

NWS Climate Services Program Regional and Local Services

November 2015

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NWS Climate Services Program

**Deliver climate information for response
and preparedness for seasonal to sub-
seasonal timescales**

**End-to-end approach to climate services: from
observations to prediction to user outreach at
national and local levels**

NWS Climate Services Program

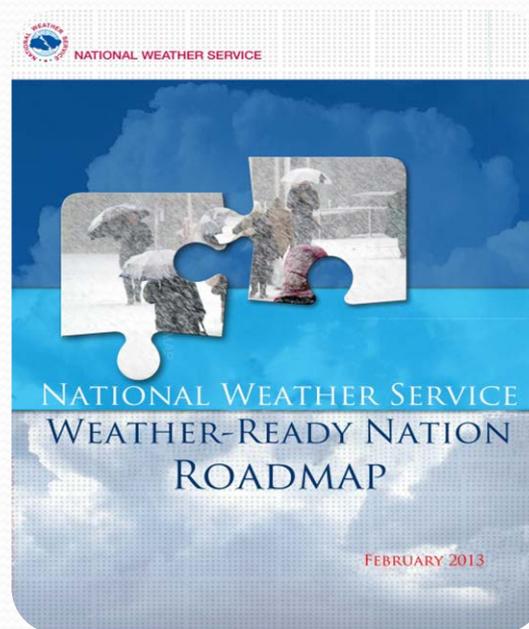
Deliver climate information for response and preparedness at the national to sub-

Climate is one of 11 national service programs

End-to-end applications and services: from observations to prediction to user outreach at national and local levels

Links to Strategic Plans

- **NWS Strategic Plan**
 - **Goal 3:** Enhance **climate services** to help communities, businesses, and governments understand and adapt to climate-related risks



NWS Climate Services Program

- **Headquarters /Program Management**
- **National Centers for Environmental Prediction**
 - **Climate Prediction Center - CPC**
 - **Climate Test Bed (jointly with OAR)**
 - **Environmental Modeling Center - EMC**
 - **NCEP Central Operations - NCO**
- **NWS Regions – 1 program manager in each of 6 regions**
- **Local offices – Climate Services Focal Point in each of 150 offices**

Regional and Local Needs: Building capacity within NWS staff

Training

1. 30 hours online training
2. 3 Residence Courses
 1. Operational Climate Services Delivery
 2. Climate Variability and Change Course (CVCC)
 3. Advanced Climate Variability and Change Course
3. Technical training for national and international partners/users

**National Weather Service
Climate Services**

CLIMATE TRAINING

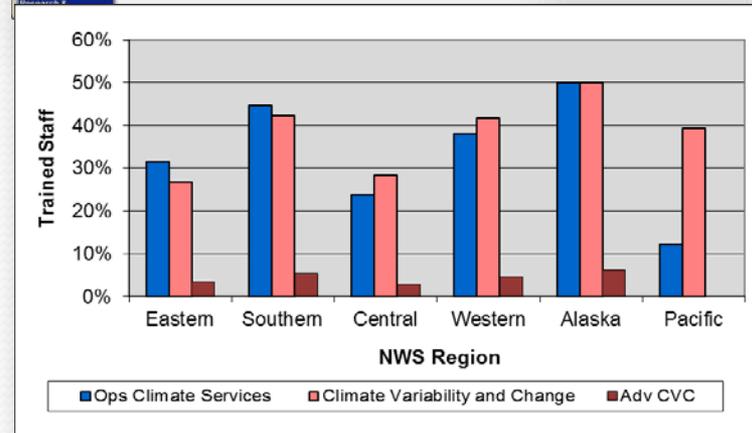
CSD training program is organized as Professional Development Series in Climate Services developing NOAA NWS staff professional competency in six main areas:

- NOAA Climate Services Infrastructure
- Climate Variability and Change
- NWS CPC Climate Products and Methodologies
- Local Applications of NWS Climate Products and Services
- Climate Services Outreach
- Quality of NOAA Climate Observations

Training Courses:

- Operational Climate Services residence course
- Climate Variability and Change virtual course
- Advanced Climate Variability and Change course

Distance Learning: CSD produces distance learning modules (recorded online presentations, webcasts, webinars, etc.) on various Climate Services topics for self-paced training. To find out more about the distance learning program, click [here](#).



Regional and Local Needs: Build capacity within NWS staff

Tools – **LCAT**

- Local Climate Analysis Tool
- Uses
 - Local impacts of climate variability and change
 - Drought impacts and water resource management
 - Severe weather (beyond T_{avg} and P_{total})
 - Decision support

The screenshot shows the LCAT website interface. At the top, there are logos for NOAA and the National Weather Service, followed by the text "LCAT Local Climate Analysis Tool". To the right, there are input fields for "username" and "password", a "Login" button, and links for "Forgot password" and "Register for LCAT". Below the header is a large image of a desert landscape with the text "Learn. Do. Share." overlaid. The main content area is divided into three columns: "Learn", "Do", and "Share". The "Learn" column lists "Data Resources", "Local Climate Analysis", "Local Climate Change", "Compositing", and "Catalogue". The "Do" column lists "Site Specific Analysis", "Climate variability impacts", "ESRL Climate Division Tool", "ESRL Reanalysis Tool", "NDMC Drought Severity Assessment", and "Search the database". The "Share" column lists "Search the database". Below the main content area, there is a footer with links for "LCAT Help | About LCAT", "Report functionality/plotting issue", "Report website issue", and "Subscribe to ListServ (name lcat_nws)". The footer also includes the copyright notice "©2013 NOAA/NWS Climate Services Division" and the USA.gov logo. At the bottom, there is a disclaimer and privacy policy section, and a link to the "Web Master's Email: w-nws.webmaster@noaa.gov".

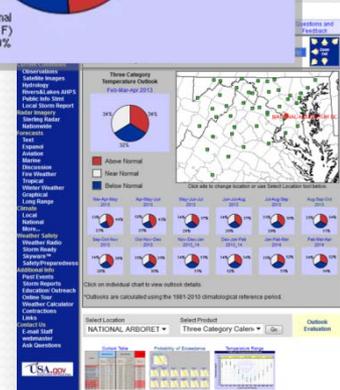
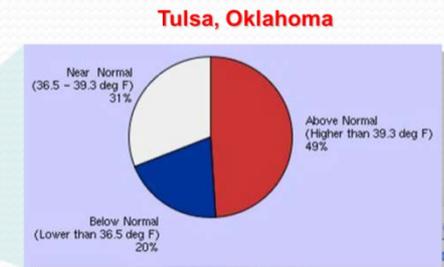
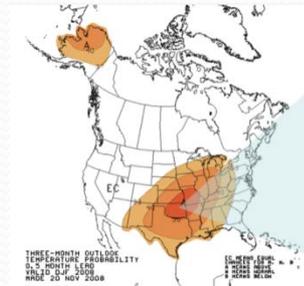
Regional and Local Needs: Build capacity within NWS staff

Products

- **Local 3-Month Temperature Outlook (L3MTO)**
 - Launched in 2007
 - Downscaled from CPC national forecast



- Developed within CSD
- Fully automated and transitioned to CPC operations
- CSB oversees O&M for local NWS operational climate webpages



- **Local 3-Month Precipitation Outlook (L3MPO)**

- Need identified through customer survey
- Applied research needed for methodology to enable product development and transition into operations

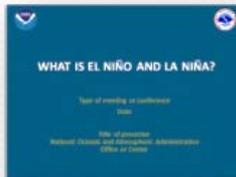
L3MPO preliminary development

Regional and Local Needs: Build capacity within NWS staff

- Climate Services Seminar Series
- Factsheets on a variety of climate topics
- Outreach



NWS Climate Outreach Google Site Provides a "one-stop-shop" for outreach material



Grab-and-go Climate Presentation Series (Under Development)



<http://www.nws.noaa.gov/os/csd/>



Regional and Local Needs: Climate Data Services

The Climate Services Branch is on point to coordinate the various tools that are provided by NWS and our partners in order to provide

Timely, continuous, reliable climate records

Within the NWS: Manage changes to the [NWS Climate Web Pages](#)

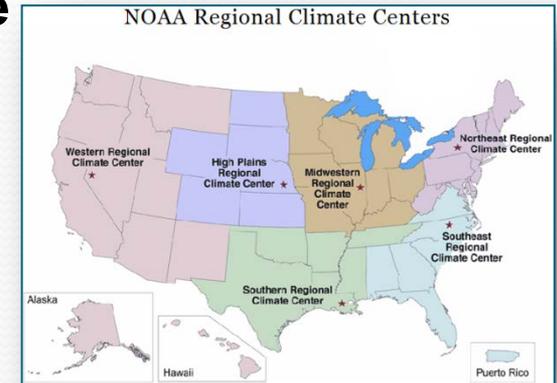
With our partners at NCEI, NERCC, SRCC & WRCC

- ✓ **WxCoder** provides a means for the NWS Cooperative Observer to provide timely, paperless reporting of observations
- ✓ **IV-ROCS** for those observers without internet access to provide their observations
- ✓ **NOWData2** provides the NWS Climate Web Pages with the most current data from the NWS Cooperative Observers
- ✓ **xmACIS2** provides the local office a robust set of data retrieval tools in order to provide localized service to their customers
- ✓ **Health of the Network** reports to help the WFO identify local data errors
- ✓ **Datzilla** to help provide corrections to erroneous data
- ✓ **ThreadEx** to provide a longer period of extremes data to the local communities



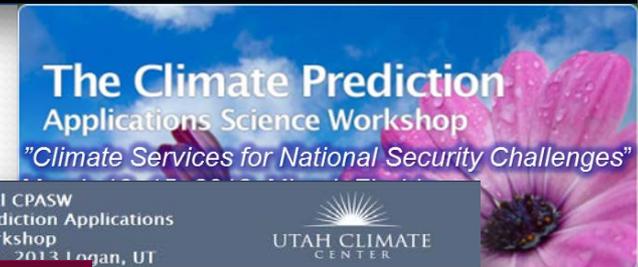
Regional and Local Needs: Develop Partnerships

- Partnerships help us share expertise in climate science and services
- Within NOAA offices for
 - Data archiving and sharing
 - Applications and tool development
 - Understanding stakeholder needs
 - Training/capacity building
 - Ecological forecasting
- Outside of NOAA
 - Science-based activities
 - Data management
 - Support to local offices



Develop Partnerships – Key Annual Meetings

- Climate Diagnostic and Prediction Workshop
- Climate Prediction Application Science Workshop

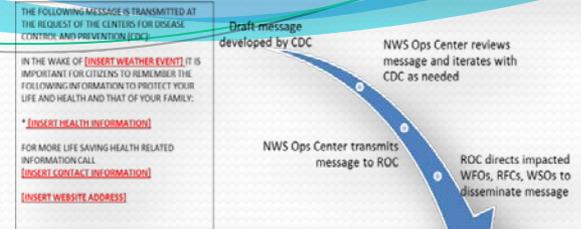


Health Collaborations

NWS Health Team represents NWS in NOAA-wide engagements on health efforts that support NOAA mandates on health, a NOAA-CDC MOU, and OSHA collaborations

- Collaborating with CDC on a process to disseminate lifesaving, credible, relevant, and timely health information before, during, and after weather, water, and climate disasters
- CDC Personnel Exchange
 - Placeholder in AFS for liaison position
- Examining the impact of NOAA AQ prediction capabilities
 - Understand health effects from wildfires
 - SOWs to build coupled forecast tools that will predict hospital admittance from wildfire exposures
- Collaborative social media efforts
- Working to understand requirements for hospital resiliency
- Investigating Methods to Assess and Warn for Health Impacts of Extreme Heat Exposure
 - Review existing warning approaches
 - Identify cross-disciplinary data exchange, training opportunities, and information gaps
 - Understand user needs and mission delivery requirements
 - Follow-on projects for consistent methodologies for heat alerts
 - Investigating cross-boarder pilots with Canada
 - Co-Hosted a NOAA-CDC Heat Health Summit (Oct. 2014)
 - Co-Hosting a Workshop on Climate Information Systems for Heat Health Early Warning (July 2015)

NWS-CDC Joint Messaging for Emergency Operations



Products and Services - Regional

Alaska Region Climate Discussion

Climate Product Discussion NWS Alaska Region, May 20, 2014

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



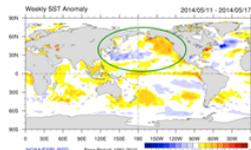
“Above-normal temperatures are favored over the west coast and Alaska where SSTs are expected to be above normal. The dynamical guidance remains in very good agreement on this temperature response.”

ONE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0-1 MONTH LEAD
MADE 15 MAY 2014

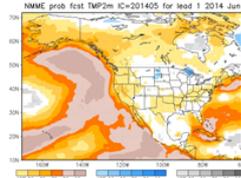
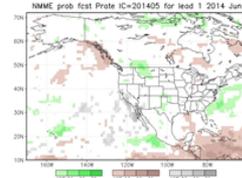
ONE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0-1 MONTH LEAD
MADE 15 MAY 2014

Regional Discussion for June 2014

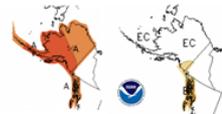
Sea surface temperatures in the North Pacific during April and May have transitioned into a solidly positive PDO anomaly configuration, with above normal temperatures near-shore along virtually all of the western North American coast and below normal SSTs stretching from Japan to east of the dateline (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



“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.”

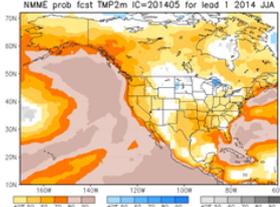
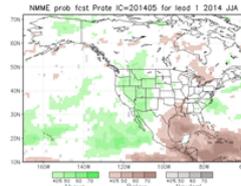
THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0-3 MONTH LEAD
MADE 15 MAY 2014

THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0-3 MONTH LEAD
MADE 15 MAY 2014

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 8th 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.

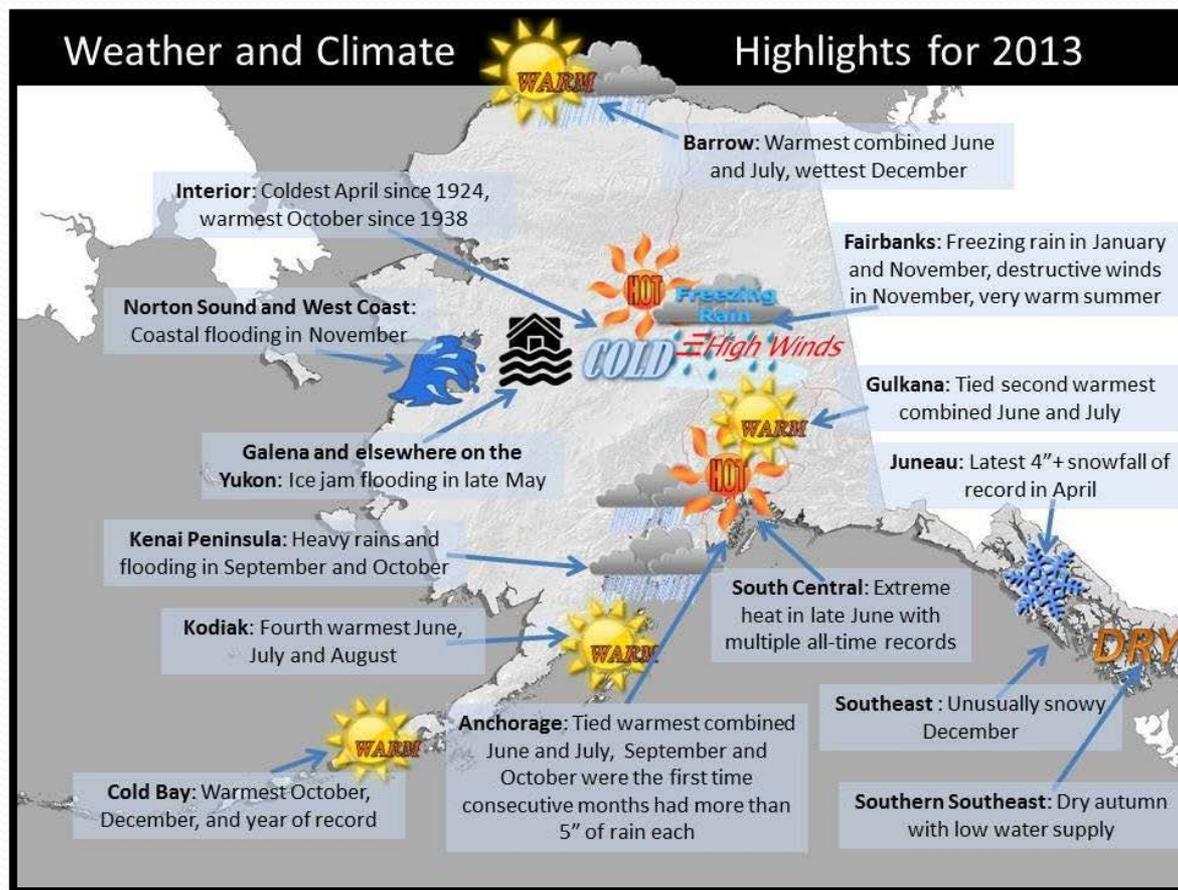



Precipitation forecasts are, as usual, a mixed bag, with the NMME precipitation category probabilities (right) having a slight tilt toward above median total precipitation over the northern Interior, an outcome potentially at odds with the developing El Niño. The CPC forecast reflects the conflicting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

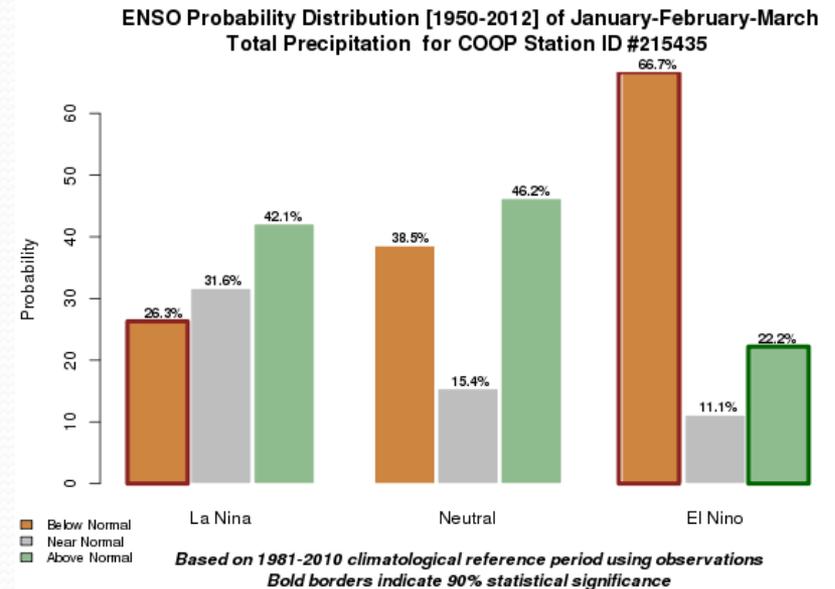
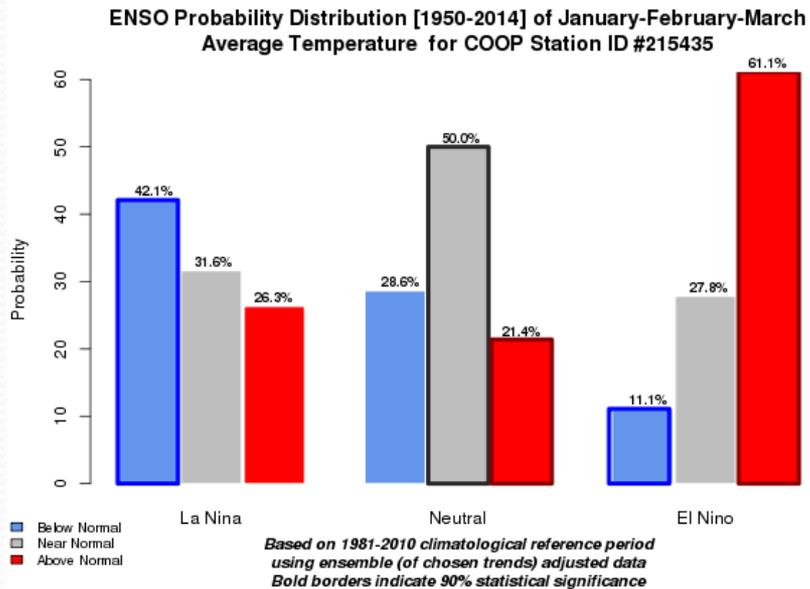
Products and Services – Regional

Alaska Region Monitoring: Social Media

- NWS Alaska Facebook and Twitter
- Climate-related posts are very popular



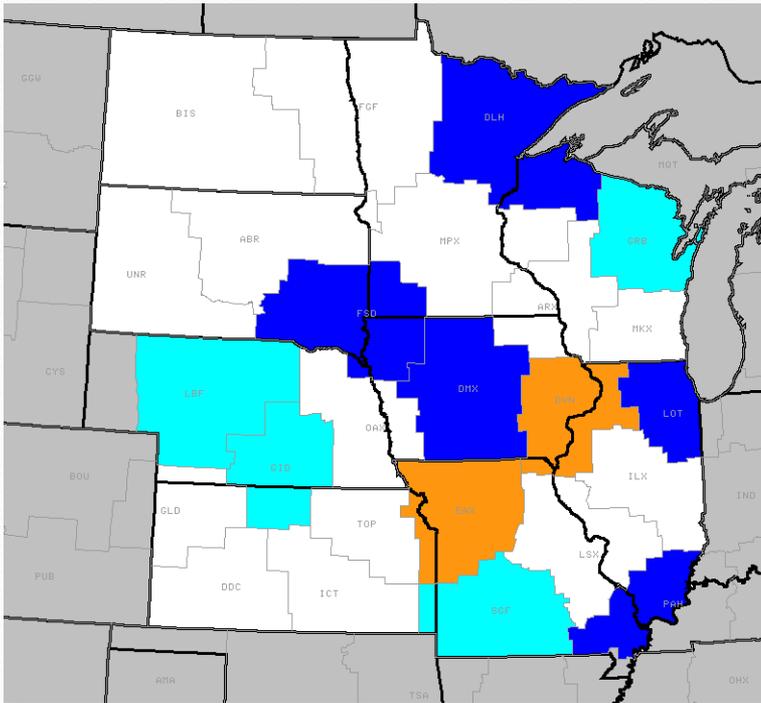
Products and Services – Local



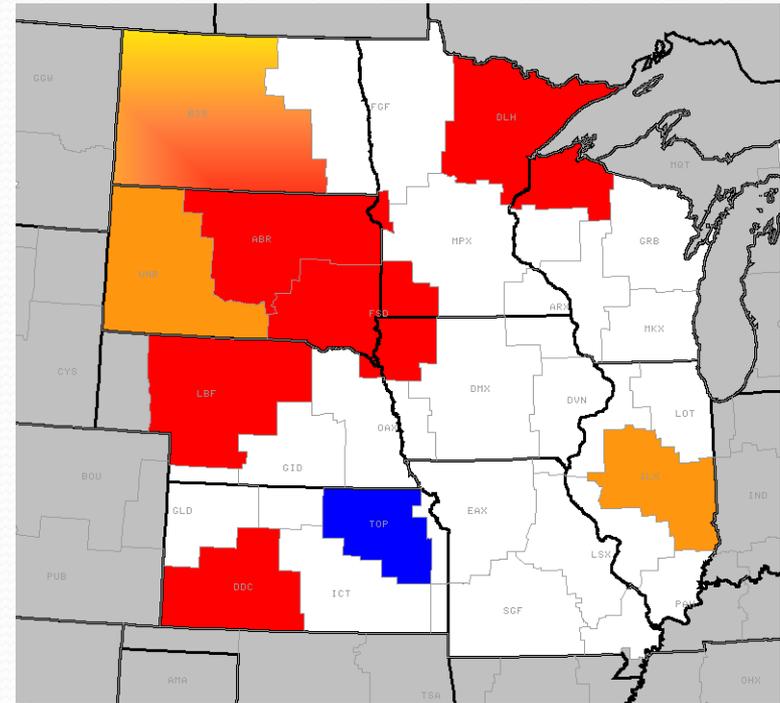
- Sample LCAT results for Minneapolis/St. Paul in Jan-Feb-Mar
- Significantly higher chance of temperatures like the warmest third of climatology and precipitation like the driest third of climatology during El Niño.

NWS Local Office Case Study

Use of historical data to link ENSO phases to tornado activity in upper Mid West.



Impact on tornado activity following a La Niña winter



Impact on tornado activity following an El Niño winter

reds=enhanced, blues=suppressed¹⁷

Local Office Examples of Climate Services

- **NWS forecasters use knowledge of potential El Niño impacts in their coverage areas**
- **Numerous media calls on relationship between ENSO and temperatures/precipitation, especially as El Niño coverage ramps up from CPC**
- **Local studies address the local impacts to respond to customer request**
- **Ongoing decision support services to U.S. Army Corps of Engineers – use local studies and outlooks to help in planning for potential for warm/cold or wet/dry conditions and guide their water release decisions (Omaha)**

Regional and Local Needs: Requests for Products/Model Output

1. Cyclone density anomalies: Monthly, Seasonal
2. 10m wind threshold probabilities and anomalies, Week 2, Week 3 and 4
3. Cyclone tracks/probabilities and anomalies, Week 2
4. 2m temp extremes threshold probabilities and anomalies, Week 2, Week 3 and 4
5. Convective potential threshold probabilities and anomalies, Week 2, Week 3 and 4
6. Precipitation, Temperature, and Wind Forecasts for Long-Range Mainstream River Forecasts

Thank you