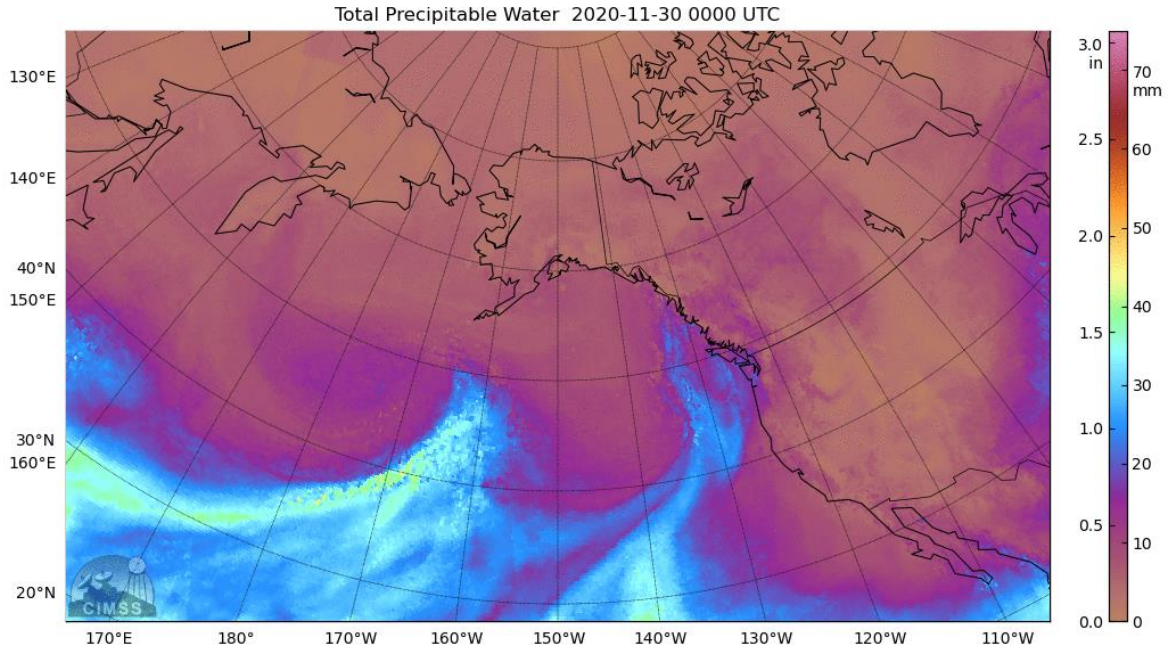
CW3E Post Event Summary: 1–4 December

Center for Western Weather and Water Extremes
SCRIPPS INSTITUTION OF OCEANOGRAPHY AT UC SAN DIEGO

Southeast Alaska Pounded by Atmospheric River while California's Fire Season Persists into December

- A persistent high pressure and ridge has set up in the eastern Pacific and has directed all AR activity poleward towards Alaska and British Columbia
- AR landfall over the Alaska Panhandle has resulted in AR 4 conditions, heavy precipitation, flooding, and debris flows
- Several locations in southeastern Alaska broke daily and 48-hour precipitation records
- The heavy precipitation triggered a landslide in Haines, AK leaving dozens of homes uninhabitable and prompting search and rescue efforts
- On the opposite end of the spectrum, the offshore flow around the southeastern portion of the high pressure created a strong Santa Ana wind event over Southern California where wind gusts >80 mph were recorded and several fires were sparked during the dry and gusty conditions



1–4 Dec Atmospheric River

For California DWR's AR Program

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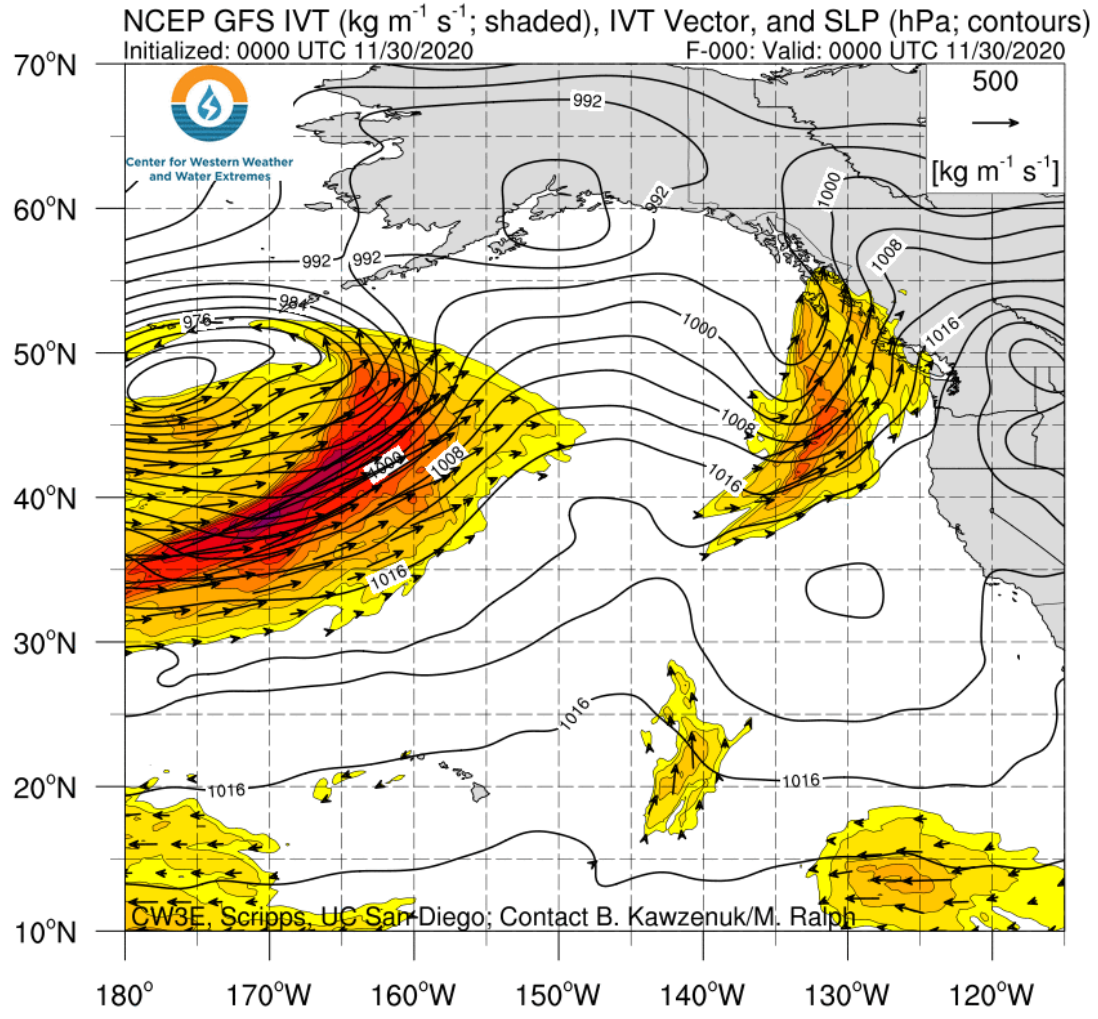

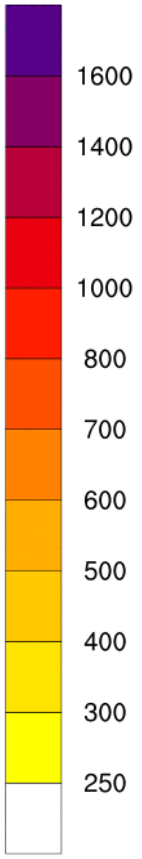

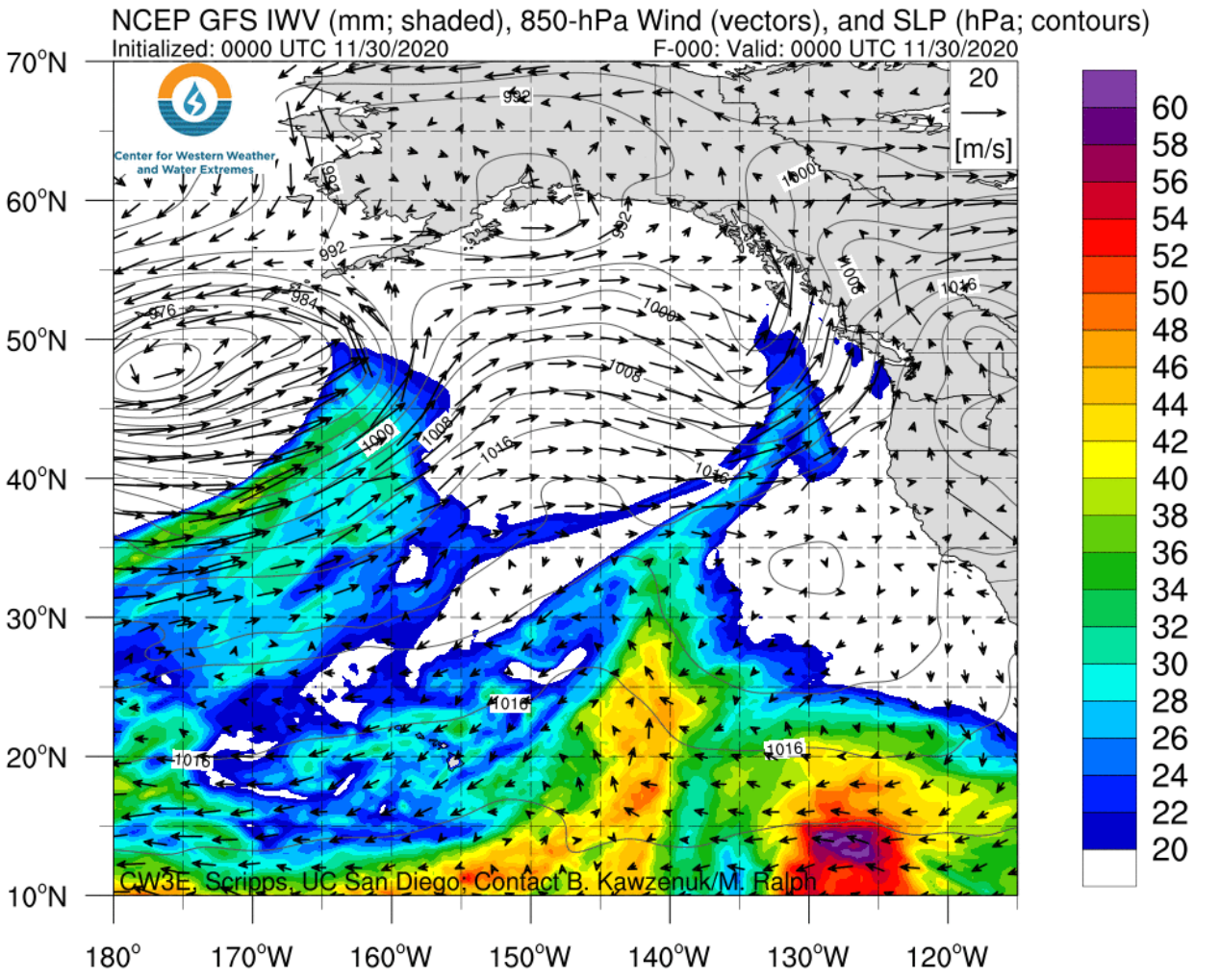

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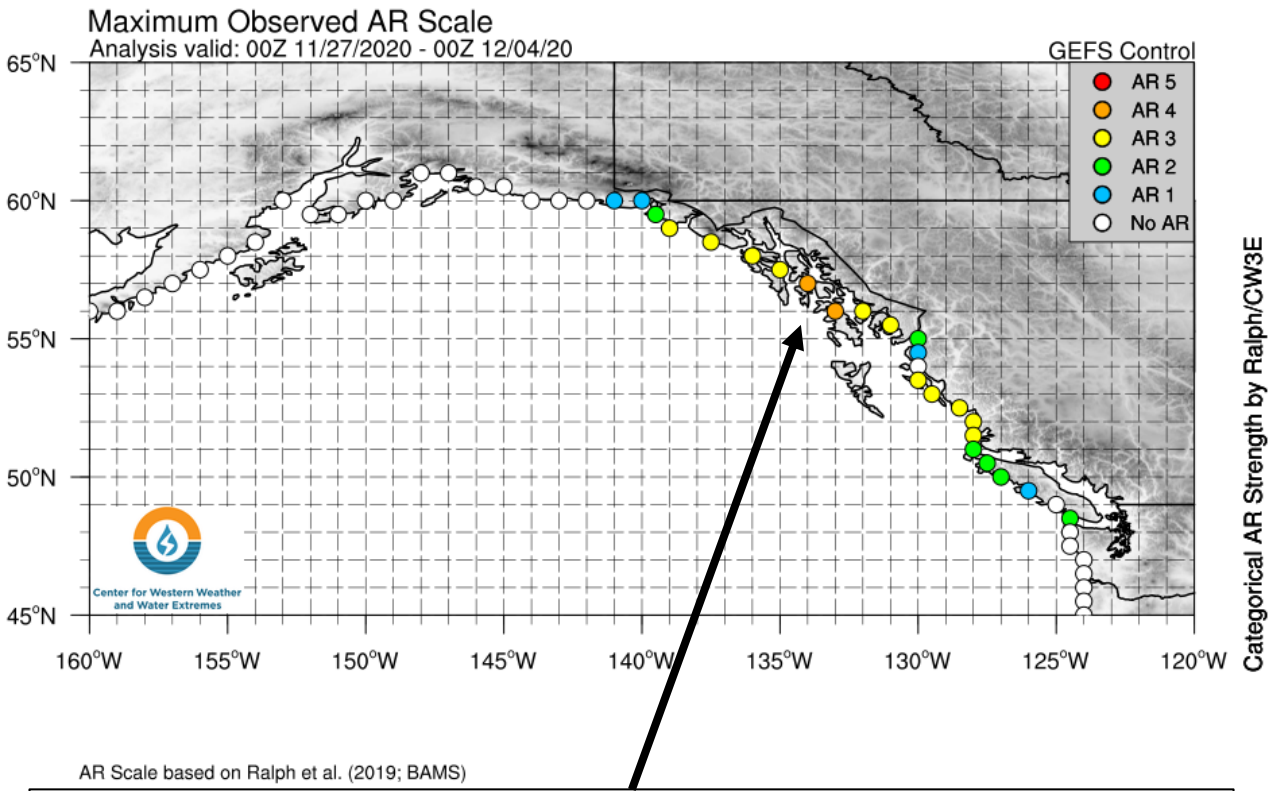
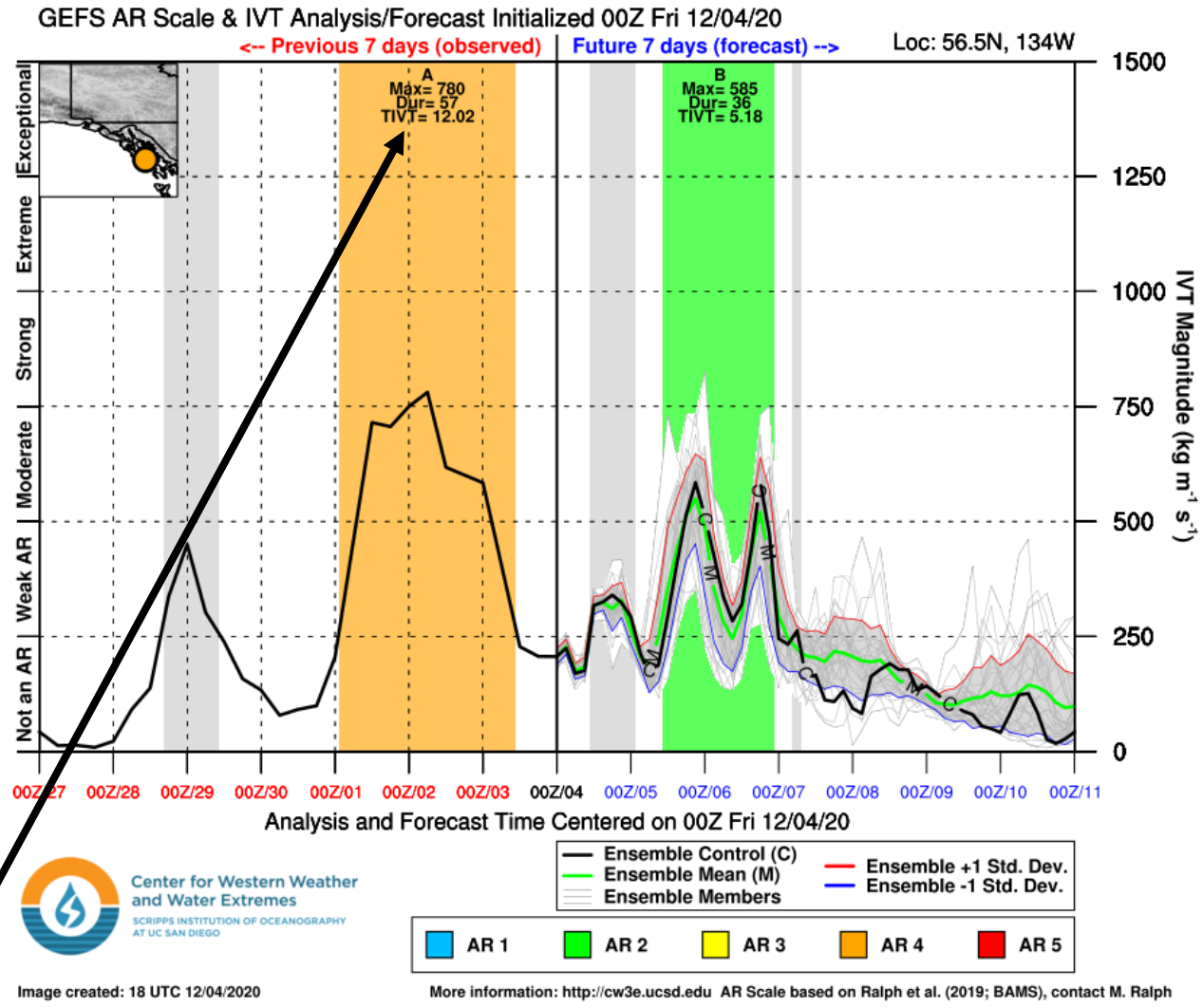


AR Scale based on Ralph et al. (2019; BAMS)



The AR brought AR 3 and 4 conditions to a large stretch of the coast in southeastern Alaska according to GEFS Analysis

The southeastern portion of Admiralty Island experienced a maximum IVT of 780 kg m^{-1} s^{-1} and 57 total hours of AR conditions, resulting in AR 4 conditions on the AR scale (Ralph et al. 2019)

1–4 Dec Atmospheric River

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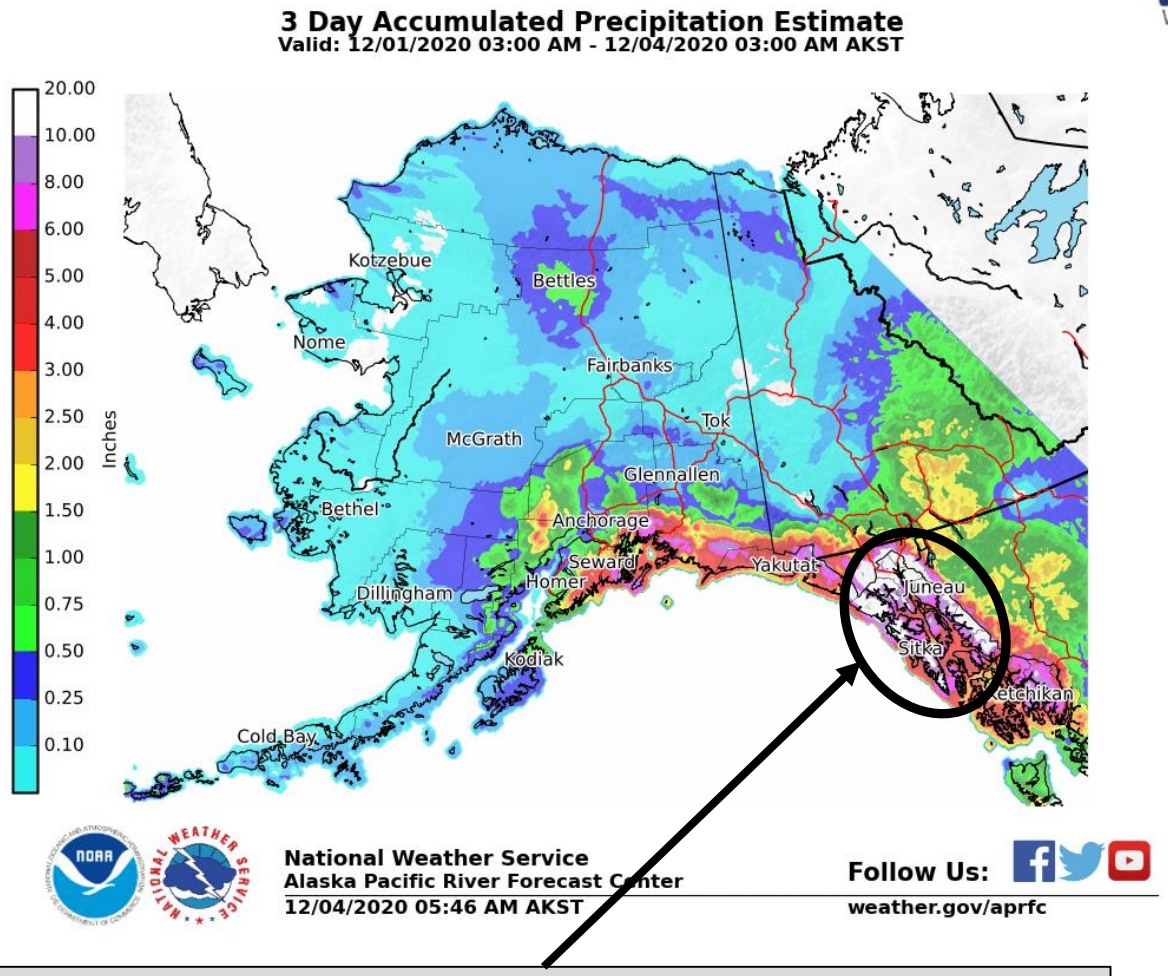

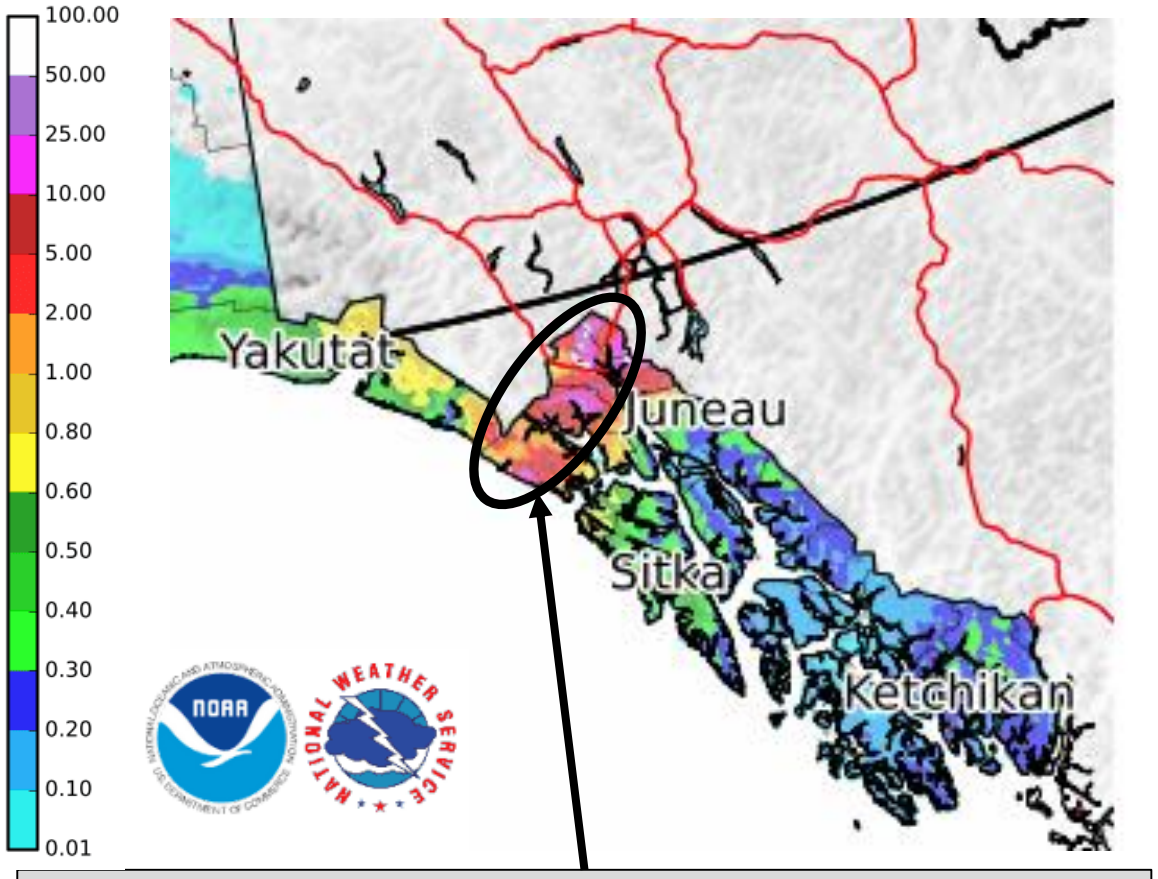

A large portion of the Alaska Panhandle received >10 inches of precipitation over a 72-hr period from 12/1 to 12/4

Other coastal locations from Anchorage to Ketchikan received >5 inches of precipitation during the same period

The 24-hour precipitation accumulations on 12/2 to 12/3 north/northwest of Juneau havea return frequency of 25–100 years, highlighting the significance and rarity of this AR

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All Time Record Rainfall Set Dec 1 and 2, 2020

Location	New Record	Date	Previous Daily Record	Previous All Time Record
Pelican COOP	9.75"	Dec 2	3.10" / 2003	8.41" Nov 19, 2005
Haines #2 COOP	6.62"	Dec 2	1.37" / 2009	3.92" Nov 23, 2005
Skagway COOP	5.37"	Dec 2	0.84" / 2019	5.31" Dec 21, 1930
Juneau Airport	4.93"	Dec 1	1.44" / 1997	4.62" Oct 10, 1946
Hoonah COOP	4.70"	Dec 2	1.20" / 2019	3.65" Sep 25, 1996
Juneau Forecast Office	4.09"	Dec 1	2.04" / 2011	3.20" Nov, 20, 2004
Lena Point COOP	3.93"	Dec 1	1.28" / 2011	2.96" Oct 14, 2018
Juneau-Douglas WWTP COOP	3.60"	Dec 1	1.93" / 2011	3.04" Aug 10, 2020

NATIONAL WEATHER SERVICE | WFO Juneau
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Southeast Alaska

Numerous rain gauges across southeastern Alaska broke daily precipitation records on December 1st or 2nd

The Haines #2 COOP station recorded 6.62 inches of rain on December 2nd, ~1.7 times the previous daily record of 3.92 inches recorded on November 23rd, 2005

The landfalling AR also brought strong winds to SE AK, where several stations recorded gusts >50 mph

Max Wind Gusts

Location	Gusts
Yakutat	63 mph
Sisters Island	52 mph
Gustavus Airport	46 mph
Sitka Airport	64 mph
Juneau Airport	60 mph
Ketchikan Airport	52 mph
Eldred Rock	56 mph
Salmon Landing	67 mph
Mendenhall Valley	52 mph
Craig	49 mph

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Landslide near Haines Alaska

The heavy precipitation triggered a landslide in Haines Alaska where numerous homes were damaged and search and rescue efforts were initiated

Mudslide near Juneau on Glacier Avenue

NWS WFO Juneau reported several mudslides in and around Haines, Skagway, and Juneau

1–4 Dec SoCal Fire Weather

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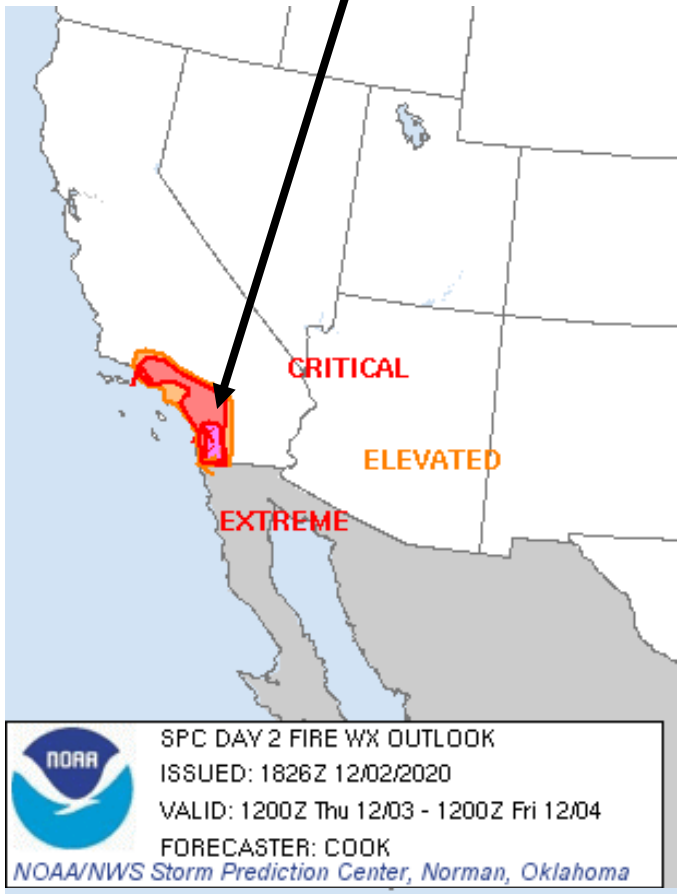
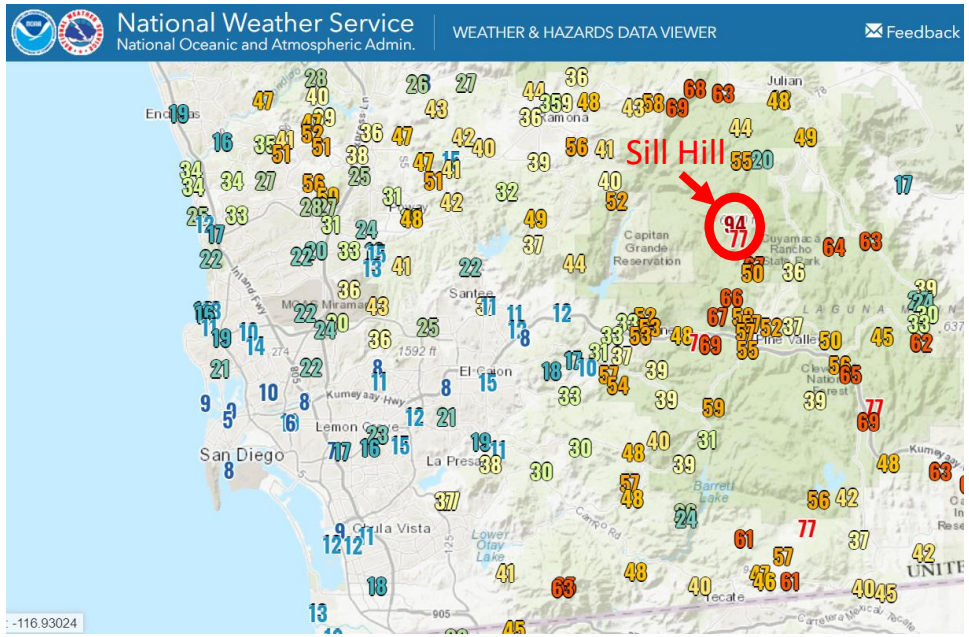
While the high-pressure system directed ARs poleward towards AK, the offshore flow to the south resulted in extreme fire weather conditions over Southern CA





Numerous stations reported >50 mph wind gusts in the mountains of San Diego County, leading to Public Safety Power Shutoffs in an effort to reduce fire danger

Sill Hill, one of the historically windiest stations in eastern SD County, reported a wind gust of 94 mph around 8 am on 12/3

Over 30 stations in the SDG&E Mesonet (>200 stations) recorded its highest wind gust in their 10-year history

The extremely dry and gusty conditions allowed for the initiation and rapid spread of several fires in Orange, Riverside, and San Diego Counties.

The Bond Fire in OC has rapidly grown to 6.4K acres since 12/2

Kent Nishimura / Los Angeles Times