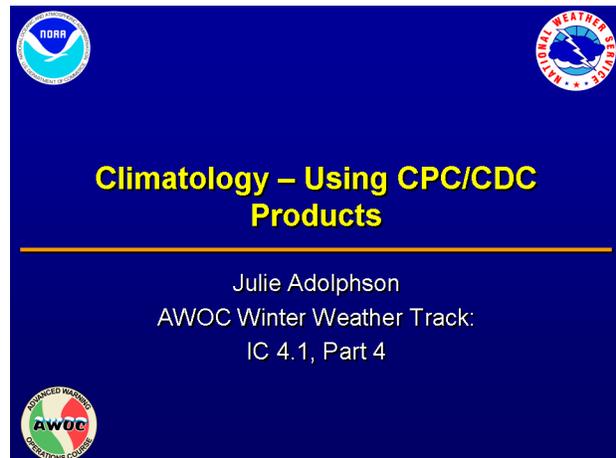

1. IC4.1 Part 4: Climatology – Using CPC/CDC Products

Instructor Notes: In this section, we will review Climate Prediction Center and Climate Diagnostics Center products that can help you identify the current and forecast state of the climate system in order to better anticipate slowly evolving winter time weather. We will look at web resources from these two organizations that will assist you in determining important features which may affect you in the medium ranges of the forecast timeline.

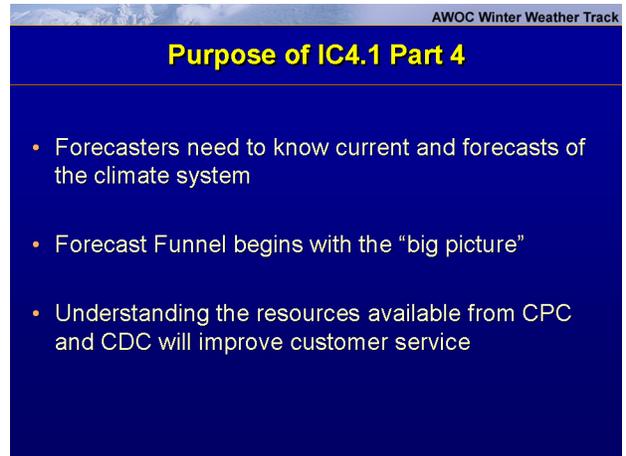
Student Notes:



2. Purpose of Lesson 1.4

Instructor Notes: In this lesson we will go through some of the products available from the Climate Prediction Center and Climate Diagnostics Center which specialize in monitoring and predicting slowly evolving patterns of large scale phenomenon. Using these centers will help you with the forecast funnel process of starting large and tapering down to smaller space and time scales. Finally, with the help of the CPC and CDC products, you'll be better able to explain the state and predictive nature of the climate system and therefore better serve your customers.

Student Notes:



AWOC Winter Weather Track

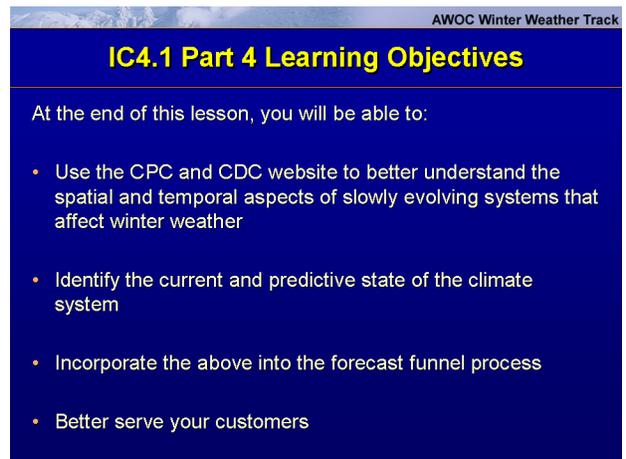
Purpose of IC4.1 Part 4

- Forecasters need to know current and forecasts of the climate system
- Forecast Funnel begins with the “big picture”
- Understanding the resources available from CPC and CDC will improve customer service

3. IC 4 Lesson 1.4 Learning Objectives

Instructor Notes: We will focus on helping you look at the “big picture” in space and time...to help you assess the potential for upcoming winter storms in your area of responsibility. You’ll be better able to use the web sites to see how these “slowly evolving” systems initiate and how they influence weather in the US. We’ll also see how these phenomena are monitored, and we’ll take a look at resources you can use to assess the state of the climate system and what the latest predictions are for the medium and longer ranges. You’ll then be able to incorporate this knowledge into your forecast funnel process. Of course, the ultimate goal of increasing your skills and knowledge is to better serve your customers.

Student Notes:



AWOC Winter Weather Track

IC4.1 Part 4 Learning Objectives

At the end of this lesson, you will be able to:

- Use the CPC and CDC website to better understand the spatial and temporal aspects of slowly evolving systems that affect winter weather
- Identify the current and predictive state of the climate system
- Incorporate the above into the forecast funnel process
- Better serve your customers

4. Performance Objectives

Instructor Notes: After this lesson you should be familiar the resources available on CPC and CDC web sites and be able to incorporate the information into the forecast funnel process. Further, you should be able to better answer questions from your customers on what to expect in the coming winter.

Student Notes:

AWOC Winter Weather Track

Most Popular Products

- [6-10 Day Outlook](#)
- [8-14 Day Outlook](#)
- [30 & 90-Day Outlooks \(color version\)](#)
- [United States Daily Data \(Most Recent Day\)](#)
- [United States Hazards Assessment](#)
- [El Niño Southern Oscillation \(ENSO\) Diagnostic Discussion](#)
- [United States Drought Assessment](#)
- [El Niño/La Niña Home](#)

7. US Hazards Assessment

Instructor Notes: This is an example of the weekly hazards assessment. This is popular with emergency managers and other officials. I want to point out that before the product is published, there is a teleconference call that is attended by at least some regional representatives. Also of interest is the side menu, which has useful links that are used to help hazard assessment forecasters diagnose the climate/weather and then create the product. You may want to bookmark this page.

Student Notes:

AWOC Winter Weather Track

US Hazards Assessment

- Weekly
- Overview
- Popular

8. ENSO Discussion

Instructor Notes: Updated Monthly, this ENSO discussion (at http://www.cpc.noaa.gov/products/analysis_monitoring/enso_advisory/index.html) has links to graphical depictions of data such as SST anomalies, OLR diagrams, etc.

Student Notes:

AWOC Winter Weather Track

ENSO Discussion

HOME > Expert Assessments > ENSO Diagnostic Discussion

EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

Issued by
CLIMATE PREDICTION CENTER/NCEP
February 9, 2006

Spanish Version (Español -- Courtesy of INFOCLIMA, Peru)

Synopsis: La Niña conditions are expected to continue during the next 3-6 months.

The patterns of anomalous ocean temperatures, atmospheric circulation and precipitation are consistent in indicating La Niña conditions in the tropical Pacific. During January negative equatorial SST anomalies less than -0.5°C were observed at most locations between the date line and the South American coast, while anomalies greater than +0.5°C were restricted to the region between Indonesia and 160°E (Fig. 1). Negative SST departures increased in magnitude in the Niño-4 and Niño-3.4 regions (Fig. 2), as the oceanic cold tongue strengthened in the central equatorial Pacific.

9. El Niño and La Niña Casa

Instructor Notes: Also from the “Most Popular Products Link” is the “El Niño and La Niña” home, where you will find a lot of useful links on the left hand side as well as the current SST and anomalies. You can however, click from the main page of CPC on the left hand side under: “Climate-Weather, El Niño/La Niña” and the next slide shows what that page looks like.

Student Notes:

AWOC Winter Weather Track

El Nino and La Nina Casa

El Niño La Niña Home

Forecasts
[Current U.S. Climate Outlook](#)

SST Forecasts
[Coupled Model](#)
[Consolidation](#)
[Summary](#)

Behind the Forecasts
[U.S. El Niño Forecast](#)
[Temperature](#)
[Precipitation](#)

Cold and Warm
[Weather Links](#)
[ENSO](#)

U.S. La Niña
[Forecast](#)
[Temperature](#)
[Precipitation](#)

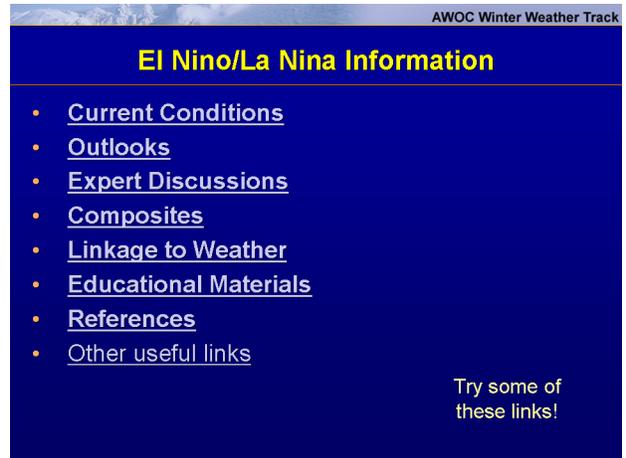
U.S. El Niño
[Forecast](#)
[Temperature](#)
[Precipitation](#)

U.S. El Niño State
[Forecast](#)
[Temperature](#)
[Precipitation](#)

10. El Niño/La Niña Information

Instructor Notes: Here is the CPC's main ENSO page with links to a wealth of information on ENSO for all ages. Many of CPC's links are formatted with these topic headings so that they are easily recalled. They contain current and forecast information on the topic referenced, as well as links to text products such as expert discussions, composite maps of the phenomena listed, and many other educational materials and references. (Note: These are found from <http://www.cpc.ncep.noaa.gov/products/outreach/other-mat.shtml>).

Student Notes:



AWOC Winter Weather Track

El Nino/La Nina Information

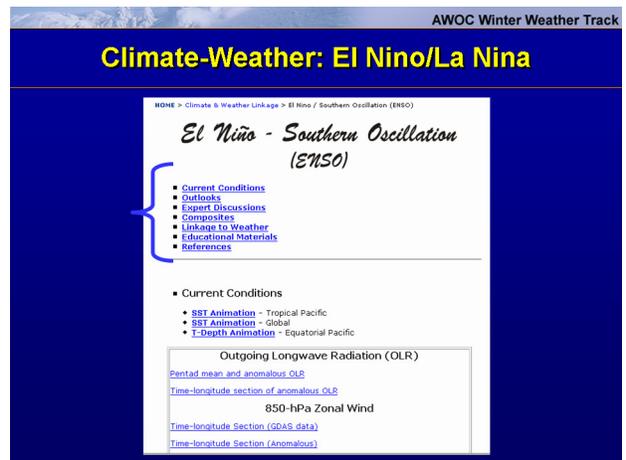
- [Current Conditions](#)
- [Outlooks](#)
- [Expert Discussions](#)
- [Composites](#)
- [Linkage to Weather](#)
- [Educational Materials](#)
- [References](#)
- [Other useful links](#)

Try some of these links!

11. Climate-Weather: El Niño/La Niña

Instructor Notes: As I mentioned in the previous slide, this ENSO page has a wealth of information. It scrolls for a couple of more pages of current conditions to help you assess the state of ENSO and answer questions from your customers.

Student Notes:



AWOC Winter Weather Track

Climate-Weather: El Nino/La Nina

HOME > Climate & Weather Linkage > El Niño / Southern Oscillation (ENSO)

El Niño - Southern Oscillation (ENSO)

- [Current Conditions](#)
- [Outlooks](#)
- [Expert Discussions](#)
- [Composites](#)
- [Linkage to Weather](#)
- [Educational Materials](#)
- [References](#)

• **Current Conditions**

- [SST Animation - Tropical Pacific](#)
- [SST Animation - Global](#)
- [T-Depth Animation - Equatorial Pacific](#)

Outgoing Longwave Radiation (OLR)

- [Pentad mean and anomalous OLR](#)
- [Time-longitude section of anomalous OLR](#)
- **850-hPa Zonal Wind**
- [Time-longitude Section \(GDAS data\)](#)
- [Time-longitude Section \(Anomalous\)](#)

12. These are Climate Monitoring “Products”

Instructor Notes: On the left hand side (the blue margin) of the CPC main page, you will find a listing called: "Monitoring and Data" and sub menu under that, which has "Index" and "Products" This slide shows what is under the "Products" tab. There are other useful links which are under the climate monitoring section (blue left side menu of CPC's home page). We'll take a look at the first and last links listed here, and you should browse the others at your convenience.

Student Notes:

AWOC Winter Weather Track

These are Climate Monitoring "Products"

- [Oceanic and Atmospheric Monitoring & Data](#)
- [United States Climate Data and Maps](#)
- [Global Climate Data & Maps](#)
- [Pacific Island Climate Data and Maps](#)
- [Monitoring Model Forecast Performance](#)

Try some of these links!

13. Oceanic and Atmospheric Monitoring of Data

Instructor Notes: In the "Monitoring" link you will find a host of information such as the Climate Diagnostic Bulletin including figures that support the bulletin. On the next two slides we'll see what else is available on this page for monitoring the state of the climate system.

Student Notes:

AWOC Winter Weather Track

Oceanic and Atmospheric Monitoring of Data

HOME > Monitoring and Data > Oceanic & Atmospheric Climate Data

Oceanic and Atmospheric Climate Data

The CPC compiles data on historic and current atmospheric and oceanic conditions in the oceans; data on climatic patterns such as the North Atlantic and Pacific Decadal Oscillations and stratospheric ozone and temperature data.

Tropical Pacific - The CPC monitors the tropical Pacific sea surface temperatures (SST) and winds as they play a major role in influencing global climate.

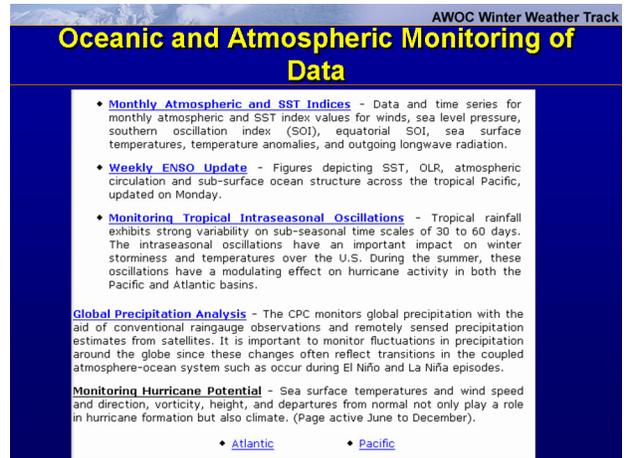
- **Climate Diagnostics Bulletin** - The Monthly Bulletin provides a technical discussion of current oceanic and atmospheric conditions in the tropical Pacific as well as the forecast together with the data on winds, sea surface temperatures, sea level pressures, water vapor and other variables.
- **Preliminary Climate Bulletin Figures** - Latest monthly Tropical Pacific sea surface temperatures, wind, and outgoing longwave radiation maps from the upcoming Climate Diagnostics Bulletin.



14. Oceanic and Atmospheric Monitoring of Data

Instructor Notes: You will also find monthly values listed here regarding atmospheric and oceanic indices...a weekly update on ENSO based on SST, OLR and other parameters, info on intra-seasonal oscillations (aka MJO), precip analysis, and hurricane potential.

Student Notes:



AWOC Winter Weather Track

Oceanic and Atmospheric Monitoring of Data

- **Monthly Atmospheric and SST Indices** - Data and time series for monthly atmospheric and SST index values for winds, sea level pressure, southern oscillation index (SOI), equatorial SOI, sea surface temperatures, temperature anomalies, and outgoing longwave radiation.
- **Weekly ENSO Update** - Figures depicting SST, OLR, atmospheric circulation and sub-surface ocean structure across the tropical Pacific, updated on Monday.
- **Monitoring Tropical Intraseasonal Oscillations** - Tropical rainfall exhibits strong variability on sub-seasonal time scales of 30 to 60 days. The intraseasonal oscillations have an important impact on winter storminess and temperatures over the U.S. During the summer, these oscillations have a modulating effect on hurricane activity in both the Pacific and Atlantic basins.

Global Precipitation Analysis - The CPC monitors global precipitation with the aid of conventional raingauge observations and remotely sensed precipitation estimates from satellites. It is important to monitor fluctuations in precipitation around the globe since these changes often reflect transitions in the coupled atmosphere-ocean system such as occur during El Niño and La Niña episodes.

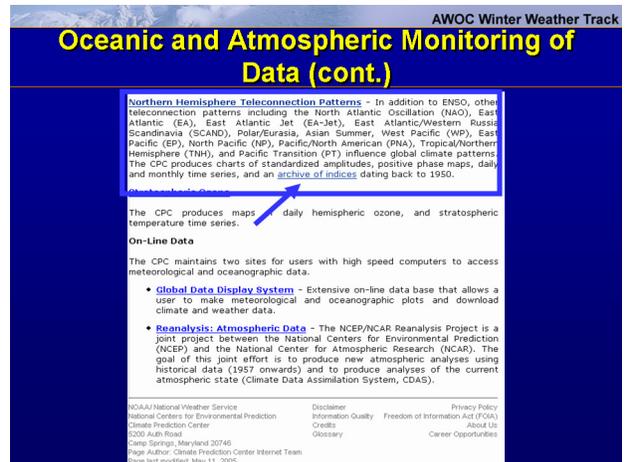
Monitoring Hurricane Potential - Sea surface temperatures and wind speed and direction, vorticity, height, and departures from normal not only play a role in hurricane formation but also climate. (Page active June to December).

- [Atlantic](#)
- [Pacific](#)

15. Oceanic and Atmospheric Monitoring of Data (Cont.)

Instructor Notes: This is the end of the monitoring data page...you have to scroll down to see that Teleconnections are linked here including some indices archived. You may want to engage in some correlation studies using this page. Unlike the left hand menu link (which only shows the indices and a link to individual teleconnections) this link also has information on how the indices are calculated.

Student Notes:



AWOC Winter Weather Track

Oceanic and Atmospheric Monitoring of Data (cont.)

Northern Hemisphere Teleconnection Patterns - In addition to ENSO, other teleconnection patterns including the North Atlantic Oscillation (NAO), East Atlantic (EA), East Atlantic Jet (EA-Jet), East Atlantic/Western Russia Scandinavia (SCAND), Polar/Eurasia, Asian Summer, West Pacific (WP), East Pacific (EP), North Pacific (NP), Pacific/North American (PNA), Tropical/Northern Hemisphere (TNH), and Pacific Transition (PT) influence global climate patterns. The CPC produces charts of standardized amplitudes, positive phase maps, daily and monthly time series, and an [archive of indices](#) dating back to 1950.

Global Data Display System - Extensive on-line data base that allows a user to make meteorological and oceanographic plots and download climate and weather data.

Reanalysis: Atmospheric Data - The NCEP/NCAR Reanalysis Project is a joint project between the National Centers for Environmental Prediction (NCEP) and the National Center for Atmospheric Research (NCAR). The goal of this joint effort is to produce new atmospheric analyses using historical data (1957 onwards) and to produce analyses of the current atmospheric state (Climate Data Assimilation System, CDAS).

NCEP/National Weather Service
National Centers for Environmental Prediction
Climate Prediction Center
5200 Auth Road
College Park, Maryland 20740
Page Author: Climate Prediction Center Internet Team
Page last modified: May 11, 2005

Disclaimer
Information Quality
Freedom of Information Act (FOIA)
Glossary
Career Opportunities

16. Monitoring Forecast Performance

Instructor Notes: Here is the “Last Link” on the Monitoring and Data “Products” list: “Monitoring Forecast Performance.” Here you have the opportunity to review skill scores of various forecasts.

Student Notes:

AWOC Winter Weather Track

Monitoring Forecast Performance

Monitoring Model Forecast Performance

The Climate Prediction Center (CPC) monitors the NWS/NCEP Medium Range Forecast (MRF) model forecasts, multiple member ensemble runs, and experimental parallel model runs. This monitoring activity is intended to help the CPC prediction efforts by providing the CPC forecasters with information about where and under what regimes the models perform well and not so well. In addition to monitoring daily forecasts, 7-day, 15-day, and 20-day averages of the 1-day, 5-day, 10-day, and 15-day forecasts are presented for each of the last 30 days to monitor how the models perform during regime transitions.

- [D+8 and Week 2 Forecasts](#)
- [D+8 and Week 2 Forecast Skill Scores](#)
- [MRF Forecast Maps and Forecast Errors](#)

The CPC also monitors the Climate Data Assimilation System (CDAS) and Global Data Assimilation System (GDAS) analyses and compares selected fields with independent observations to assess the accuracy of these analysis systems. CDAS is relied upon heavily at the CPC for monthly climate monitoring activities. GDAS provides the primary initial conditions for running the NCEP MRF weather forecasting model and is evaluated in conjunction with CDAS. Such evaluations provide information about improvements in the operational weather prediction model analysis (GDAS) relative to CDAS. By monitoring and noting improvements in GDAS, the climate community can make informed decisions about when to rerun CDAS/Reanalysis using an updated analysis system that incorporates substantial improvements in the GDAS.

- [Monthly CDAS and GDAS Evaluations](#)

17. Expert Assessments – ENSO Update

Instructor Notes: You can download a weekly ENSO update from the “Expert Assessments – Products” list on the left hand side of the CPC main menu. There are many links on this page, we’ll talk mainly about the above list for the Weekly ENSO update, which is really a PowerPoint presentation which has current conditions, forecasts and some other useful background information.

Student Notes:

AWOC Winter Weather Track

Expert Assessments – ENSO Update

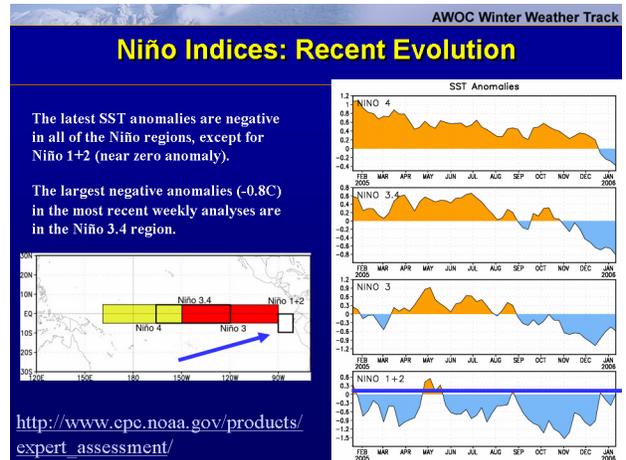
- Weekly Powerpoint slides
- Includes current conditions
- Includes Forecasts of ONI
- Sometimes background/educational material

http://www.cpc.ncep.noaa.gov/products/expert_assessment

18. Niño Indices: Recent Evolution

Instructor Notes: Here is an example of material you will find in the "weekly update" expert assessment we talked about on the previous slide. The diagram on the left shows areas in the tropical Pacific, called Niño regions which are used by scientists to identify the state of ENSO. On the right is a plot of these Niño regions' SST anomalies. The orange areas are above normal SSTs, while the blue shows below normal temperatures. The plot is from Feb 2005 to January 2006. Now let's move on to a discussion of other climate products found on CPC/CDC, in other words, let's talk again about monitoring/predicting MJO activity.

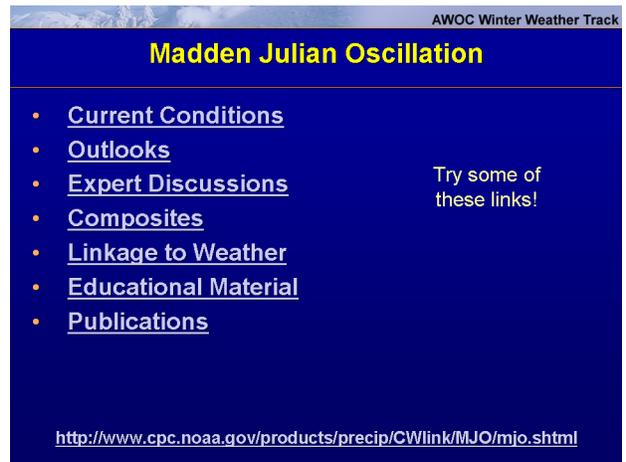
Student Notes:



19. Madden Julian Oscillation

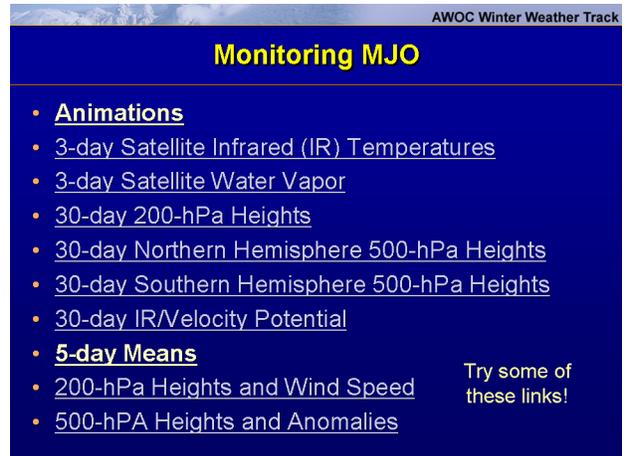
Instructor Notes: Underneath the “ENSO” listing on the left hand side of the “Climate-Weather Link” you will find “MJO”. If you click on that, you’ll get this list plus other information on the current and predicted state of the MJO. For more information on the MJO, see IC4 sub-lesson 1.2.

Student Notes:



20. Monitoring MJO

Instructor Notes: The next two slides have many links to data which scientists use to monitor the MJO. Take a few minutes to look over the list and consider more in-depth viewing of this data when you want to analyze the current state of the atmosphere and in particular how the tropics and extratropics oceans/atmosphere are behaving; this could be part of your forecast funnel in the winter to assess/predict the potential for large scale slowly evolving long wave patterns to set up and affect the development and track of synoptic systems.

Student Notes:


AWOC Winter Weather Track

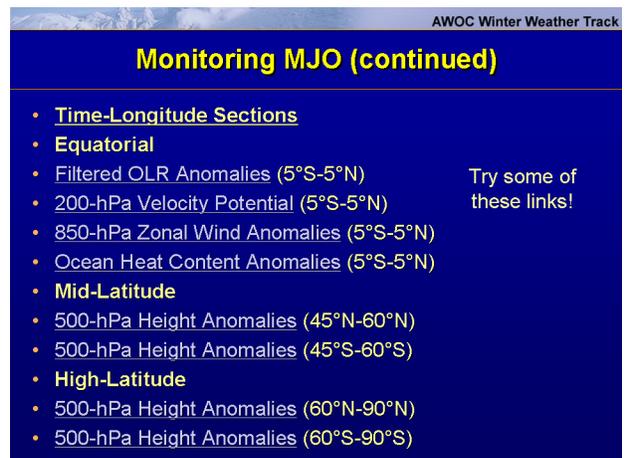
Monitoring MJO

- [Animations](#)
- [3-day Satellite Infrared \(IR\) Temperatures](#)
- [3-day Satellite Water Vapor](#)
- [30-day 200-hPa Heights](#)
- [30-day Northern Hemisphere 500-hPa Heights](#)
- [30-day Southern Hemisphere 500-hPa Heights](#)
- [30-day IR/Velocity Potential](#)
- [5-day Means](#)
- [200-hPa Heights and Wind Speed](#)
- [500-hPa Heights and Anomalies](#)

Try some of these links!

21. Monitoring MJO (continued)

Instructor Notes: As mentioned in the previous slide you should spend some time reviewing the data to assess the current state of the MJO. In particular, these links contain plots of time series of Outgoing Longwave Radiation, winds (including anomalies), and heights of the 500 mb pressure surface (also including anomalies), all of which are tools you can use to determine the MJO activity.

Student Notes:


AWOC Winter Weather Track

Monitoring MJO (continued)

- [Time-Longitude Sections](#)
- [Equatorial](#)
- [Filtered OLR Anomalies \(5°S-5°N\)](#)
- [200-hPa Velocity Potential \(5°S-5°N\)](#)
- [850-hPa Zonal Wind Anomalies \(5°S-5°N\)](#)
- [Ocean Heat Content Anomalies \(5°S-5°N\)](#)
- [Mid-Latitude](#)
- [500-hPa Height Anomalies \(45°N-60°N\)](#)
- [500-hPa Height Anomalies \(45°S-60°S\)](#)
- [High-Latitude](#)
- [500-hPa Height Anomalies \(60°N-90°N\)](#)
- [500-hPa Height Anomalies \(60°S-90°S\)](#)

Try some of these links!

22. CDC and Other MJO Resources

Instructor Notes: Here is a list of some of the resources you can use to find out more about the MJO and forecasting its effects. The first one is a "blog" or comment(s) by the Science and Operations Officer in Dodge City, KS, Ed Berry. Ed updates this "discussion" whenever something of interest is occurring in the climate system, in particular with regard to the MJO*. The rest are either CPC or CDC links to useful information. The next slide offers information on an "Interactive Tool" that you may find useful in your climate studies and outreach services.

Instructor Notes:

Instructor Notes: *Note: Ed Berry's log is an unofficial climate related product. Refer to the CPC for all official climate related forecast and diagnostic products disseminated by NOAA.

Student Notes:

AWOC Winter Weather Track

CDC and Other MJO Resources

- <http://weatherclimatelink.blogspot.com/>
- <http://www.cdc.noaa.gov/MJO/> Try some of these links!
- <http://www.cdc.noaa.gov/MJO/Links/>
- <http://www.cpc.noaa.gov/products/intraseasonal/index.html>
- <http://www.cdc.noaa.gov/spotlight/08012001/index.html>

23. Interactive MJO Forecasts from CDC

Instructor Notes: Here is a list of some of the resources you can use to find out more about the MJO and forecasting its effects. The first one is a "blog" or comment(s) by the Science and Operations Officer in Dodge City, KS, Ed Berry. Ed updates this "discussion" whenever something of interest is occurring in the climate system, in particular with regard to the MJO*. The rest are either CPC or CDC links to useful information. The next slide offers information on an "Interactive Tool" that you may find useful in your climate studies and outreach services. *Note: Ed Berry's log is an unofficial climate related product. Refer to the CPC for all official climate related forecast and diagnostic products disseminated by NOAA.

Student Notes:

AWOC Winter Weather Track

Interactive MJO Forecasts from CDC

Climate Diagnostics Center

Jump to: Map Room Weather Products Search for: Go!

You are at: CDC Home MJO Forecasts

Home Search Site Index Privacy policy Disclaimer Contact us

As of October 1, 2005, the NOAA Climate Diagnostics Center has merged into the Earth System Research Laboratory (ESRL) as part of the Physical Sciences Division.

Experimental MJO Forecasts

MJO Forecasts: Form page

Product type: Mean Fields Total Anomaly Fields MJO Anomaly Fields Homologies Verifications Climate Discussions

The purpose of this page is to be able to compare plots or pull up single plots without going through the longer interface. Currently, you will get a single plot unless you choose multiple options from either "models" or "times". You should only choose multiple options from one of these categories. Some possible options will not have a plot.

Select variables

Type of Output: Total Anomaly Variable: 500mb geopotential height

CDC Ensemble Reforecast
 NCEP Ensemble Forecast
 LIM Forecast
 WHEELER Forecast
 Empirical Wave Propagation Fcst
 POAMA Forecast

Model: Choose 1 or more

Verification Time: Choose 1 or more, up to 4

Initial Condition
 1 week
 2 week

24. Other Interactive Forecasts

Instructor Notes: Here is another one of CDC's interactive pages. On this particular page, you can plot a time series for a given station, parameter, and level. These types of analyses can be used to depict expected conditions for different stages of the MJO, for example. Again, you might find these pages useful in conducting local studies or answering questions posed by your customers, particularly for questions regarding effects of the state of the climate system on seasonal forecasts.

Student Notes:

AWOC Winter Weather Track

Other Interactive Forecasts

- <http://www.cdc.noaa.gov/Timeseries/Daily/>

Climate Diagnostics Center

Jump to: Map Room Weather Products Search for:

Home Search Site Index Privacy Disclaimer Contact us

Get Dates from daily time series

The purpose of this page is to select dates from various climate time series where the value satisfies a specified criteria. Use the [web page](#) in order to investigate different variables at various lead/lags associated with the phenomenon.

Select variable level or pregenerated time series. Page will obtain dates that correspond to the selection to a set or range of years and a particular season. The daily composite is for 200 days.

Which pregenerated time series? MJO

OR: Choose a Station? Choose a Variable? Maximum Temperature Station List

OR: From the reanalysis? Choose a Variable? None Choose a Level? 1000mb Latitude?

Compositing Criteria

25. Other CDC Climate Products

Instructor Notes: The Climate Diagnostics Center offers the products listed here in addition to many others. You should spend some time visiting these pages and you may want to bookmark some in your favorite browser.

Student Notes:

AWOC Winter Weather Track

Other CDC Climate Products

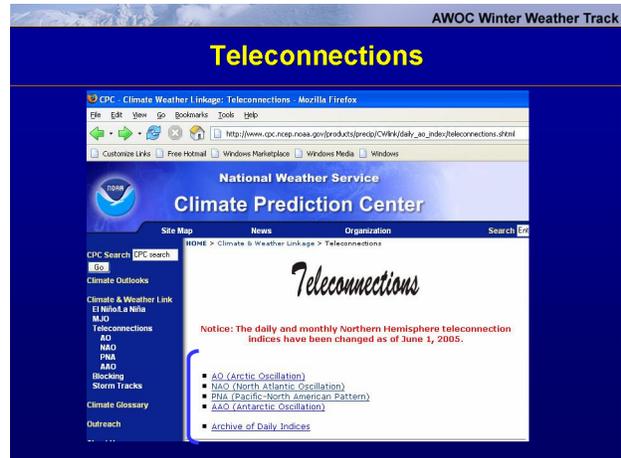
- Climate Products
- Atmospheric Angular Momentum (FNL)
 - Global & Zonal AAM Budget
- Global Windfield Mode
- Sea Surface Temperature
- Outgoing Longwave Radiation (OLR)
- Coherent Tropical OLR Modes
- Global Circulation: Means & Anomalies
 - Operational Data - Daily Plots or Animations
 - Reanalysis Data - Daily Plots or Animations
 - Quick Menu - links to all
- Realtime TOGA-TAO Graphics Page
- MEI (Multivariate ENSO Index)
- El Niño Animations
- CDC's Experimental Seasonal Forecast

Try some of these links!

26. Teleconnections

Instructor Notes: As with the other climate phenomena such as ENSO and the MJO, teleconnections have a section that shows current teleconnection indices, and other information such as education materials. Here's what the top level page looks like, and the link for entering the CPC teleconnection area is given at the top of this slide. (note: this page is found from http://www.cpc.ncep.noaa.gov/products/precip/CWlink/daily_ao_index/teleconnections.shtml)

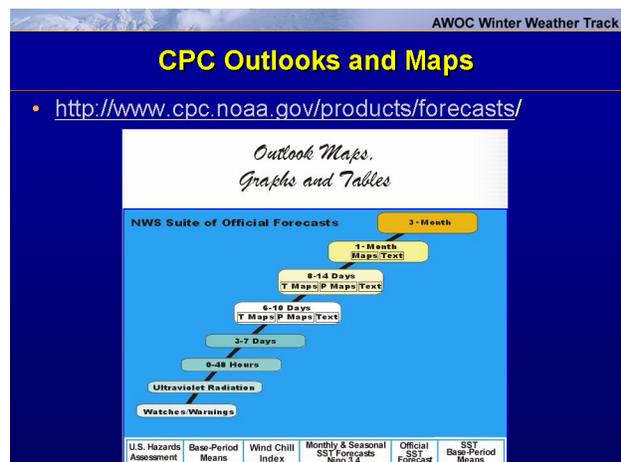
Student Notes:



27. CPC Outlooks and Maps

Instructor Notes: This is a popular page from CPC as it ties all spatial and temporal product in the NWS suite. It makes it easy to go to any forecast level that you are interested in at any given time.

Student Notes:



28. Expert Assessments

Instructor Notes: You will find this list of "Discussions" by clicking on the Expert Assessments, and then "Products" on the left hand side of the main CPC page. Scroll down past the previous mentioned items (hazards assessment and ENSO weekly bulletin) to find these other categories. The CPC issues the ENSO Diagnostic Discussion around the middle of the month. The discussion addresses the current oceanic and atmospheric conditions in the Pacific and the seasonal climate outlook for the following one to three seasons. An online archive of the ENSO Diagnostic Discussions (since 2001) is also available. Also on this list, the CPC posts the Winter Outlook in October, which reviews climate influences on the upcoming winter season and the likely weather impacts on various regions of the United States. Also on this page is a set of "bulletins" like the crop bulletin and the "extratropical highlights" which are useful for explaining what has happened over the previous month. http://www.cpc.ncep.noaa.gov/products/expert_assessment/

Student Notes:

AWOC Winter Weather Track

Expert Assessments

- U.S. Drought Assessment
- U.S. Degree Days Assessment
- Seasonal, Annual and Special Climate Assessments
- Discussions (includes Monthly ENSO Diagnostic)
- Special Diagnostics
- Bulletins

Expert Assessments

Climate Prediction Center (CPC) meteorologists and oceanographers review climate and weather observations and data along with model results; assess their meaning, significance, and current status; and likely future climate impacts. Their findings are issued as assessments, advisories, special outlook discussions, and bulletins.

Assessments

Assessments are reviews of current weather and climate information issued on a routine basis.

- **Hazards Assessment**

From Tuesday-Friday, the CPC issues an assessment of weather- and climate-related hazards to the United States for the next three to fourteen days.

- [ENSO Assessment: Weekly Update](#)
- [Weekly Update](#)

29. Forecasts with Discussions

Instructor Notes: Monthly and seasonal forecasts are updated each month. The monthly forecast is issued on the last day of each month. The seasonal forecast is published after the CPC forecaster has a conference call with many partners including IRI and CDC. The forecast is released at around 8:30am each month on the Thursday that is closest to, but not before the 15th of the month. The "terciles" mean that the forecast is compared to three classes of conditions: those that were above the average, those near the average, and those below. If you take all of the observations in a 30 year period, you can divide the probabilities into these categories. If you see EC on the map, it means that you have a 33% chance of having above normal, near normal, or below normal conditions. Note that if you have an above (below) normal shaded area, you must subtract the amount of the shading that is above 33% from the opposite, and leave the near normal alone all the way down to 3%. For example, if the above normal contour is 40%, then you have a 33% chance of near normal, and a 26% chance of below normal conditions com-

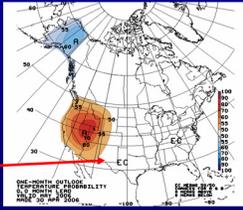
pared to the average. CPC is currently experimenting with a 2-class system. The purpose for making these versions of the outlooks available is to afford users an opportunity to refer the outlooks to a more familiar two outcome system, where odds equal or differ from 50-50. These maps are representations of the official, 3-category outlooks and may contain less information than the Official maps.

Student Notes:

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Forecasts with Discussions

- CPC produces 13 forecasts each month
- These forecasts go out for the next year
- Temperature and Precipitation
- Based on 30-year normal
- Depicted in terciles; also experimental 2 class
 - http://www.cpc.ncep.noaa.gov/products/predictions/long_range/two_class.html



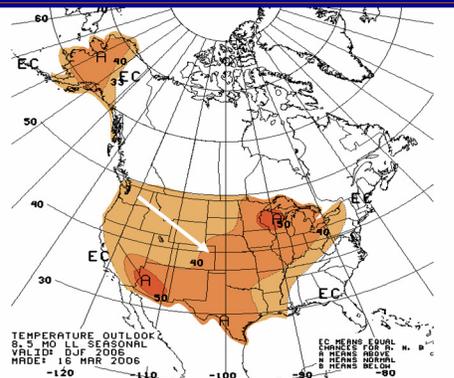
30. Traditional Terciles

Instructor Notes: Here is an example of the temperature forecast for December, January, and February (or DJF) which was made on March 16th 2006. This is the traditional tercile forecast. In other words, let's look at the midwestern US, where there is a 40- contour. This means that there is a 40% chance of above normal temperatures, a 33% chance of near normal temperatures, and a 26% chance of below normal temperatures. Now let's take a look at the experimental 2-class system.

Student Notes:

AWOC Winter Weather Track

Traditional Terciles



- 40% chance of above normal temperatures
- 33% chance of near normal temps
- 26% chance of below normal temps

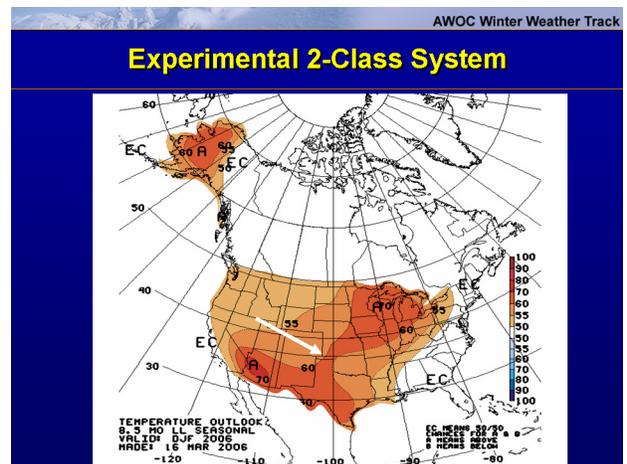
TEMPERATURE OUTLOOK:
8-9 MO LL SEASONAL
VALID: DJF 2006
MADE: 16 MAR 2006

EC: MEANS EQUAL
A: MEANS ABOVE
B: MEANS BELOW

31. Experimental 2-Class System

Instructor Notes: This is the experimental 2-class system, in which the comparison is made on a 50-50 percent chance. In other words, look at the same area as we did in the previous slide. Notice that we now have a 60-contour. This means that we have a 60 percent chance of above normal and a 40 percent chance of below normal. You might be wondering about the “normal” category. Let’s use an example to illustrate what happens in this situation. Say, for example, the normal temperature for this season is 50 deg F. In this two class system, what is the chance of the temperature being 50 deg F? Did you guess zero? If you did, you’d be right, because the probability of any single value is zero. If you find this confusing, you may want to discuss it with your SOO or your climate services focal point.

Student Notes:



32. Seasonal Forecasts

Instructor Notes: Here is a list of the seasonal forecasts made by CPC. You get to this page by clicking on the "Outlooks" then "Products" then the top choice, called "3-month". The forecasts listed here are often referred to as "leads" meaning the time the forecast is valid for an equivalent time as the lead. For example, the 1.5 month outlook would be called the 1.5 month "lead". This list also contains links to skills for each lead, normals for some first order stations, and Probability of Exceedence plots for temperature and precipitation. (Note: the website is from <http://www.cpc.ncep.noaa.gov/products/predictions/90day>)

Student Notes:

The screenshot shows the 'Seasonal Forecasts' page from the AWOC Winter Weather Track website. The main heading is 'Three-Month Outlooks' with a sub-heading 'OFFICIAL Forecasts'. Below this, there are two links: 'UPDATED MONTHLY FORECAST SERVICE CHANGE NOTICE' and 'EXPERIMENTAL TWO-CLASS SEASONAL FORECASTS'. A table titled 'OUTLOOKS (Click title for maps)' is displayed, showing various forecast periods and their skill levels. The table has columns for 'OUTLOOKS (Click title for maps)', 'SKILL (Click HERE for explanation)', 'Norm', and 'Prob of Exceed'. The 'Prob of Exceed' column is further divided into 'T' and 'P' sub-columns. The table lists several forecast periods, including '0.5 Month Outlook for Feb-Mar-Apr 2006', '1.5 Month Outlook for Mar-Apr-May 2006', '2.5 Month Outlook for Apr-May-Jun 2006', '3.5 Month Outlook for May-Jun-Jul 2006', '4.5 Month Outlook for Jun-Jul-Aug 2006', '5.5 Month Outlook for Jul-Aug-Sep 2006', '6.5 Month Outlook for Aug-Sep-Oct 2006', '7.5 Month Outlook for Sep-Oct-Nov 2006', '8.5 Month Outlook for Oct-Nov-Dec 2006', '9.5 Month Outlook for Nov-Dec-Jan 2006-07', '10.5 Month Outlook for Dec-Jan-Feb 2006-07', '11.5 Month Outlook for Jan-Feb-Mar 2007', and '12.5 Month Outlook for Feb-Mar-Apr 2007'. The 'Skill' column shows values like 'x', 'y', 'z', and 'w'. The 'Norm' column shows 'x' or 'y'. The 'Prob of Exceed' column shows 'T' or 'P'.

33. Summary

Instructor Notes: The CPC and CDC have a wealth of information, including the current and forecast states of the climate system, and information regarding many of the phenomena we covered in the 3 other sub-lessons in this instructional component 4, lesson 1. There have been several teletraining sessions which highlight the medium and long range forecasting techniques and also how to navigate the CPC web page. If you weren't able to attend these sessions, speak with your SOO who can show you how to view teletraining in a "local mode." Also, consider asking your climate services focal point for more information, particularly if they have attended the climate services workshops, such as the Climate Variability or the Climate Operations Courses. I hope you will take some time to browse these websites and consider engaging in a local study climate and its variability in your area.

Student Notes:

The screenshot shows the 'Summary' page from the AWOC Winter Weather Track website. The page has a blue background with a yellow header that says 'Summary'. Below the header, there are three bullet points:

- CPC and CDC have a wealth of information
- ENSO, MJO, Teleconnections
- Other sources of information

34. CPC Quiz

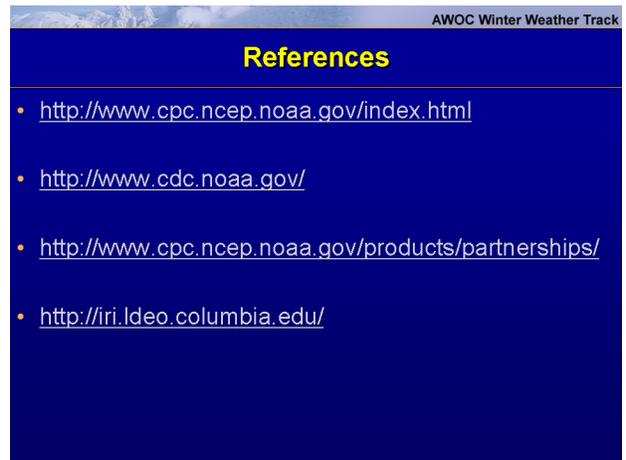
Instructor Notes: Take a few moments to complete this quiz.

Student Notes:

35. References

Instructor Notes: Here are some links...the first two are the main pages for CPC and CDC. The third is a link which takes you to partners' web sites from CPC's page. The final link is the International Research Institute (IRI) who closely coordinates with CPC and also models the global climate system and issues climate products.

Student Notes:



AWOC Winter Weather Track

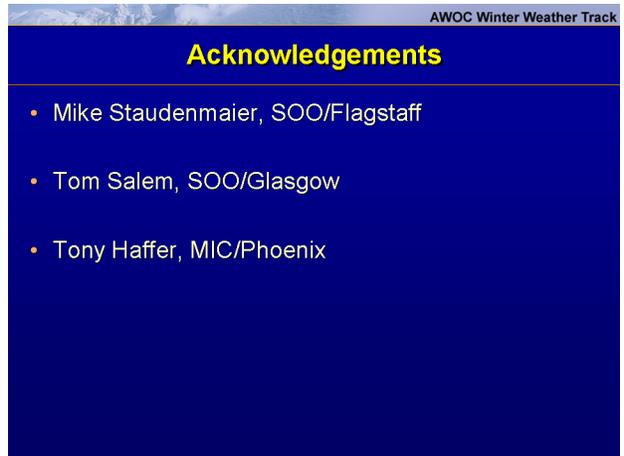
References

- <http://www.cpc.ncep.noaa.gov/index.html>
- <http://www.cdc.noaa.gov/>
- <http://www.cpc.ncep.noaa.gov/products/partnerships/>
- <http://iri.ldeo.columbia.edu/>

36. Acknowledgements

Instructor Notes: I'd like to thank the following individuals for their support in the creation of this lesson: Mike Staudenmaier, SOO/Flagstaff Tom Salem, SOO/Glasgow Tony Haffer, MIC/Phoenix

Student Notes:



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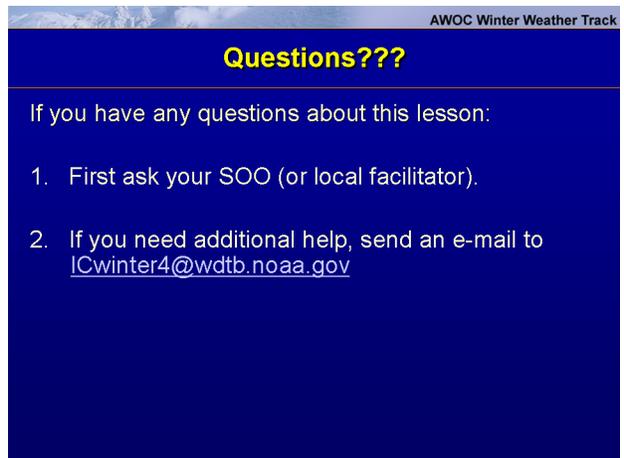
Acknowledgements

- Mike Staudenmaier, SOO/Flagstaff
- Tom Salem, SOO/Glasgow
- Tony Haffer, MIC/Phoenix

37. Questions???

Instructor Notes: After going through this lesson if you have any questions, first ask your SOO. Your SOO is your local facilitator and should be able to help answer many questions. If you need additional info from what your SOO provided, send an E-mail to the address on the slide. This address sends the message to all the instructors involved with this IC. Our answer will be CC'd to your SOO so that they can answer any similar questions that come up in the future. We may also consider the question and answer for our FAQ page.

Student Notes:



AWOC Winter Weather Track

Questions???

If you have any questions about this lesson:

1. First ask your SOO (or local facilitator).
2. If you need additional help, send an e-mail to ICwinter4@wdtb.noaa.gov