW

Divisional Average Temperature Ranks

February 2022

Period: 1895-2022



National Centers for
Environmental
Information
Fri Mar 4 2022

Record
Coldest

Much
Below
Average

Below
Average

Near
Average

Above
Average

Much
Above
Average

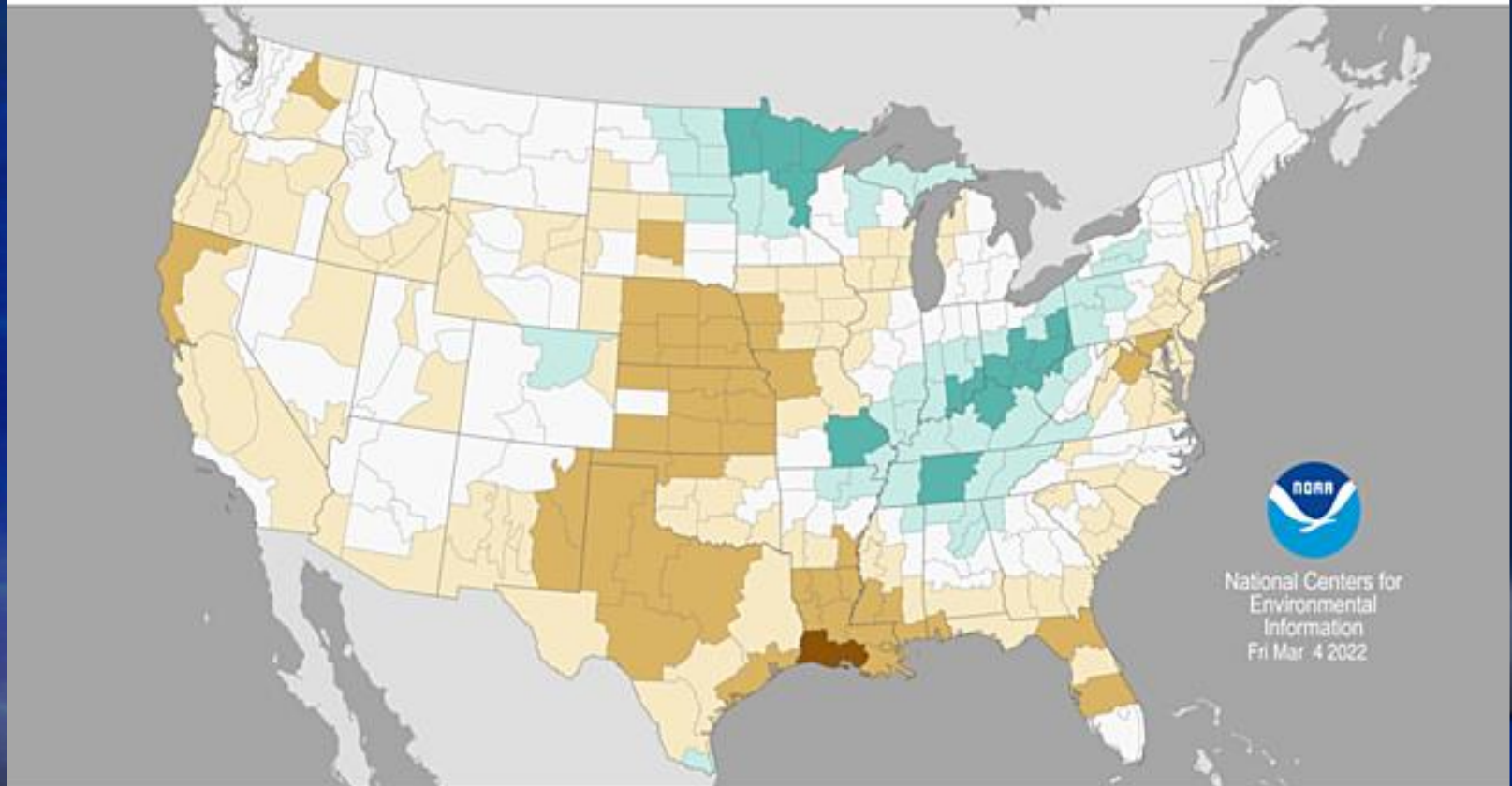
Record
Warmest

Winter Precip Anomaly

Divisional Precipitation Ranks

December 2021–February 2022

Period: 1895–2022



National Centers for
Environmental
Information
Fri Mar 4 2022

Record
Driest

Much
Below
Average

Below
Average

Near
Average

Above
Average

Much
Above
Average

Record
Wettest

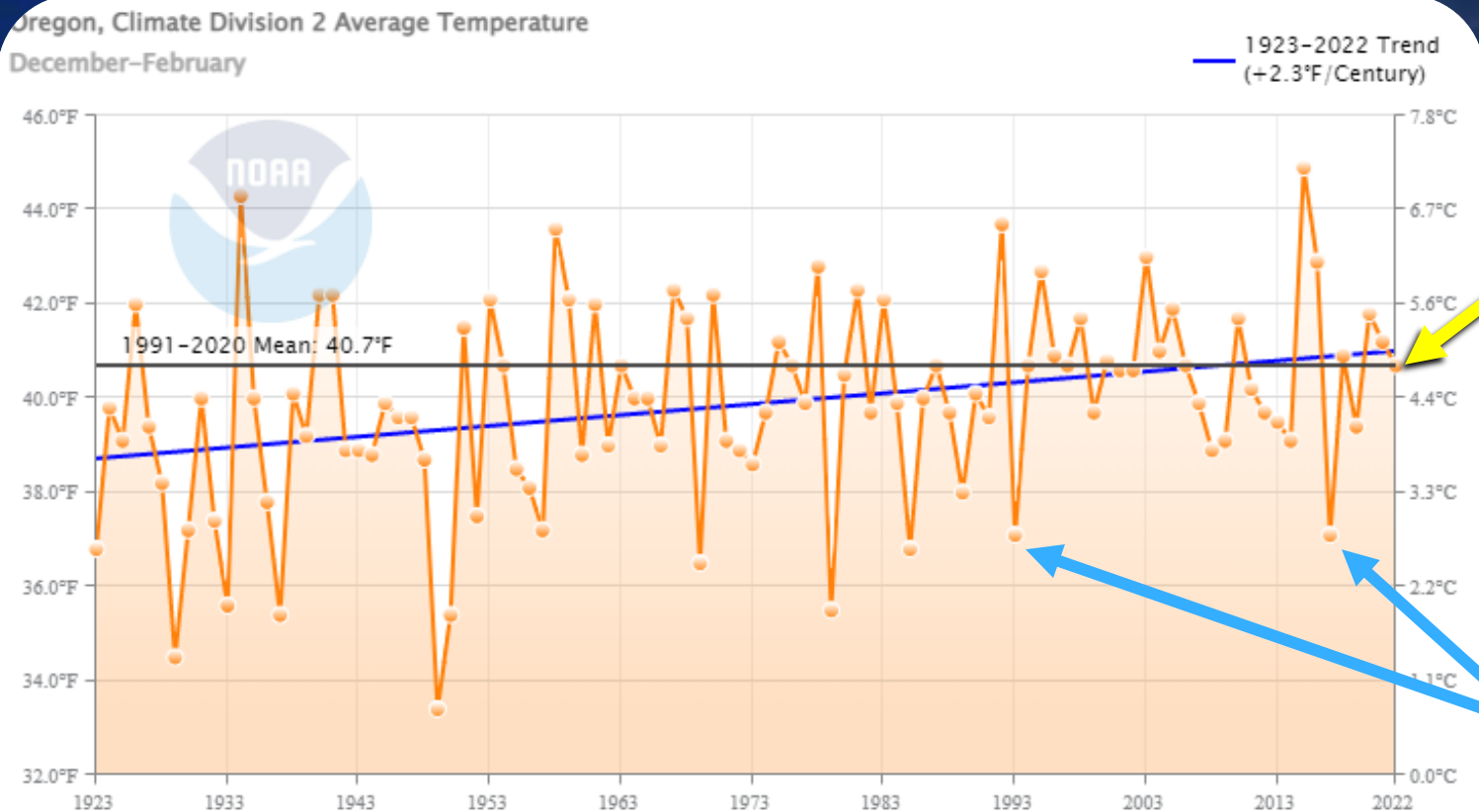
Western Valleys Winter Temperature

(the past 100 years)

Another mild one. Last “cold” winter was 2016-17

Last Winter
in Oregon
Zone 2
(Willamette
Valley)

The last two
cold winters
(92-93 & 16-17)



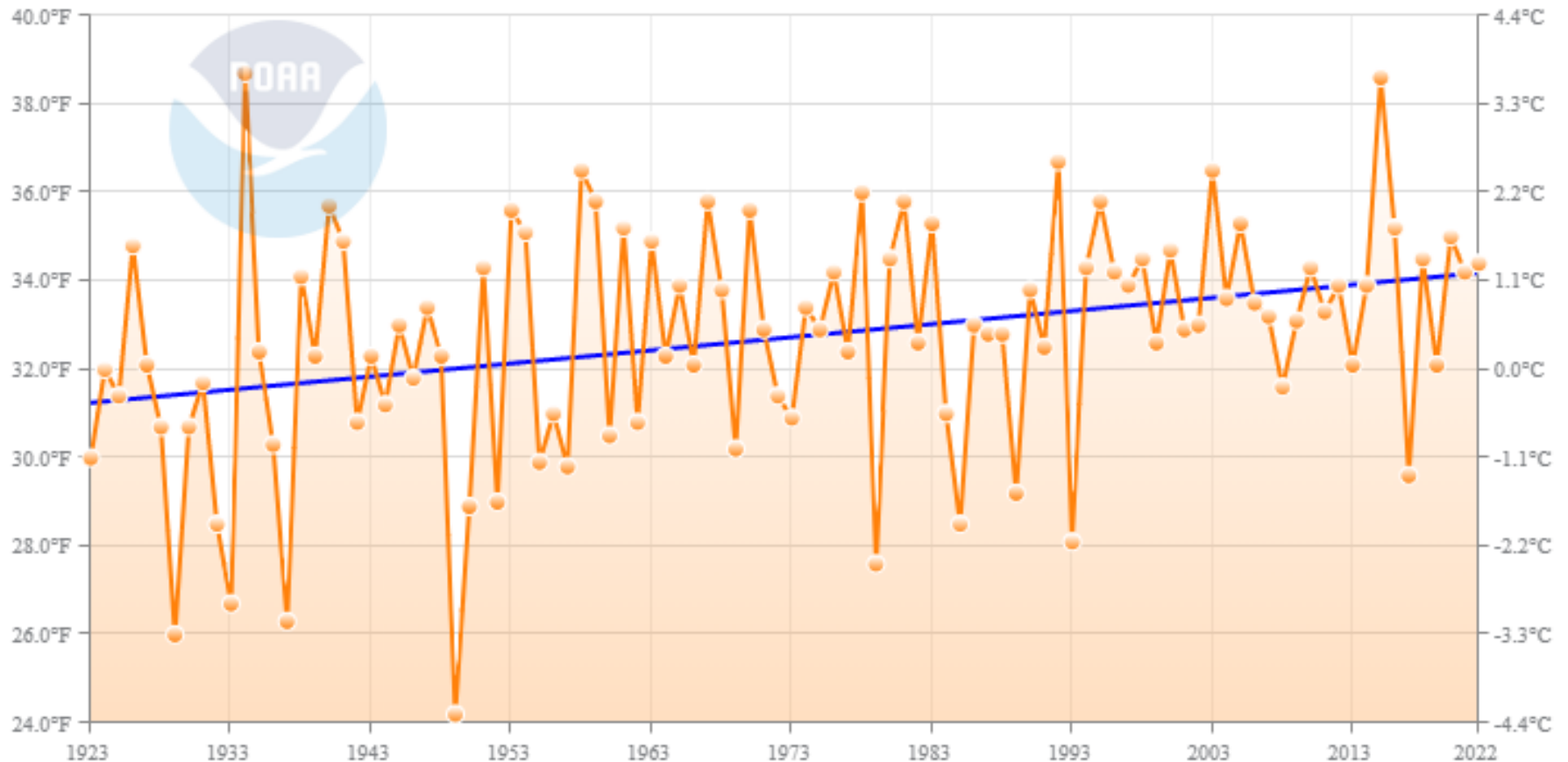
Oregon Winter Temps

(the last 100 years)

Slow Warming Trend (3 deg/century)

Oregon Average Temperature
December–February

1923–2022 Trend
(+0.3°F/Decade)



A WEATHER QUIZ

WHY IS MARK HANGING OUT WITH
STEVE'S CAT?

PLUS, WHAT IMPORTANT METEOROLOGICAL EVENT WAS
ABOUT TO OCCUR IN THE PACNW?



LAST WEEK OF OCTOBER

Huge mid-latitude cyclones in Eastern Pacific

WIND STORMS WEST OF CASCADES

FIRST. LIVE. LOCAL.
WEATHER

**OCTOBER 21ST
BOMB CYCLONE**
950 mb

**OCTOBER 24TH
BOMB CYCLONE**
942 mb

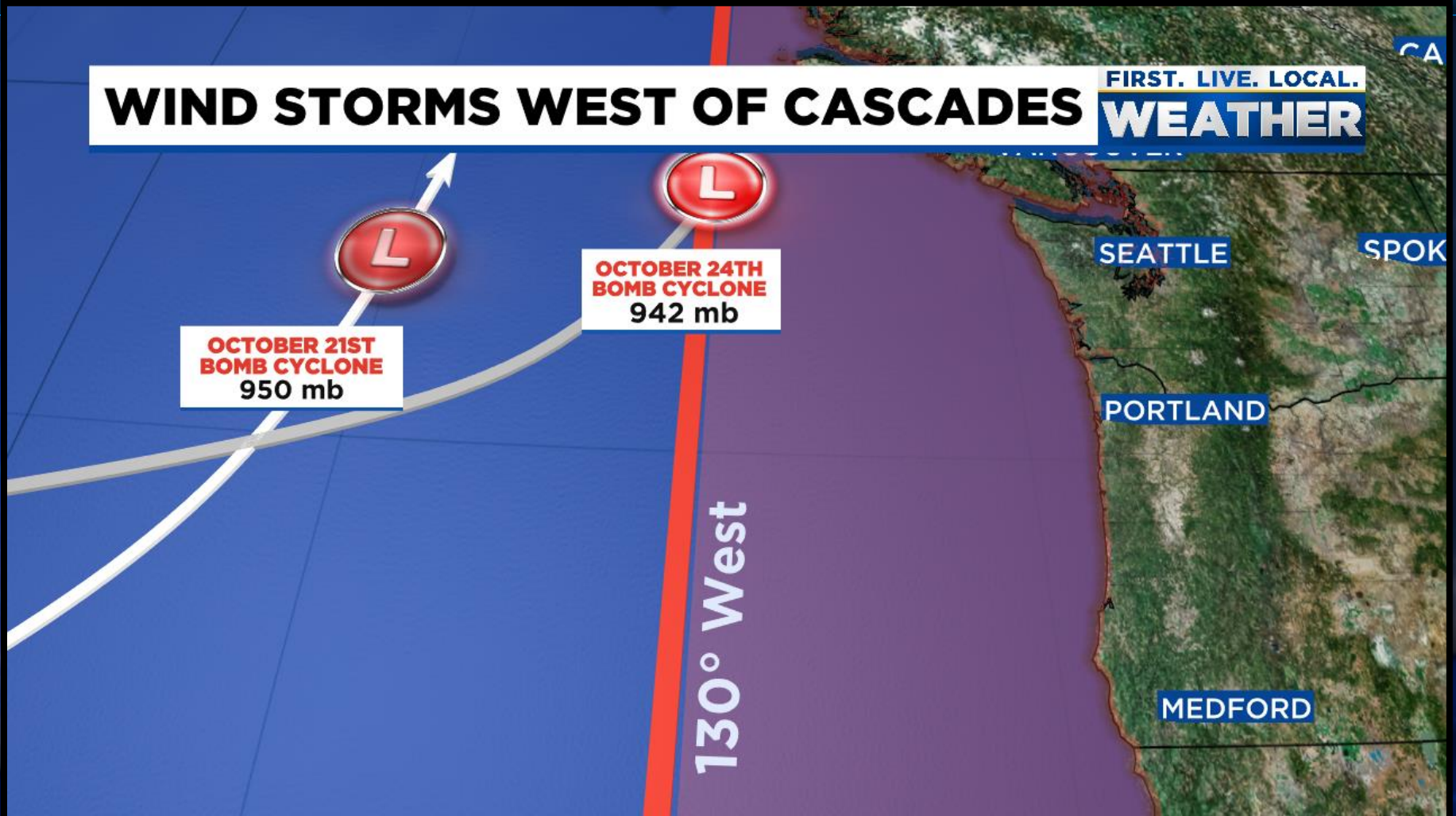
130° West

SEATTLE

SPOK

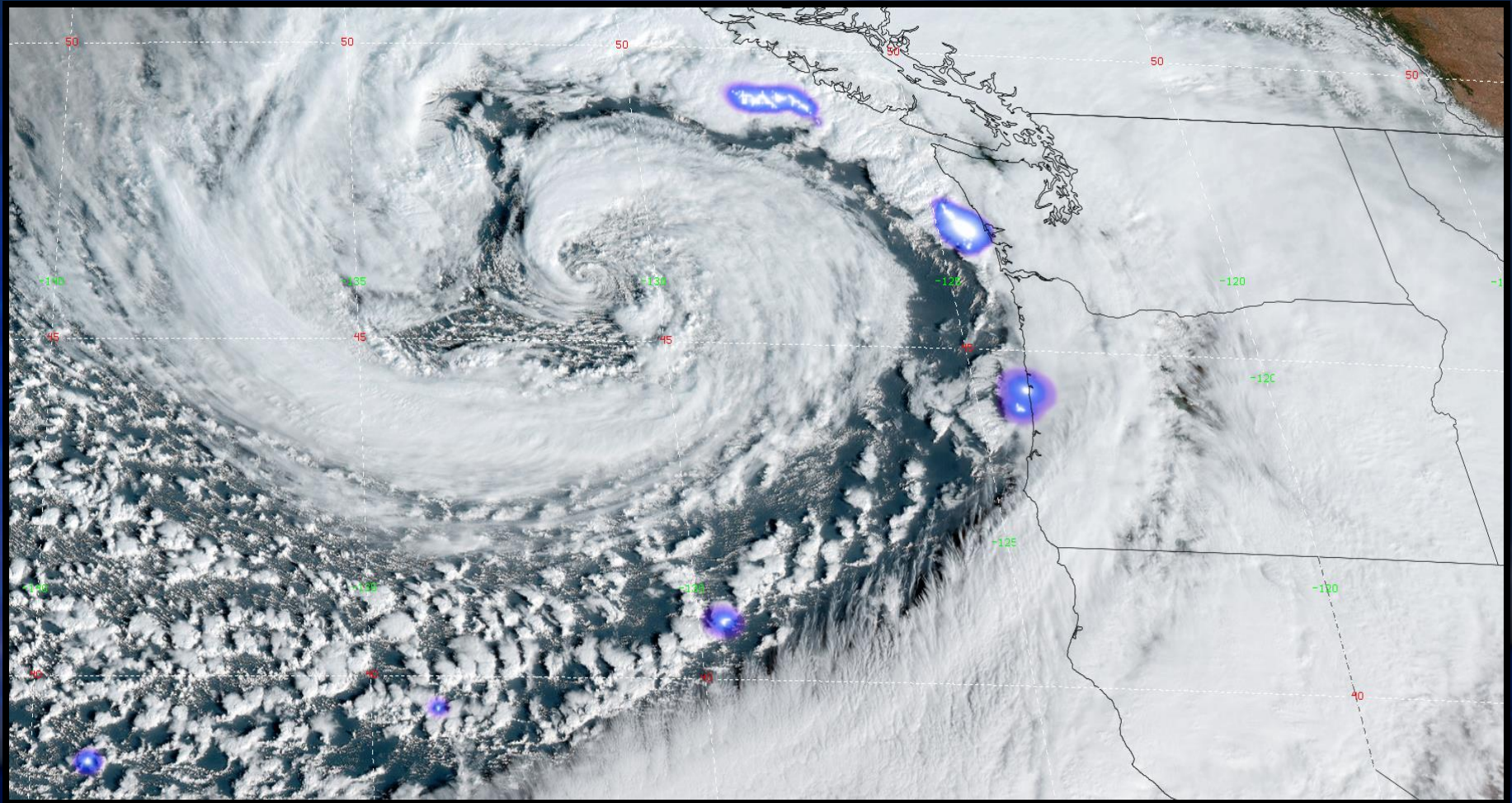
PORTLAND

MEDFORD



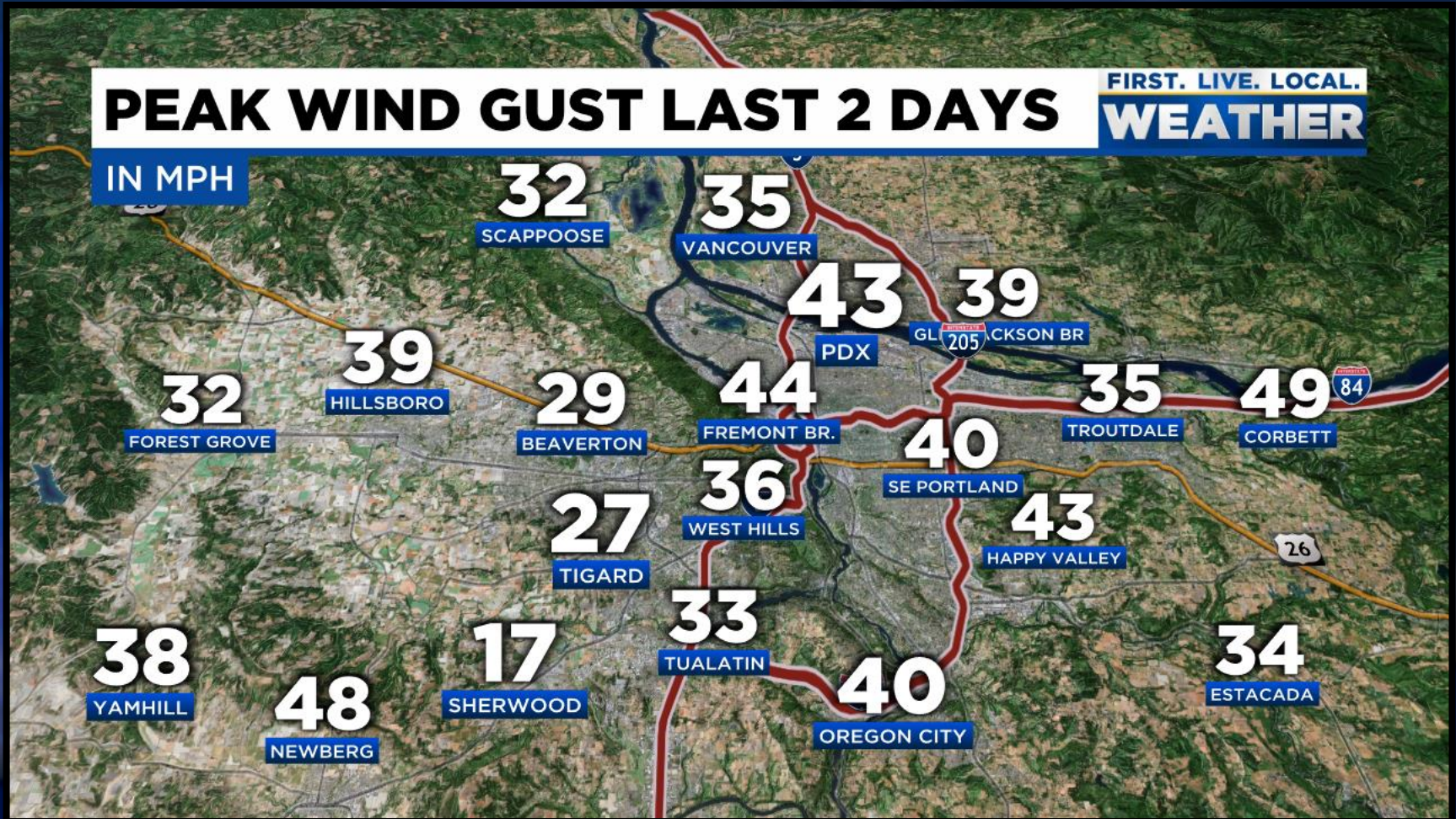
LAST WEEK OF OCTOBER

942 millibar low October 24, 2021
Deepest on record for this part of N.E. Pacific



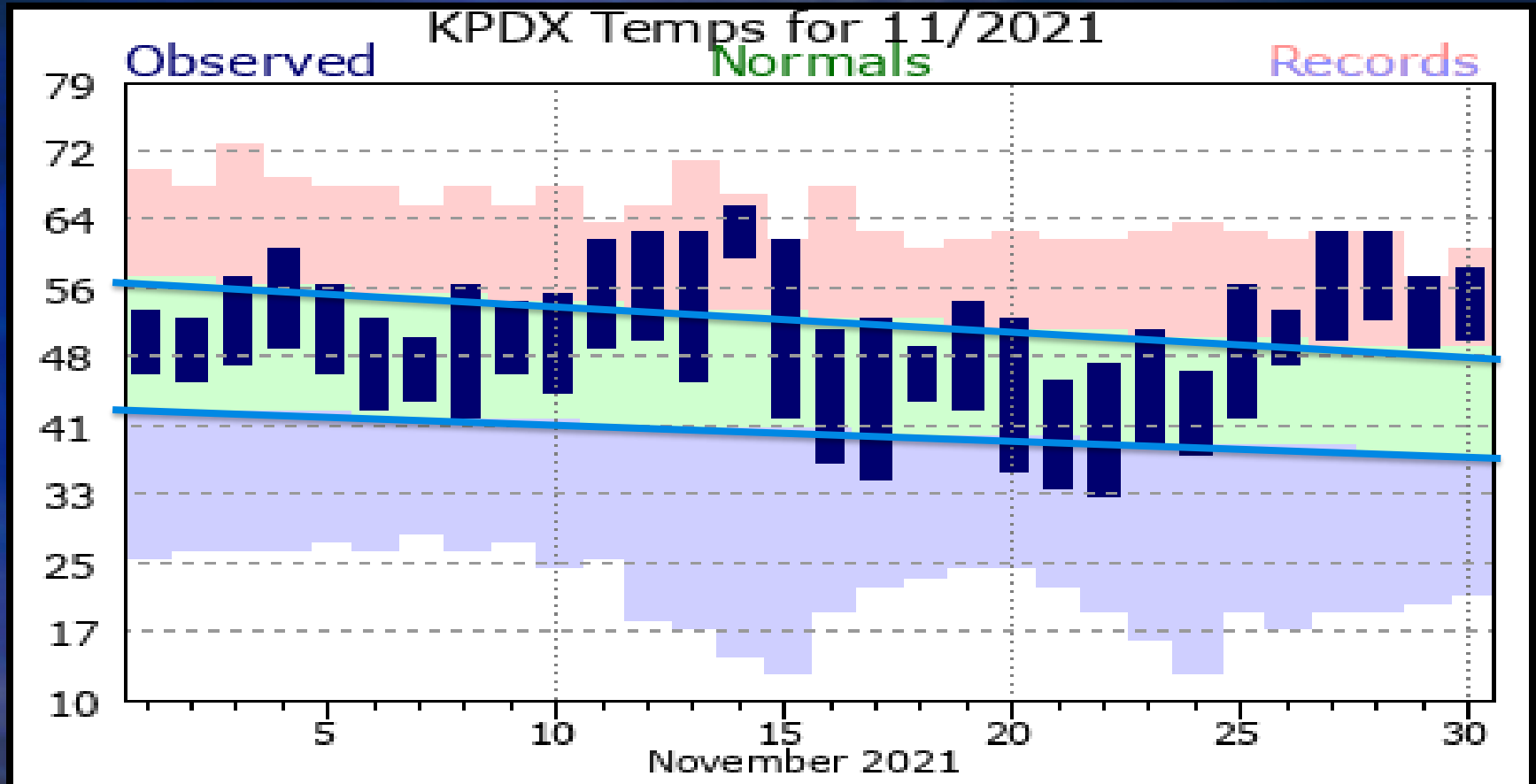
LAST WEEK OF OCTOBER

Strong gradient and wind remains offshore with big cyclones



NOVEMBER

Mild & wet weather. Lots of fronts/systems, but no big storms



Much-needed wet fall

NOVEMBER RAIN IN PORTLAND

FIRST. LIVE. LOCAL.

WEATHER

IN INCHES

**A WET
NOVEMBER!**



NOVEMBER

Atmospheric river hits N.W. Oregon 2nd week of month

STORM TOTAL RAIN

NOVEMBER 10TH-12TH (in inches)

FIRST. LIVE. LOCAL.
WEATHER



NOVEMBER

Atmospheric river hits N.W. Oregon 2nd week of month

WETTEST IN 6 YEARS!

FIRST. LIVE. LOCAL.
WEATHER

THE LAST 2 DAYS

2.79"

in Portland

THURSDAY + FRIDAY

LAST TIME IT WAS THIS WET?

4.33" DECEMBER 7th/8th, 2015

APRIL THROUGH AUGUST RAIN

2.27"

CHRISTMAS JUST 3+ WEEKS AWAY!

DECEMBER 1ST

TODAY'S HIGH TEMPS

FIRST. LIVE. LOCAL.
WEATHER

PORTLAND

50°

AVERAGE HIGH

59° / 1940

RECORD HIGH

56

HOQUIAM

58

OLYMPIA

59

SEATTLE

59

ASTORIA

60

KELSO

63

PORTLAND

61

HOOD RIVER

65

THE DALLES

TILLAMOOK

62

SALEM

63

MADRAS

57

NEWPORT

62

EUGENE

68

REDMOND

56

ROSEBURG

66

BEND

RECORD WARM DAY

FIRST. LIVE. LOCAL.
WEATHER

NEW RECORD

DECEMBER
RECORD?

63° PORTLAND

65° TROUTDALE

65° SALEM

70° THE DALLES

72° REDMOND

68° PENDLETON

64° MEACHAM



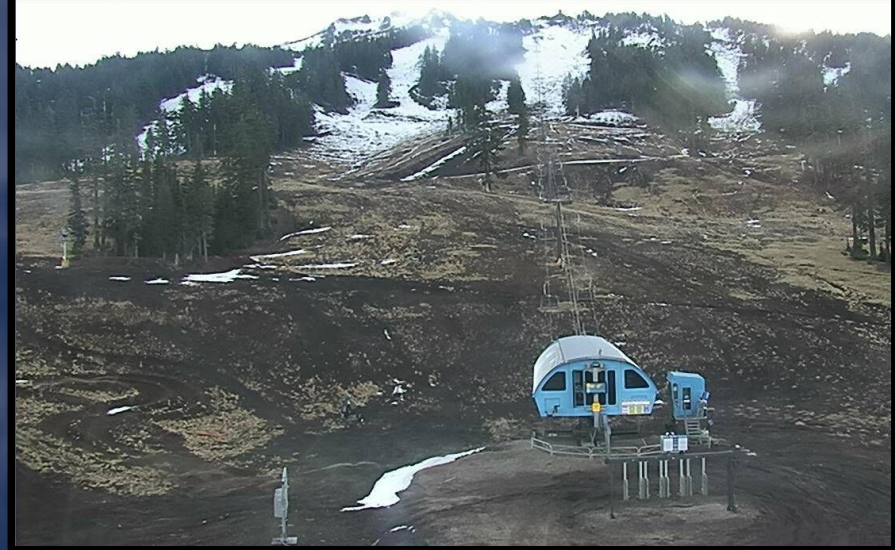
Little or no snow at ski areas through first week of December.

Several snowstorms followed by warm rains Oct/Nov

Late starts more common recently

DECEMBER 1ST

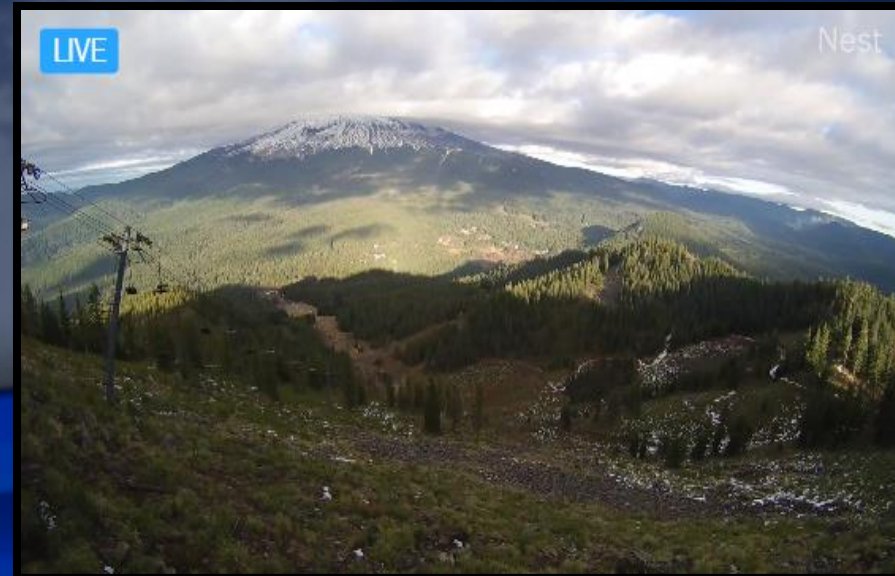
West Village Cam 02:46:07 PM 2021-12-01



MHM Bottom of Vista Cam © Wednesday, December 1, 2021 2:50 PM

LIVE

Nest



Little or no snow at ski areas through first week of December.

Several snowstorms followed by warm rains Oct/Nov

Late starts more common recently

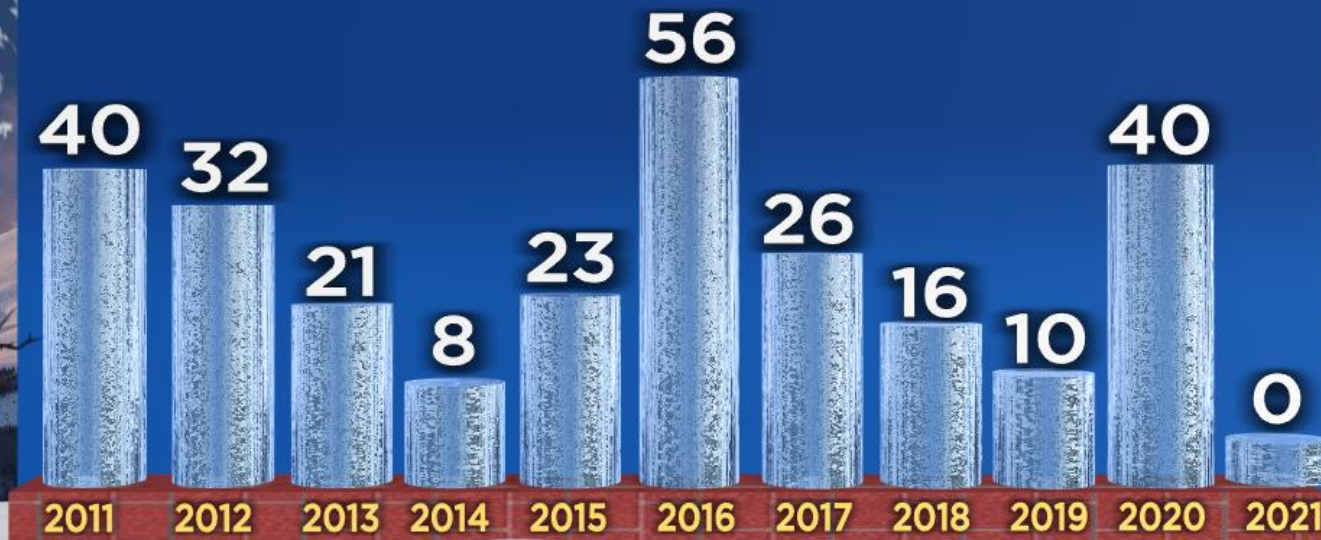
MT. HOOD SNOW DEPTH @ 5,400'

INCHES ON GROUND DECEMBER 7TH

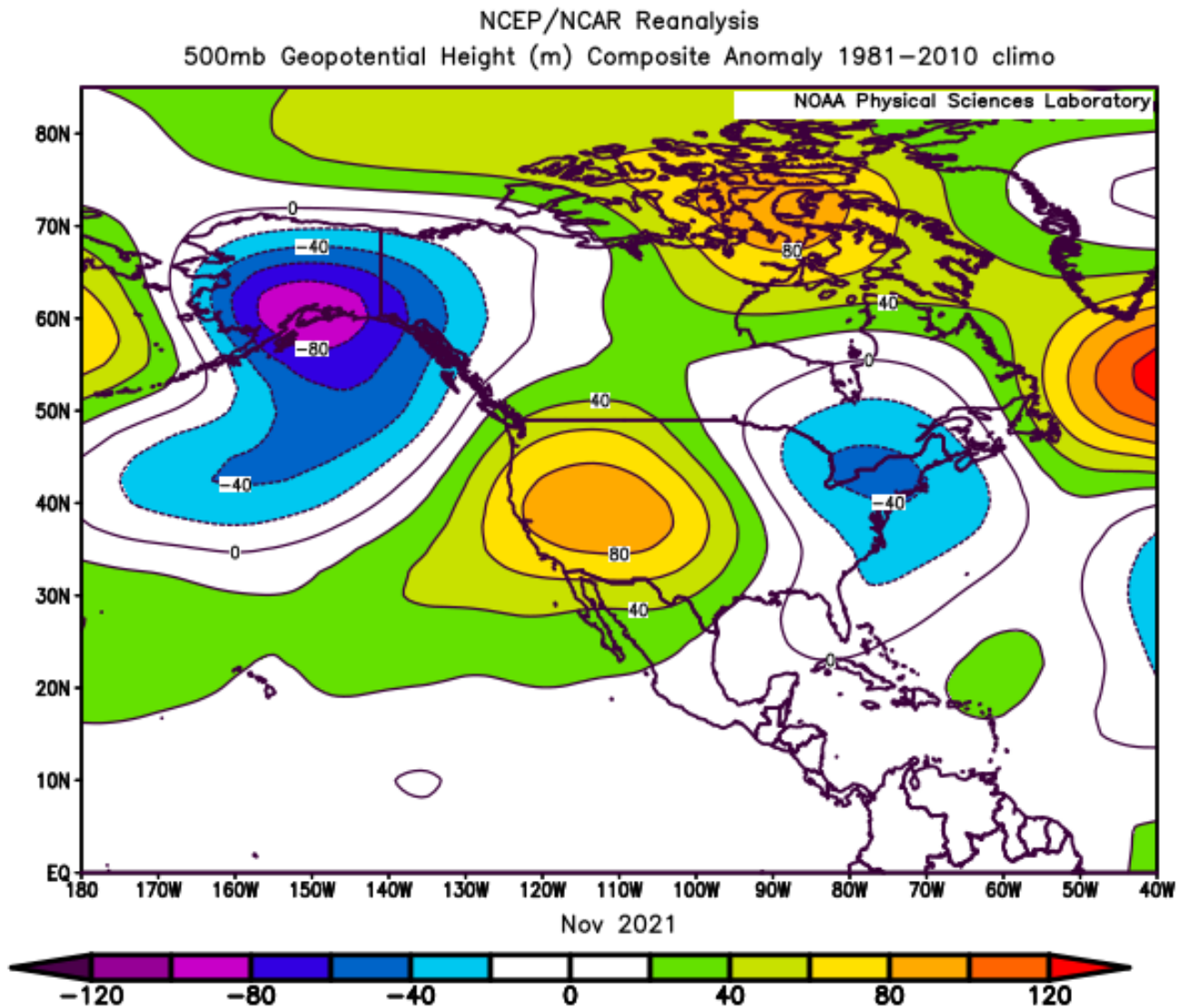
FIRST. LIVE. LOCAL.

WEATHER

LOWEST SNOWPACK (DEC. 7TH) SINCE 2002

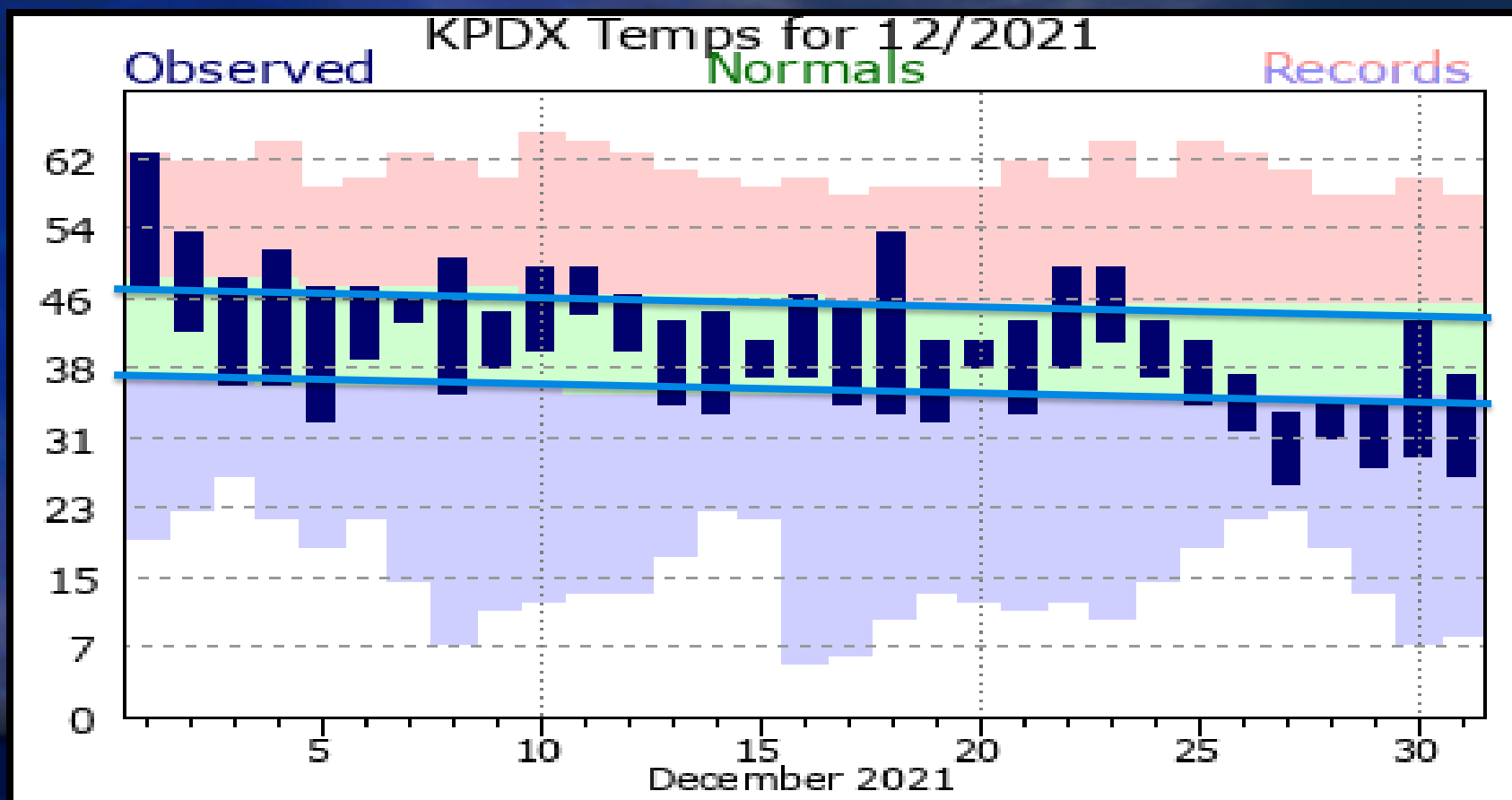


NOVEMBER 500mb HEIGHTS



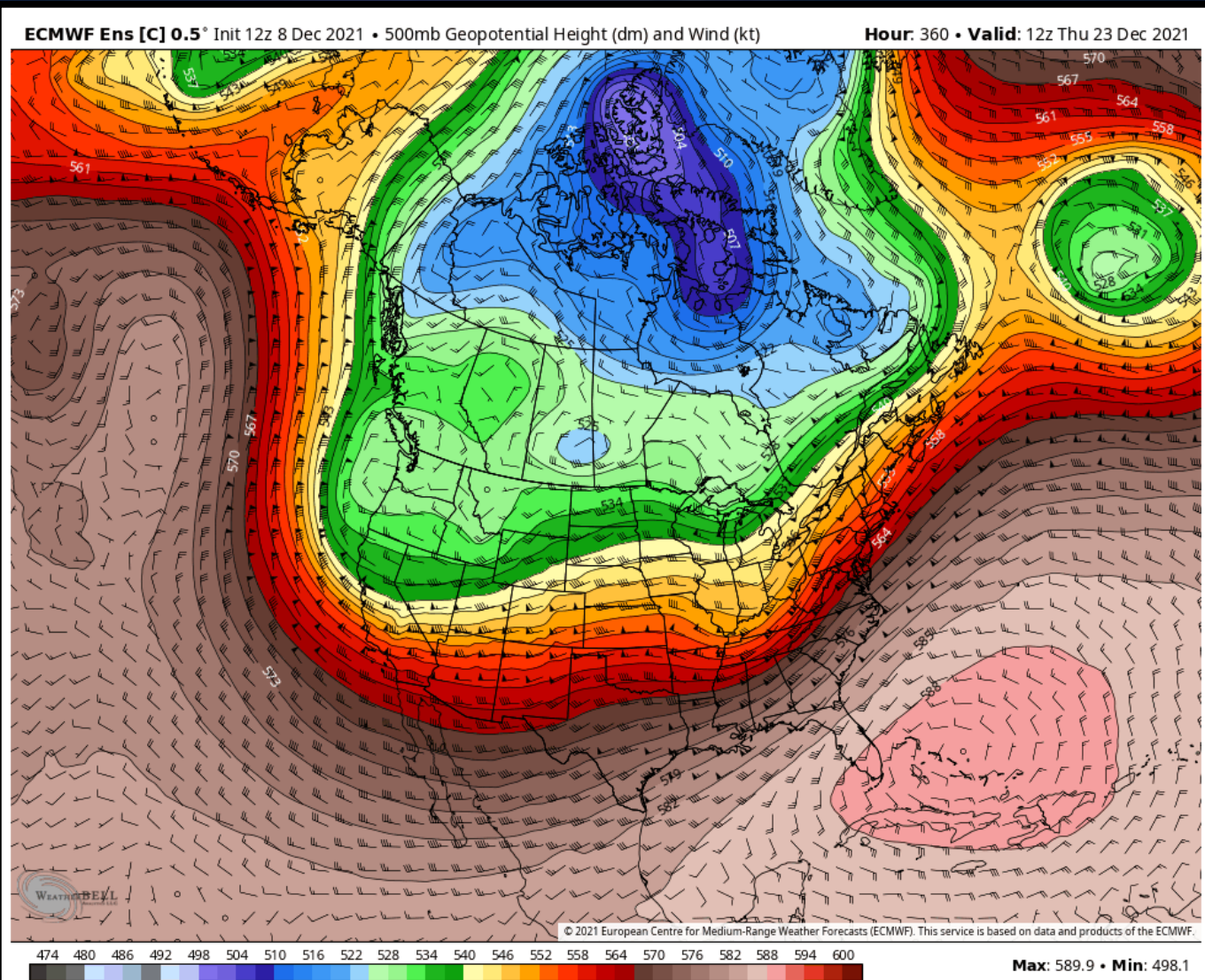
DECEMBER

3 mild/normal weeks, then cold/snowy last week



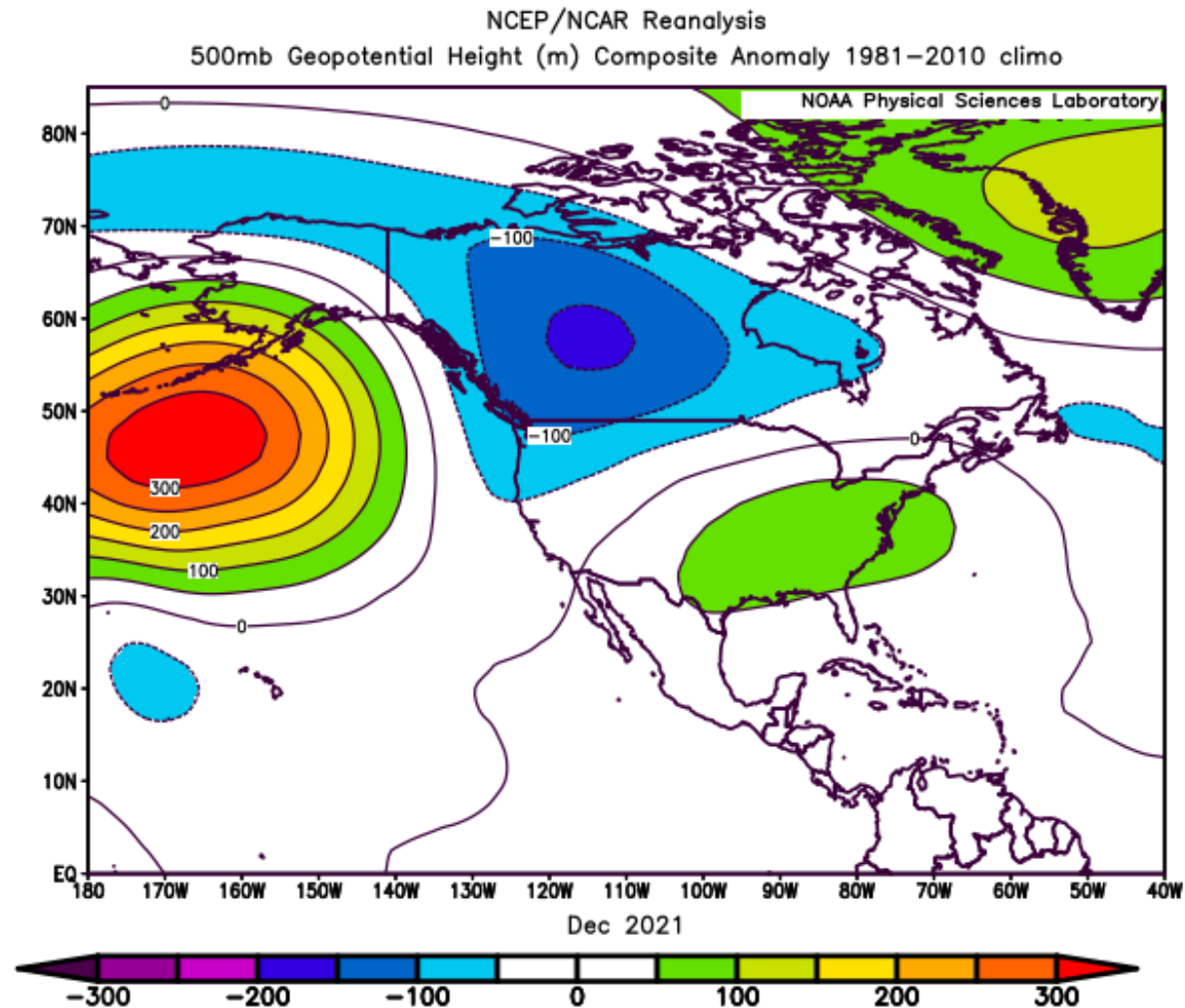
2-week forecast from December 8th (ECMWF ensembles)

Models showing pattern change to ridging in EPAC and troughing over Western North America = looking exciting!



Actual December 500 millibar height anomaly

Ridging in N.E. Pacific, troughing in western North America



FIRST SNOW "EVENT"
Saturday, December 18th "Anafront"

FORECAST

8:00 PM SATURDAY

RAIN

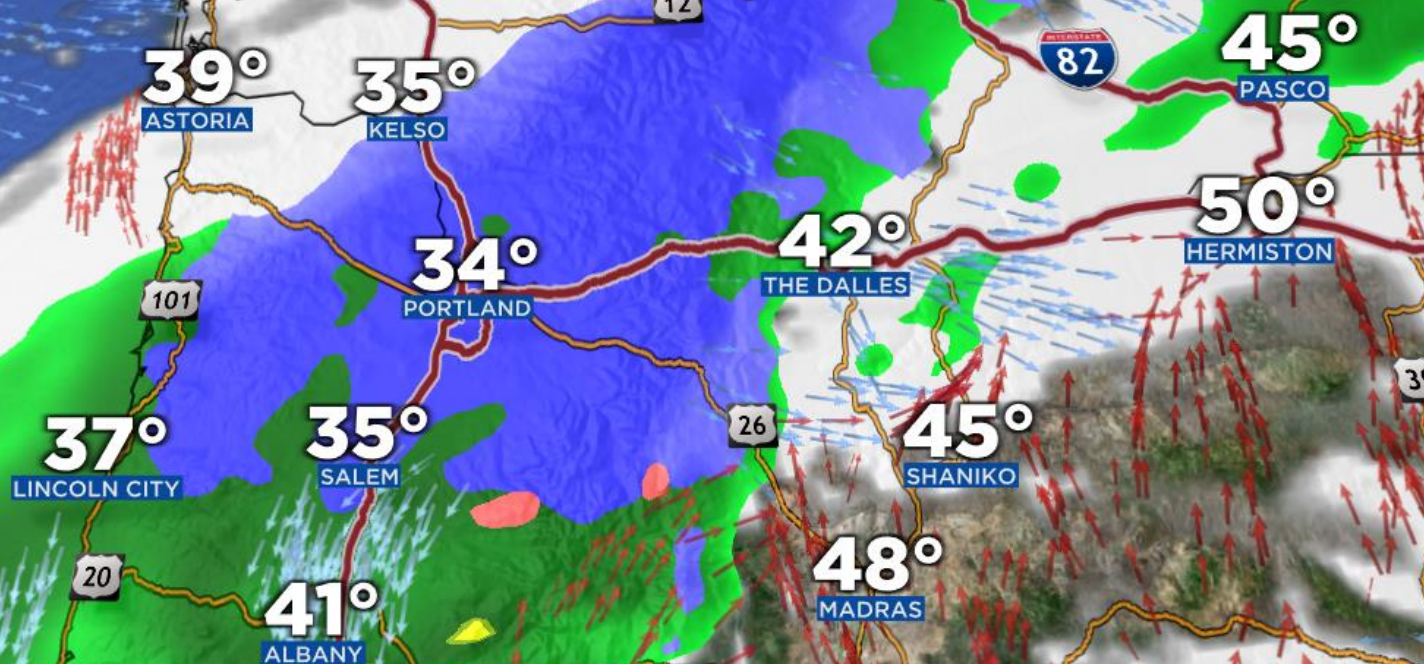
FREEZING
RAIN

ICE
PELLETS

SNOW

FIRST. LIVE. LOCAL.

WEATHER



FIRST SNOW "EVENT"

Saturday, December 18th "Anafront"

HEAVY RAIN > HEAVY EVENING SNOW > LIGHT RAIN BY SUNRISE

SNOW FORECAST

(IN INCHES) ECMWF MODEL

ENDING 5:00 AM WEDNESDAY

1 2 4 6 10 15 20 25 30+

FIRST. LIVE. LOCAL.
WEATHER

-GFS 4km Domain

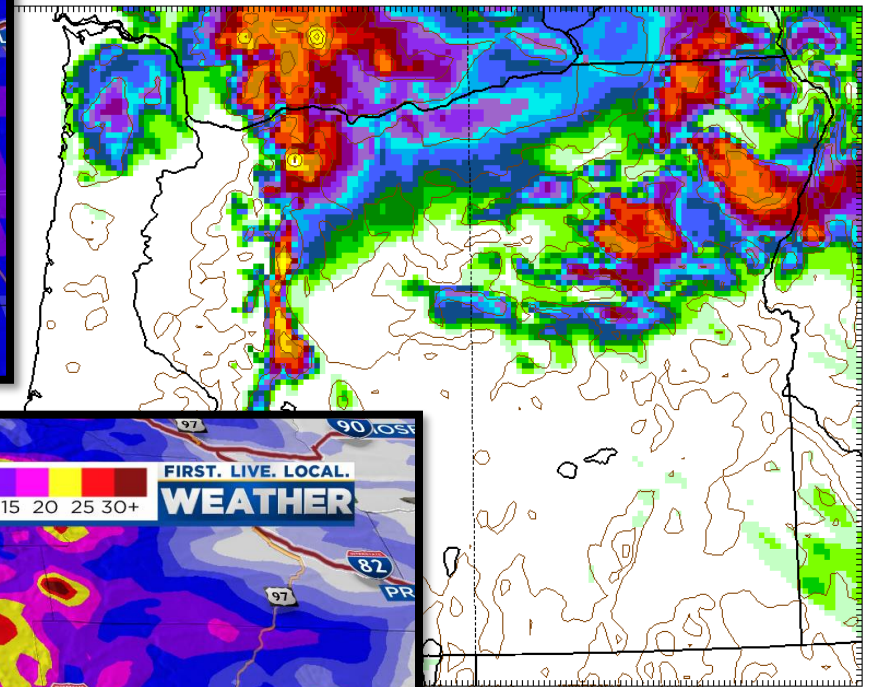
34 h

ated Model Snowfall (inches)

height AMSL

Init: 00 UTC Fri 17 Dec 21

Valid: 12 UTC Mon 20 Dec 21 (04 PST Mon 20 Dec 21)



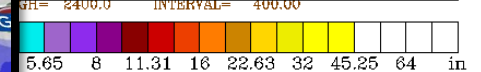
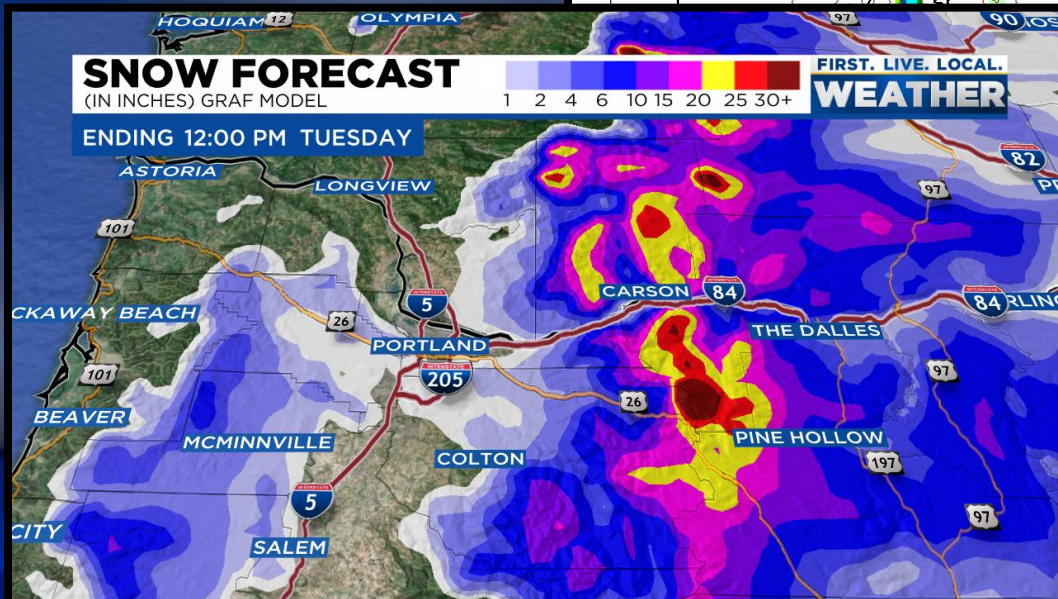
SNOW FORECAST

(IN INCHES) GRAF MODEL

ENDING 12:00 PM TUESDAY

1 2 4 6 10 15 20 25 30+

FIRST. LIVE. LOCAL.
WEATHER



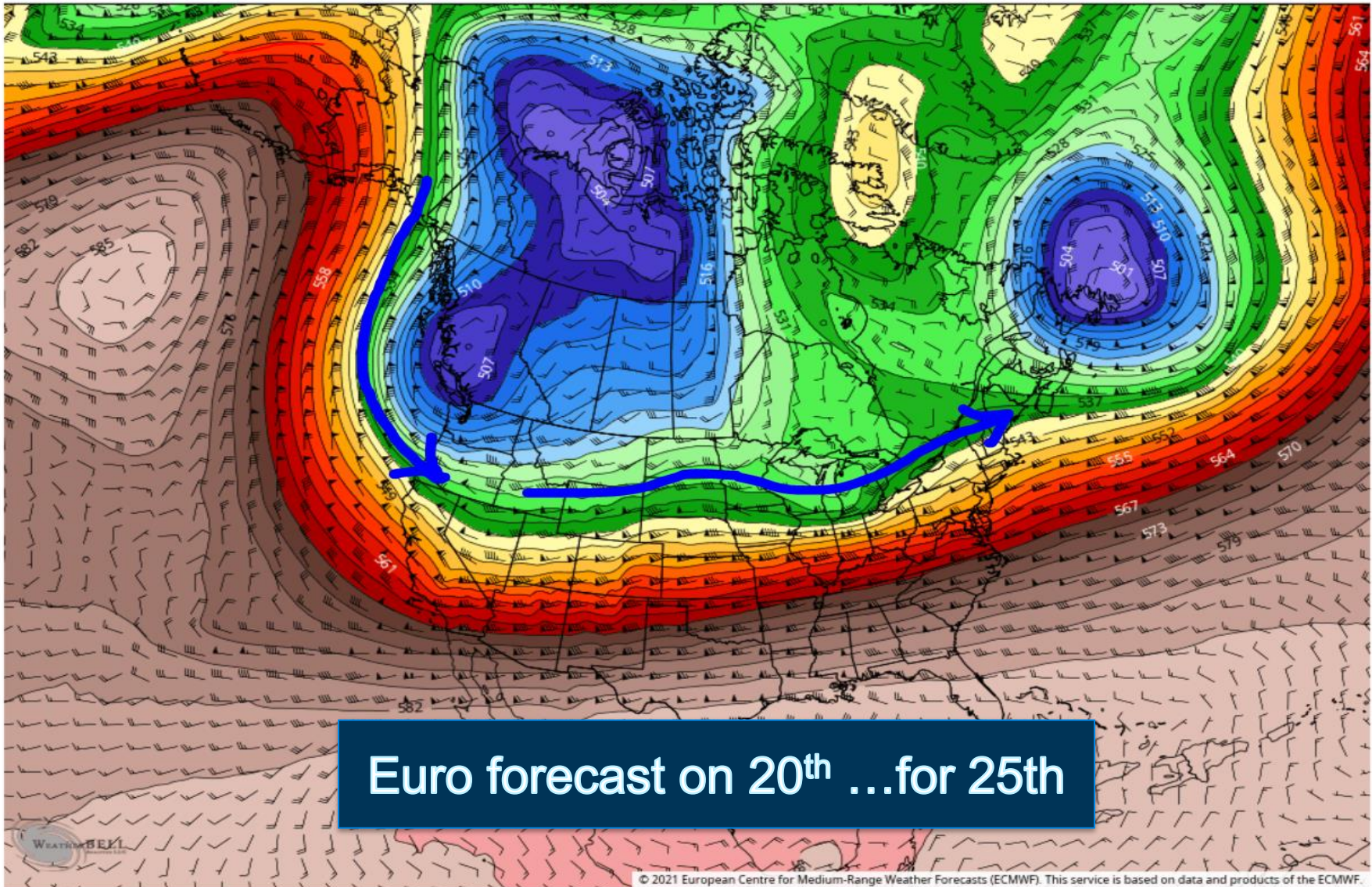
on Noah-MP 4.0 km, 37 levels, 24 sec
full KM: 2D Smagor

THEN...MODELS ALL FORECAST VERY COLD UPPER TROUGH FOR CHRISTMAS WEEKEND...CHRISTMAS SNOW???

The usual issues: How much moisture, does arctic air make it to Oregon, snow?

ECMWF Ens [C] 0.5° Init 18z 20 Dec 2021 • 500mb Geopotential Height (dm) and Wind (kt)

Hour: 120 • Valid: 18z Sat 25 Dec 2021



Euro forecast on 20th ...for 25th

© 2021 European Centre for Medium-Range Weather Forecasts (ECMWF). This service is based on data and products of the ECMWF.

474 480 486 492 498 504 510 516 522 528 534 540 546 552 558 564 570 576 582 588 594 600

Max: 589.9 • Min: 498.6

FORECAST FOR SUNDAY, DEC 26TH

Exact orientation
and how
far cold upper
trough
pushes south
determines how
cold we get in
PACNW

UW WRF-GFS 36km Domain

Fest: 84 h

Absolute vorticity

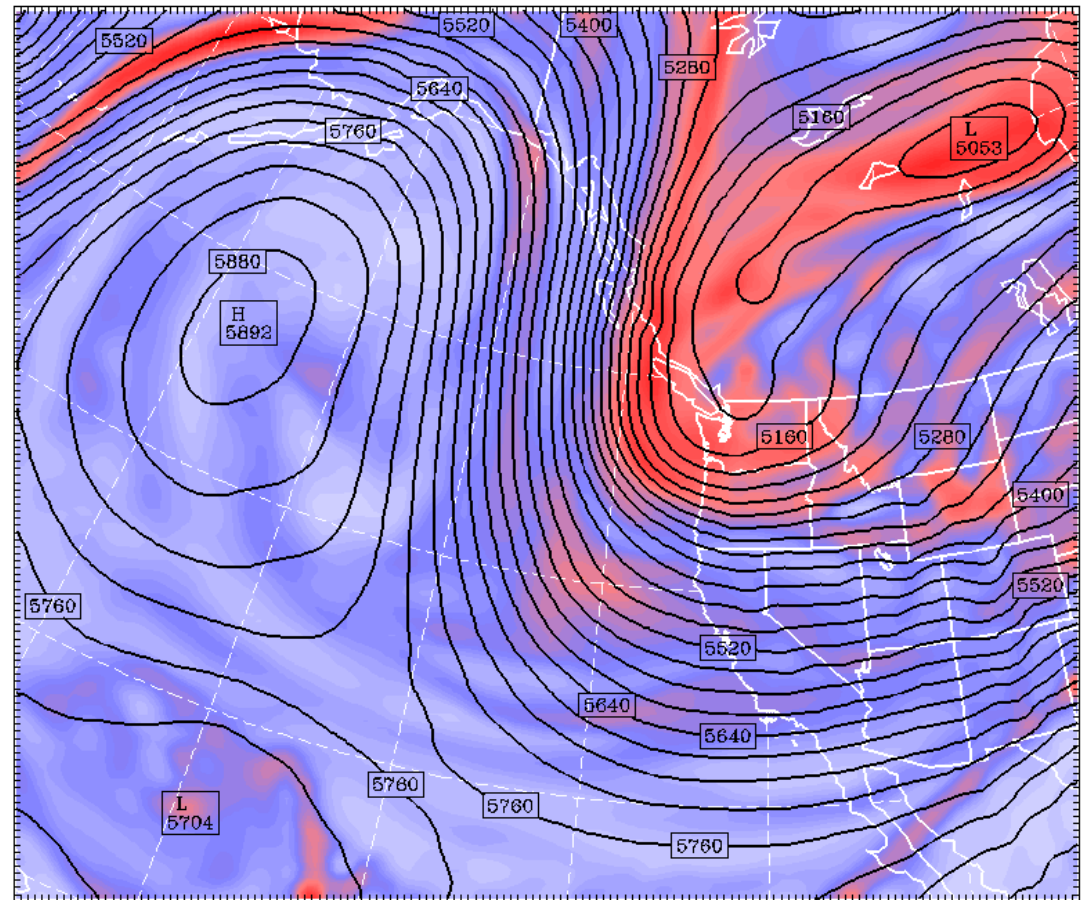
Geopotential Height at 500mb (m)

Init: 12 UTC Thu 23 Dec 21

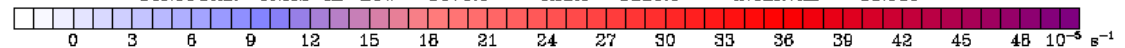
Valid: 00 UTC Mon 27 Dec 21 (16 PST Sun 26 Dec 21)

at pressure = 500 hPa

sm= 2



CONTOURS: UNITS=m LOW= 5070.0 HIGH= 5880.0 INTERVAL= 30.000

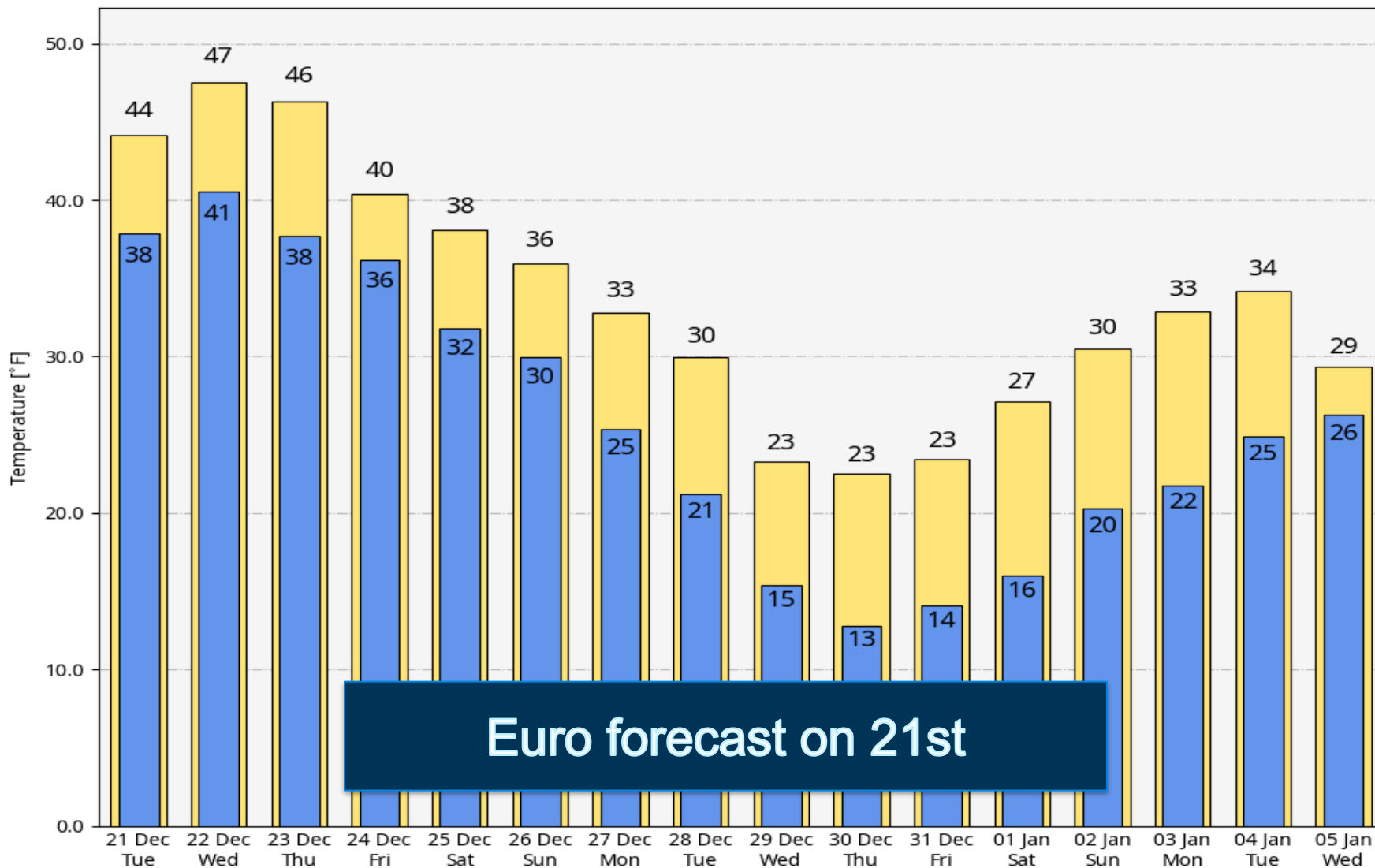


Model Info: V4.1.3 G-D Ens YSU PBL Thompson Noah-MP 36 km, 37 levels, 216 sec
LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor

MODELS ALL FORECAST COLD UPPER TROUGH FOR CHRISTMAS WEEKEND

The usual issues: How much moisture, does arctic air make it to Oregon, snow?

ECMWF Ens 0.2° Init 12z 21 Dec 2021 • Daily High/Low Temperature (°F)
Portland International Airport • KPDX [45.5887°N, 122.598°W]



COLD ONSHORE FLOW = SNOW TO SEA LEVEL

(Where there was enough moisture for showers)

UW WRF-GFS 12km Domain

Init: 00 UTC Sun 26 Dec 21

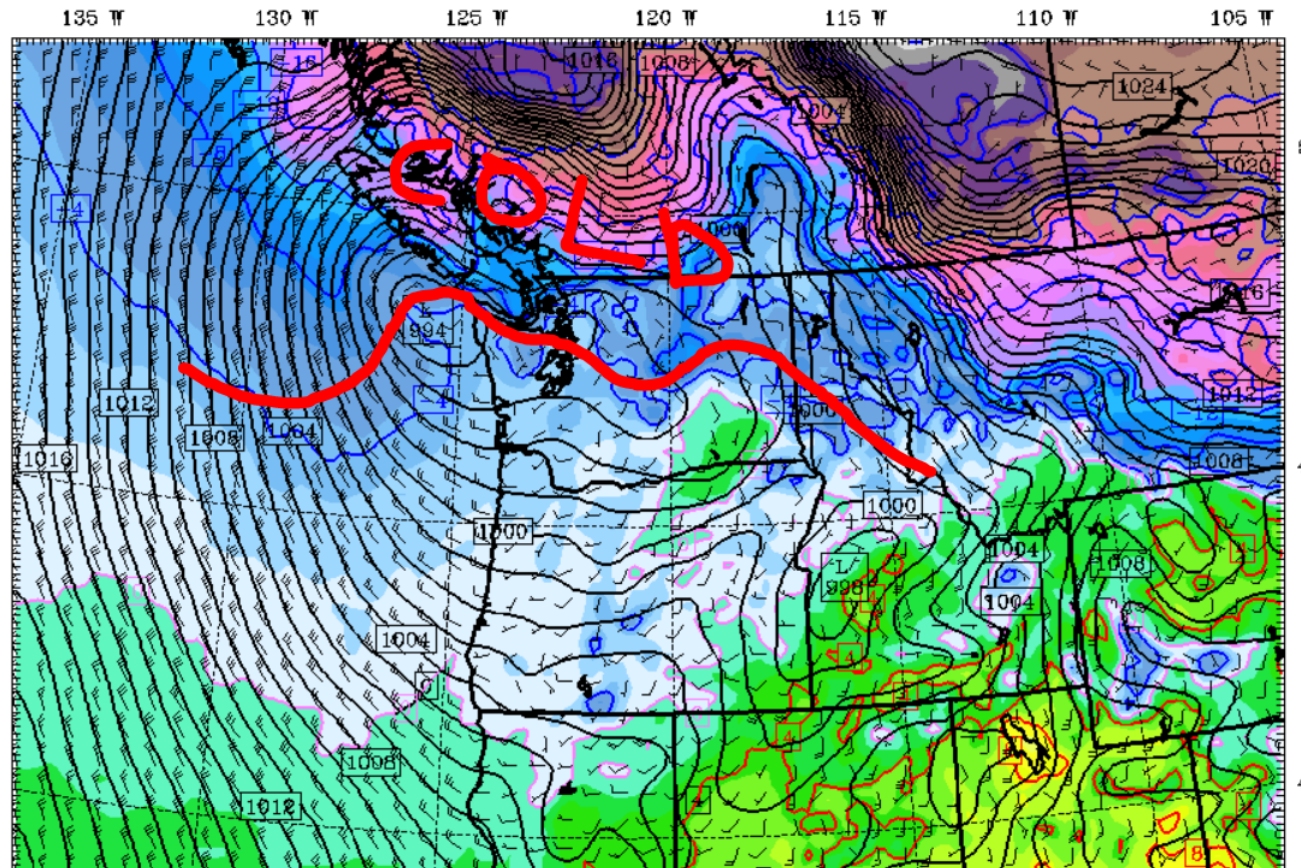
Fest: 3 h

Valid: 03 UTC Sun 26 Dec 21 (19 PST Sat 25 Dec 21)

Temperature at 925 mb (°C)

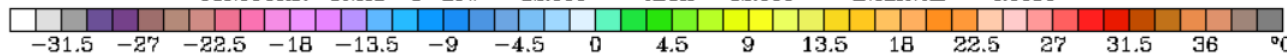
Sea Level Pressure (hPa)

Wind at 10m (full barb = 10kts)



Christmas Evening (25th)

CONTOURS: UNITS=hPa LOW= 995.00 HIGH= 1024.0 INTERVAL= 1.0000
CONTOURS: UNITS=°C LOW= -32.000 HIGH= 12.000 INTERVAL= 4.0000



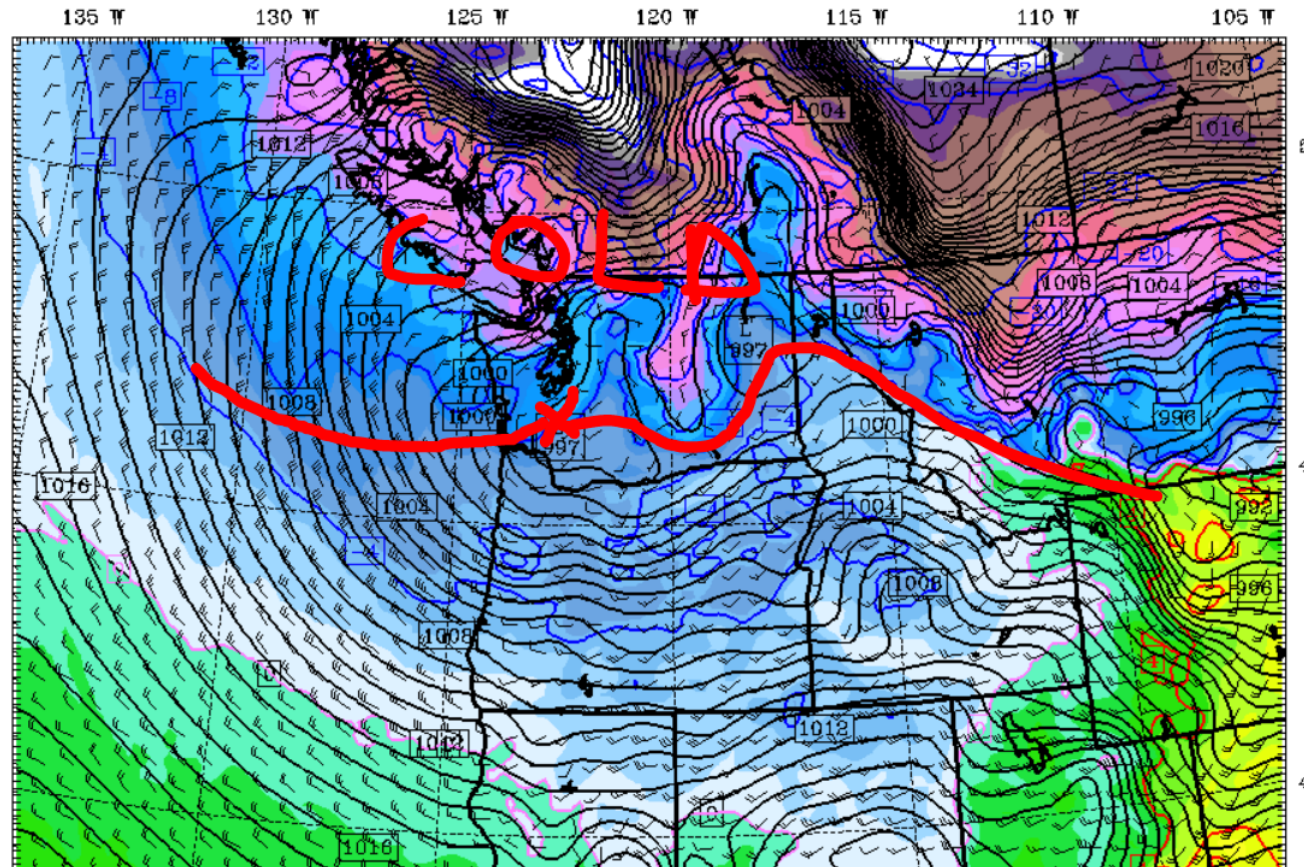
ONSHORE FLOW CONTINUES SUNDAY (Snow for some of us)

Init: 00 UTC Sun 26 Dec 21

Valid: 18 UTC Sun 26 Dec 21 (10 PST Sun 26 Dec 21)

Sea Level Pressure (hPa)

Wind at 10m (full barb = 10kts)



Forecast for midday on 26th (Sun)

```

CONTOURS:  UNITS=hPa  LOW= 991.00      HIGH= 1026.0      INTERVAL= 1.0000
CONTOURS:  UNITS=°C   LOW= -40.000     HIGH= 8.0000     INTERVAL= 4.0000

```



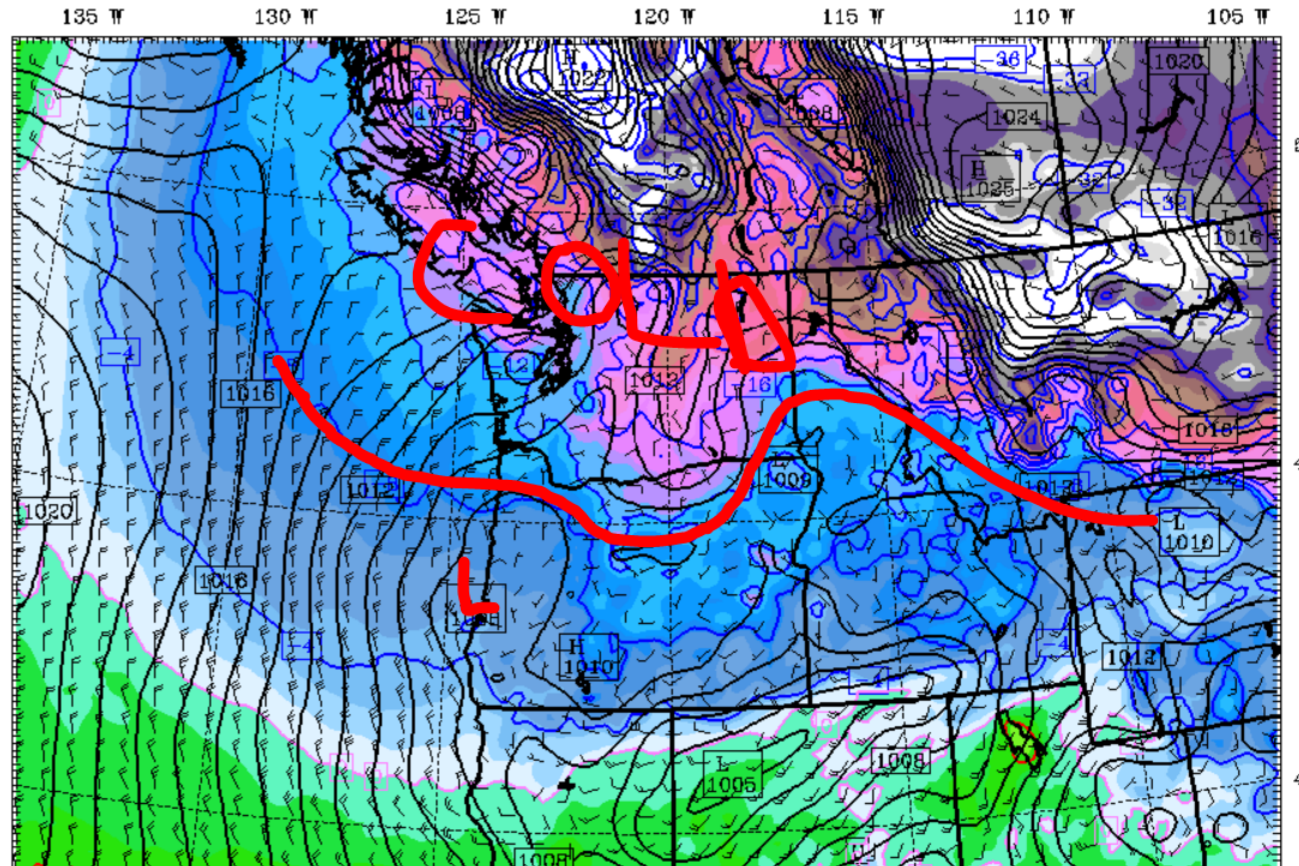
Thin layer of surface arctic air noses into Portland/Salem Monday

Init: 00 UTC Sun 26 Dec 21

Valid: 12 UTC Mon 27 Dec 21 (04 PST Mon 27 Dec 21)

Sea Level Pressure (hPa)

Wind at 10m (full barb = 10kts)



Forecast for 26th (Mon AM)

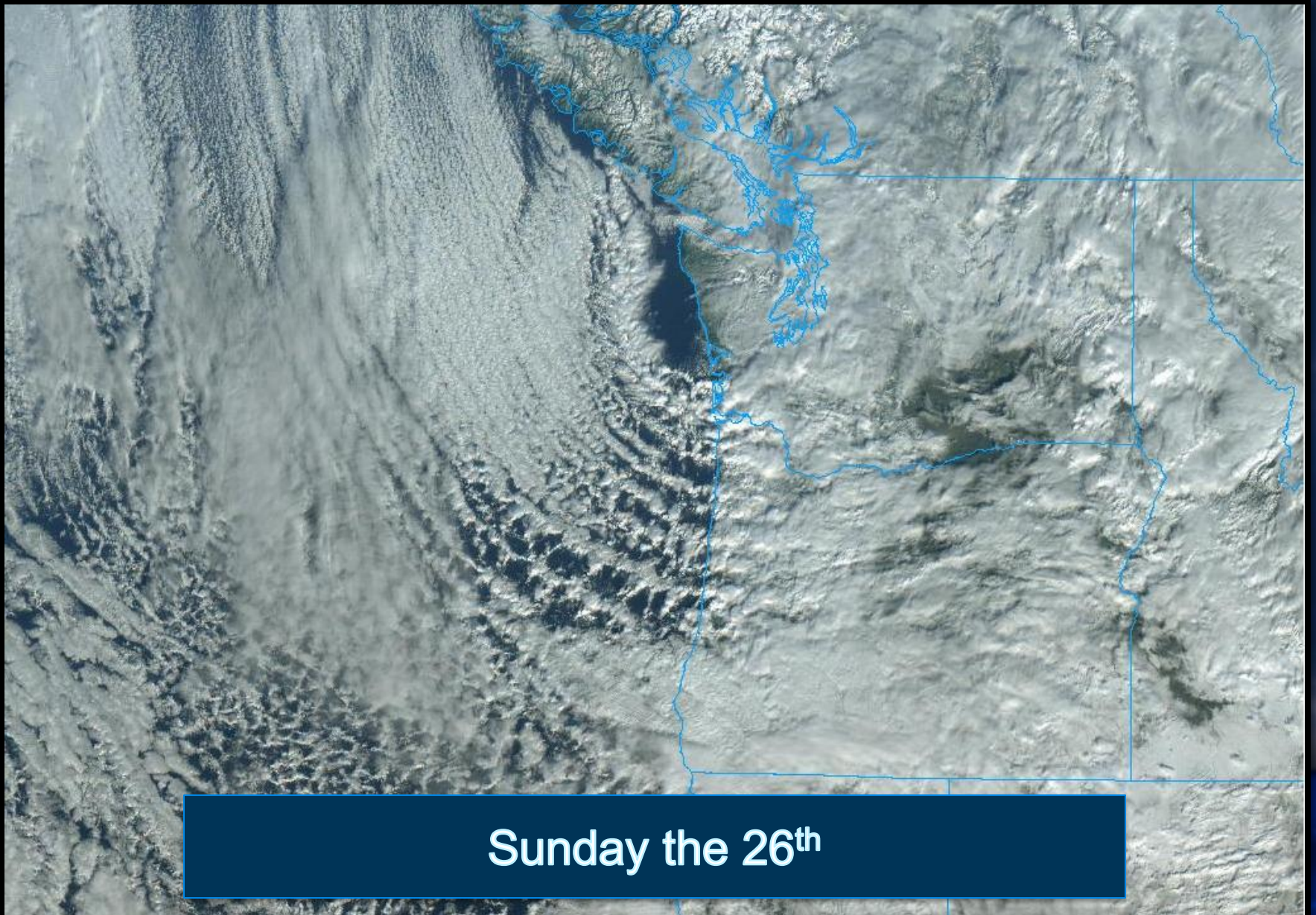
```

CONTOURS:  UNITS=hPa  LOW=  1005.0      HIGH=  1025.0      INTERVAL=   1.0000
CONTOURS:  UNITS=°C   LOW=  -48.000     HIGH=   4.0000     INTERVAL=   4.0000

```

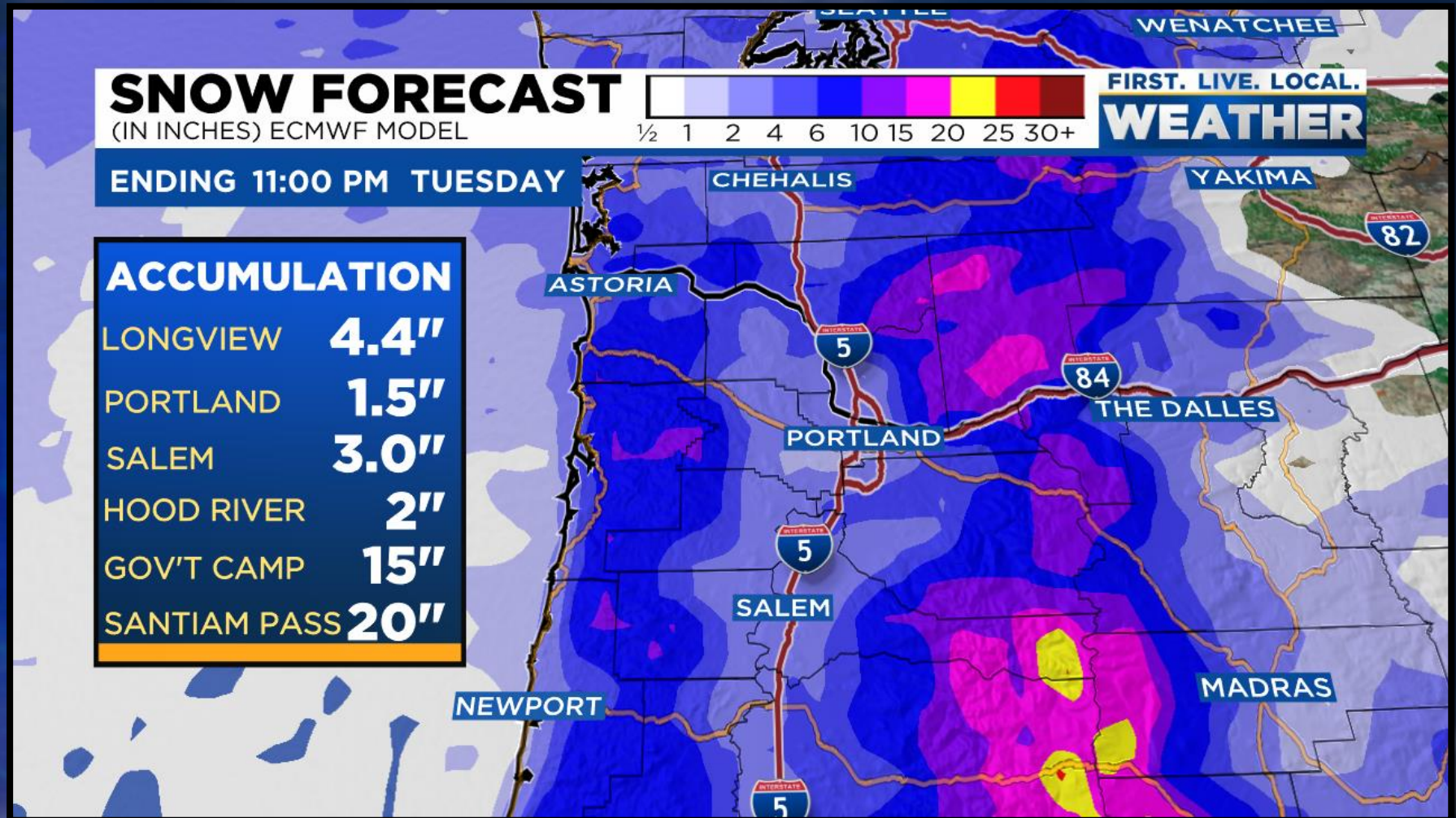


“Ocean Effect” snow showers moving inland



Sunday the 26th

MODELS STRUGGLE WITH COLD SHOWER PATTERN

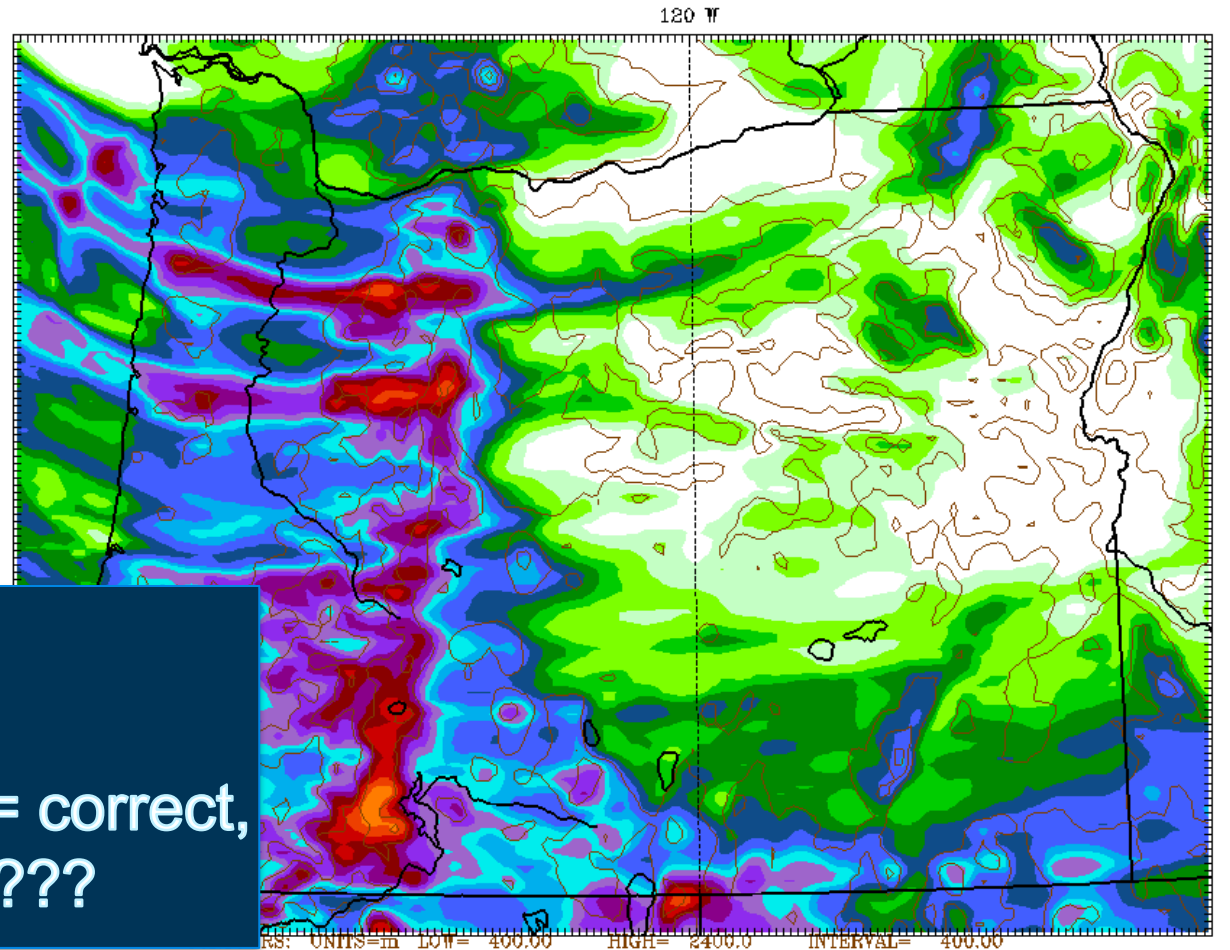


Global models don't handle situation well

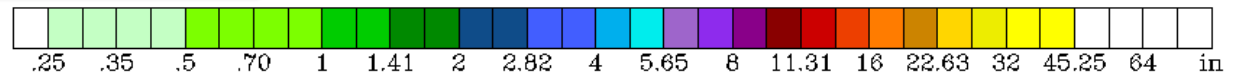
MODELS STRUGGLE WITH COLD SHOWER PATTERN

UW WRF-GFS 4km Domain
Fest: 36 h
24HR Snowfall (in)
Terrain height AMSL

Init: 00 UTC Sun 26 Dec 21
Valid: 12 UTC Mon 27 Dec 21 (04 PST Mon 27 Dec 21)



Mesoscale models
show “banding”
of heavy showers = correct,
but who gets them???

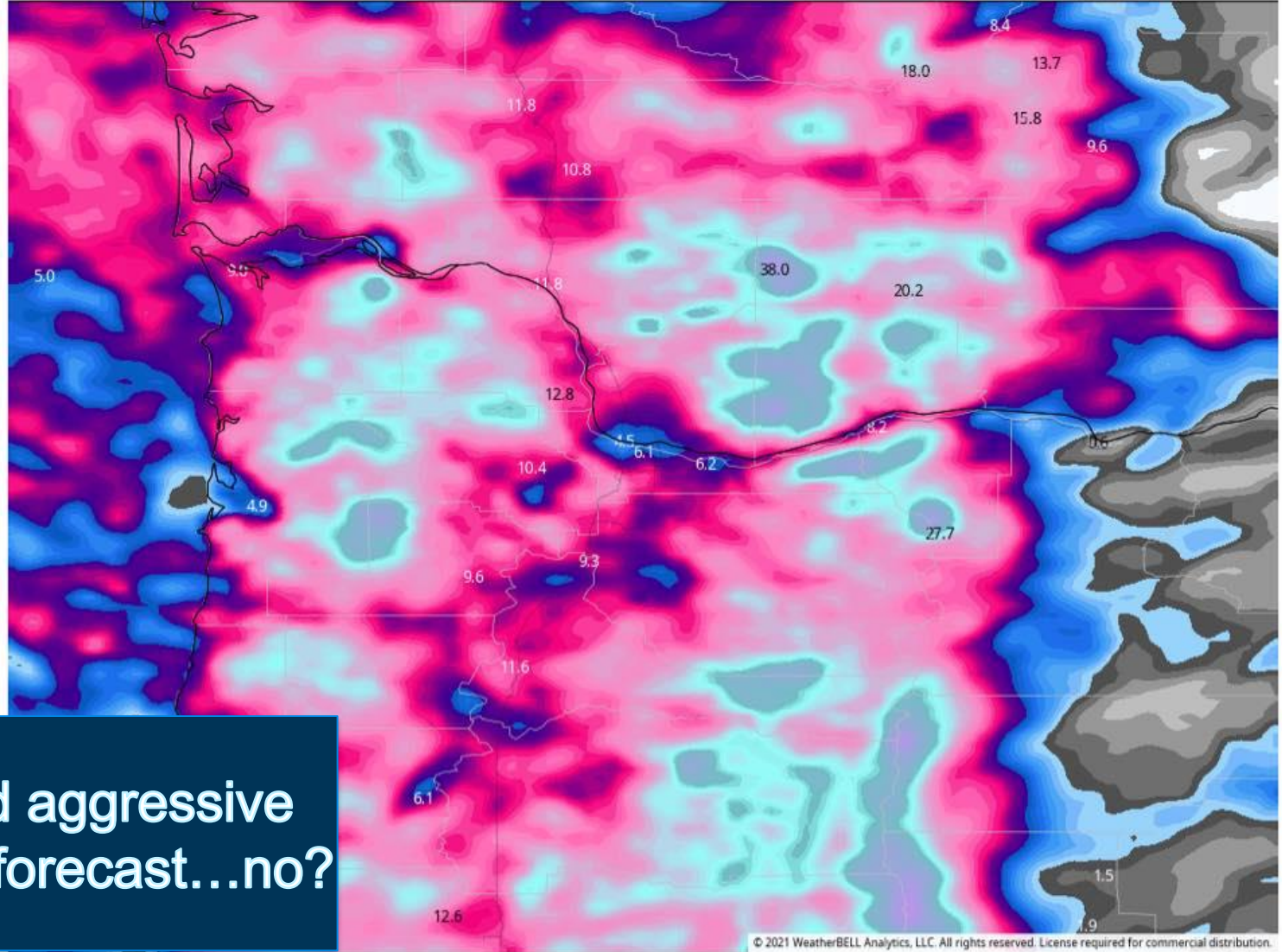


Model Info: V4.1.3 G-D Ens YSU PBL Thompson Noah-MP 4.0 km, 37 levels, 24 sec
LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor

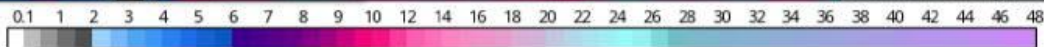
MODELS STRUGGLE WITH COLD SHOWER PATTERN

HRRR 3 km Init 18z 24 Dec 2021 • Total Snow (10:1 Ratio) (Inches)

Hour: 48 • Valid: 18z Sun 26 Dec 2021

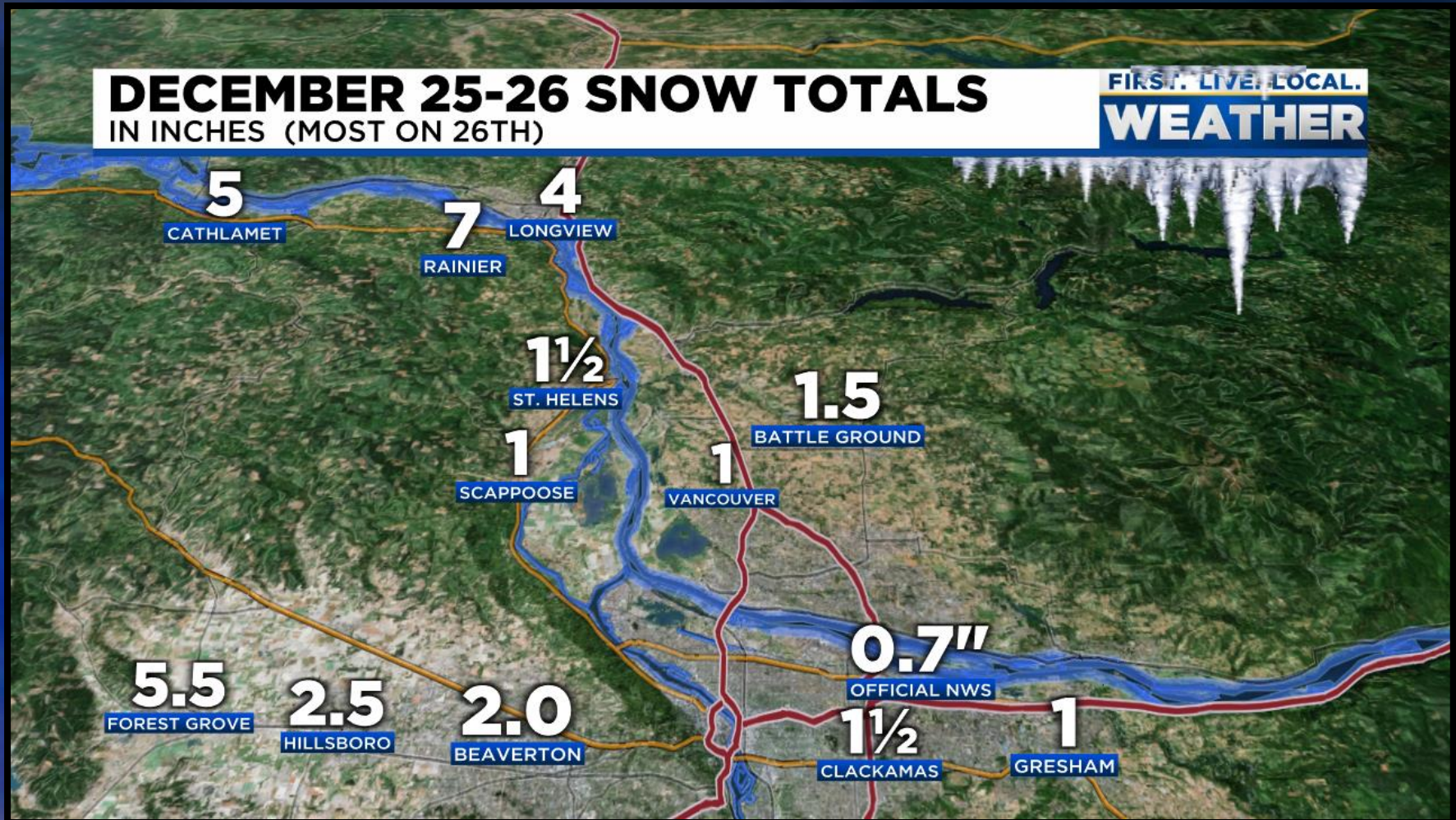


Just a tad aggressive
with snow forecast...no?



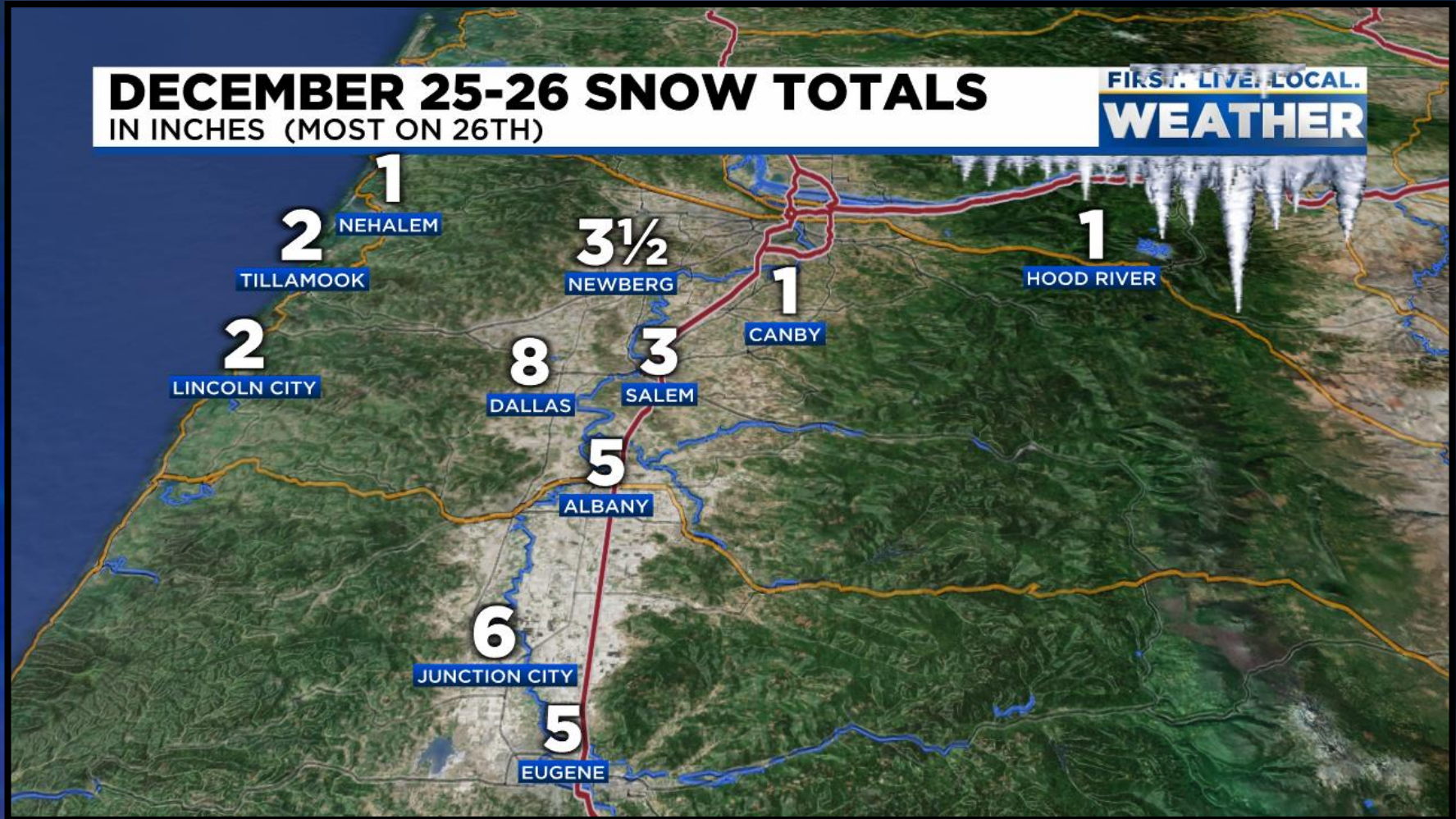
Max: 42.9

WHAT HAPPENED?



Not much in most of metro area

LOTS OF SNOW IN PARTS OF CENTRAL/SOUTH VALLEY



Could be more in Eugene, totals from Portland NWS

REAL SNOW IN PARTS OF CENTRAL/SOUTH VALLEY

LIVE

WILLAMETTE VALLEY
VINEYARDS

32°

S 7 mph
Gust 11



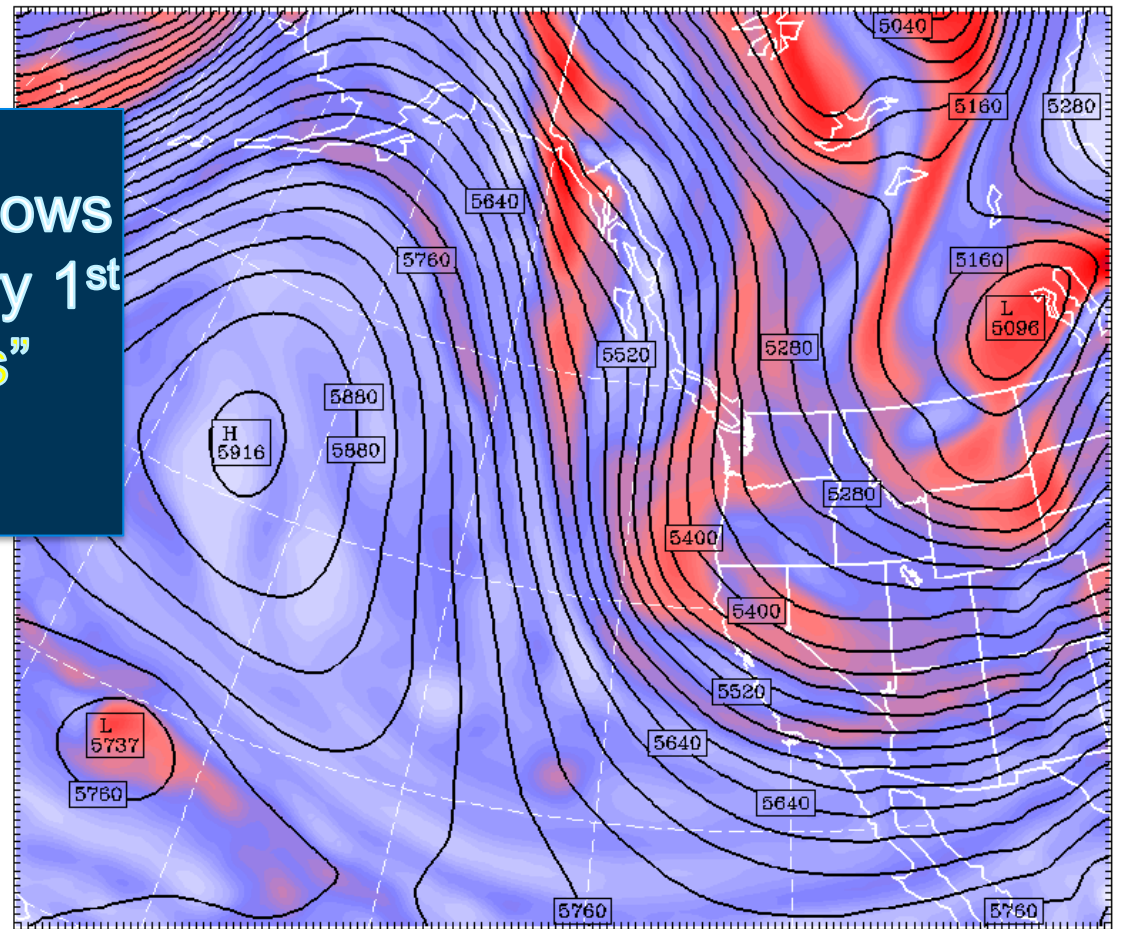
December 26th in South Salem Hills

COLD FINAL WEEK OF DECEMBER

UW WRF-GFS 36km Domain
Fest: 75 h
Absolute vorticity
Geopotential Height at 500mb (m)

Init: 12 UTC Sat 25 Dec 21
Valid: 15 UTC Tue 28 Dec 21 (07 PST Tue 28 Dec 21)
at pressure = 500 hPa
sm= 2

Cold northerly flow follows
December 27th-January 1st
Several "BC Sliders"
bring light snow

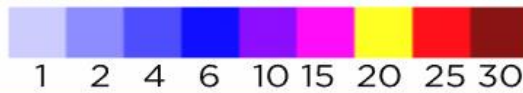


CONTOURS: UNITS=m LOW= 5010.0 HIGH= 5910.0 INTERVAL= 30.000
Model Info: V4.1.3 G-D Ens YSU PBL Thompson Noah-MP 36 km, 37 levels, 216 sec
LW: RRTMG SW: RRTMG DIFF: full KM: 2D Smagor

WIDESPREAD METRO SNOW 2 DAYS AFTER CHRISTMAS

SNOW FORECAST

(IN INCHES)



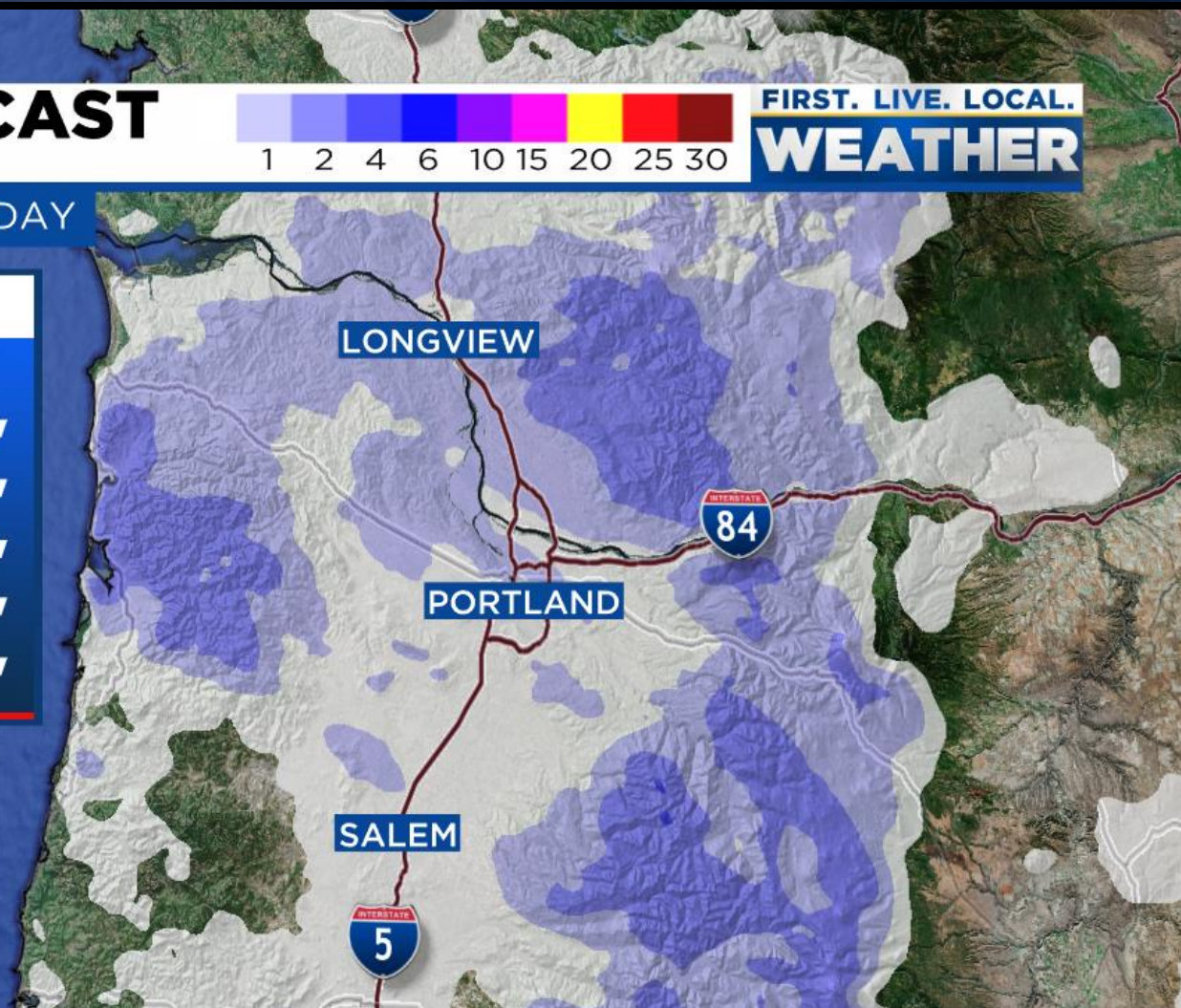
FIRST. LIVE. LOCAL.

WEATHER

ENDING 8:00 PM TUESDAY

PORTLAND

MODEL	FCST
GEM	 1.1"
ECMWF	 1.6"
WRF-UW	 1.2"
HRRR	 1.1"
GRAF	 .9"

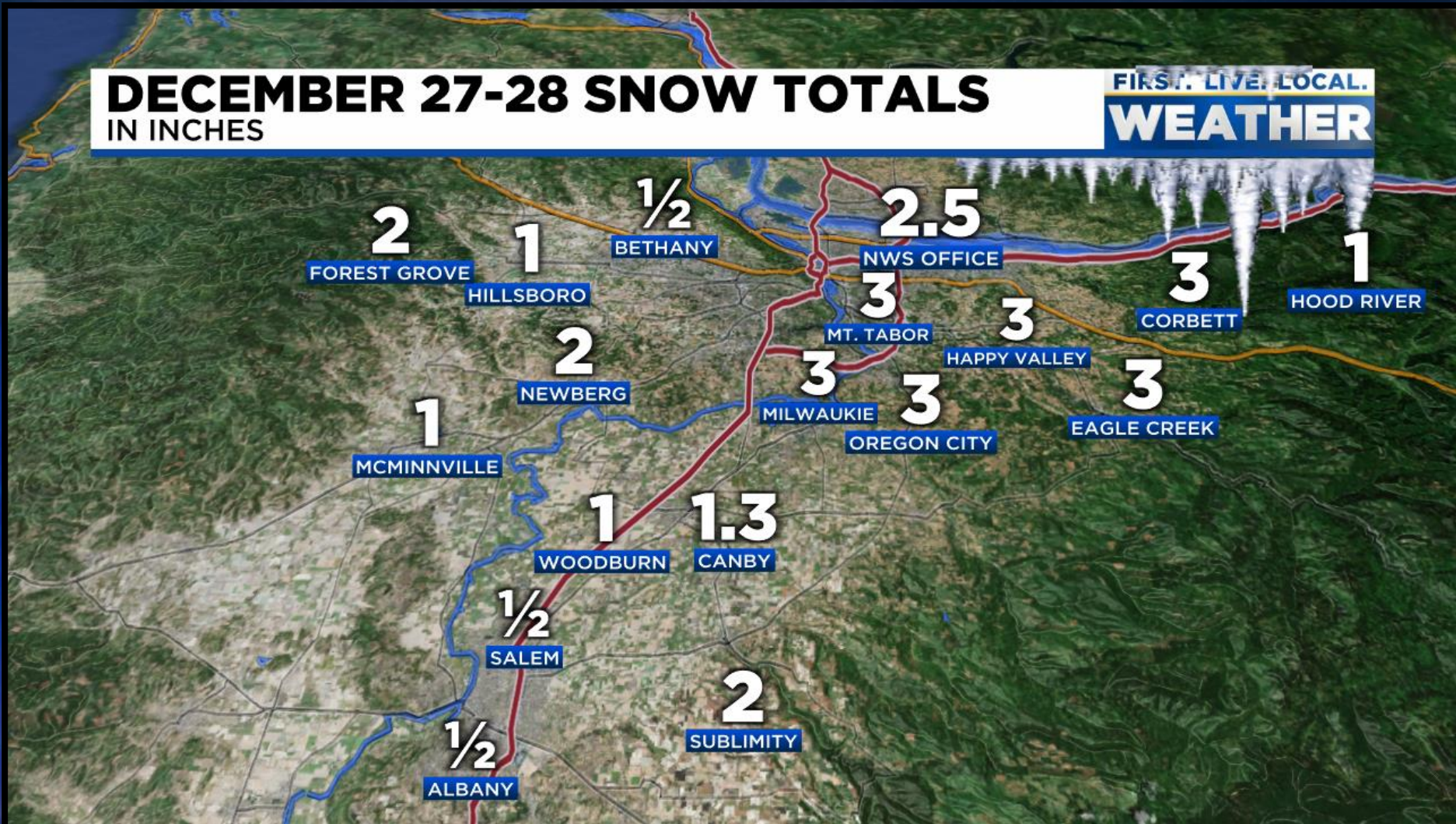


Nice forecast for late 27th into 28th

WIDESPREAD METRO SNOW 2 DAYS AFTER CHRISTMAS

DECEMBER 27-28 SNOW TOTALS IN INCHES

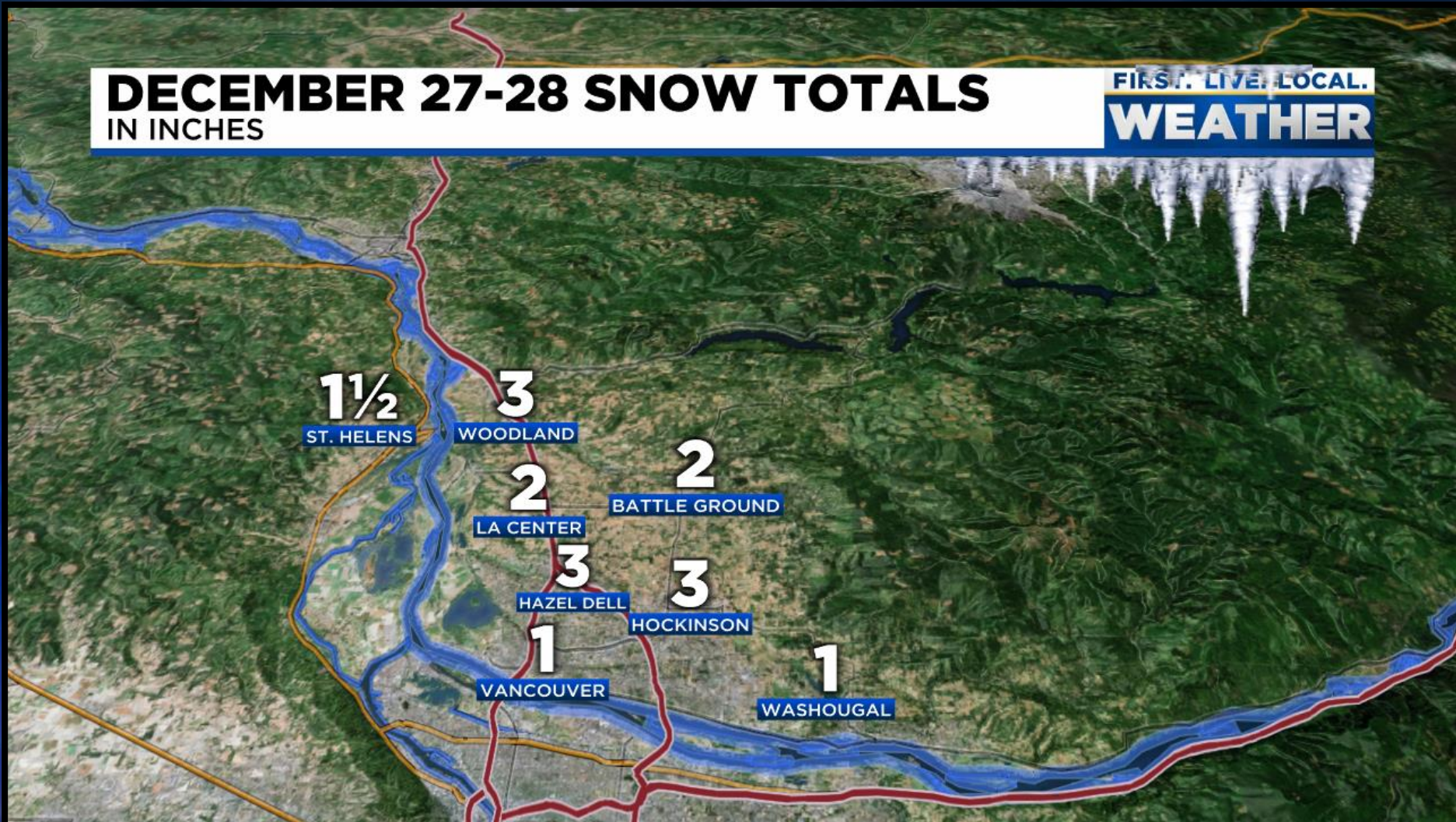
FIRST. LIVE. LOCAL.
WEATHER



WIDESPREAD METRO SNOW 2-3 DAYS AFTER CHRISTMAS

DECEMBER 27-28 SNOW TOTALS IN INCHES

FIRST. LIVE. LOCAL.
WEATHER



FRIGID AIRMASS NEW YEAR'S EVE & DAY

Good morning 2022! Low temps on January 1st

TODAY'S LOW TEMPS

FIRST. LIVE. LOCAL.
WEATHER

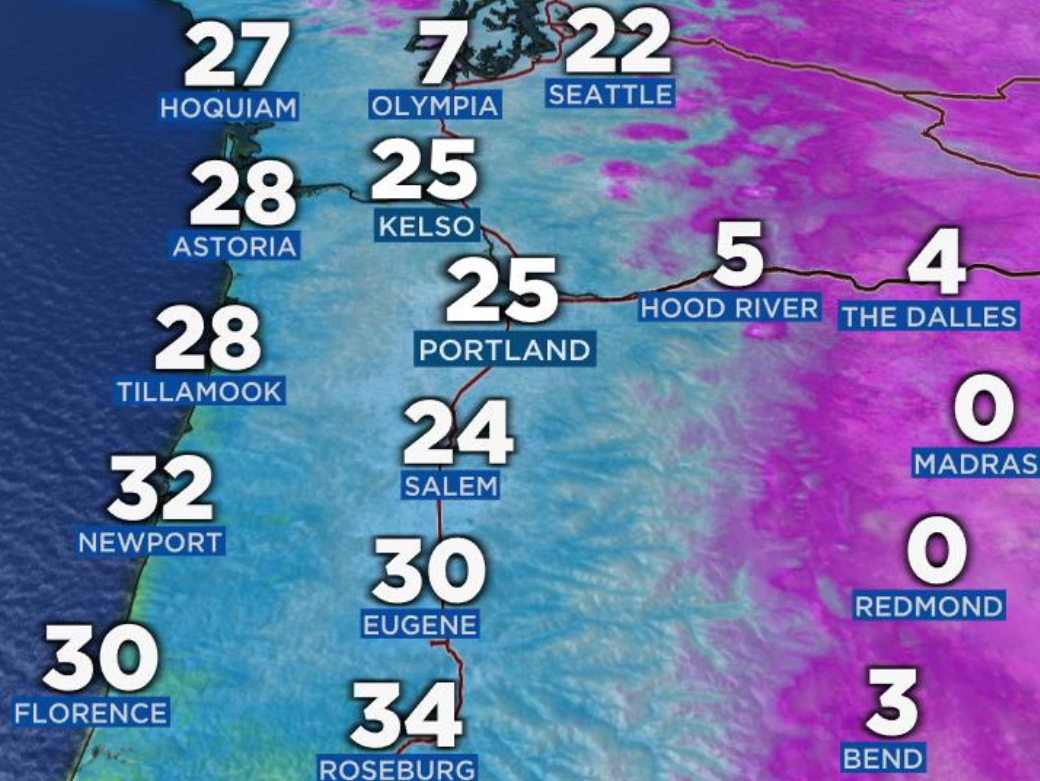
PORTLAND

36°

AVERAGE LOW

14° / 1979

RECORD LOW

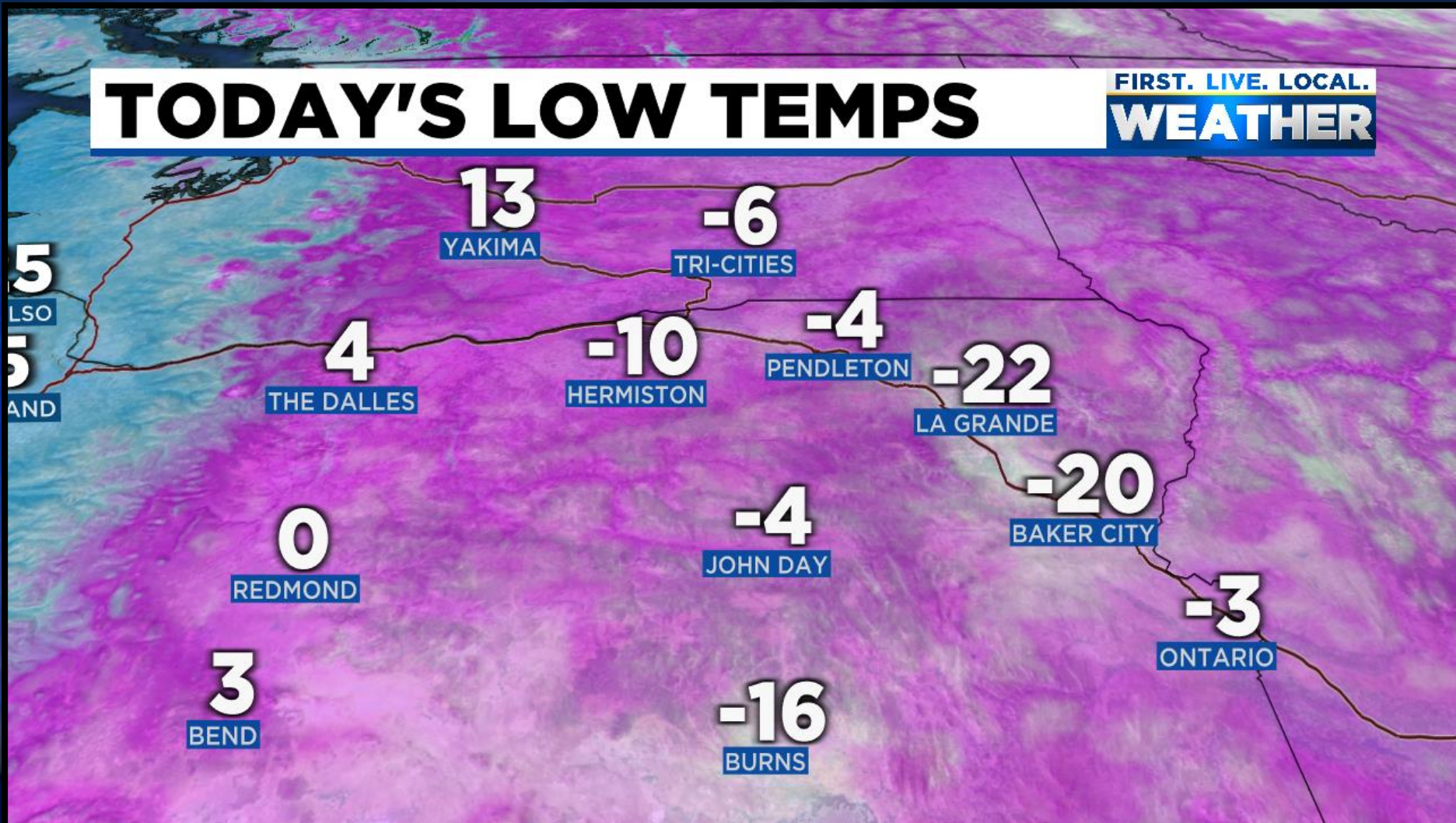


FRIGID AIRMASS NEW YEAR'S EVE & DAY

Good morning 2022! Low temps on January 1st

TODAY'S LOW TEMPS

FIRST. LIVE. LOCAL.
WEATHER



FRIGID AIRMASS NEW YEAR'S EVE & DAY

Good morning 2022! Low temps on January 1st

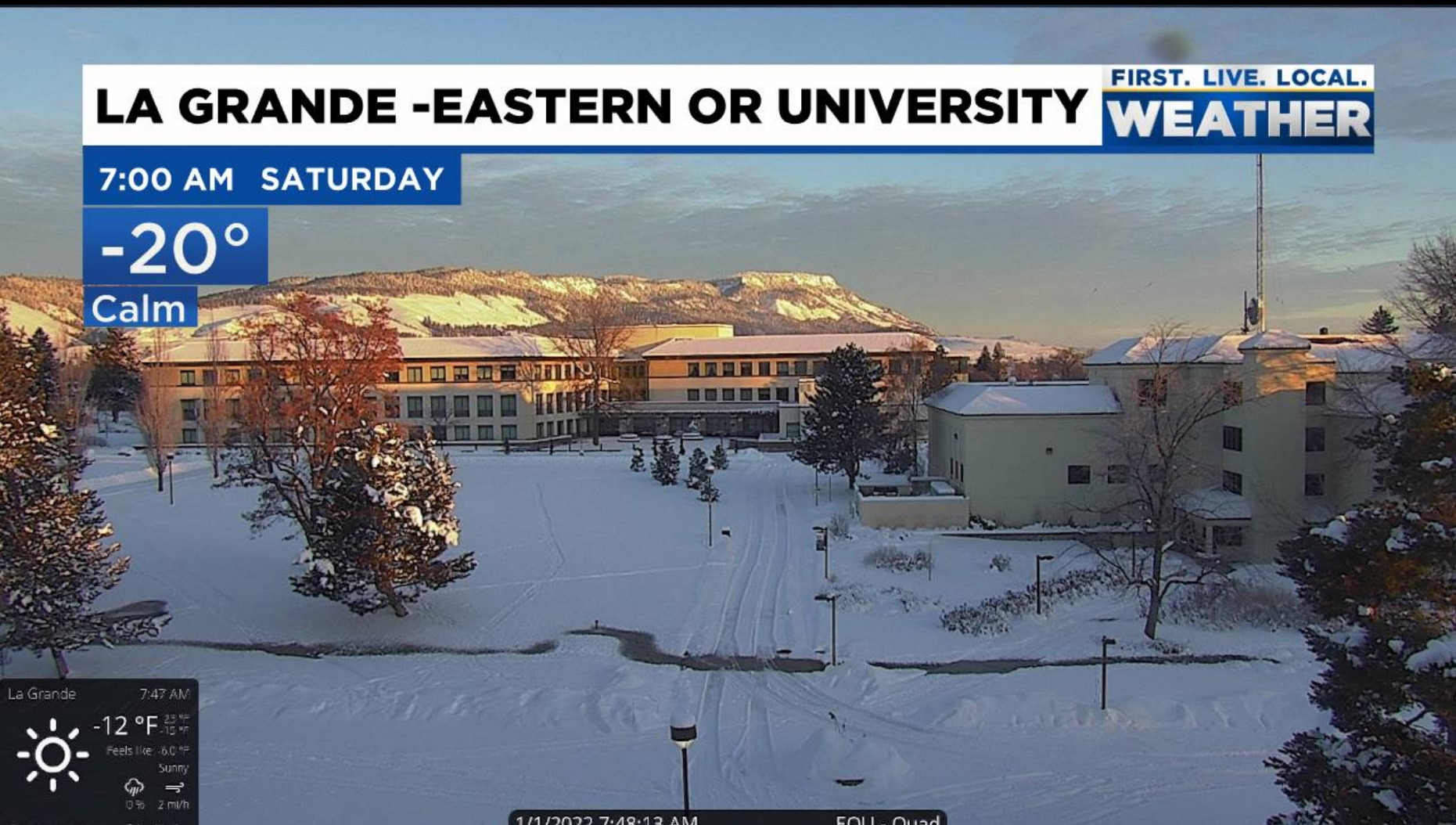
LA GRANDE -EASTERN OR UNIVERSITY

FIRST. LIVE. LOCAL.
WEATHER

7:00 AM SATURDAY

-20°

Calm



La Grande 7:47 AM



-12 °F

Feels like -6 °F

Sunny

10% 2 mi/h

1/1/2022 7:48:13 AM

5011 - Quad

MILD WESTERLY FLOW RETURNS JANUARY 2ND & BEYOND

Deep cold air in Eastern Oregon and Gorge leads to big snowstorm!

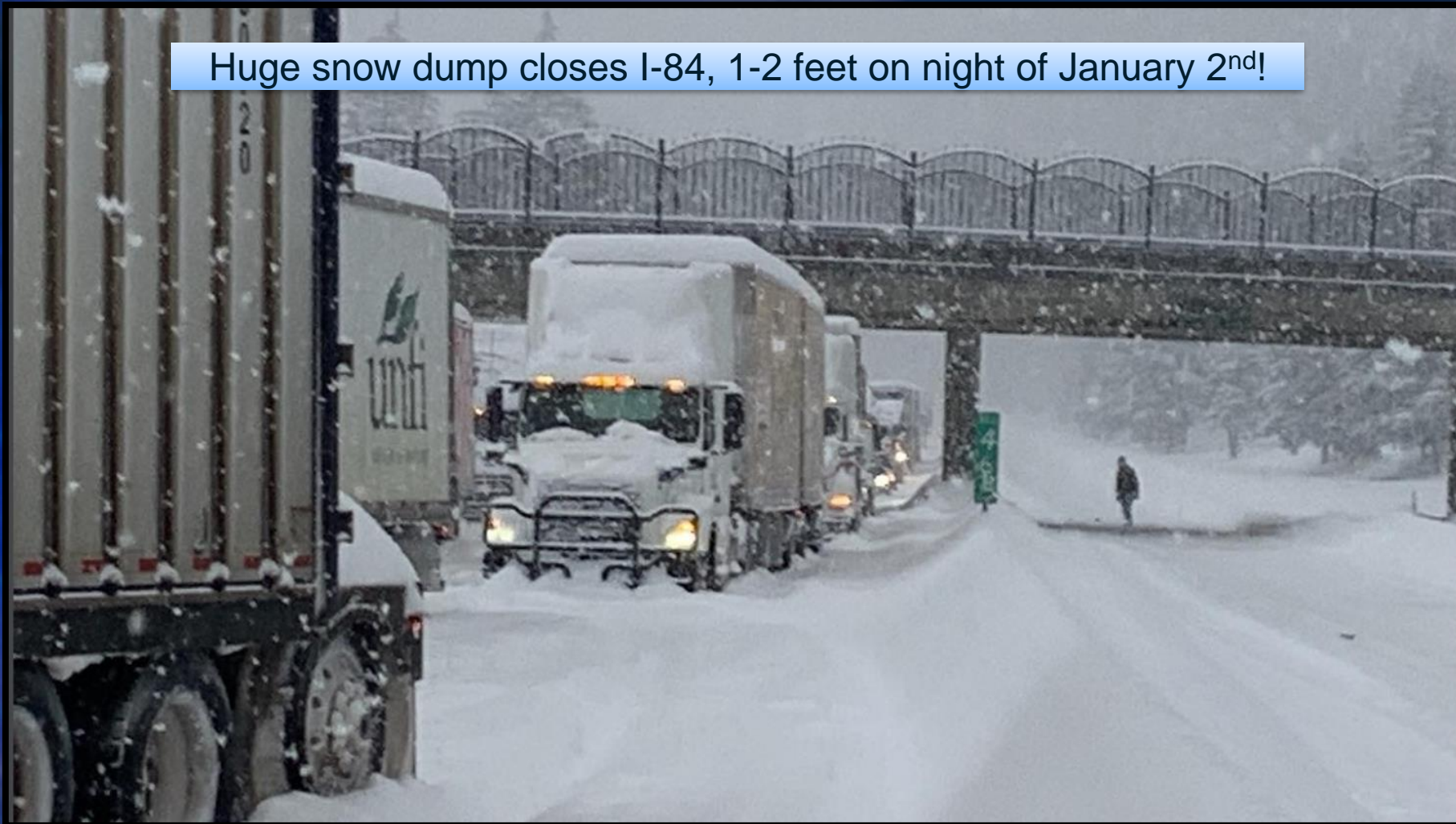
Huge snow dump closes I-84, 1-2 feet on night of January 2nd!



MILD WESTERLY FLOW RETURNS JANUARY 2ND & BEYOND

Deep cold air in Eastern Oregon and Gorge leads to big snowstorm!

Huge snow dump closes I-84, 1-2 feet on night of January 2nd!



BIG SNOW STORM IN GORGE JANUARY 2-3, 2022

COLUMBIA RIVER GORGE SNOW

SNOWY THE LAST 24 HOURS

FIRST. LIVE. LOCAL.

WEATHER

HOOD RIVER

24"

CARSON

30"

CASCADE LOCKS

26"

NORTH BONNEVILLE

23"



Stevenson & Hood River snow January 2nd-3rd



MILD WESTERLY FLOW RETURNS JANUARY 2ND & BEYOND

Deep cold air in Eastern Oregon and Gorge leads to big snowstorm!

STORM TOTAL SNOW

JANUARY 3rd & 4th

FIRST. LIVE. LOCAL.
WEATHER

35"
SKIBOWL

39"
TIMBERLINE
LODGE

37"
MT. HOOD
MEADOWS

TOO MUCH SNOW!

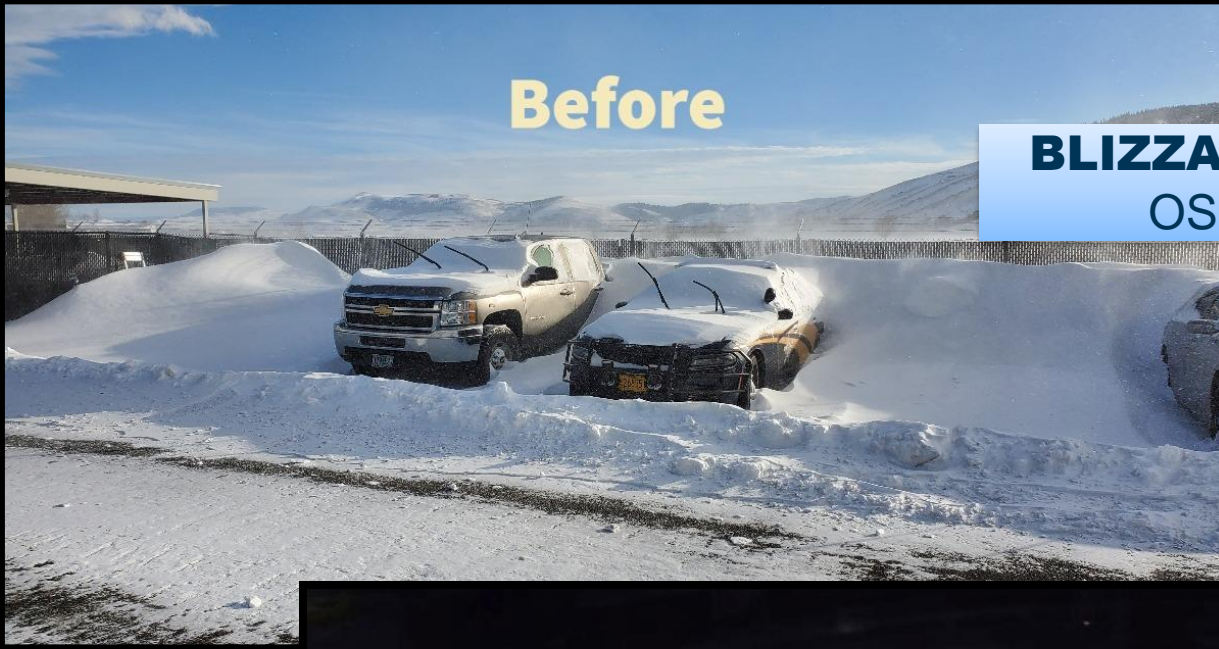
Ski areas shut down

I-84, OR35, & US26 shut down = Entire Mt. Hood Loop closed



Before

BLIZZARD IN LA GRANDE
OSP PARKING LOT



After



JANUARY

Best snowpack (on Jan 3rd) on Mt. Hood in 25 years!

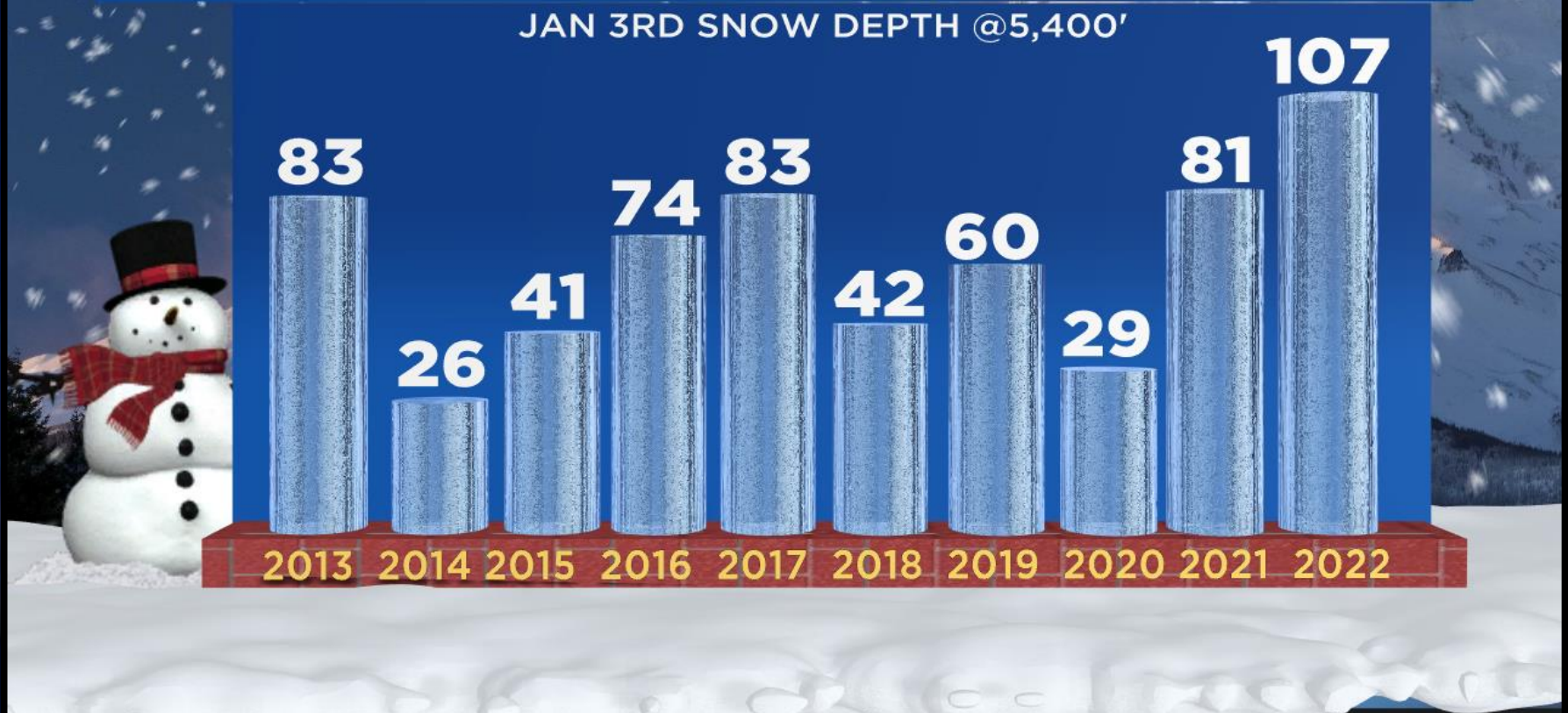
BIG SNOWPACK ON MT. HOOD!

DEEPEST SNOW DEPTH (ON THIS DATE) SINCE 1997

FIRST. LIVE. LOCAL.

WEATHER

JAN 3RD SNOW DEPTH @5,400'



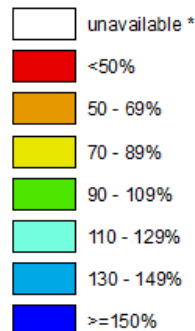
GREAT OREGON SNOWPACK!

JANUARY 4th

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

Jan 04, 2022

Current Snow Water Equivalent (SWE)
Basin-wide Percent
of 1991-2020 Median

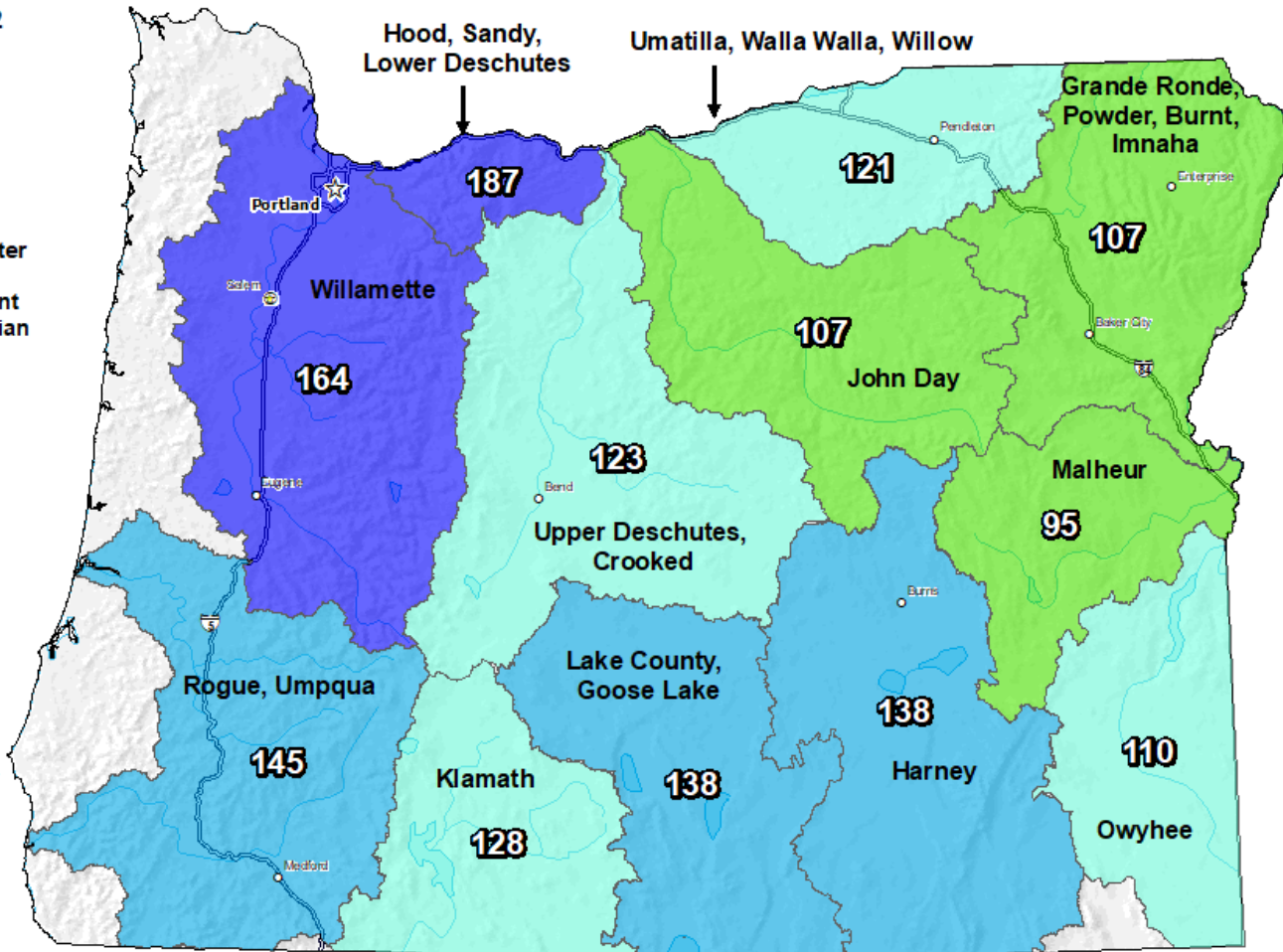


* Data unavailable at time of posting or measurement is not representative at this time of year

Provisional Data
Subject to Revision



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

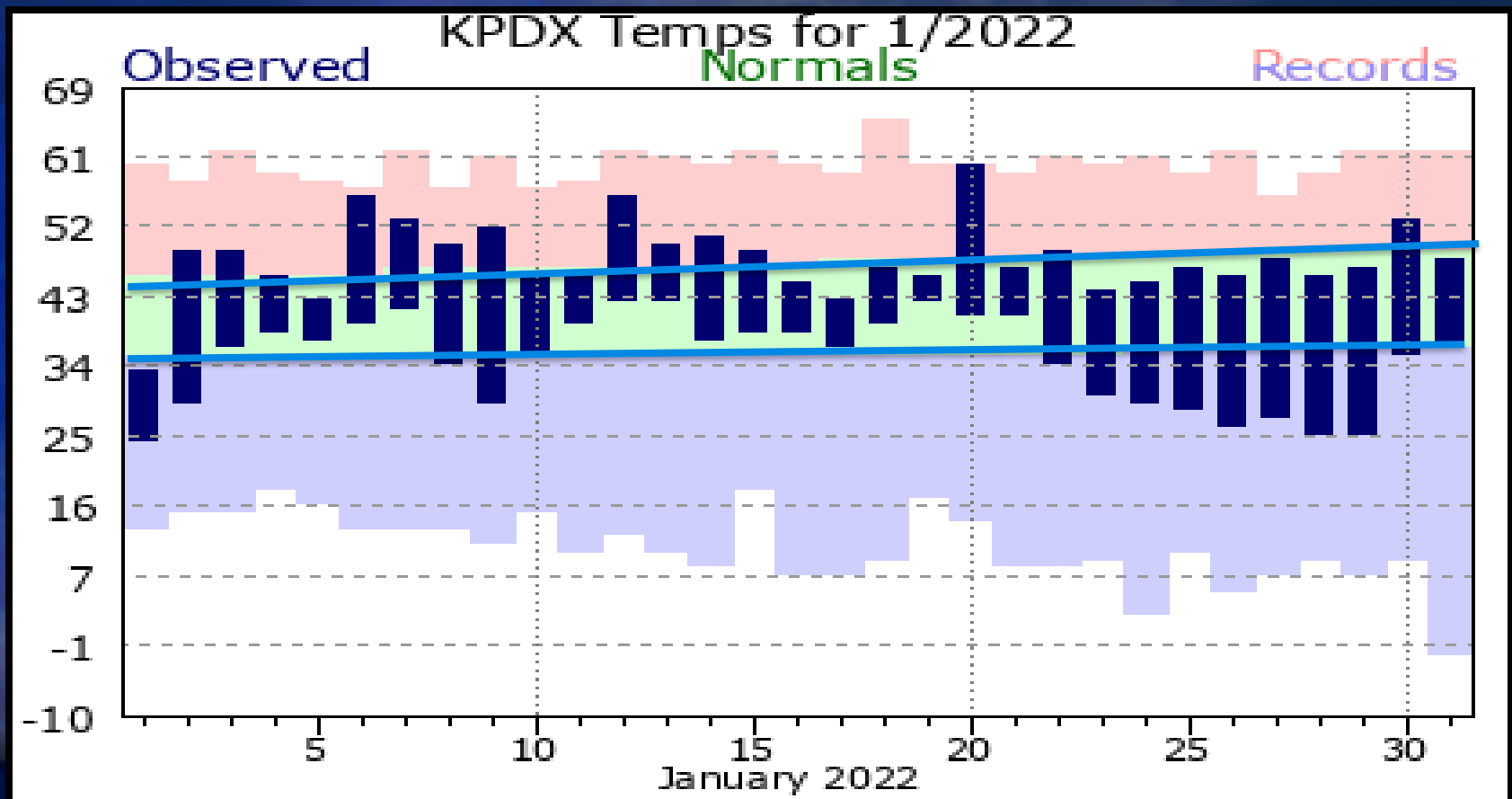


0 10 20 40 60 80 100 Miles

Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
<https://www.nrcs.usda.gov/wps/portal/wcc/home/>

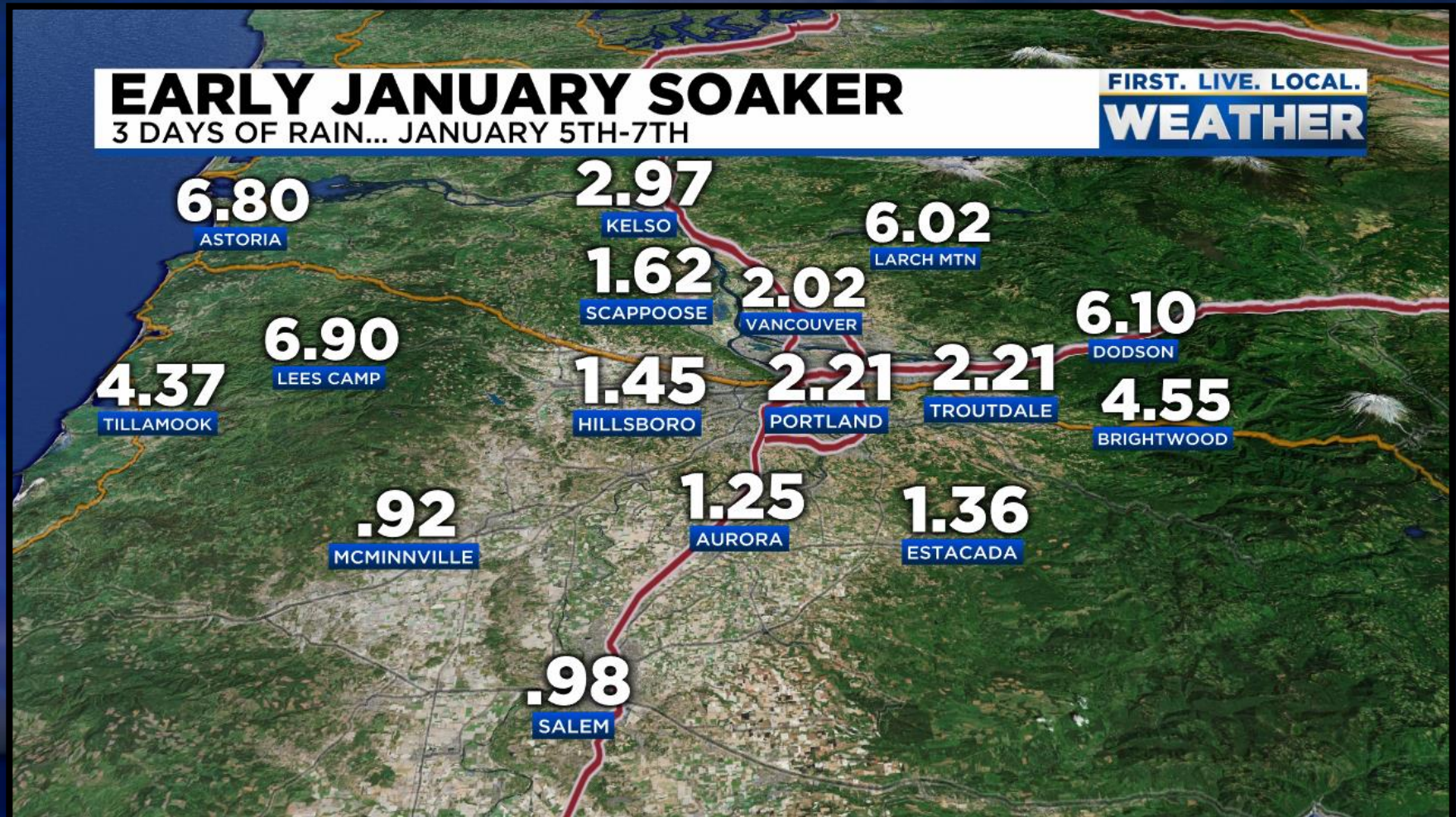
JANUARY

Mild and unusually dry after 1st week



JANUARY

Mild & wet conditions return by 4th-5th



JANUARY

Mild & wet conditions return after New Year's Day

HEAVY RAIN = FLOODING

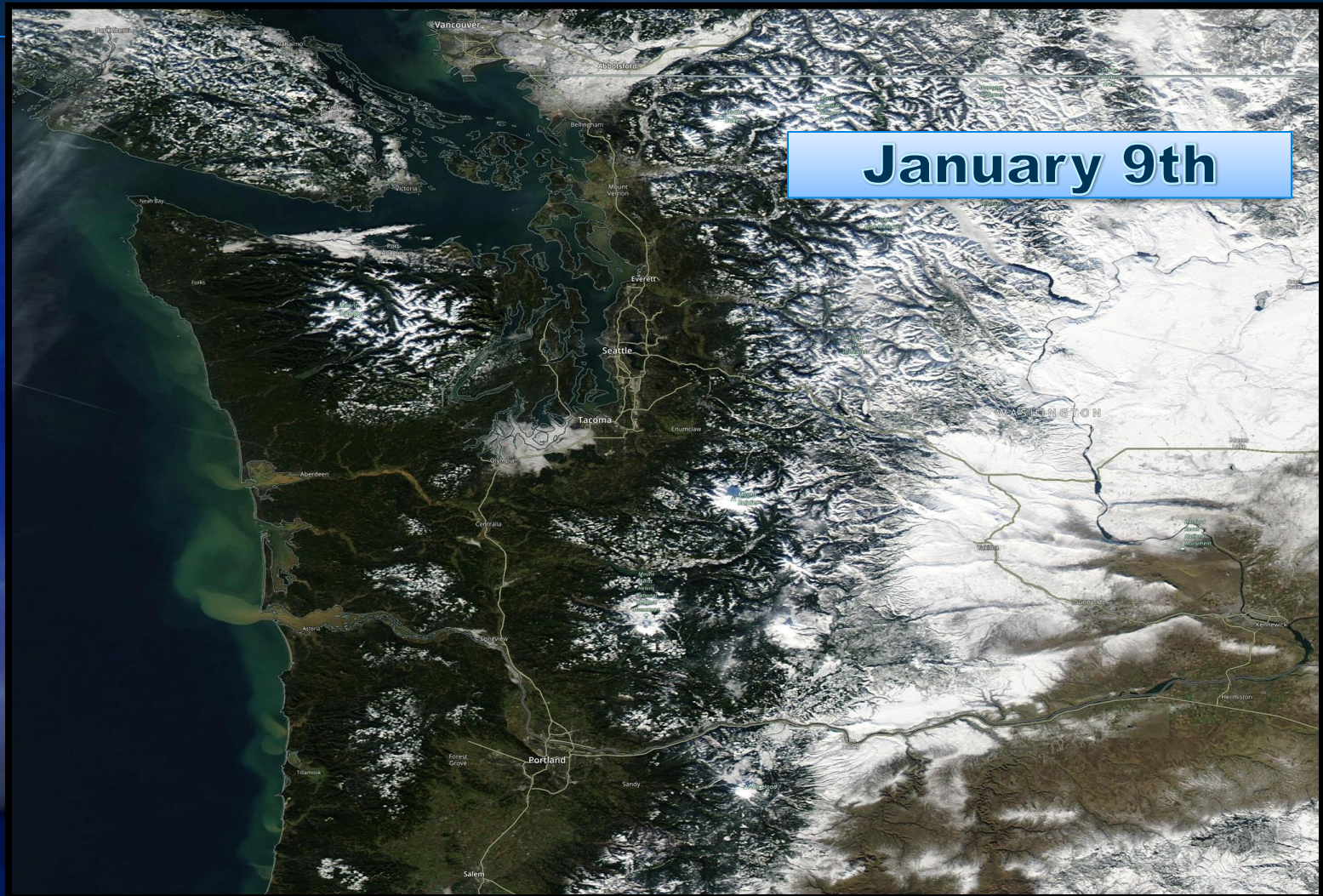
FIRST. LIVE. LOCAL.
WEATHER

3 DAY RAINFALL (in inches)

9.41	Cougar, WA
9.45	Huckleberry Ridge (WA)
7.10	Lee's Camp
7.05	Brightwood
6.86	Astoria

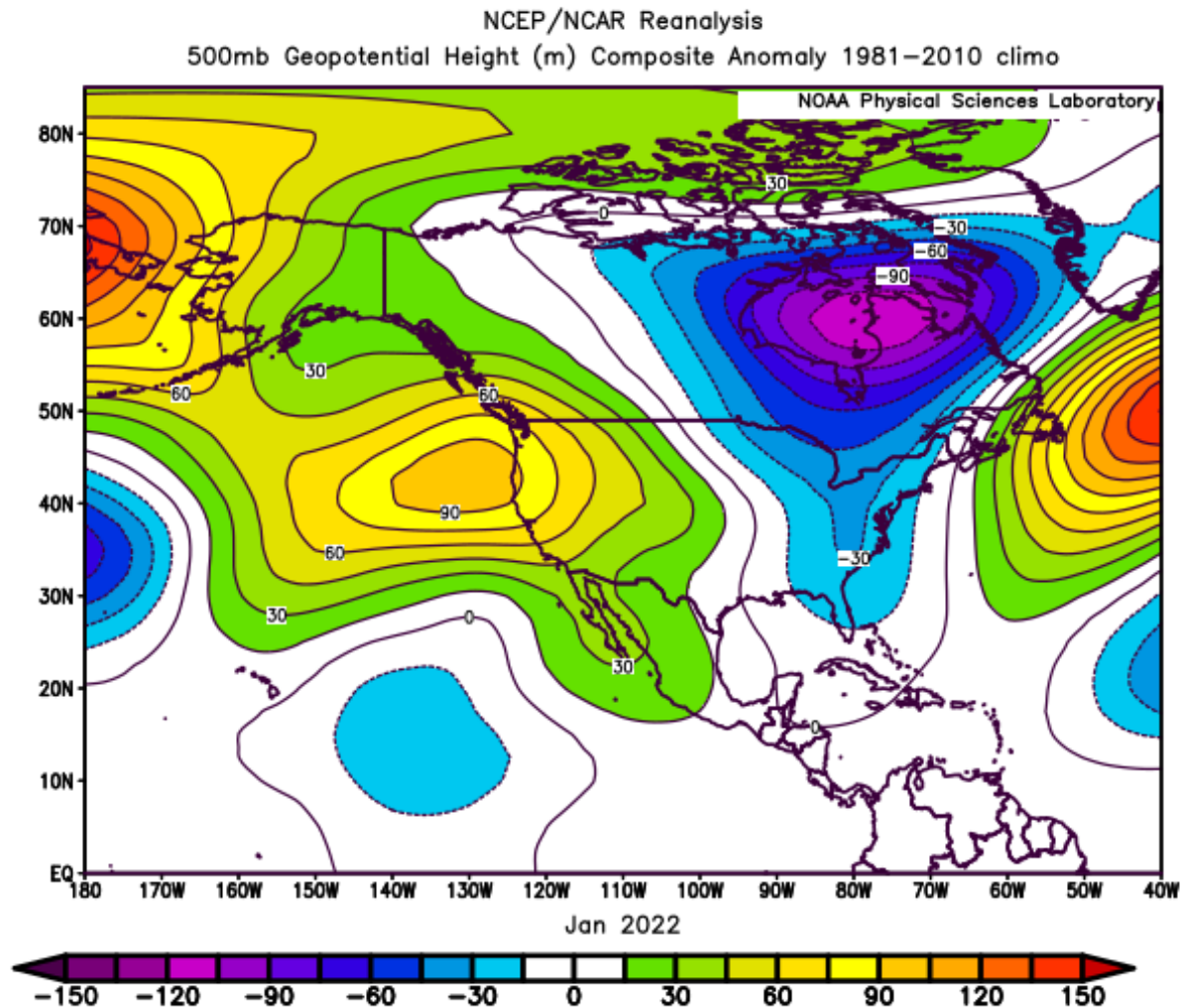
JANUARY

Skies clear & high pressure takes over after 1st week



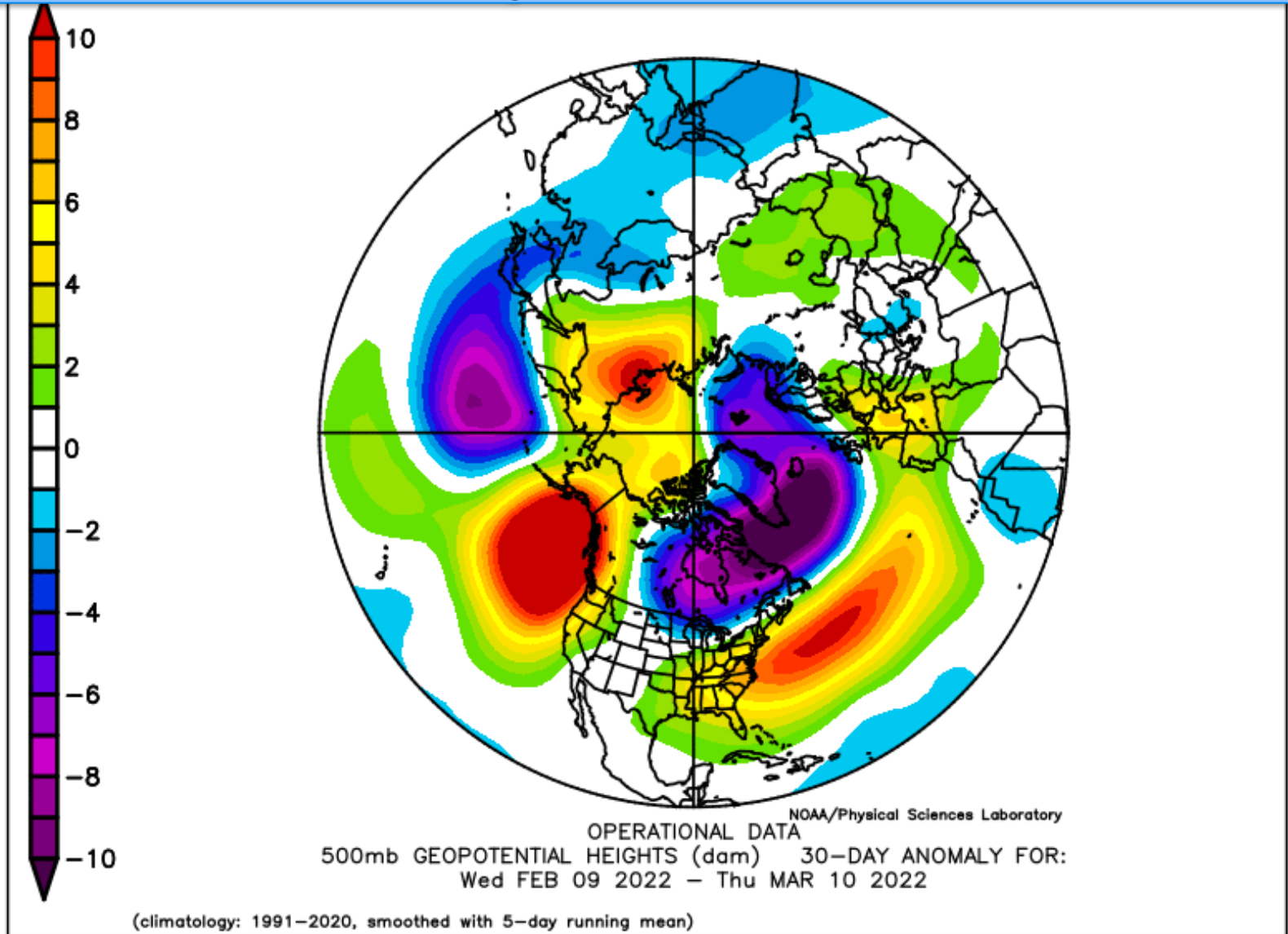
JANUARY

Skies clear & high pressure takes over after 1st week



FEBRUARY

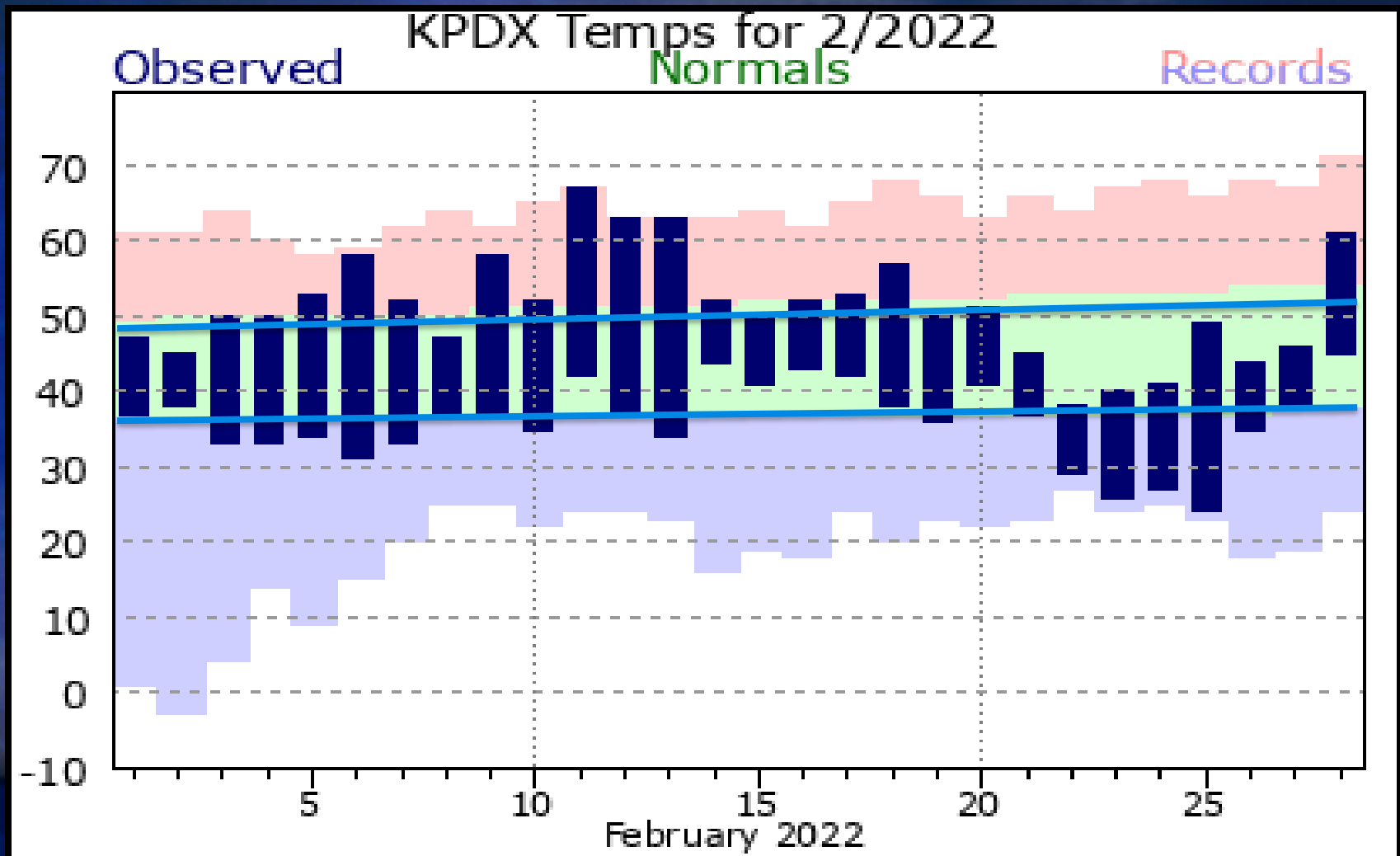
Upper level ridging over/west of us much of time mid-January to early March
This image = Feb 9th-March 10th



FEBRUARY

Normal temps

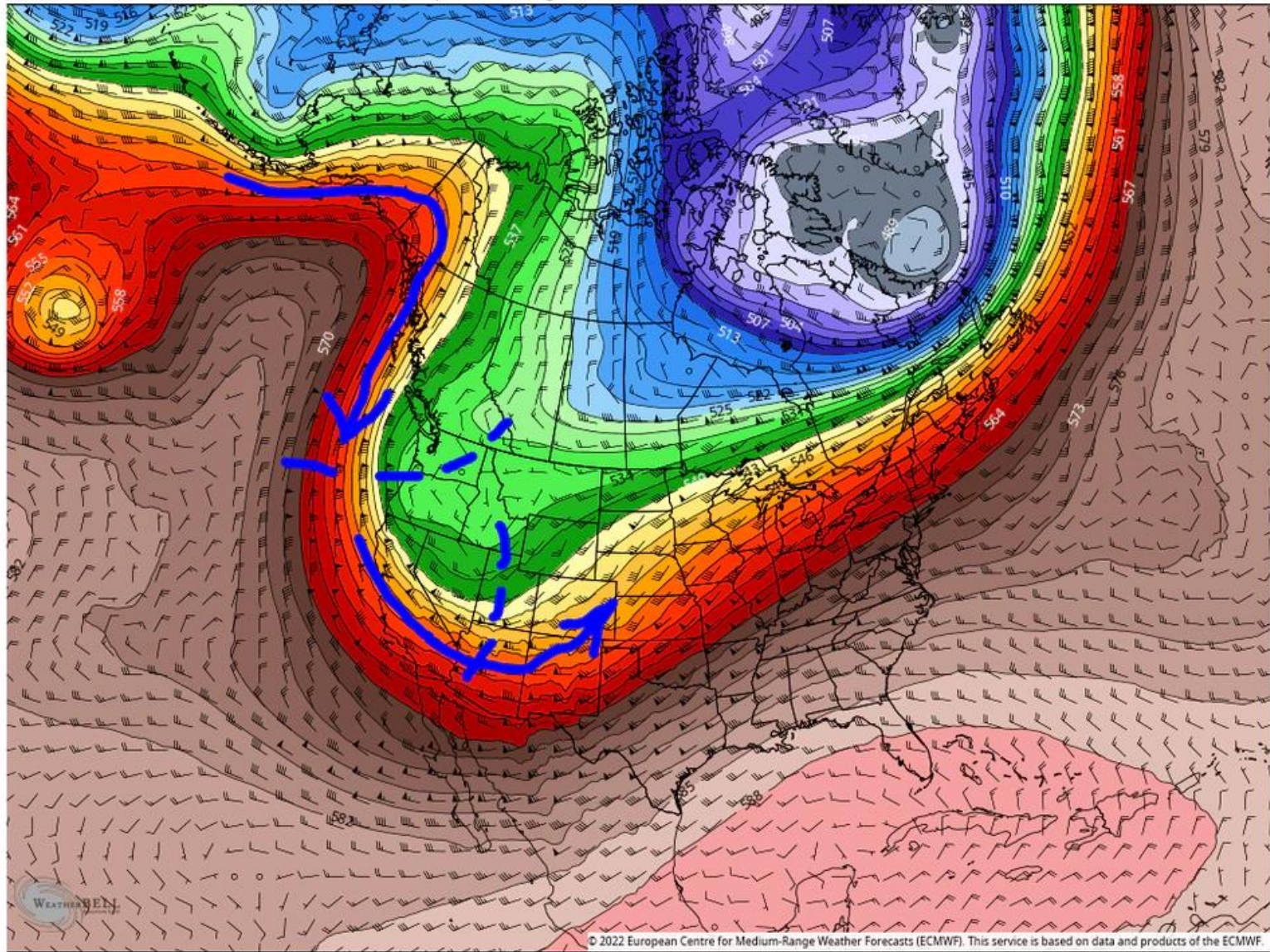
Near record warmth 11th-13th balanced out by cold in last week



Cold & dry returns February 22nd

ECMWF 0.2° Init 18z 20 Feb 22 • 500mb Geopotential Height (dm) and Wind (kt)

Hour: 33 • Valid: 03z Tue 22 Feb 2022



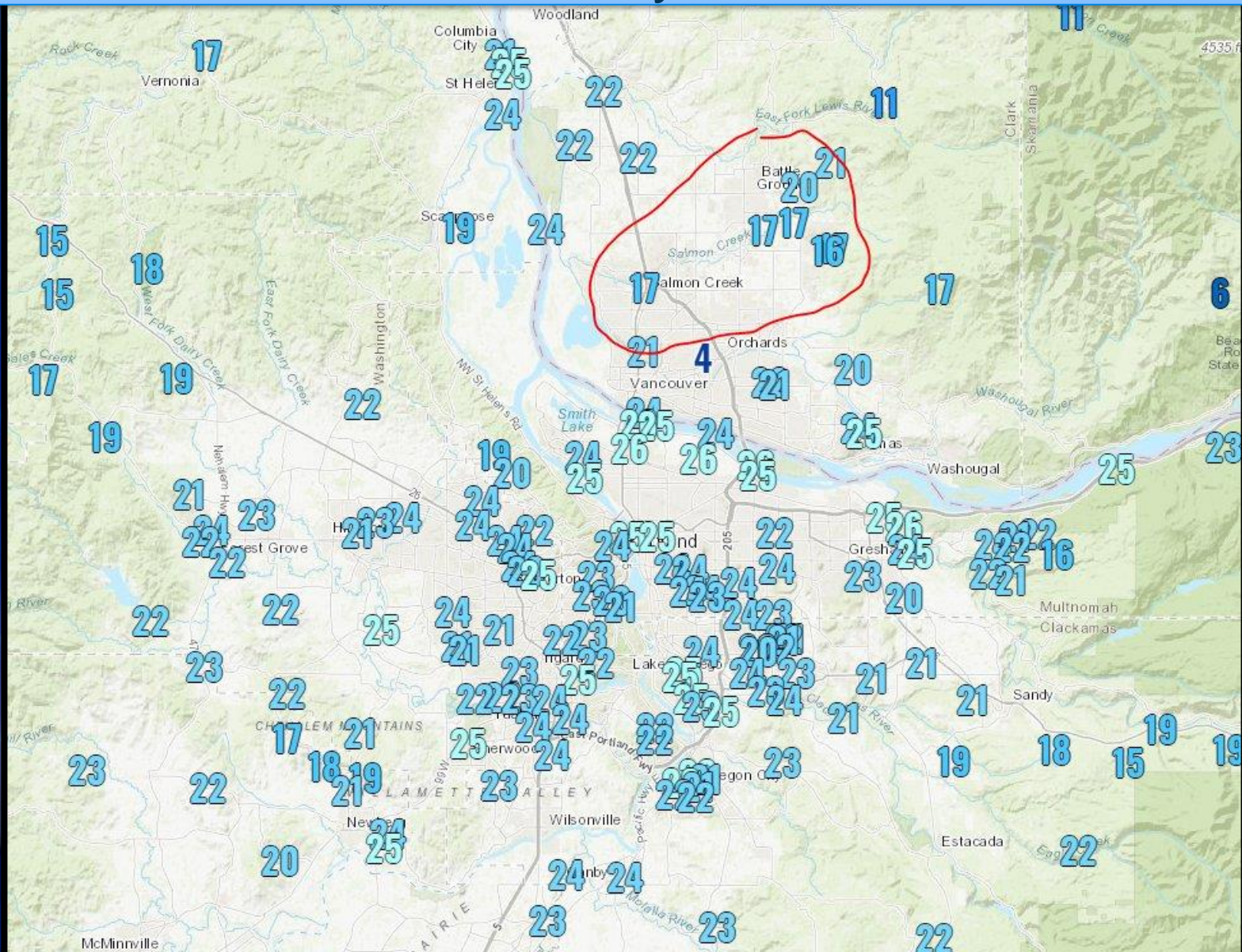
© 2022 European Centre for Medium-Range Weather Forecasts (ECMWF). This service is based on data and products of the ECMWF.

474 480 486 492 498 504 510 516 522 528 534 540 546 552 558 564 570 576 582 588 594 600

Max: 590.6 • Min: 486.5

Coldest morning of winter for some of us

February 23rd



Coldest temp in February

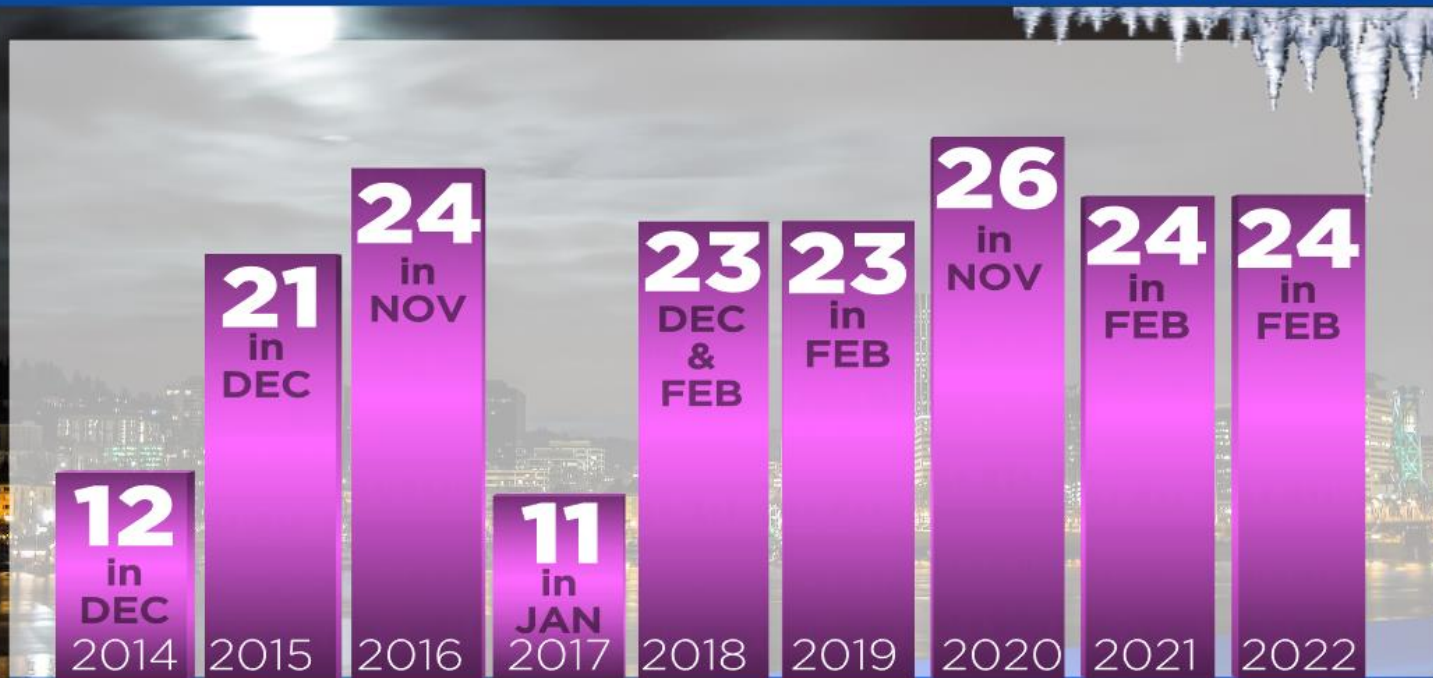
4 of last 5 years

COLDEST WINTER TEMP IN PORTLAND

2014-2022

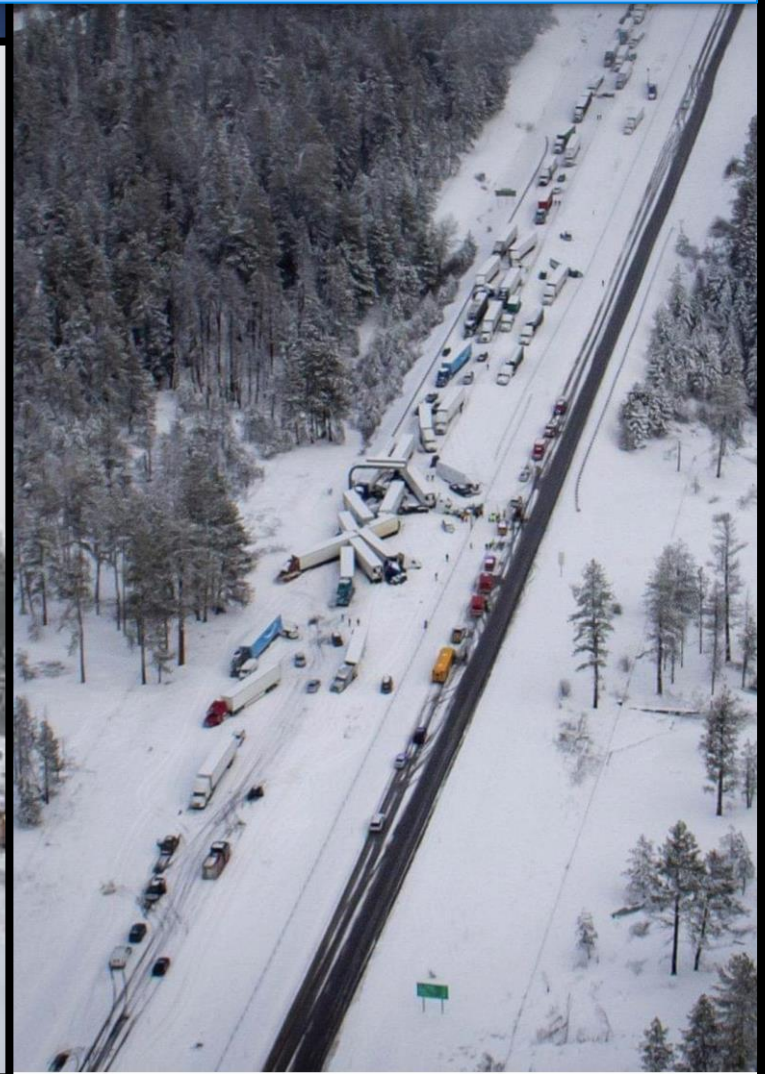
FIRST. LIVE. LOCAL.

WEATHER

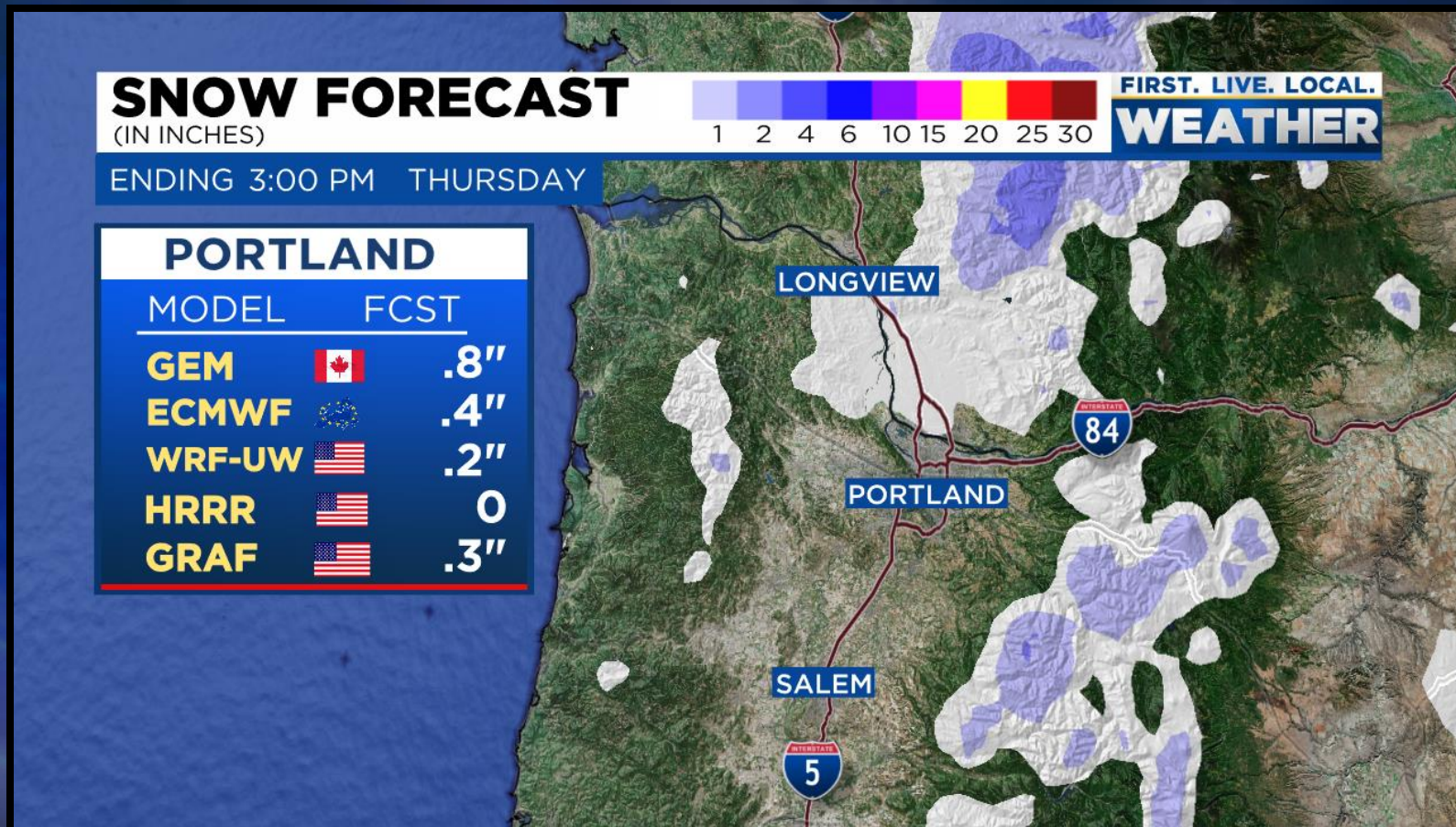


FEBRUARY 21st

100+ car pileup near Meacham on I-84 as arctic air arrives



Flurries to ½" as upper-level wave passes by early AM February 24th
5th and LAST SNOW OF SEASON = 0.5" at PQR

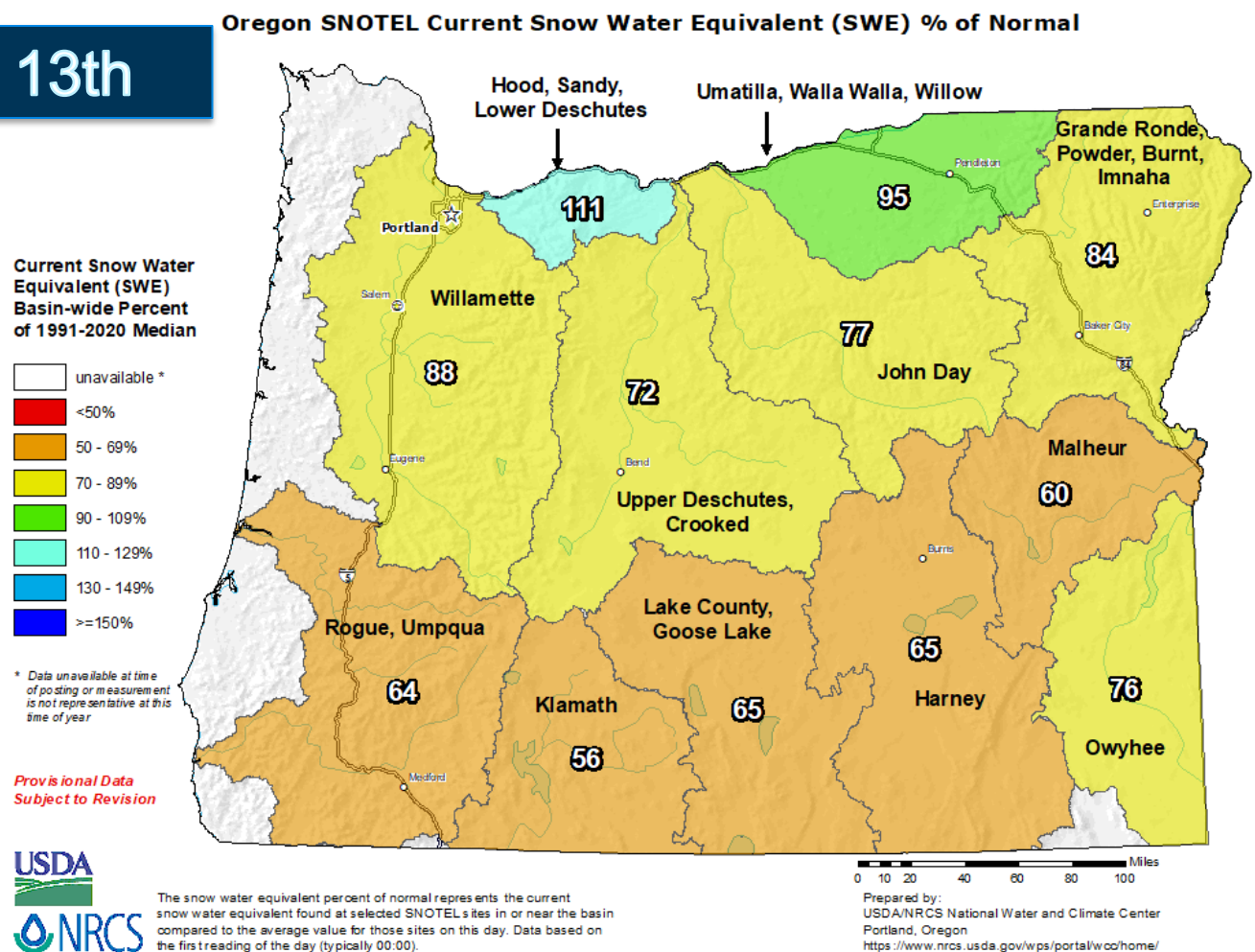


MOST CLARK COUNTY SCHOOLS CLOSE FOR THE DAY
Some delays in eastern Multnomah county too, nothing west/south

2 MONTHS OF MILD & DRY WEATHER TAKES A TOLL

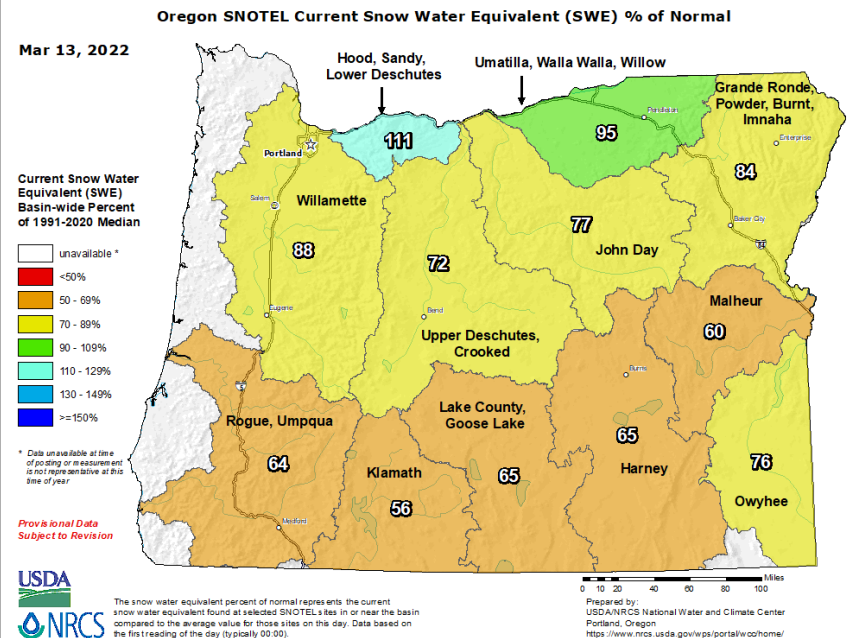
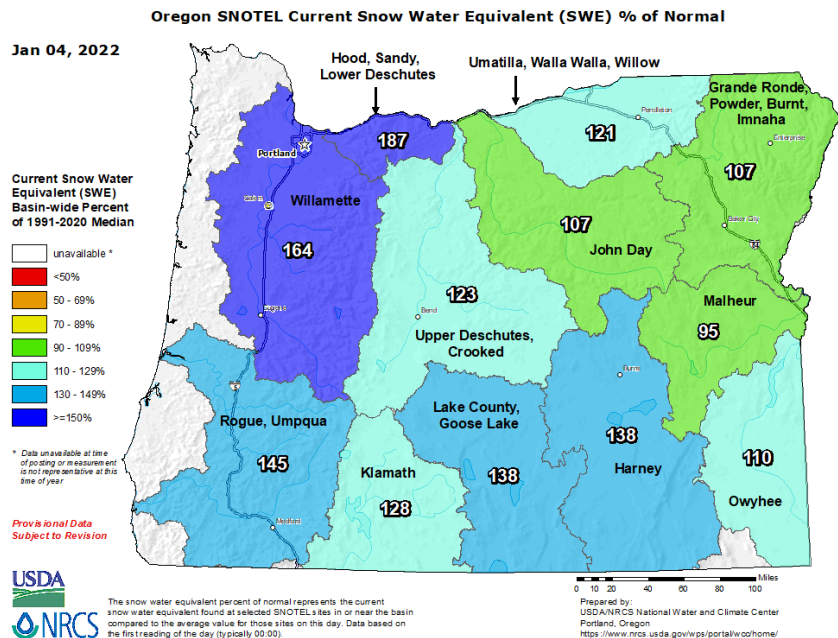
Snowpack well below normal in early March, except Mt. Hood & N. Blues

March 13th



2 MONTHS OF MILD & DRY WEATHER TAKES A TOLL

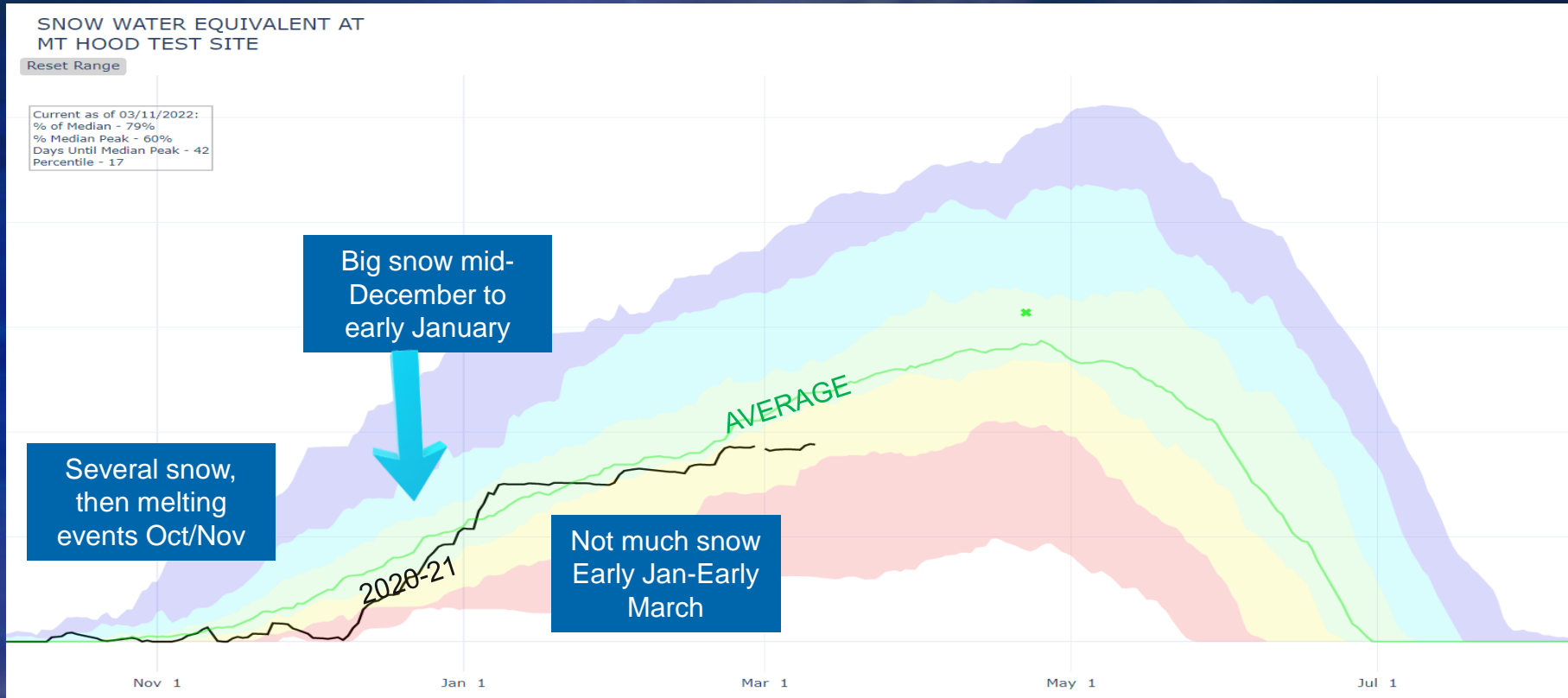
Snowpack well below normal in early March, except Mt. Hood & N. Blues



Mountain Snowpack @ 5,400'

Bottom of Pucci Lift @Timberline

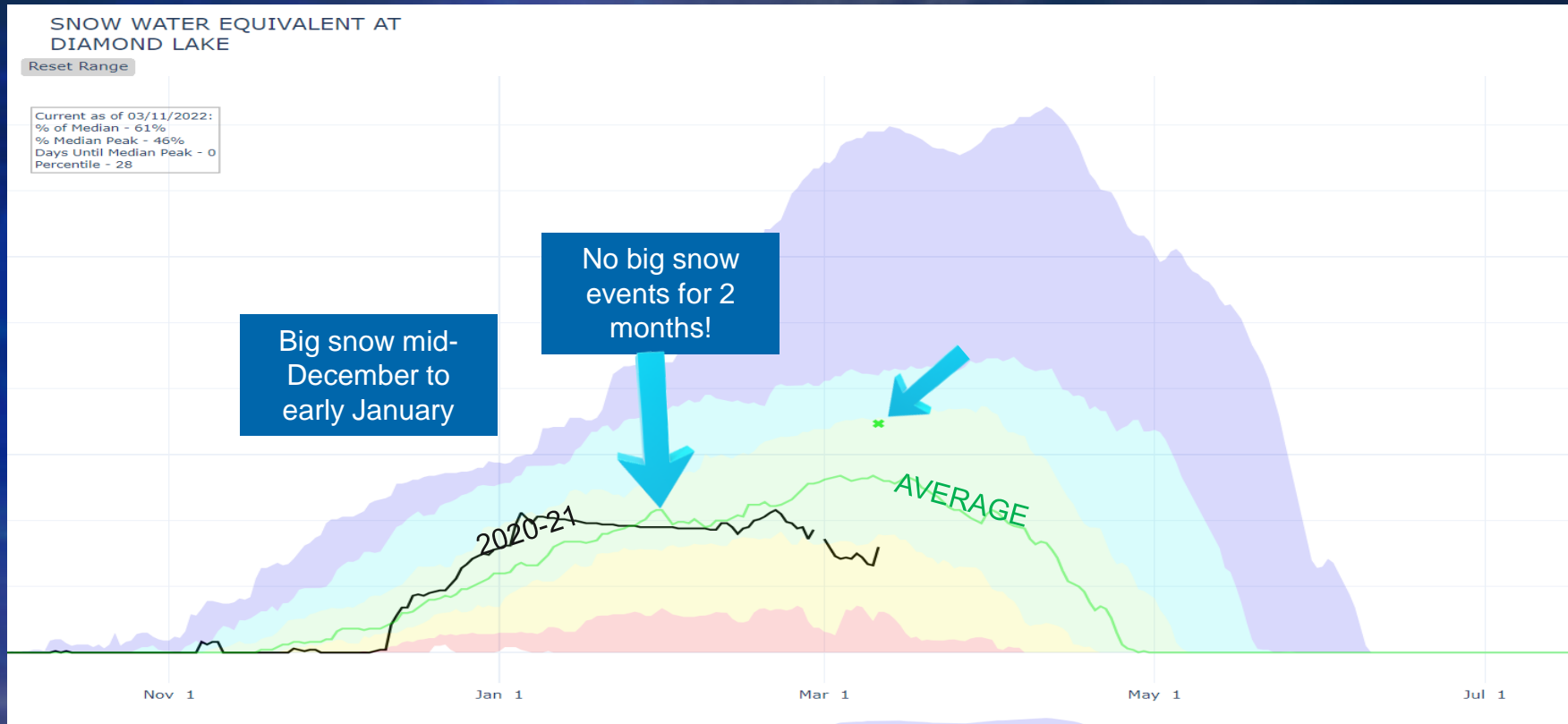
Water Year Precipitation: **NEAR NORMAL**
Snowpack: **BELOW AVERAGE**



Southern Cascades Snowpack @ 5,300'

Diamond Lake

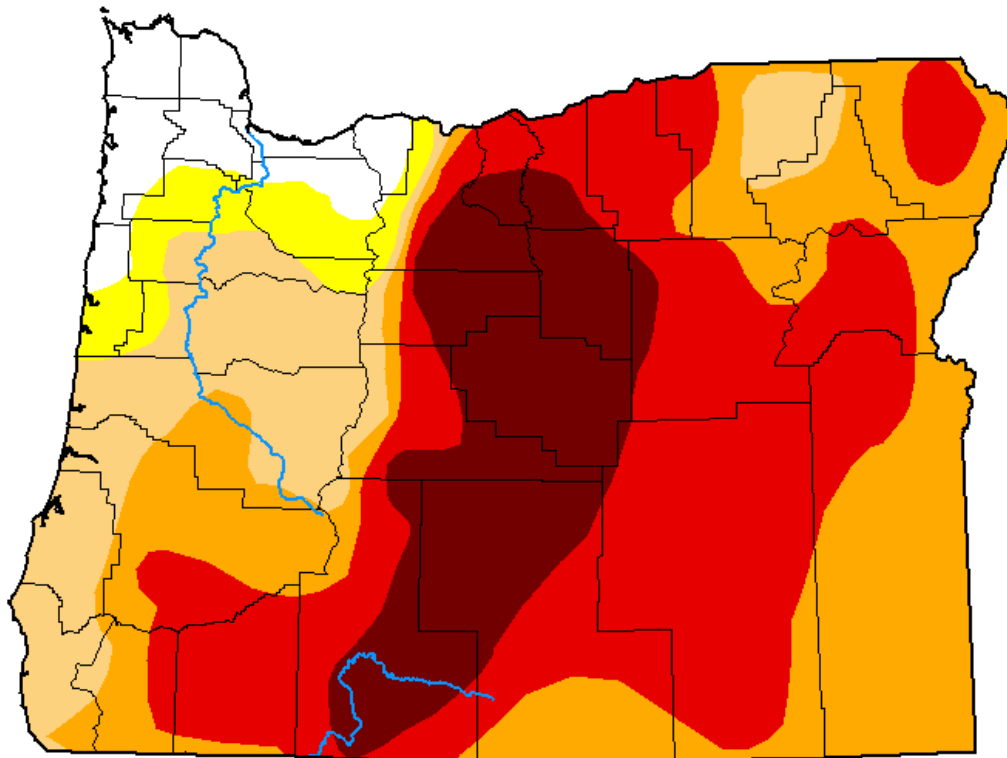
Water Year Precipitation: **BELOW AVERAGE**
Snowpack: **WELL BELOW AVERAGE**



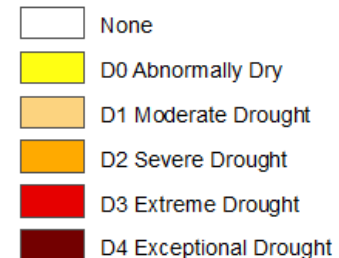
Bigger water issues likely across Oregon this year

U.S. Drought Monitor Oregon

March 8, 2022
(Released Thursday, Mar. 10, 2022)
Valid 7 a.m. EST



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:

Brian Fuchs
National Drought Mitigation Center



droughtmonitor.unl.edu

Cascade Snowfall

1. Delayed ski season start, has become more common
2. Incredible series of snowstorms for 1 month (early Dec-early Jan)
3. Not much fresh snow mid January to early March, but still a decent ski season

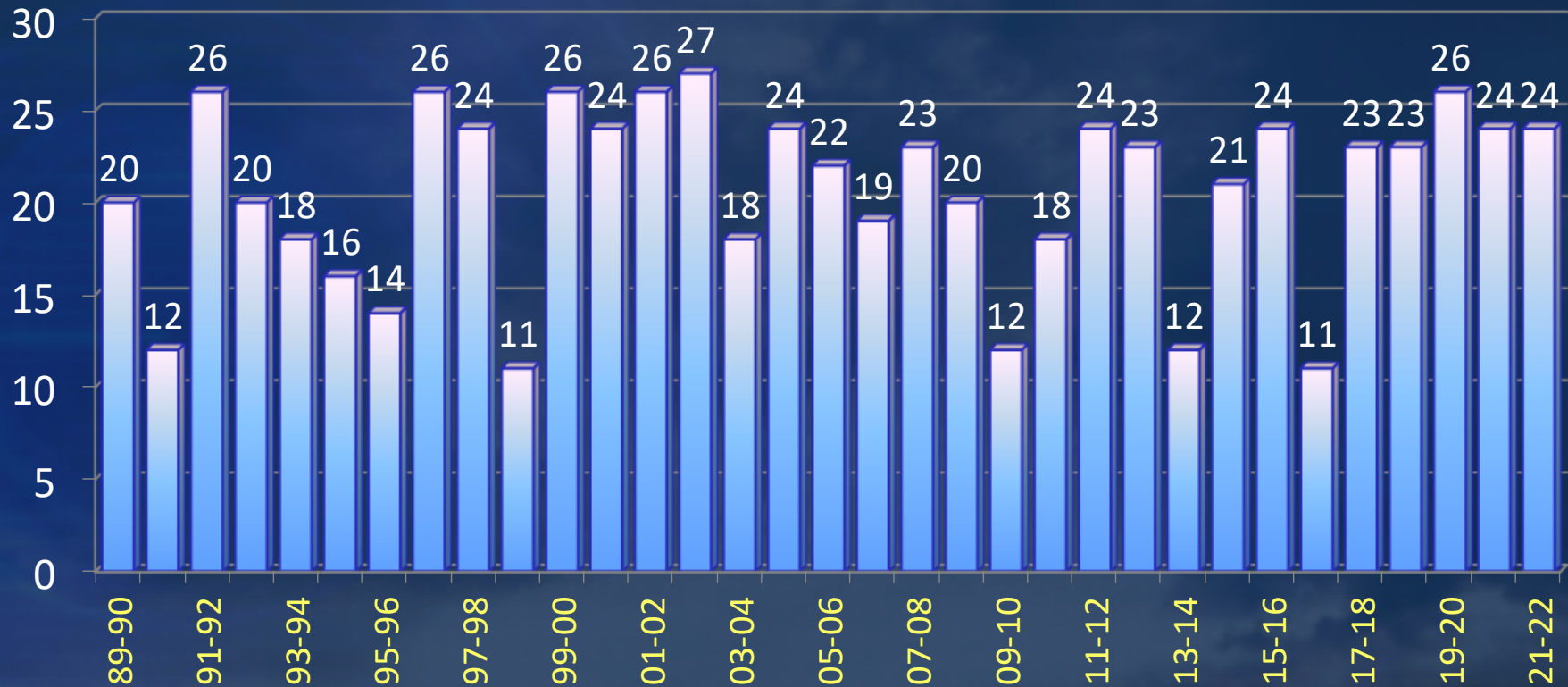
Winter Snowfall On Mt. Hood During La Nina Winters

Meadows vs. **Gov't Camp** (in inches)



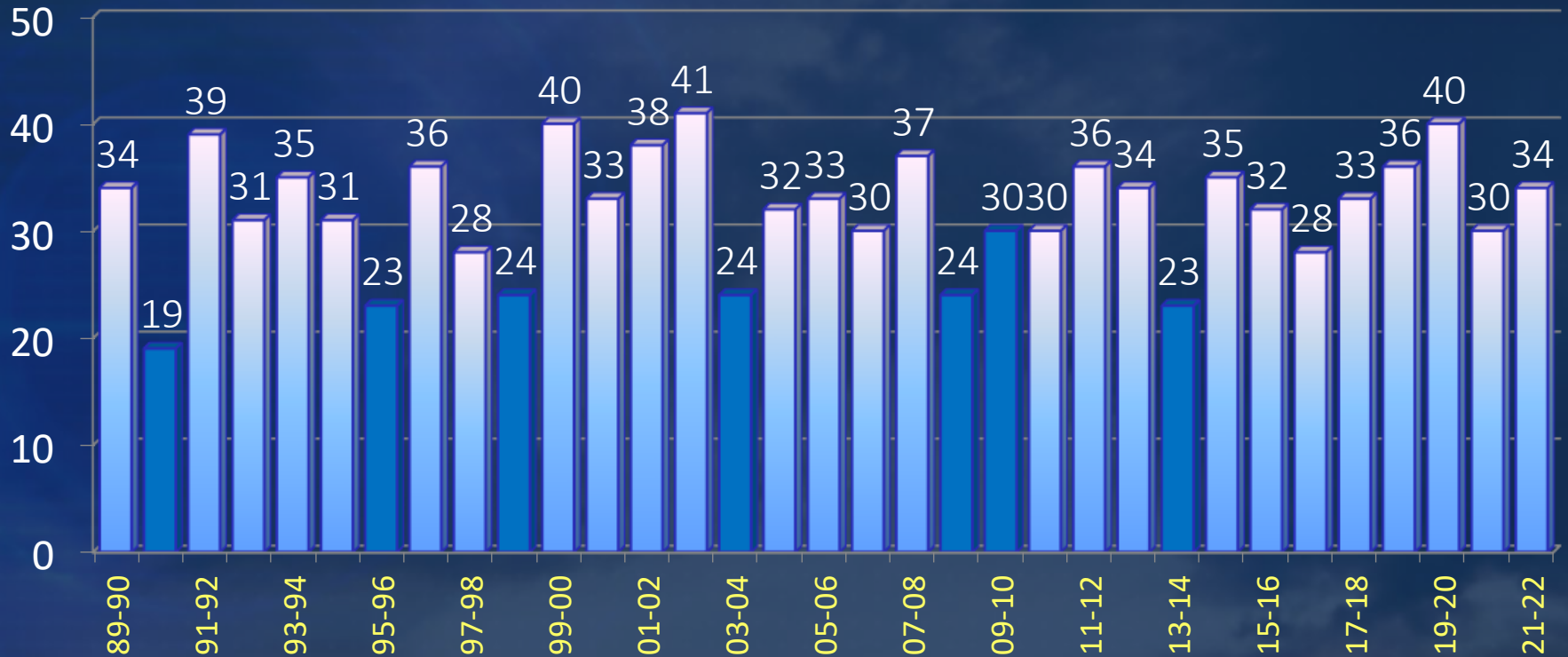
Winter temps go easy on our gardens

Winter Minimum Temperature @PDX



A Better Measure of an Arctic Blast

Coldest Daytime High at PDX



Blue = Widespread PACNW Arctic Air Outbreak

Last "arctic blast" was December 2013

Previous events: Nov 2010, Dec 2009, Dec 1998, Dec 1990

PORTLAND HISTORICAL ARCTIC BLAST INFO

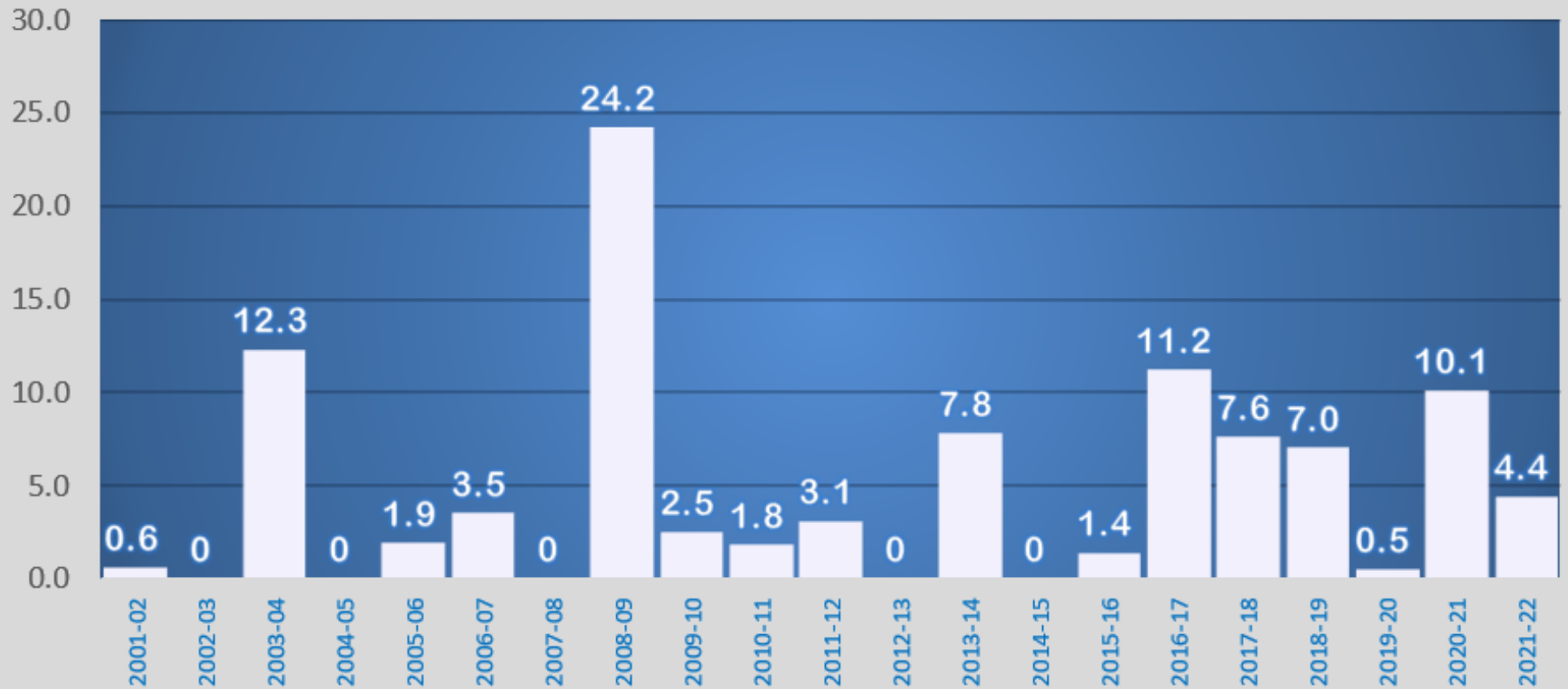
GREEN BOX = SIGNIFICANT/HISTORIC EVENTS, BUT NOT A REGIONWIDE ARCTIC AIR OUTBREAK

YELLOW BOX = REGIONWIDE ARCTIC AIR OUTBREAK

SLE Sounding	Month/Year	Lowest 500mb Height	Lowest 500/1000 Thk	Coldest 850mb T	Coldest 925mb T	Lowest Dewpoint	PDX Coldest		Comments
Data							High	Low	
	Late February 2022			-10.1		0	38	24	Last week of February: Cold upper level troug
	December 2021	516	517	-9.9	-5.5	19	34	25	Very cold upper-level trough, swung through P
	February 2021			-0.7	-1.9		30	24	Edge of historic cold airmass that hit central/s
	Late February 2018			-10.5		20	34	23	Series of BC sliders and cool northerly flow. N
	January 2017			-9.3	-5.2		28	11	Cool airmass at first, then low passing by thre
	Early Feb 2014	532	524	-7.3	-7.7	1	23	19	NOT ARCTIC BLAST Strong east wind, 3 separa
	Dec 2013	529	514	-14.1	-9	-2	28	12	Little/no snow metro area. East wind gusty o
	Late Feb 2011			-10	-7		32	18	
	Nov 2010			-12.5	-9		30	18	Mainly dry cold blast from north, only flurries
	Dec 2009			-12.3	-10		30	12	3 consecutive below freezing days, no snow
	Dec 2008			-9.3	-8		24	20	Huge snow event. Big storm one day and the
	Mid Feb 2006			-10.3		-8			Cold and dry upper level trough swings throug
	Jan 2004			-8.1	-3		24	18	NOT ARCTIC BLAST Major snow, then ice stor
	Dec 1998	526	506	-17.5	-13		24	11	Not too much east wind, then 2" snow and qu
	Late Jan 1996			-7	-7		23	14	Extremely cold and windy, lots of moving ice c
	Jan 1993			-8	-5		31	22	
	Dec 1990	515	505	-22.1	-17	-4	19	12	Coldest 850mb temp on record
	Feb 1990	527	507	-12	-7		34	20	
	Feb 1989	515	505	-16.7	-15	-6	15	9	
	Nov 1985	533		-10.7	-9	10	25	13	Didn't technically meet criteria, but widesprea
	Dec 1983	531		-16.1	-12	-4	20	12	
	Jan 1980	516		-14.5			27	13	Short, but heaviest snow on record east metro
	Dec/Jan 1978-79	537		-13.5	-10	2	19	13	14 days @/below 33 degrees!

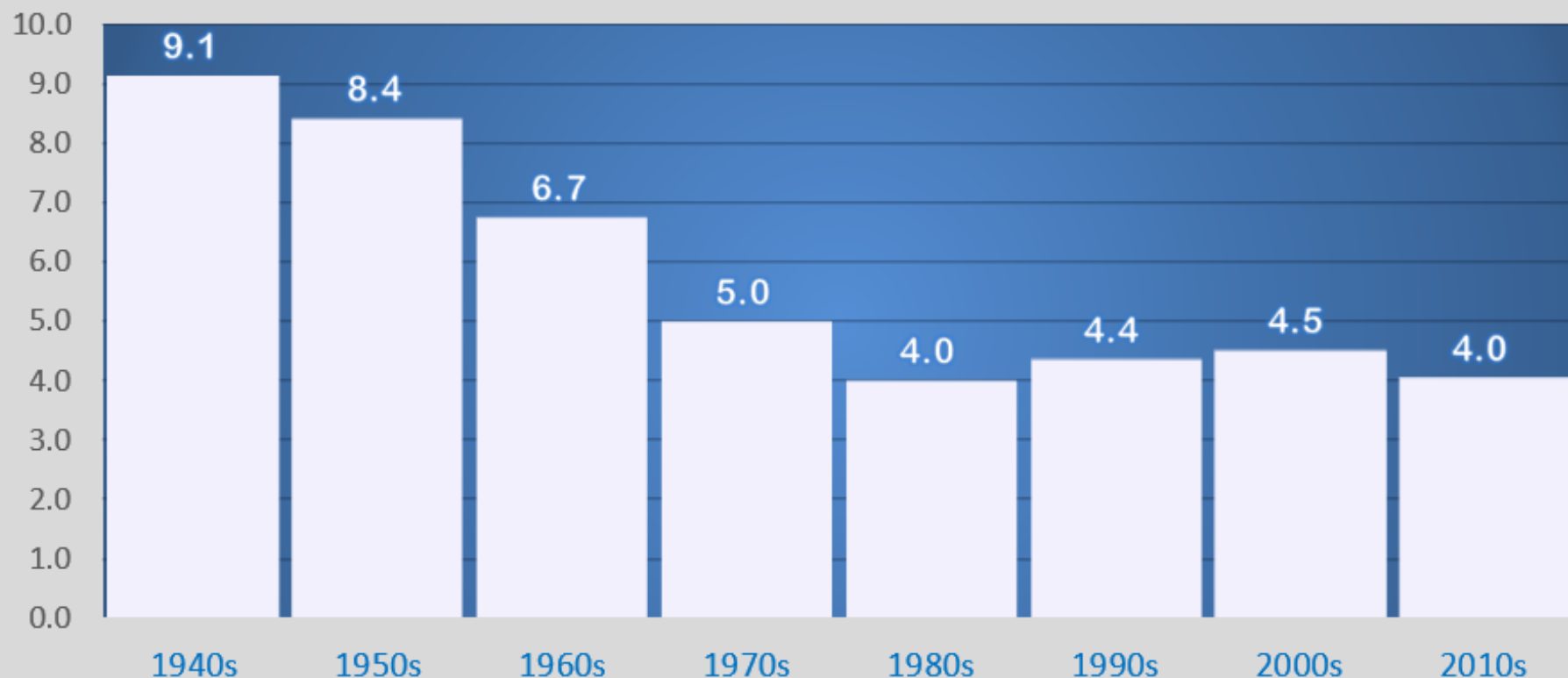
Been working on arctic air events, along with Tanis Leach

PORTLAND (NWS-PARKROSE)
SNOWFALL THE LAST 20 WINTERS (inches)



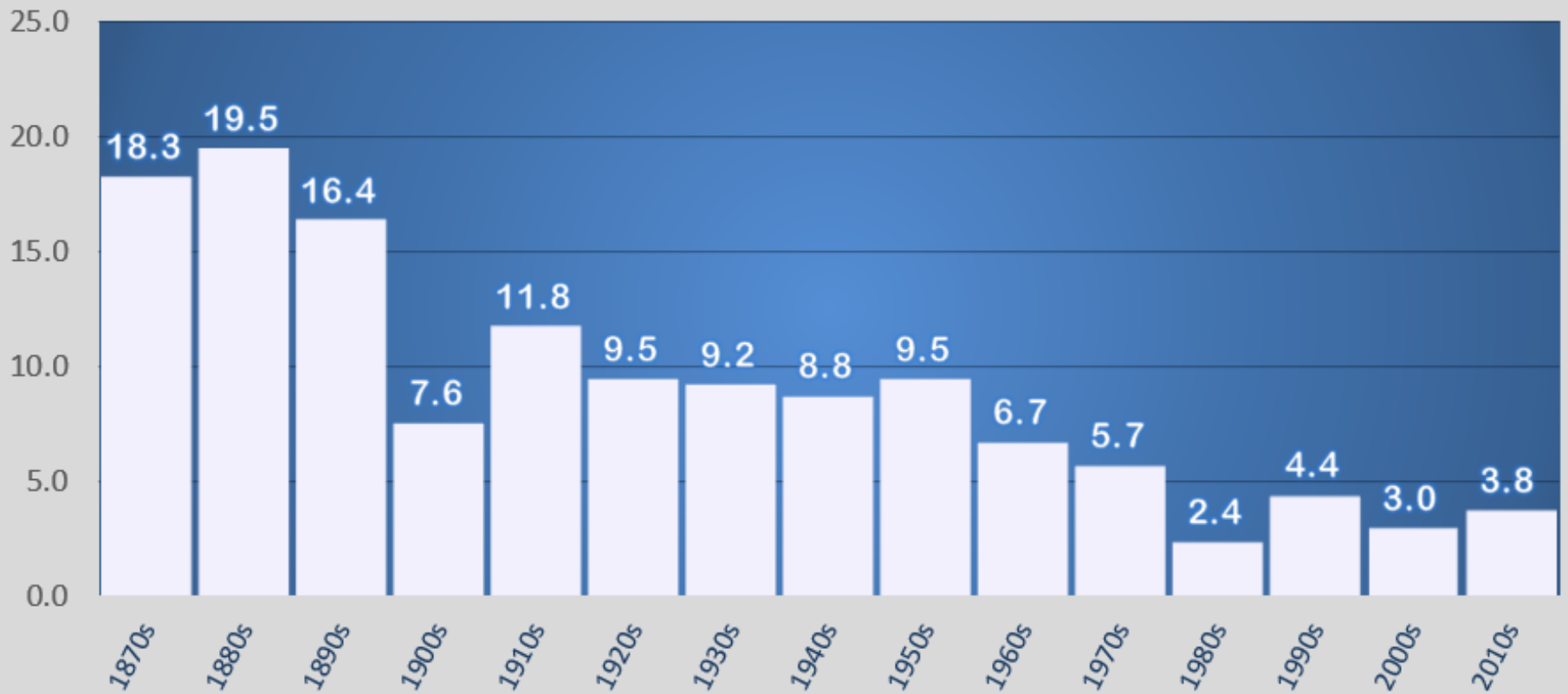
OFFICIAL PORTLAND SNOWFALL

Average per winter in inches (Portland Airport & NWS Office)



DOWNTOWN PORTLAND SNOWFALL

Average per winter in inches

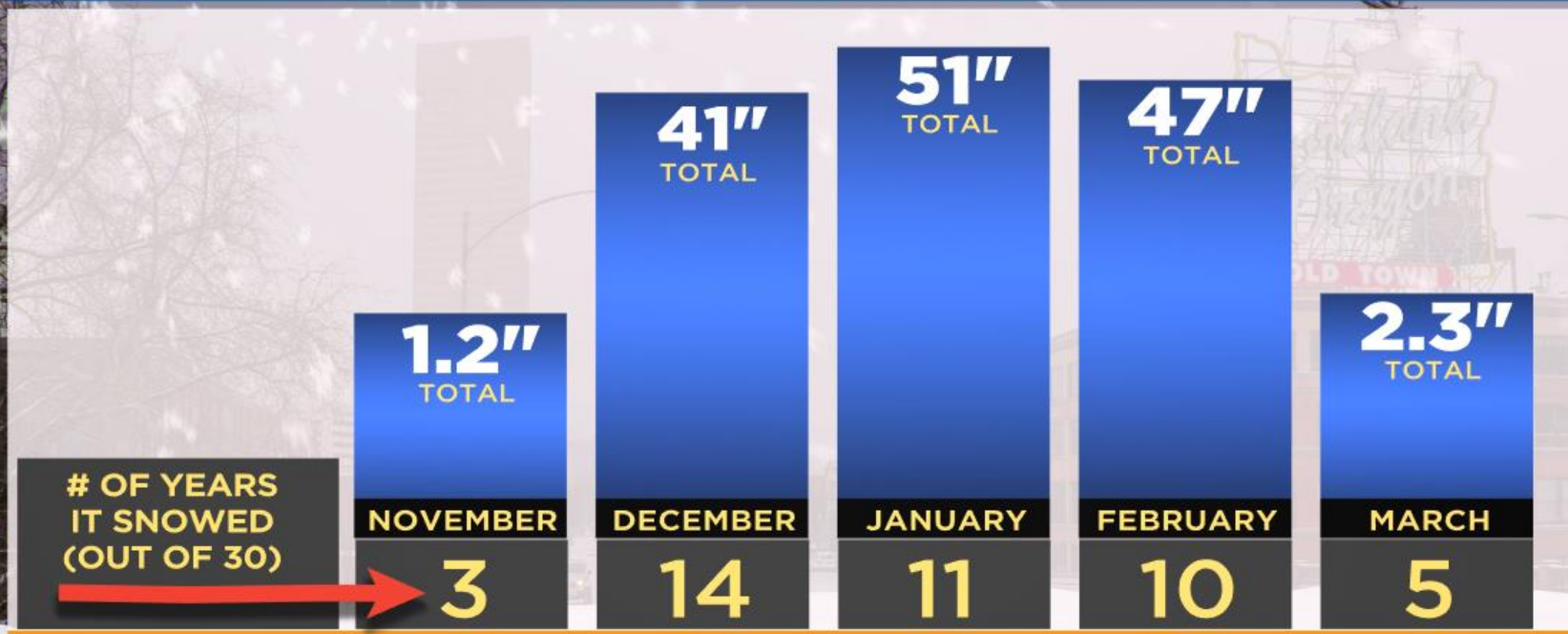


SNOW IN PORTLAND

LAST 30 YEARS (Winter 1993-Winter 2022)

FIRST. LIVE. LOCAL.

WEATHER



SNOW IN PORTLAND

PREVIOUS 30 YEARS (Winter 1963-Winter 1992)

FIRST. LIVE. LOCAL.

WEATHER

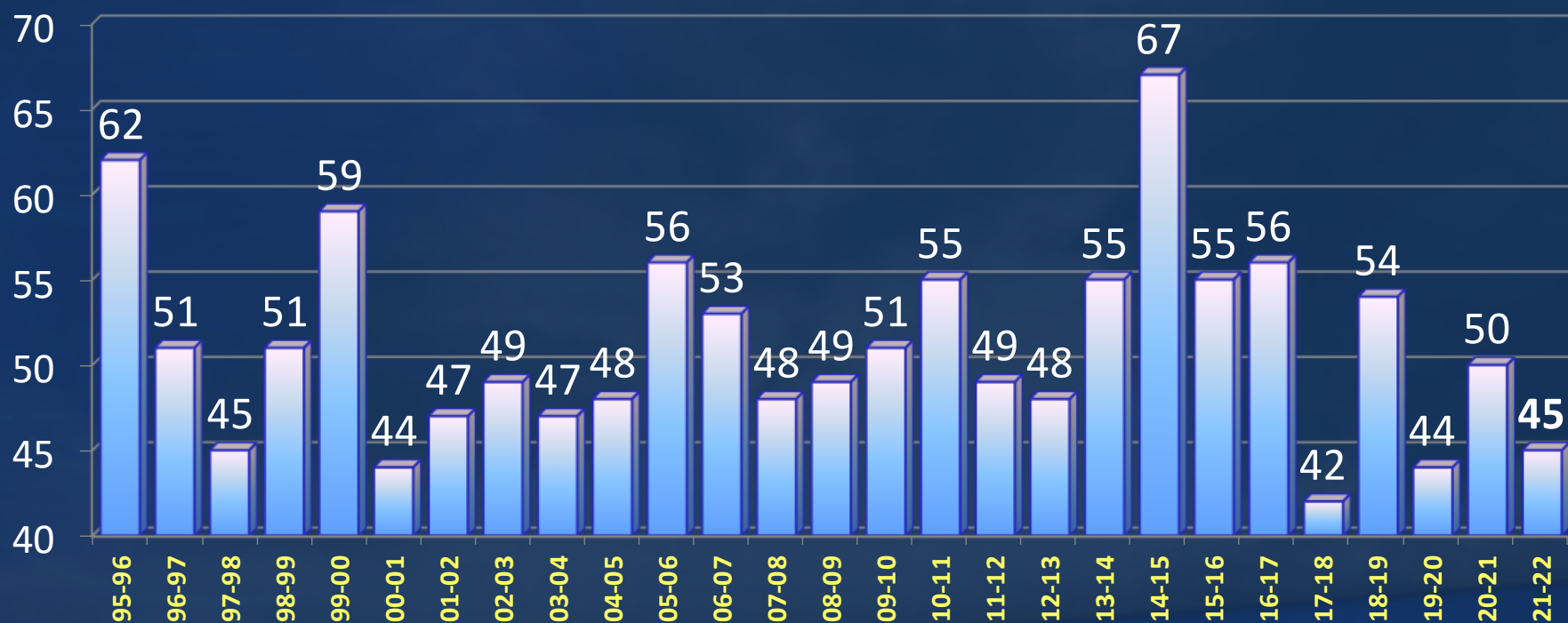


NO INLAND WIND STORMS

26 winters without a major REGIONAL storm

Yearly Peak Wind Gust at PDX in MPH

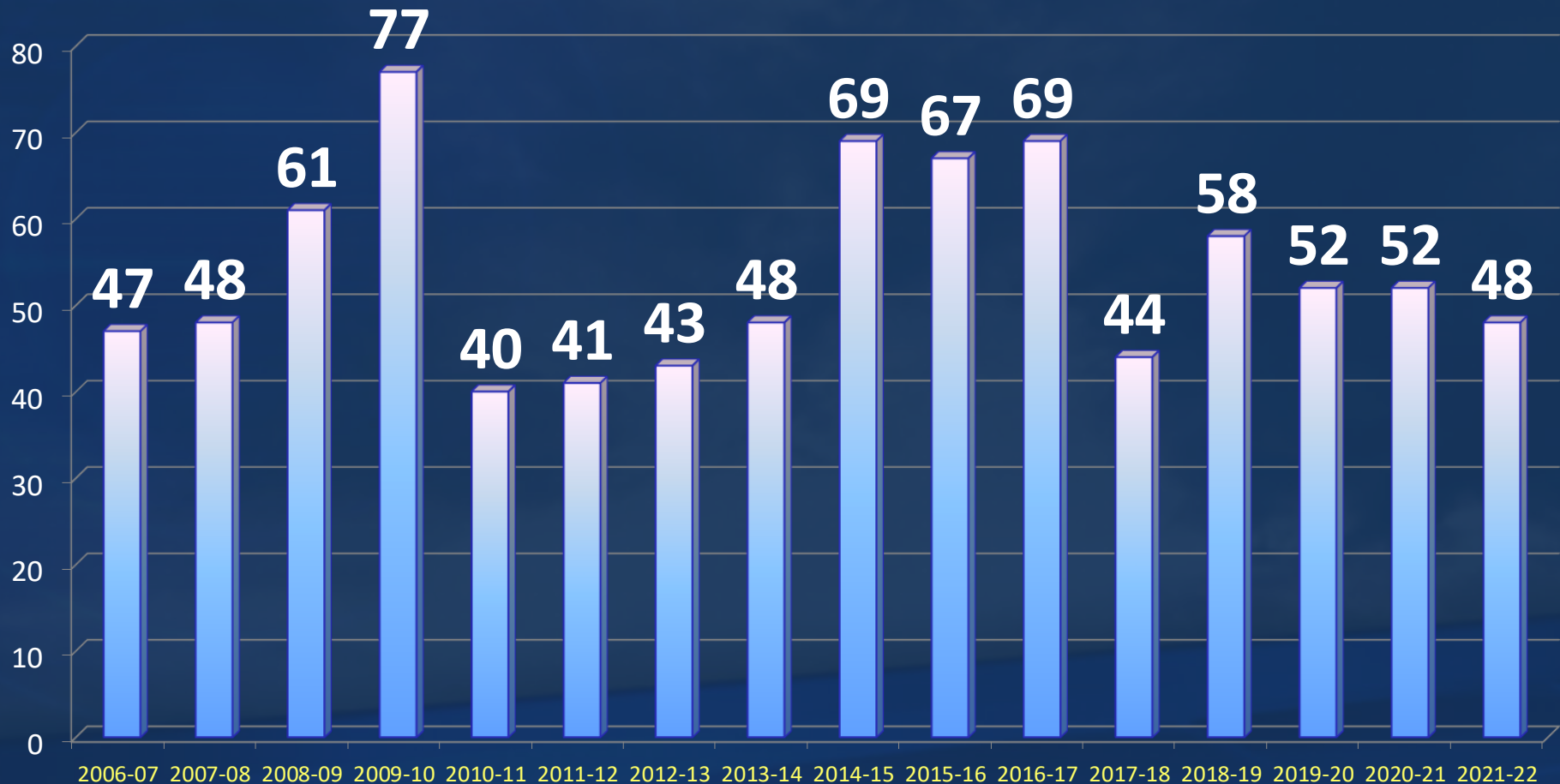
(Generally southerly)



EASY EAST WIND SEASON

Only one period of very strong wind in late January

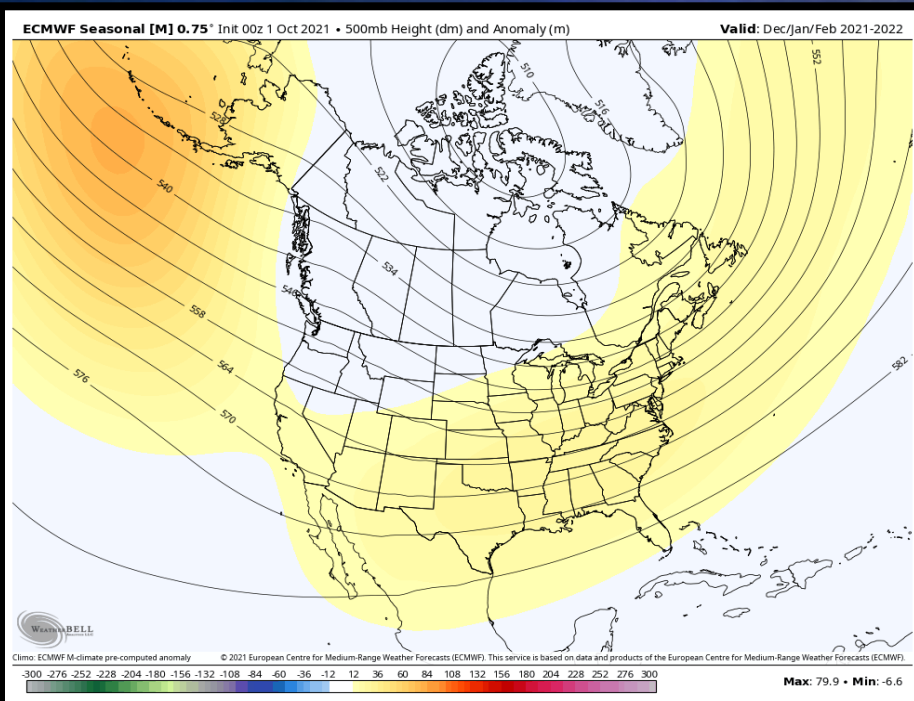
Days with peak easterly gusts 25+ mph at Troutdale (Nov-Feb)



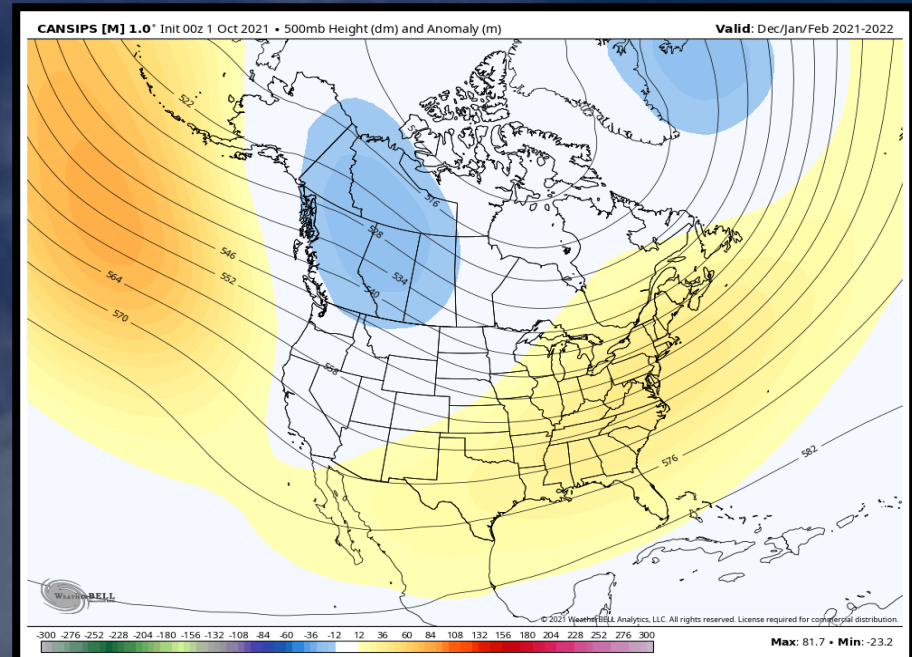
MY FINAL THOUGHTS

- I think we have a communication issue with La Nina
(Public/media/some forecasters believe La Nina = cold/wet winters)
- It was nice to see “the goods” during the holidays! Cold and snowy
- First time Salem & Portland have gone 5 winters without sub-20° reading.
- PDX hasn't had sub-30° daytime high in last 5 winters, happened in 1940s

TWO MODEL FORECASTS

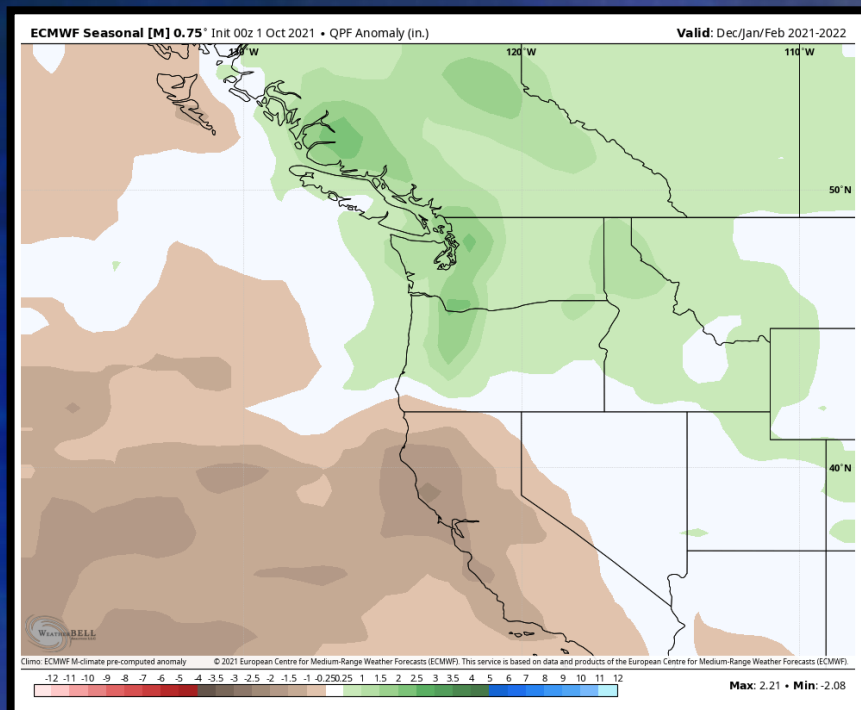


ECMWF DEC-FEB 500MB

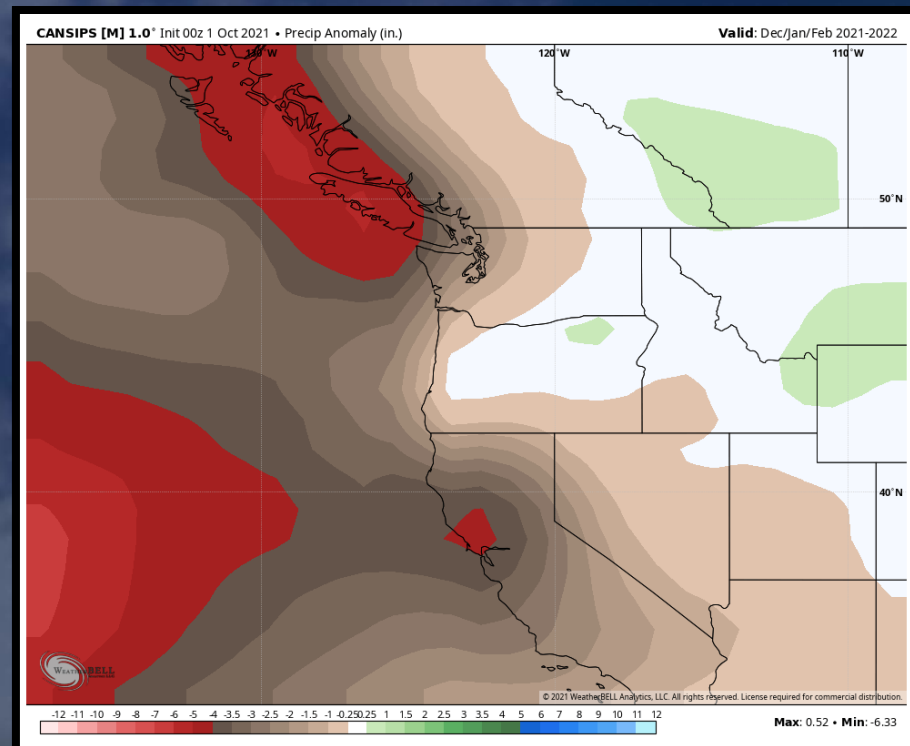


CANSIPS DEC-FEB 500MB

TWO MODEL FORECASTS



ECMWF DEC-FEB PRECIP ANOMALY



CANSIPS DEC-FEB PRECIP ANOMALY