

# ALASKA REGION CLIMATE SERVICES

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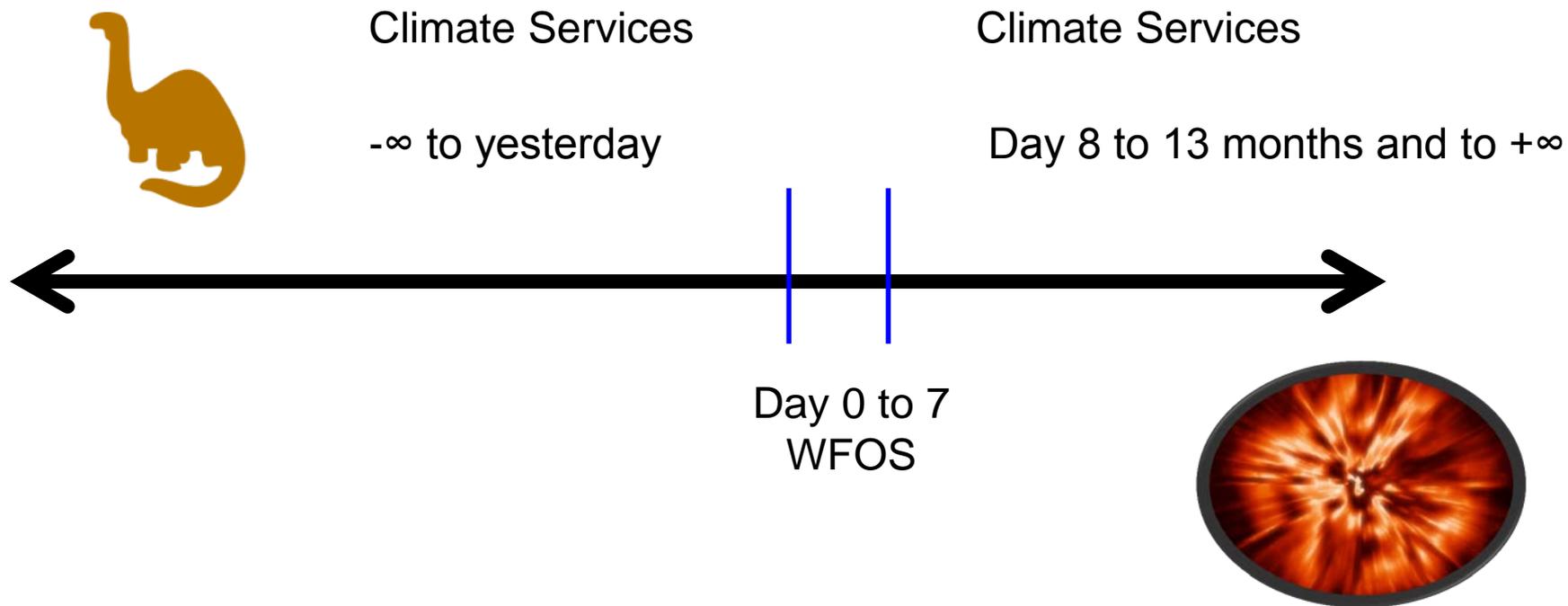
Rick Thoman

NWS Alaska Region

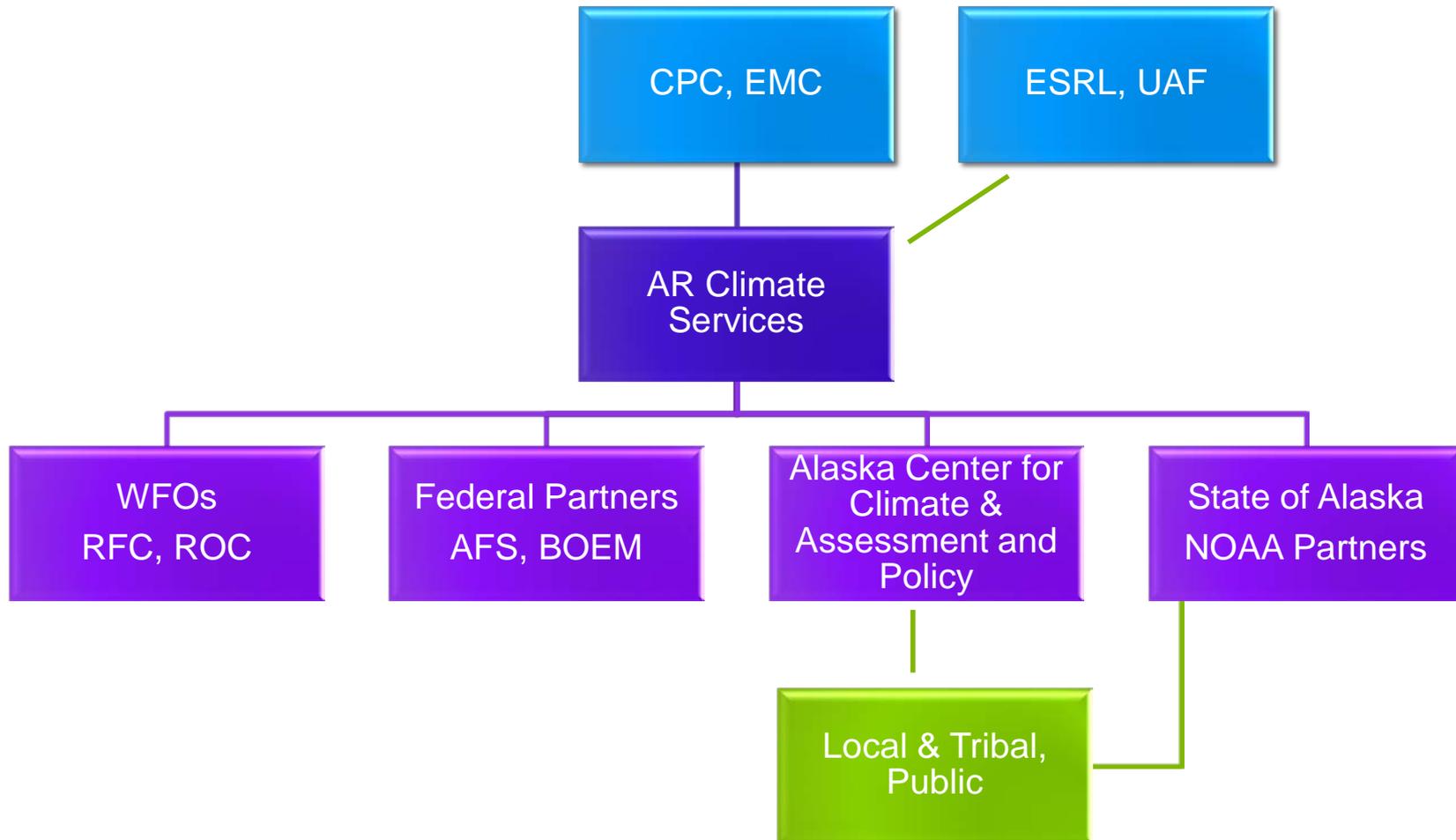
Environmental and Scientific Services Services Division



# NWS Climate Services

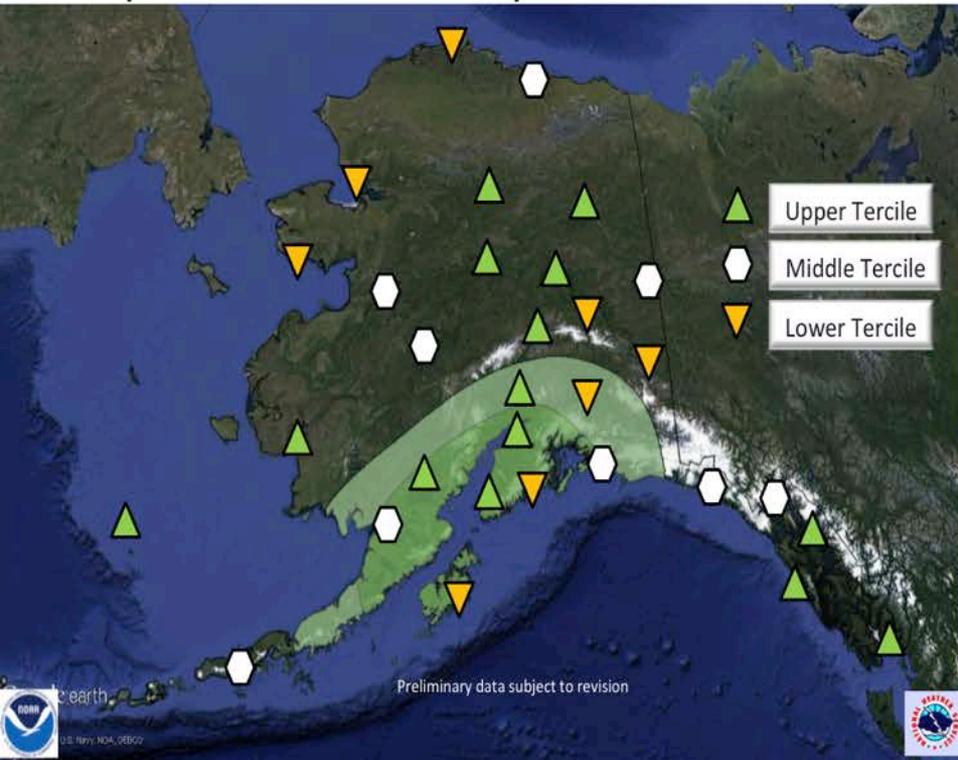


# Flow of Climate Outlooks in Alaska (NWS Perspective)

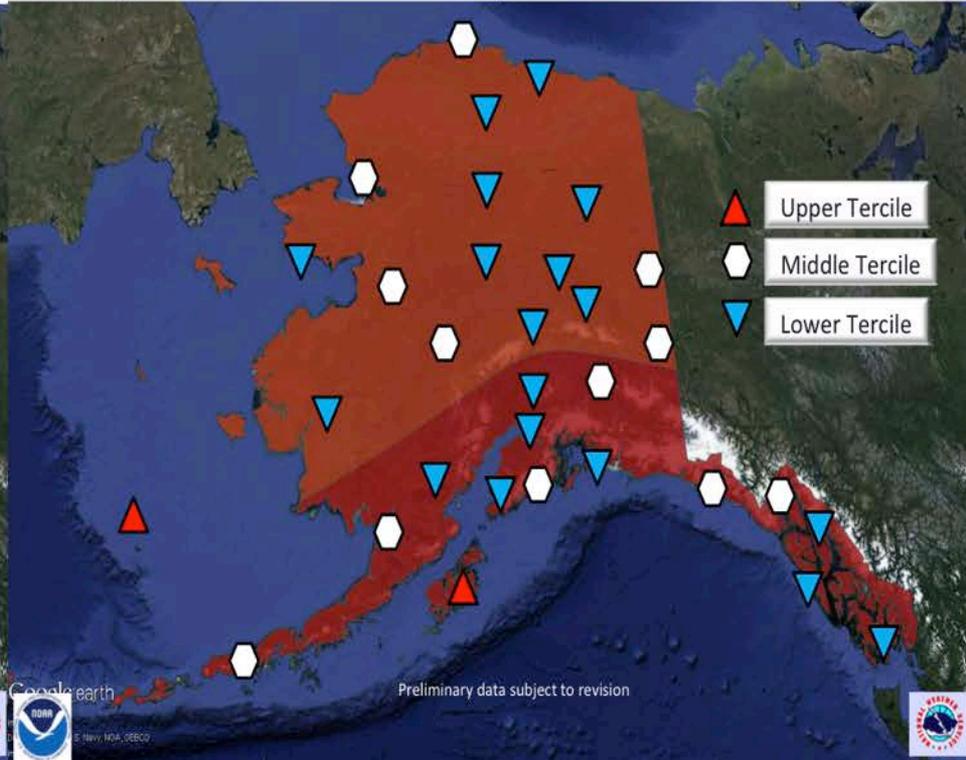


# Alaska Climate Monitoring

September 2015 Precipitation Anomalies



September 2015 Temperature Anomalies



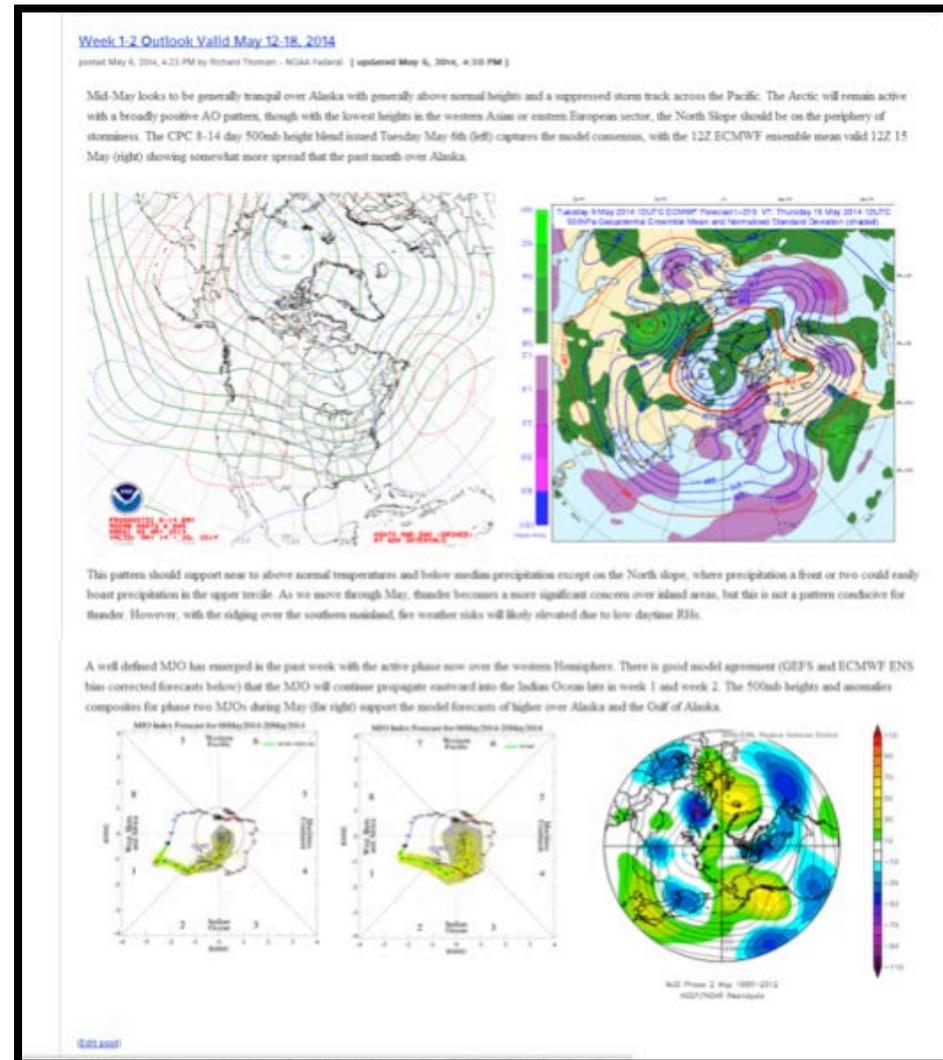
# Alaska Region Climate Services: Outlooks

- If it's beyond the Weather Forecast Office time frame, it's climate in Alaska Region
- Weeks 2 to 4 (weather-climate linkage)
  - Remote, isolated and long, vulnerable supply chains
  - Forecasts of opportunity: patterns associated with high impacts
- Monthly to Seasonal
  - Planning and commitment
- Probabilistic information of primary importance
  - Useable to users



# Climate Forecasts: Week 1-2 Outlook

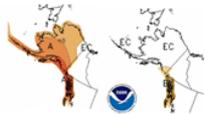
- Weekly (or more)
- Technical: expand, explain and Alaska-fy CPC 6-10/8-14 day Outlooks
- Google shared site
- Help operational offices make best use of CPC products
- Weekly State of Alaska Briefing



# Climate Forecasts: Climate Product Discussion

## Climate Product Discussion NWS Alaska Region, May 20, 2014

### Climate Prediction Center Official Forecasts and Reasoning, Forecast for June 2014



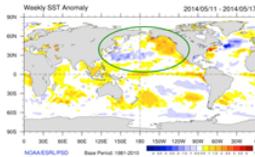
"Above-normal temperatures are favored over the west coast and Alaska where SSTs are expected to be above normal. The dynamical guidance remains in very good agreement on this temperature response."

ONE-MONTH OUTLOOK  
TEMPERATURE PROBABILITY  
0-5 MONTH LEAD  
VNO\_ID\_0M\_2014  
MME\_15\_MAY\_2014

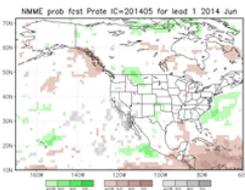
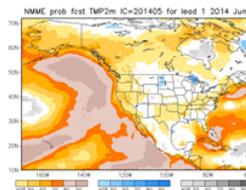
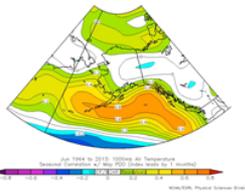
ONE-MONTH OUTLOOK  
PRECIPITATION PROBABILITY  
0-5 MONTH LEAD  
VNO\_ID\_0M\_2014  
MME\_15\_MAY\_2014

### Regional Discussion for June 2014

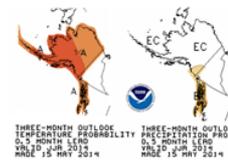
Sea surface temperatures in the North Pacific during April and May have transitioned into a solidly positive PDO anomaly configuration, with above normal temperatures near-shore along virtually all of the western North American coast and below normal SSTs stretching from Japan to east of the dateline (May 11-17 anomalies left). The correlations of May PDO with June low-level temperatures (below) are highest over the Alaska Peninsula, southwestern Alaska, and outer Southeast but surprisingly low along the Gulf Coast.



As noted in the CPC discussion, dynamic models are in good agreement increased chances of significantly above normal temperatures, with more than half of NMME members forecasting significantly above normal temperatures over the southern half of Alaska (below left). The CPC forecast for precipitation chances follows the tilt of the NMME (below right), with a slight tilt toward significantly below median precipitation over Southeast.



## Climate Prediction Center Official Forecasts and Reasoning June through August, 2014 Forecast



THREE-MONTH OUTLOOK  
TEMPERATURE PROBABILITY  
0-3 MONTH LEAD  
VNO\_ID\_3M\_2014  
MME\_15\_MAY\_2014

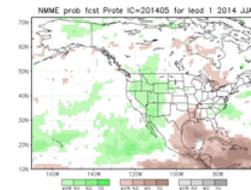
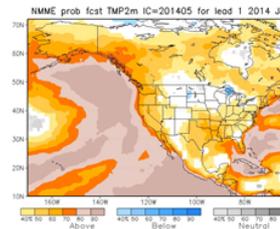
THREE-MONTH OUTLOOK  
PRECIPITATION PROBABILITY  
0-3 MONTH LEAD  
VNO\_ID\_3M\_2014  
MME\_15\_MAY\_2014

"The JJA and JAS 2014 temperature outlook indicates elevated probabilities of above-normal seasonal mean temperatures for all of Alaska... These signals are supported by a broad range of tools and dynamical climate models. Enhanced probabilities of below-median seasonal accumulated precipitation for the Alaska panhandle. This signal is consistent with developing El Niño conditions and is weakly supported by the NMME."

### Regional Discussion for June through August, 2014

The development of El Niño (or lack thereof) during mid-summer is a major climate system development for Alaska. The May 8<sup>th</sup> update to the El Niño watch has a 67% of El Niño conditions for JJA. While the warm season impacts on large-scale circulation patterns of enhanced convection in the central equatorial Pacific are not as marked as during the cold season, there is a correlation between summer-developing El Niños and Alaska wildfire acreage burned. Point-based composites suggest that this is a feature of increased chances for significantly below median precipitation over mainland Alaska during El Niño summers.

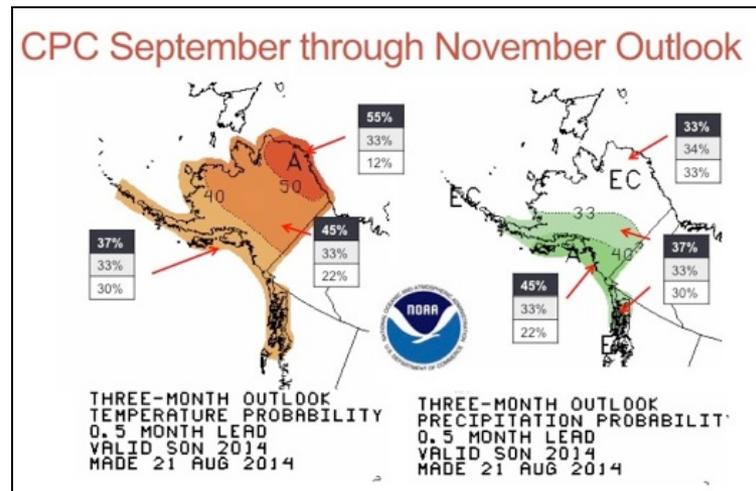
The dynamic models have quite a strong signal for significantly warmer than normal temperatures, as seen in the NMME tercile probabilities (left). More than 70 percent of the NMME ensemble members are forecasting mean temperatures in the (model's) upper tercile over all of Southeast, the Gulf Coast and Alaska Peninsula. This is remarkably high cross-model consensus, but does not necessarily follow from the warm SSTs, as summer correlations with the PDO index are low.



Precipitation forecasts are, as usual, a mixed bag, with the NMME precipitation category probabilities (right) having a slight tilt toward above median total precipitation over the northern Interior, an outcome potentially at odds with the developing El Niño. The CPC forecast reflects the conflicting signals except that the below-median seasonal tilt in Southeast reflects the June probabilities.

# Wx-Climate Outlooks: Getting the word out

- NWS Alaska TV Desk (especially week 2)
- Social Media
- UAF/ACCAP Monthly Climate Forecast briefing; very popular



# Seasonal Sea Ice Outlooks — An ~~Emerging~~ Emerged Need

- Active oil exploration in Alaskan Arctic since 2012
- Industry making **billion** dollar decisions on oil and gas activities in Beaufort and Chukchi Sea
- Department of the Interior
  - Bureau of Ocean Energy Management (BOEM)
  - Bureau of Safety and Environmental Enforcement (BSEE)
- Department of Homeland Security: Coast Guard
- Sea ice forecasts for specific locations weeks to months in advance for planning and regulatory actions.
- Demand will increase (shipping, tourism)

