

Winter Storms



National Weather Service
Baltimore/Washington Forecast Office

Today's Topics

- Reporting Procedures
- Measuring Snowfall
- Winter Storm Ingredients
- Winter Hazards
- NWS Products & Services
- 2014 Case Study
- Preparedness & Safety



Reporting Criteria for Winter Storms



Snow Accumulation

Every 2 inches, or any accumulation not reflected
in the forecast

Reporting Criteria for Winter Storms

Ice on a Car Window



Photo Courtesy of Ray Martin

Sleet on a Car



Photo Courtesy of Ray Martin

Ice Accumulation - Any amount
Make sure to differentiate between sleet
accumulation and ice accumulation.

Snowfall Reporting & Measurement



Ideally, a snowboard is the best measuring surface:

- 2 foot square piece of plywood painted white
- Place flags/markers near the board to help locate under snow

If you clear your board:

- No more than every 6 hours!
- Replace board on top of snow, not back in the hole

Reporting & Measurement

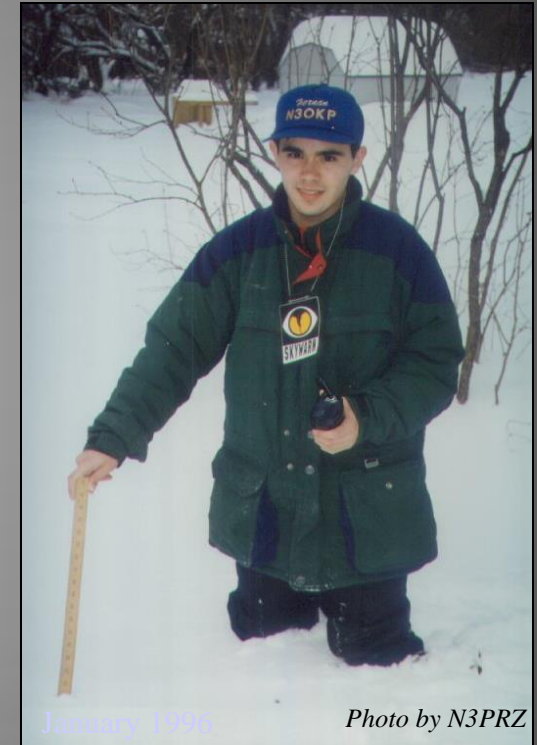


- **Report Snowfall**

- First two inches
- Every two inches or so (guideline)
- **TOTAL SNOWFALL**
- Is it measured or estimated?

- **Report Ice Accumulation / Glaze – any!**

- Measure off surface (railing, branch, etc.)
- Thickness (usually in fractions of an inch)



- **Report a change in precipitation type (Ex. Snow to rain, etc.)**

Reporting & Measurement

You can also measure snow on an outdoor wooden table/deck

If drifting is a problem:

- Take several measurements
- Discount the very high & low
- Then, take an average



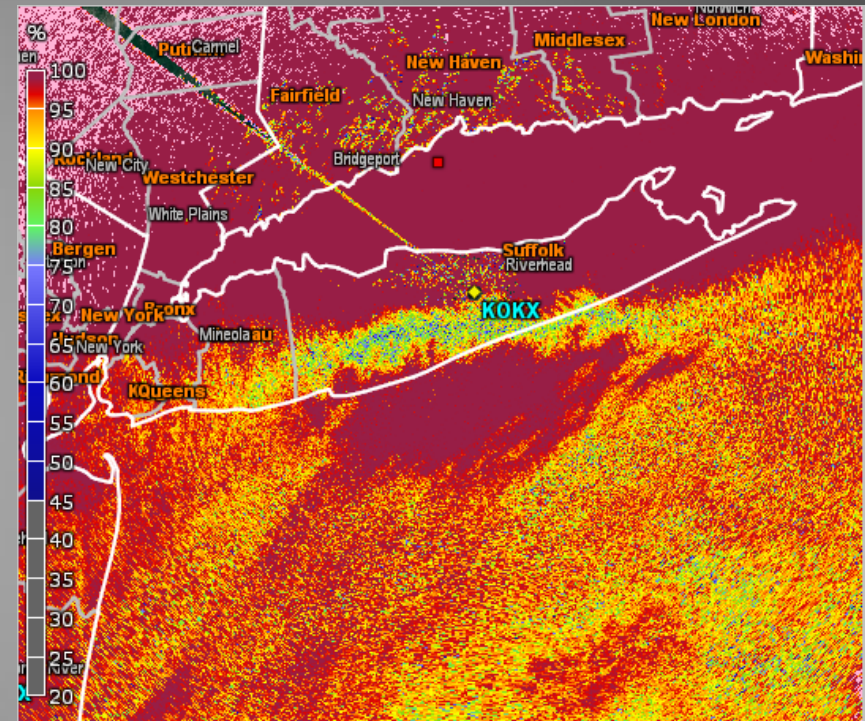
Use these rules, and do your best.

In windy snows, measuring snow is challenging

Snowfall Reporting

- Changing Precipitation types
 - Call in when a significant change has occurred, especially if not reflected in the current forecast

Dual Pol radar helps us better understand winter precipitation types. However, spotters are needed to confirm what we see on the radar.



Correlation Coefficient
Can you find the rain/snow line?

How to Report Information

1. Call NWS Sterling directly if weather is imminent:
(800) 253-7091 or **(703)996-2200**
2. You can email your reports to:
lwz-report@noaa.gov
3. Fill out form for snow/ice reports
4. Contact local Emergency Management
5. Amateur Radio (when activated)



NEW! Snow

1. NEW for this Winter

2. Fill out Snow/Ice Report

<http://ht.ly/gVpw4>

3. Reports automatically added to our database

<http://ht.ly/gVpw305Nchl>

Submit a Snow and Ice Storm Report

Trained Skywarn Spotters may use this form to submit a storm report if the snow/ice measurements were taken at the address on file with NWS Baltimore/Washington Forecast Office. If measurement was NOT taken at a location on file with us, please e-mail your reports to lw-report@noaa.gov.

* Required

Skywarn ID *

Contact lw-report@noaa.gov if you do not know your Skywarn Spotter ID.

Your answer

Observation Date and Time *

Eastern

MM DD YYYY Time

/ / 2016 : AM

Snow Amount *

In Inches

Your answer

Ice Amount *

In inches

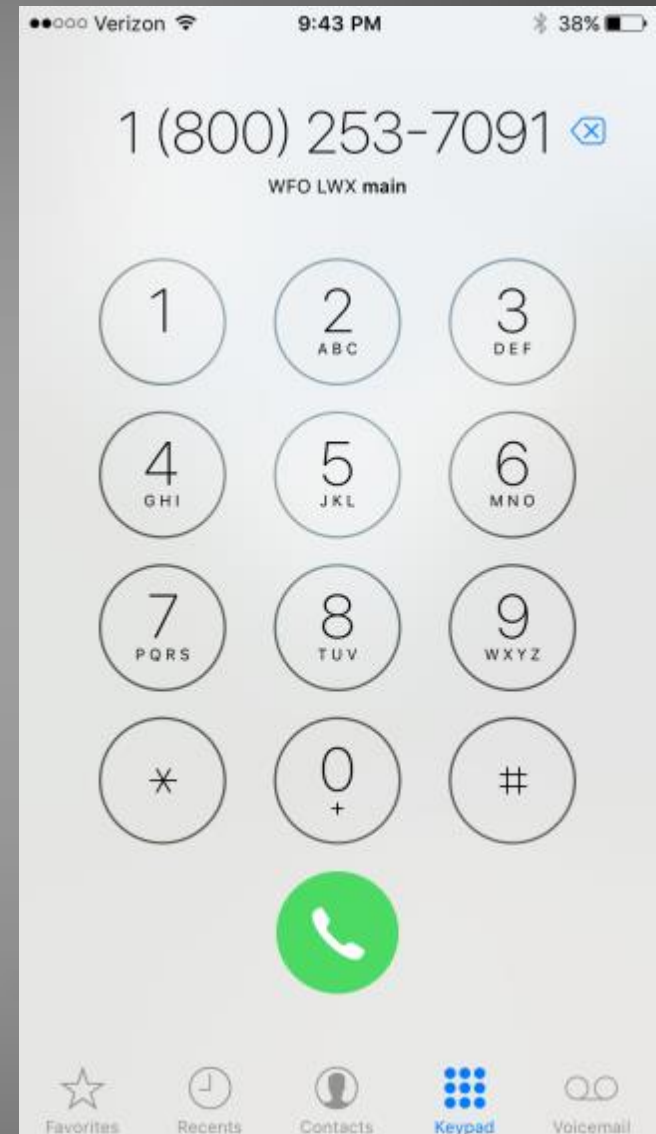
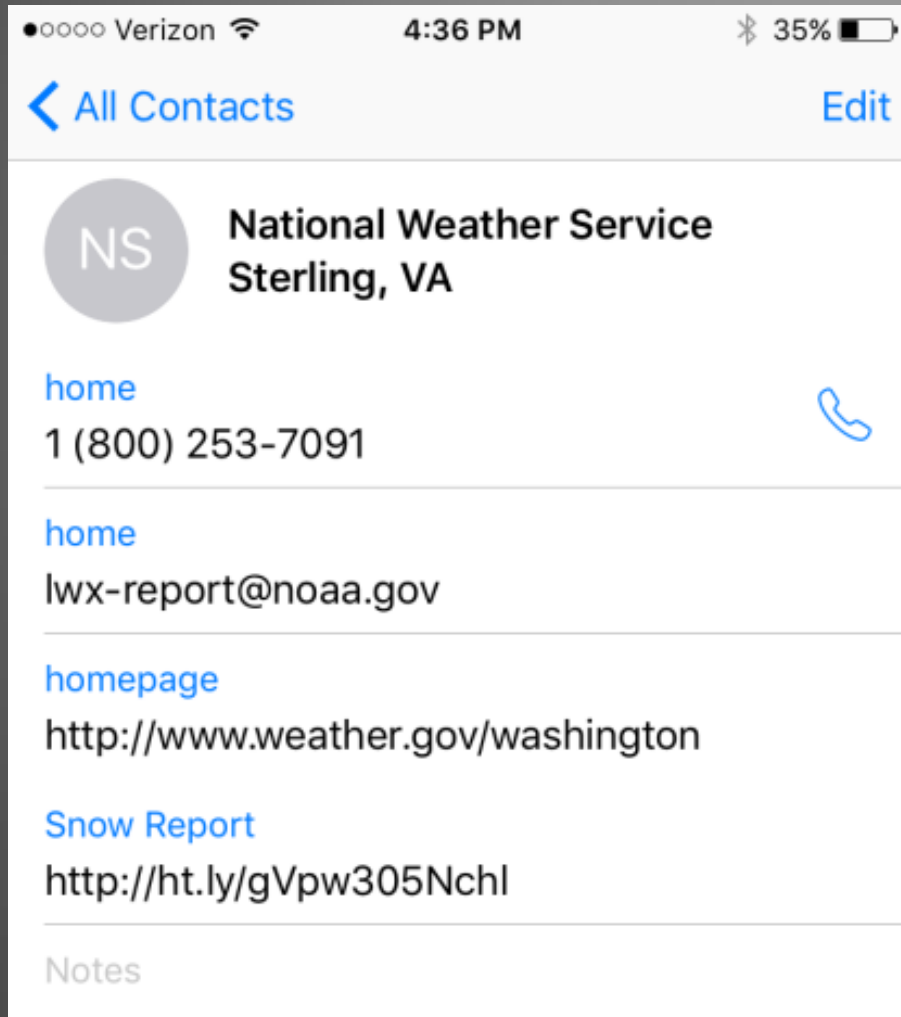
Your answer

Remarks

Your answer

Contact Information

Let's take a minute and input this information into your cell phone.



Mid-Atlantic Winters

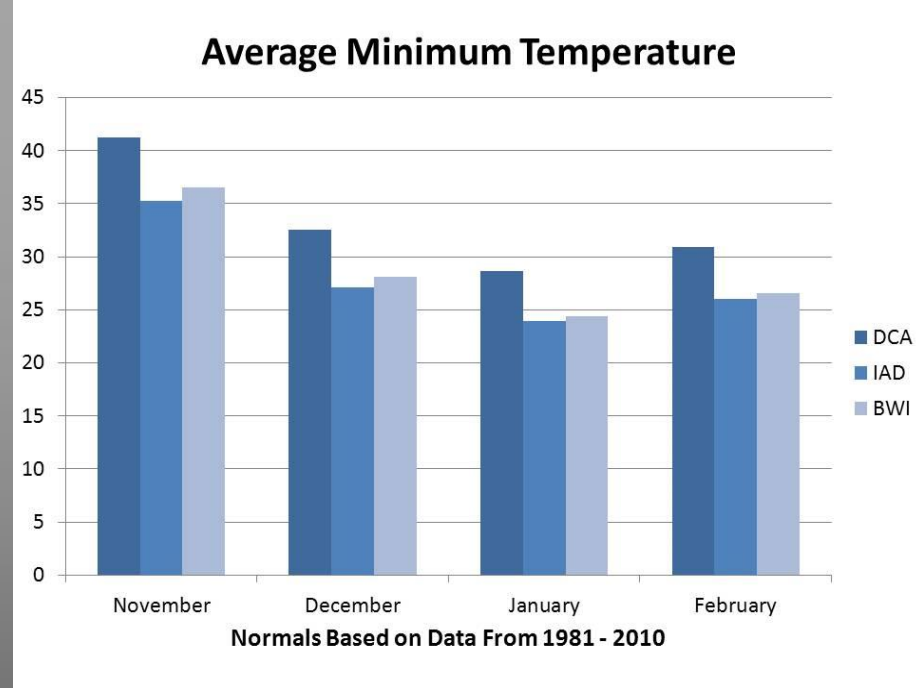
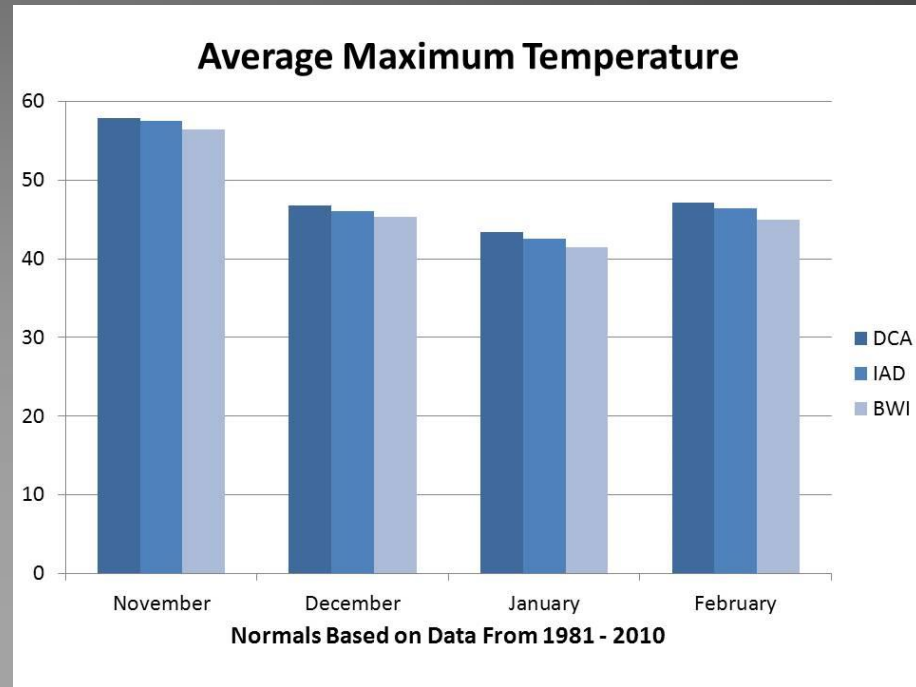
Temps.	Nov.	Dec.	Jan.	Feb.	Mar.
Max.	56.4	45.3	41.4	44.9	53.6
Min.	36.5	28.1	24.4	26.6	33.5

Normals based on BWI data from 1981-2010

Snowfall	DCA	IAD	BWI
October	Trace	Trace	Trace
November	0.5	0.5	0.4
December	2.3	3.5	3.0
January	5.6	7.3	6.8
February	5.7	7.6	8.0
March	1.3	2.8	1.9
April	Trace	0.3	Trace
Season	15.4	22.0	20.1

Normals based on data from 1981-2010

Mid-Atlantic Winters (Normal Temperatures)



Mid-Atlantic Winters

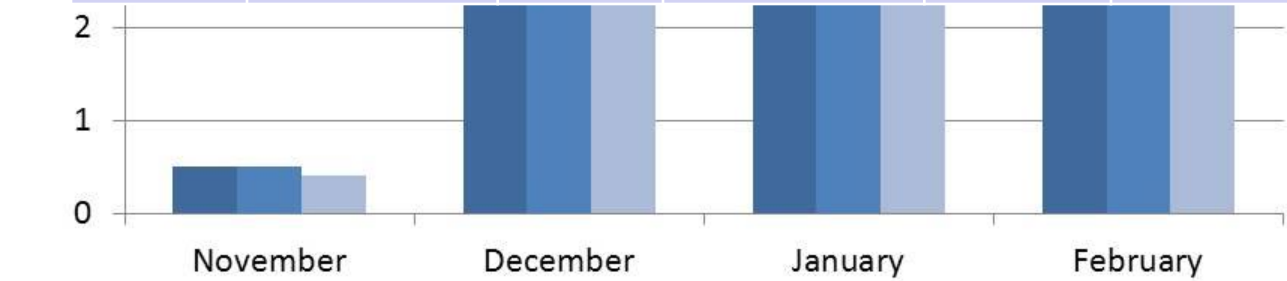
Earliest Measurable Snowfall (All Airports) **October 10, 1979**

DCA	BWI	IAD
.3"	.3"	1.3"



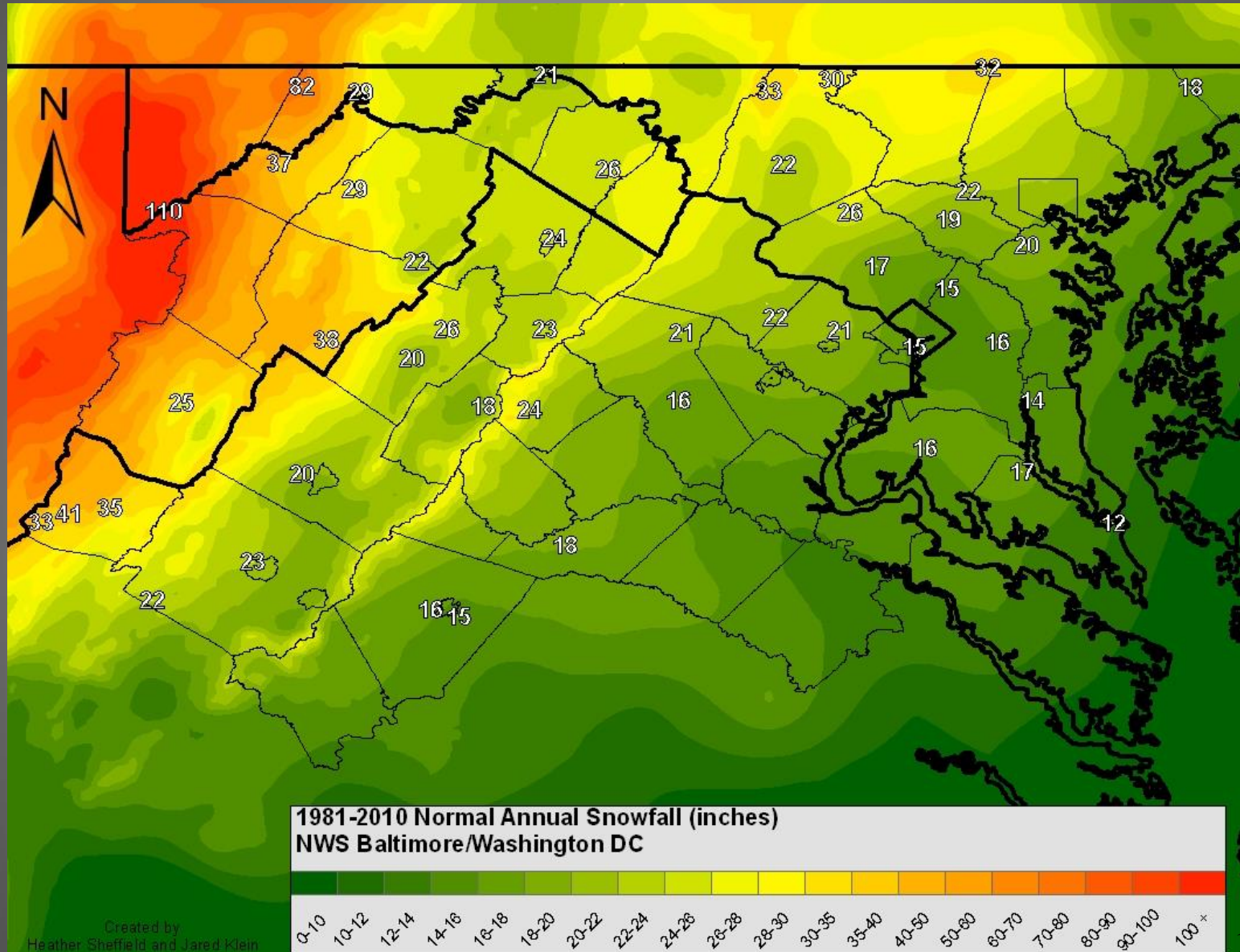
Latest Measurable Snowfall

DCA		BWI		IAD	
.5"	4/28/1898	.1"	4/28/1898	1.0"	4/12/1973



Normals Based on Data From 1981 - 2010

Average Annual Mid-Atlantic Snowfall Map



Mid-Atlantic Winters

Snowiest Month Ever

DCA		BWI		IAD	
35.2"	2/1899	50.0"	2/2010	46.1"	2/2010



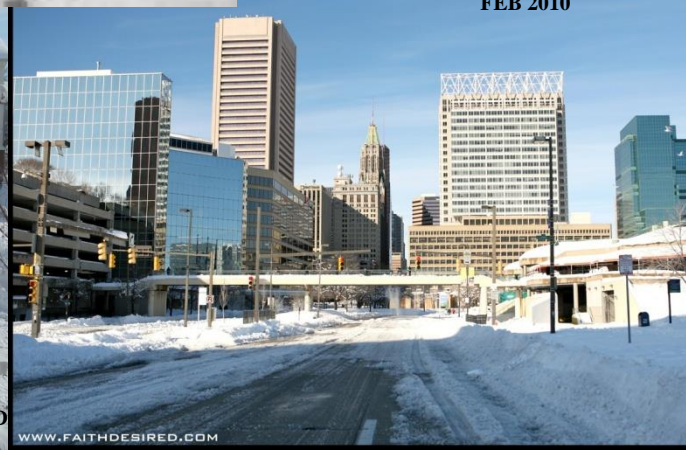
FEB 1899 Washington DC
Photo Courtesy: Washington Post



Downtown Baltimore
FEB 2010



6 Miles SW of IAD
Photo: Listemaa



WWW.FAITHDESIRE.COM



Fells Point, MD
Photo By: faithdesired.com (Flickr)
FEB 2010

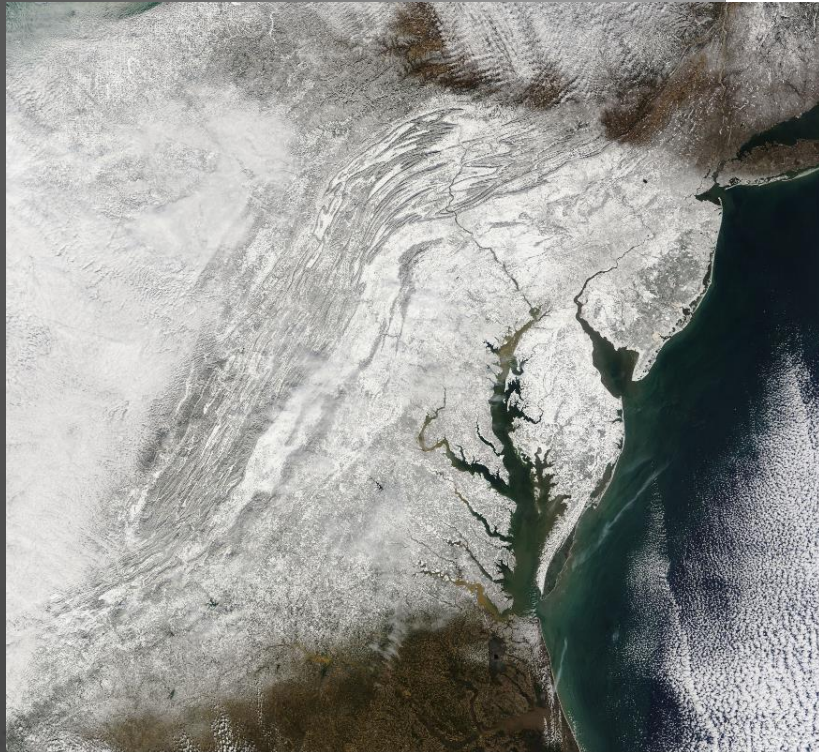
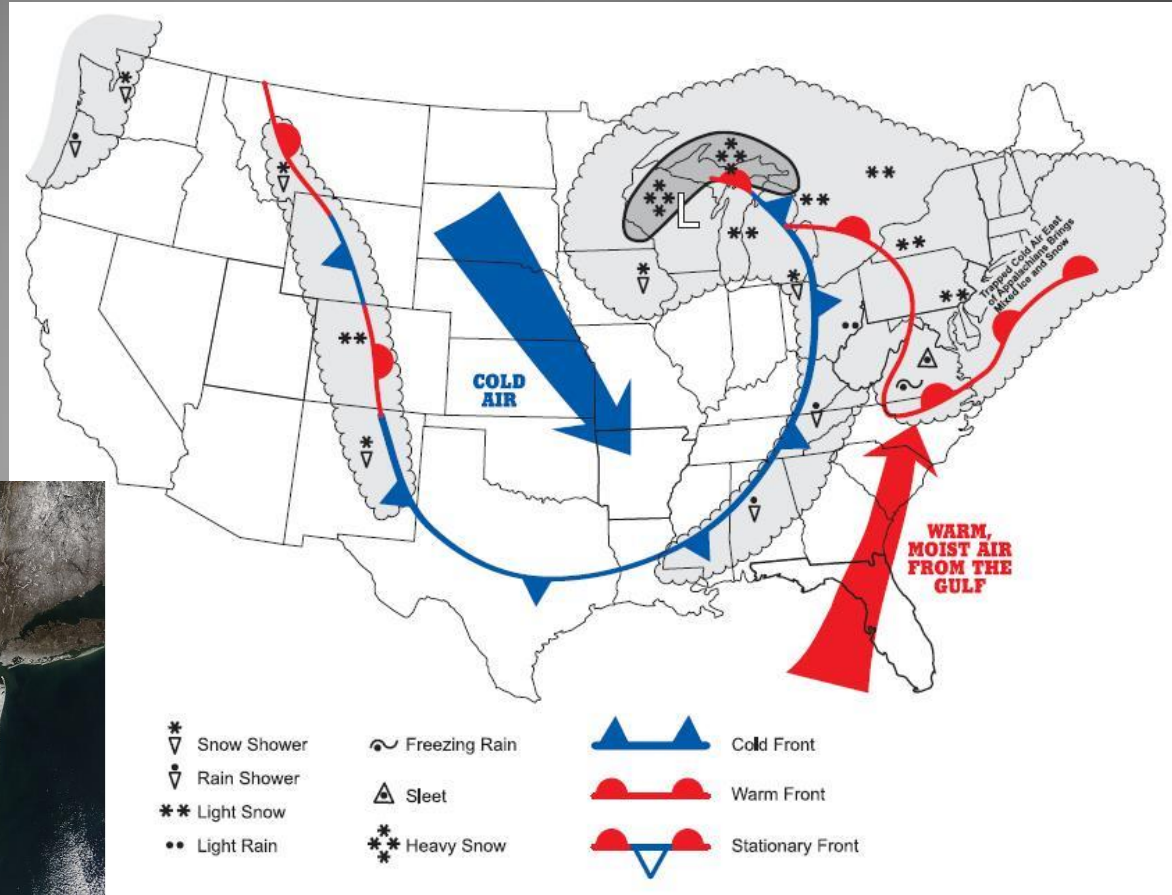
Snowfall Extremes

	Washington D.C. (1884-2015)		Baltimore, MD (1892-2015)		Dulles, VA (1962-2015)	
	1-3 Day Total	Date	1-3 Day Total	Date	1-3 Day Total	Date
1)	28.0	Jan 27-29, 1922	29.2	Jan 22-23, 2016	32.4	Feb 5-6, 2010
2)	20.0	Feb 12-14, 1899	26.8	Feb 16-18, 2003	29.3	Jan 22-23, 2016
3)	18.7	Feb 18-19, 1979	26.6	Jan 7-9, 1996	24.6	Jan 6-8, 1996
4)	17.8	Jan 22-23, 2016	26.5	Jan 27-29, 1922	22.8	Feb 10-11, 1983
5)	17.8	Feb 5-6, 2010	25.0	Feb 5-6, 2010	21.7	Feb 15-17, 2003
6)	17.3	Jan 7-9, 1996	22.8	Feb 11, 1983	18.0	Dec 18-19, 2009
7)	16.6	Feb 10-11, 1983	22.0	Mar 28-29, 1942	16.3	Feb 18-19, 1979
8)	16.4	Dec 18-19, 2009	21.3	Feb 12-14, 1899	15.4	Dec 30, 1970-Jan 1, 1971
9)	16.4	Feb 16-18, 2003	20.0	Feb 18-19, 1979	14.1	Mar 13-14, 1993
10)	14.4	Feb 7, 1936 and Feb 15-16, 1958	19.5	Feb 9-10, 2010	13.3	Feb 12-13, 2014

Ingredients for a Winter Storm

Cold Air

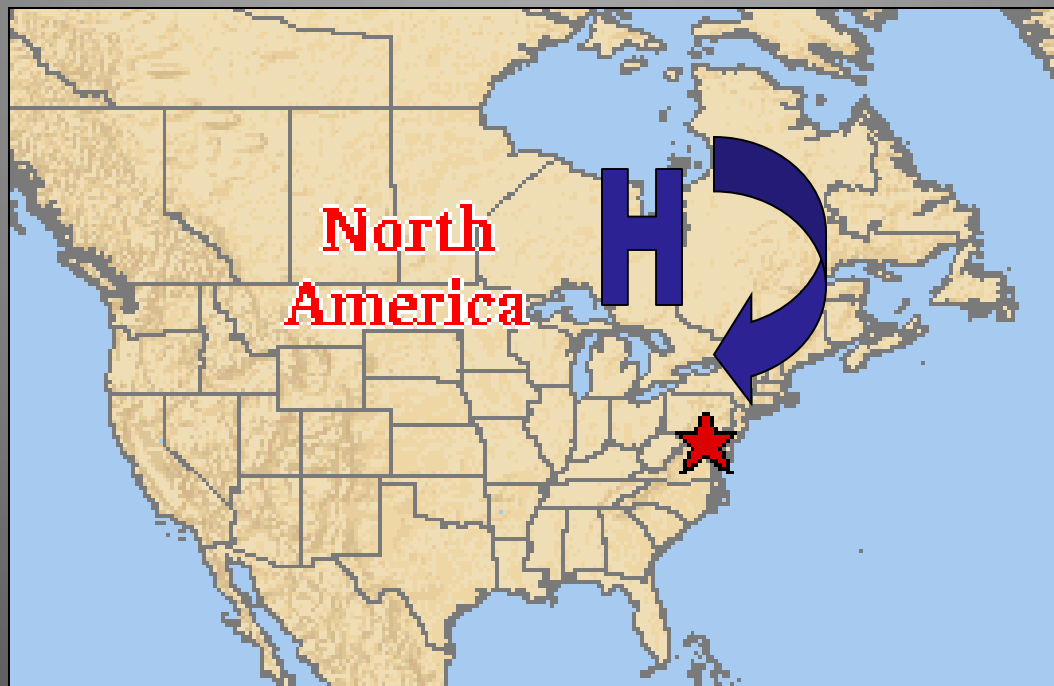
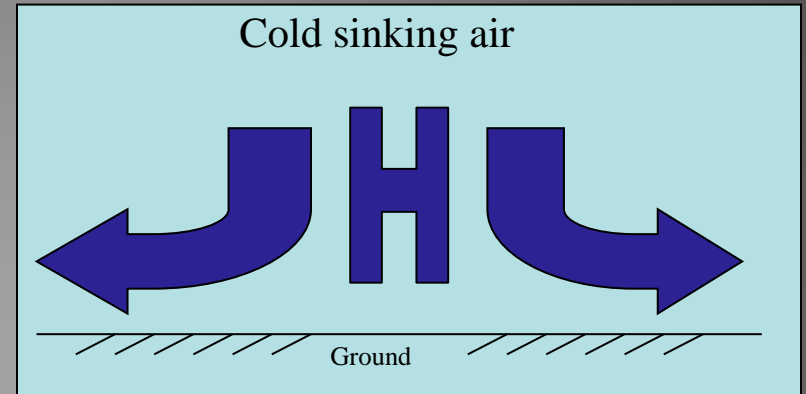
Moisture



Lift

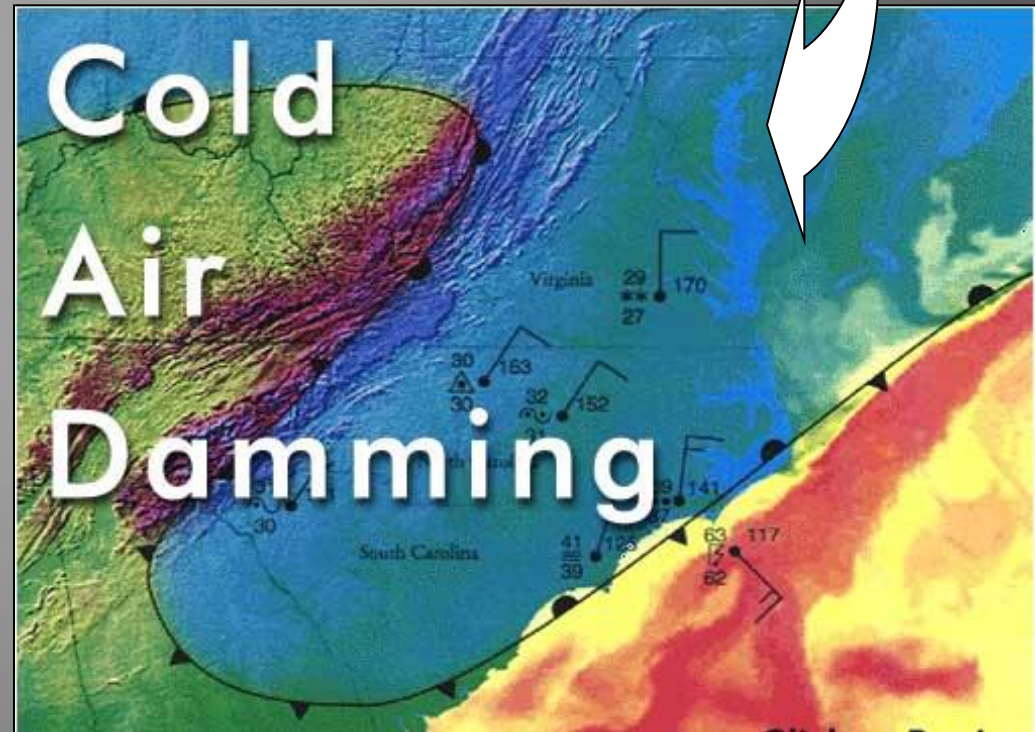
Sources of Cold Air

- Arctic
- High Pressure

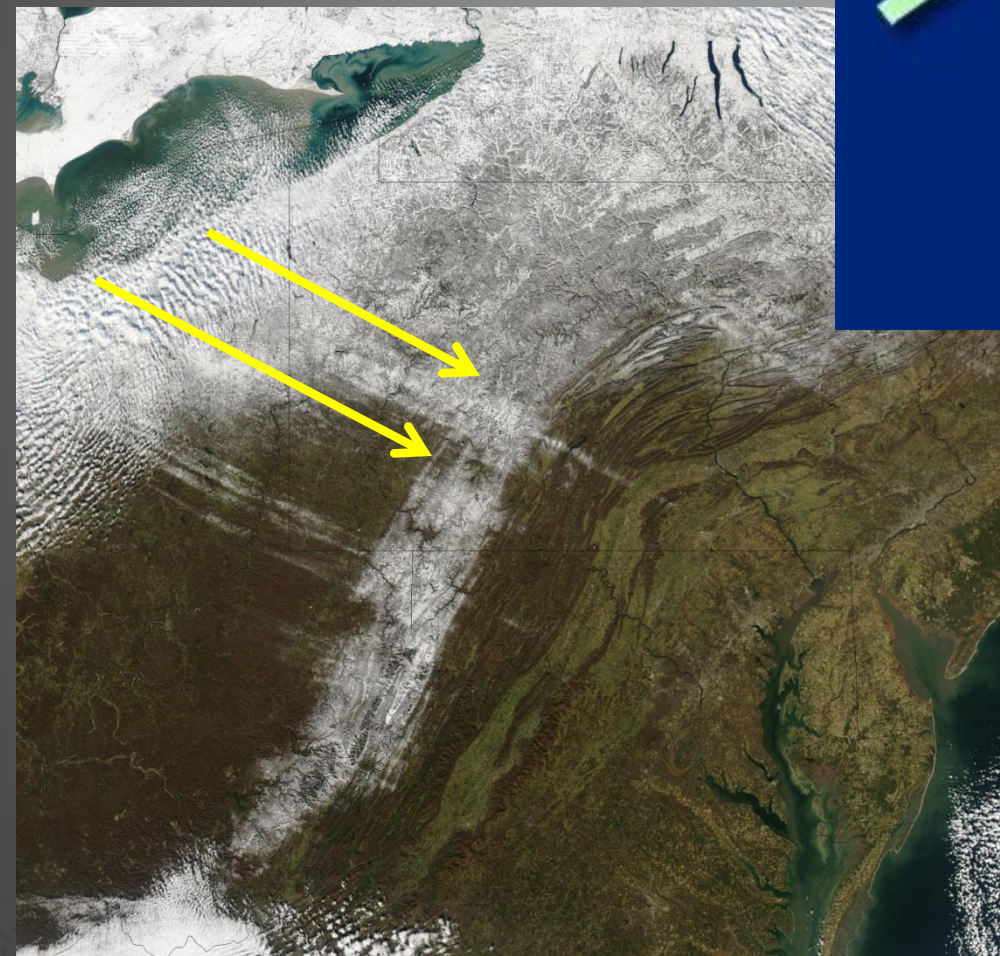


Cold Air Damming

Cold stable air can
not move over
mountains



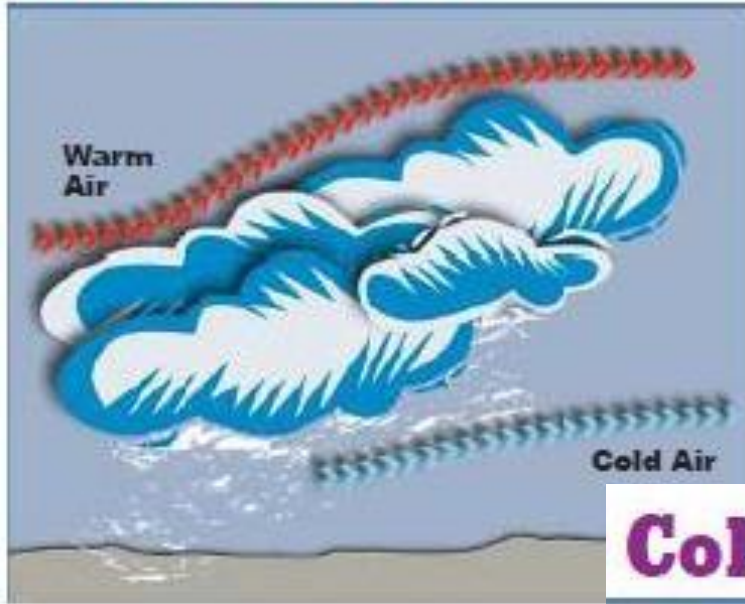
Sources of Moisture



Our moisture sources are the Great Lakes, Atlantic Ocean/Gulf Stream, and the Gulf of Mexico.

Sources of Lift

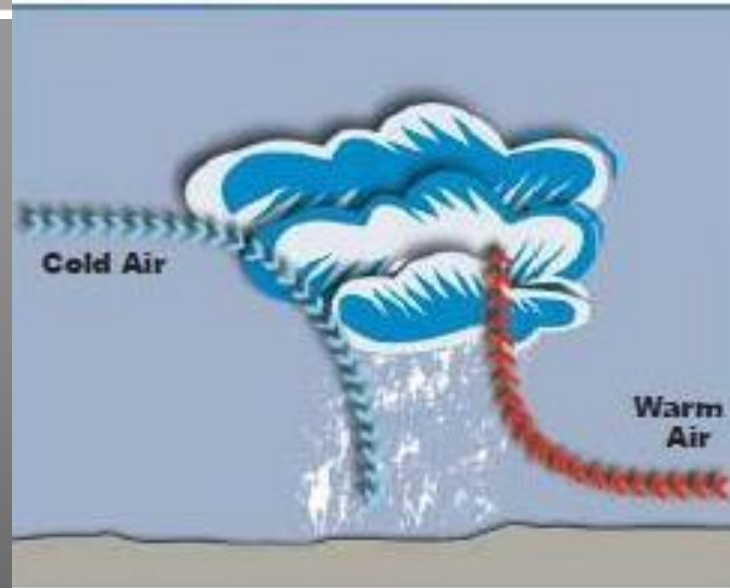
Warm Front



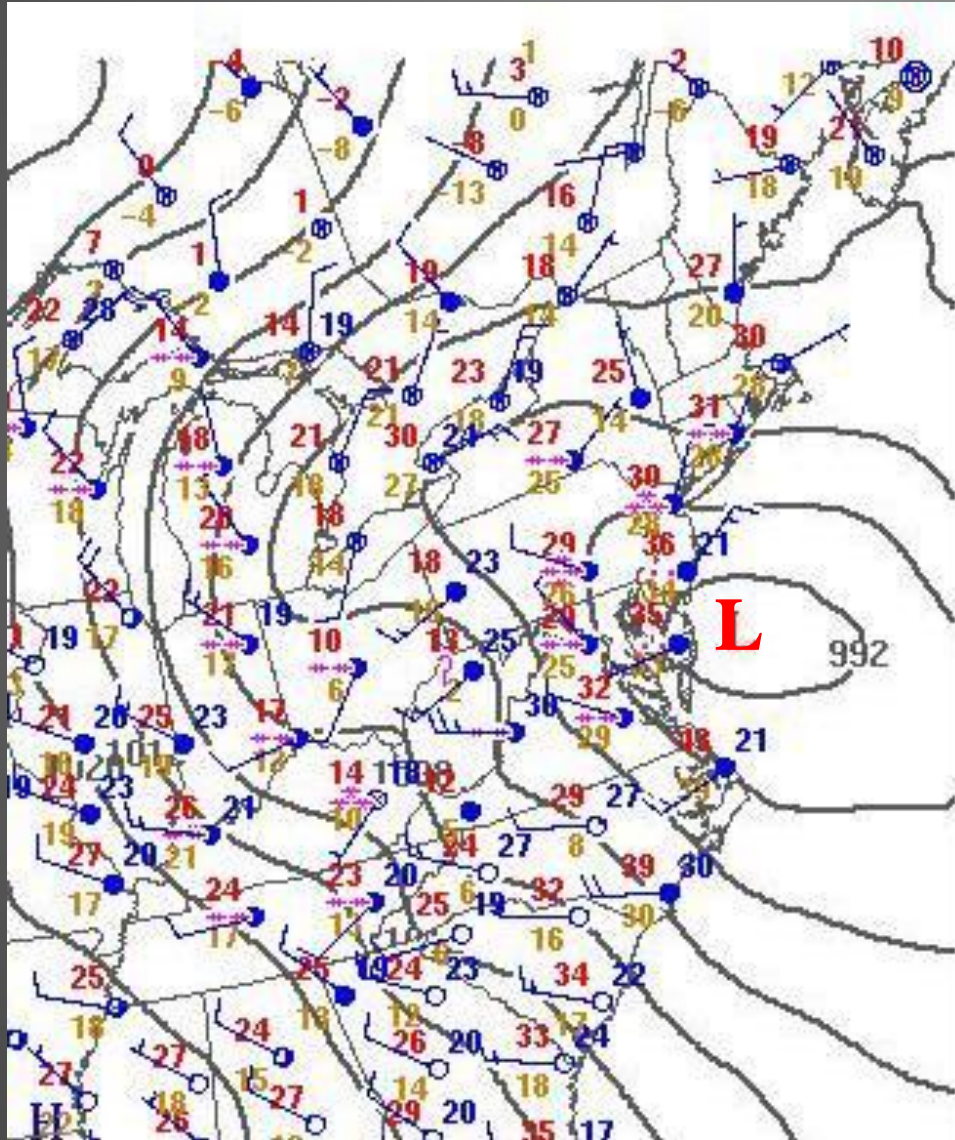
Mountain Effect



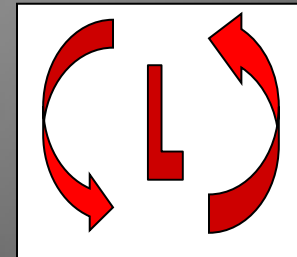
Cold Front



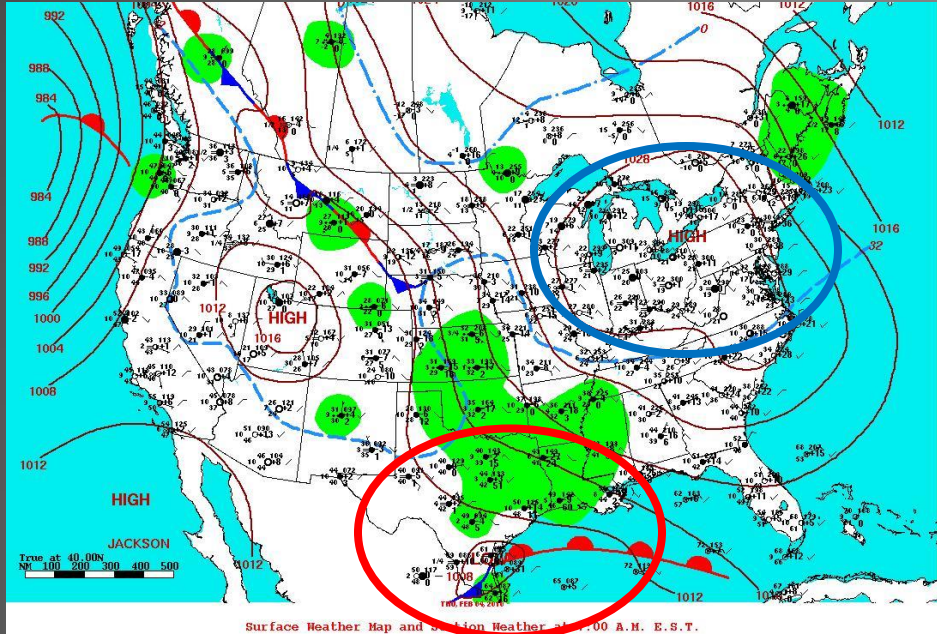
Best Combination



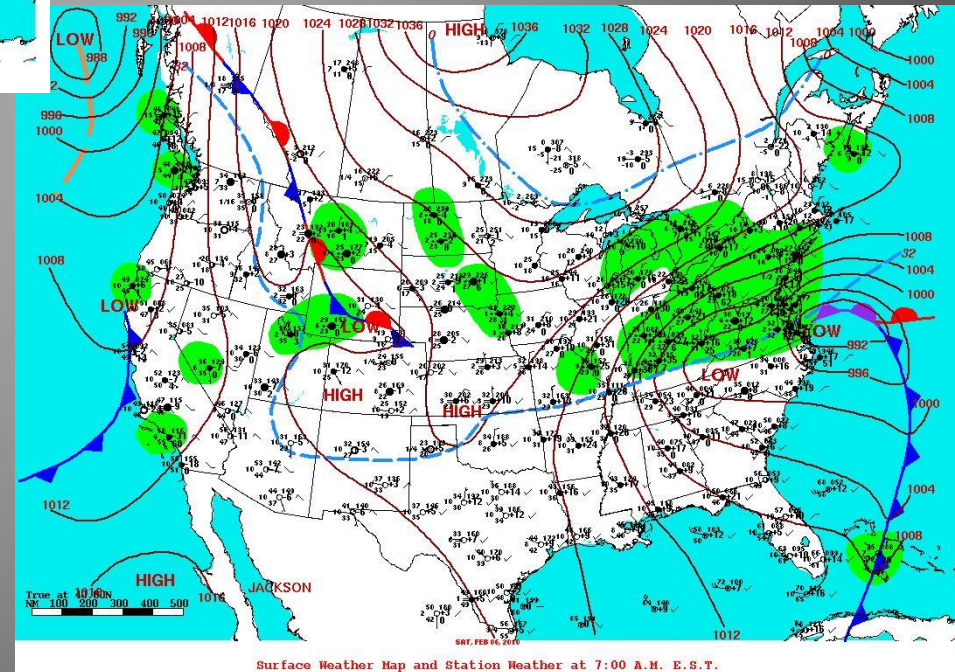
- Coastal Lows / Nor'easters
- Low center acts as a source of lift
- Moisture comes from warm Gulf Stream
- Wind circulating around the low, lifts the warm moist air up over the cold air locked over the coastal plain east of the mountains



Classic Nor'easter Setup

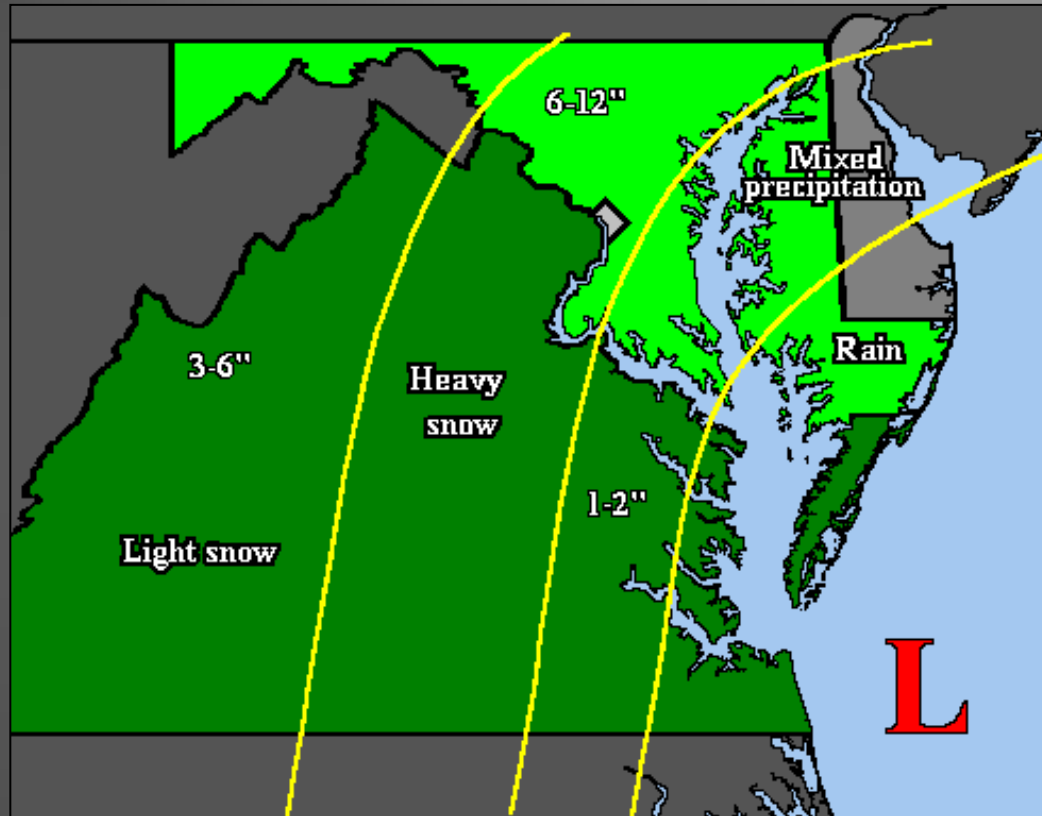


High pressure centered north of DC.



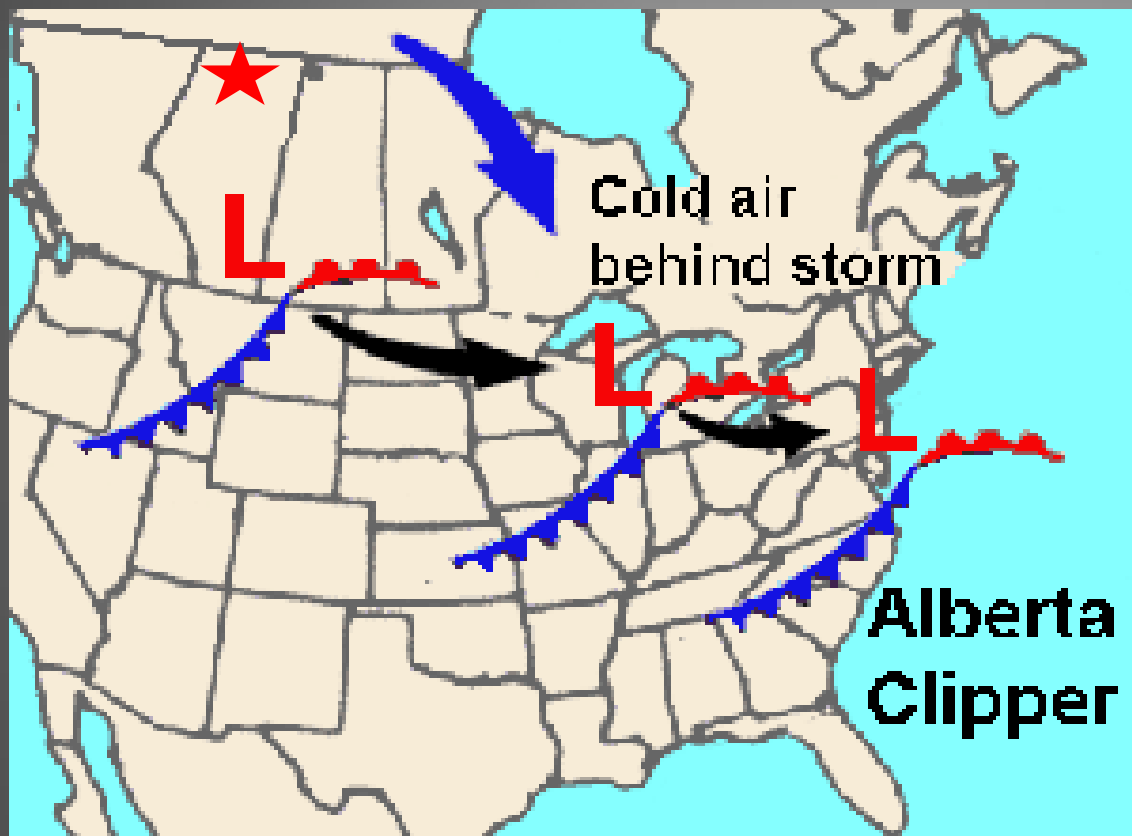
Low pressure or disturbance in the Gulf of Mexico.

Classic Nor'easter



The path of the storm plays a major role in determining what type of precipitation we receive and how much.

Alberta Clipper



- Quick moving low pressure system that originates in the Alberta Province of Canada.
- 1 to 5 inches of snow possible.
- Pulls down arctic air behind them.

Winter Hazards

• Heavy Snow

• Ice

• Cold Outbreaks

• Wind

• Flooding

SUPER BOWL (& CABIN) FEVER
IN SPORTS: GAME PREVIEW AND ANALYSIS • LIVE UPDATES ONLINE: WASHINGTONPOST.COM/SPORTS

The Washington Post

Monday, February 27, 2012

A HISTORIC MESS

POWERLESS: Officials across area consider opening shelters for tens of thousands without heat. | **STALLED:** 32 inches of snow shutters Dulles; other airports, rail and roads still struggling to dig out.

GOING NOWHERE FAST
Powerless, outages will keep plans on ice

ENGLAND
In whitout, many things come to standstill

With speech, Palin bounces back on the political stage

Hall of Fame makes way for a 'Hog'

Area travel comes to a standstill

BUY DIRECT FROM OUR WAREHOUSE KITCHEN DISTRIBUTORS

It's Colts-Saints for all the marbles SPORTS

THE BALTIMORE SUN

February 7, 2012

SNOWED OUT

► State digging out after being hit by up to 3 feet of accumulation
► I-95 stifled, BWI paralyzed, tens of thousands without power

TSUNAMI WEATHER
29 °F

Power outage breaks the ice

Area travel comes to a standstill

BUY DIRECT FROM OUR WAREHOUSE KITCHEN DISTRIBUTORS

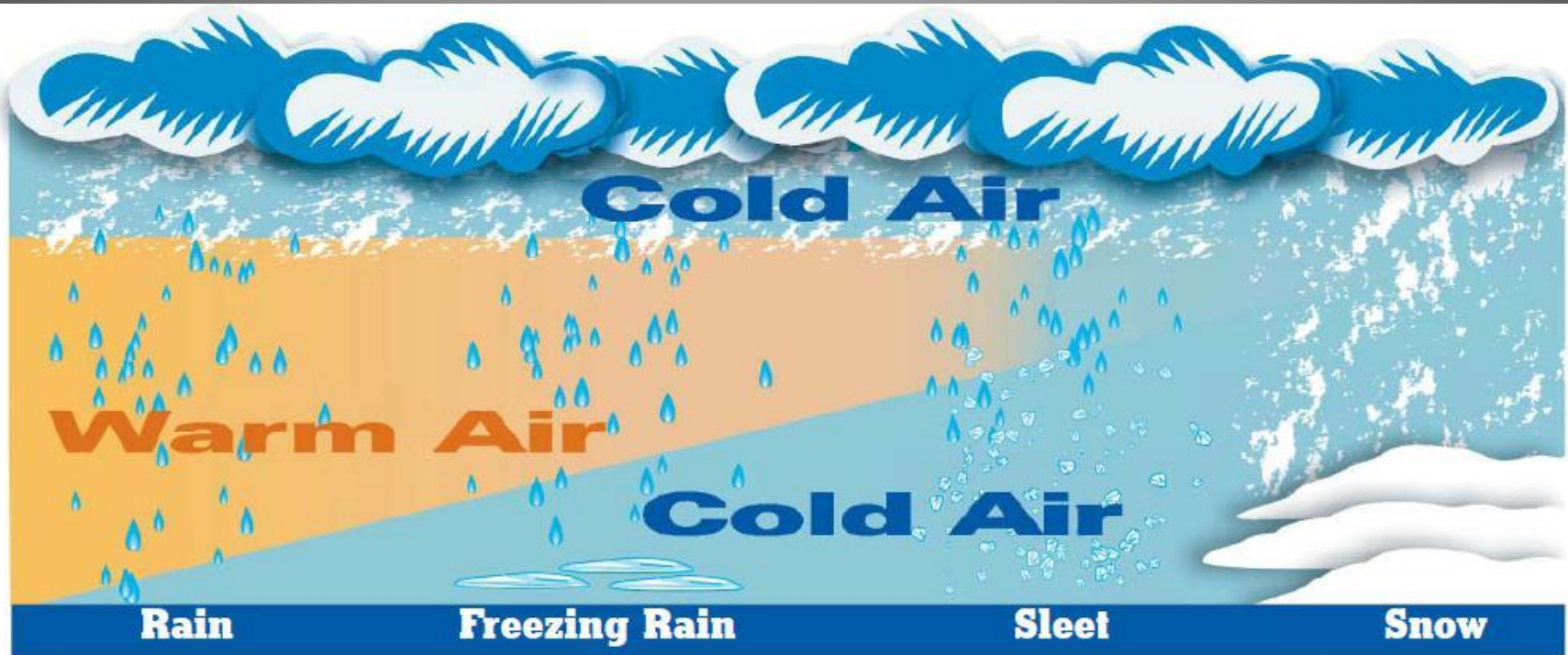
What is a Blizzard?

Winds of 35 mph or more and
Visibility near zero.
For at least 3 consecutive hours.

**Snow amount is NOT a factor in
determining a blizzard.**



What determines Precipitation Type?



Rain

Frozen precipitation melts into rain

Freezing Rain

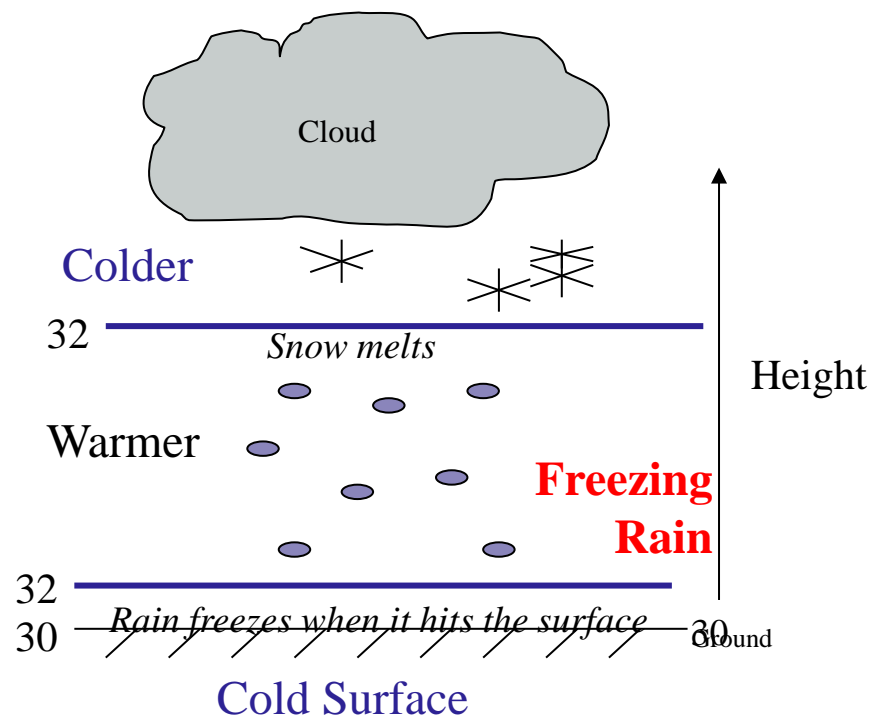
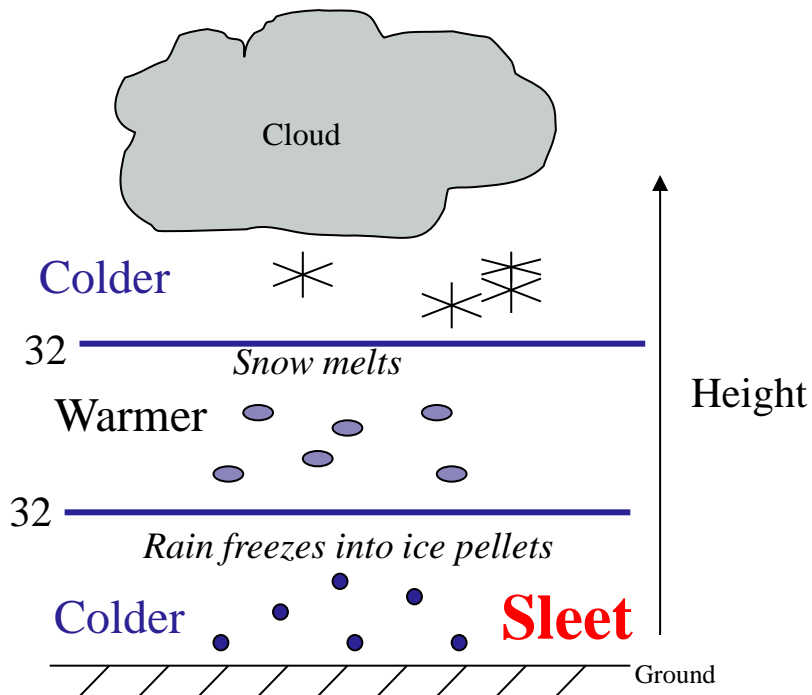
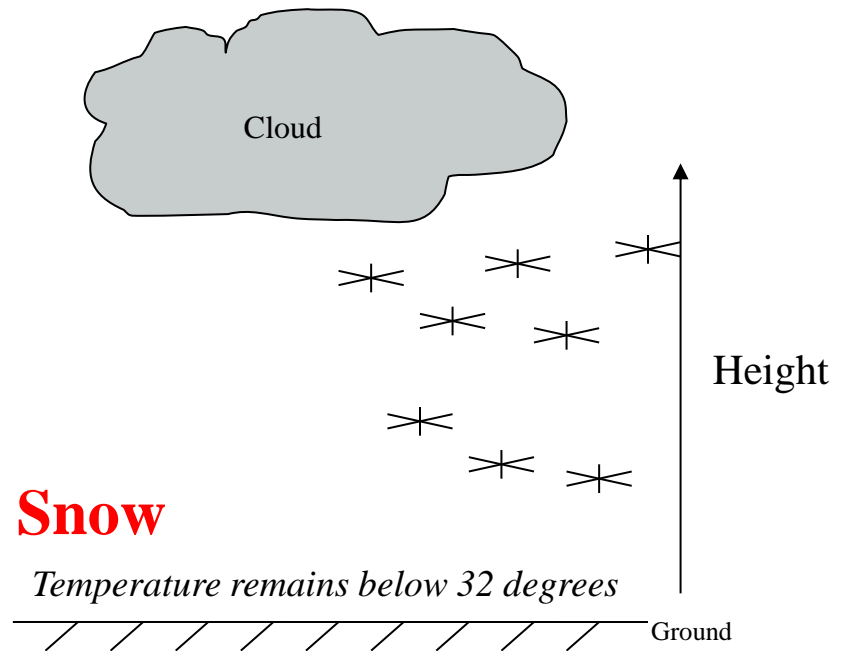
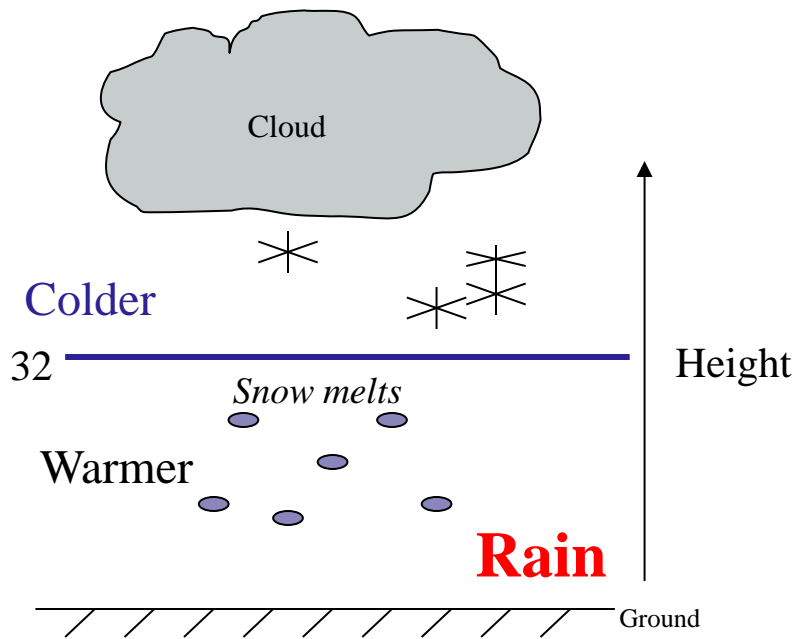
Frozen precipitation melts in warm air...
...rain falls and freezes on cold surfaces as a sheet of ice

Sleet

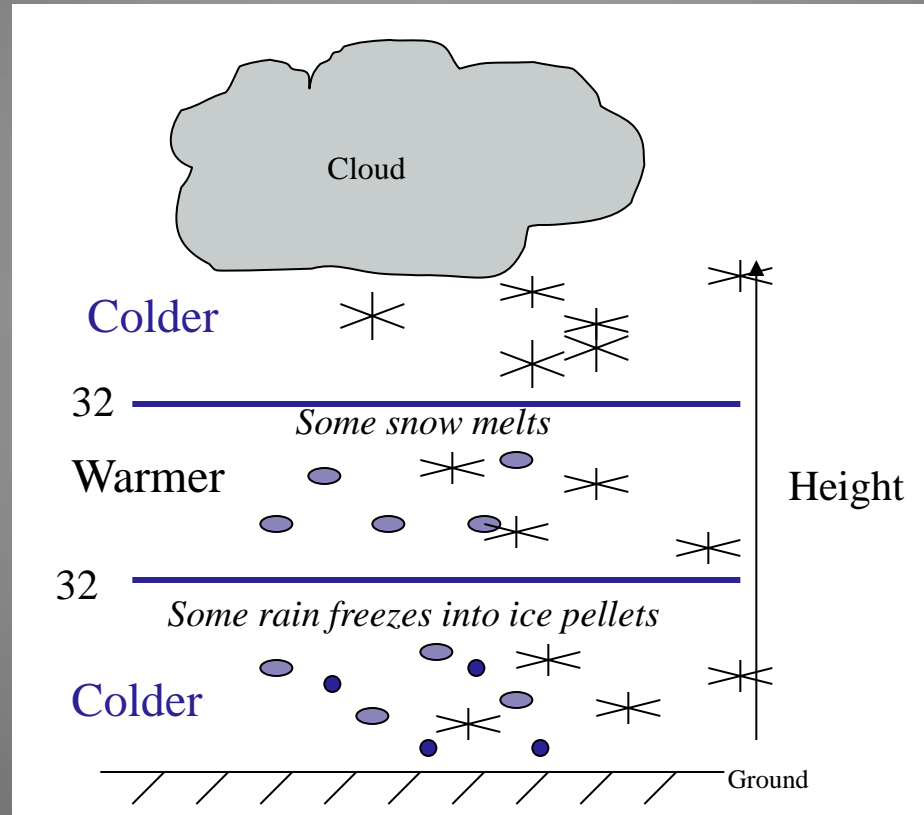
Frozen precipitation melts...
...refreezes into sleet before hitting ground

Snow

Snow falling into cold air never melts



Mixed Precipitation Profile



Heavy Snow



Washington Metro



Photo Courtesy: World Press



Photo Courtesy: frozenblog.com

Prince William Ice Rink

- Disrupts Transportation
- Closes Businesses/Schools
- Roof Collapse
- Downed Tree Limbs/Powerlines
- High Cost of Snow Removal



Photo Courtesy: Washington Examiner

Ice

- Power and Communication lines come down
- Traffic Accidents
- Pedestrian Falls
- Heavy weight can bring down trees

Mixing Bowl (Springfield, VA) Feb 12, 2008
Photo: Washington Post



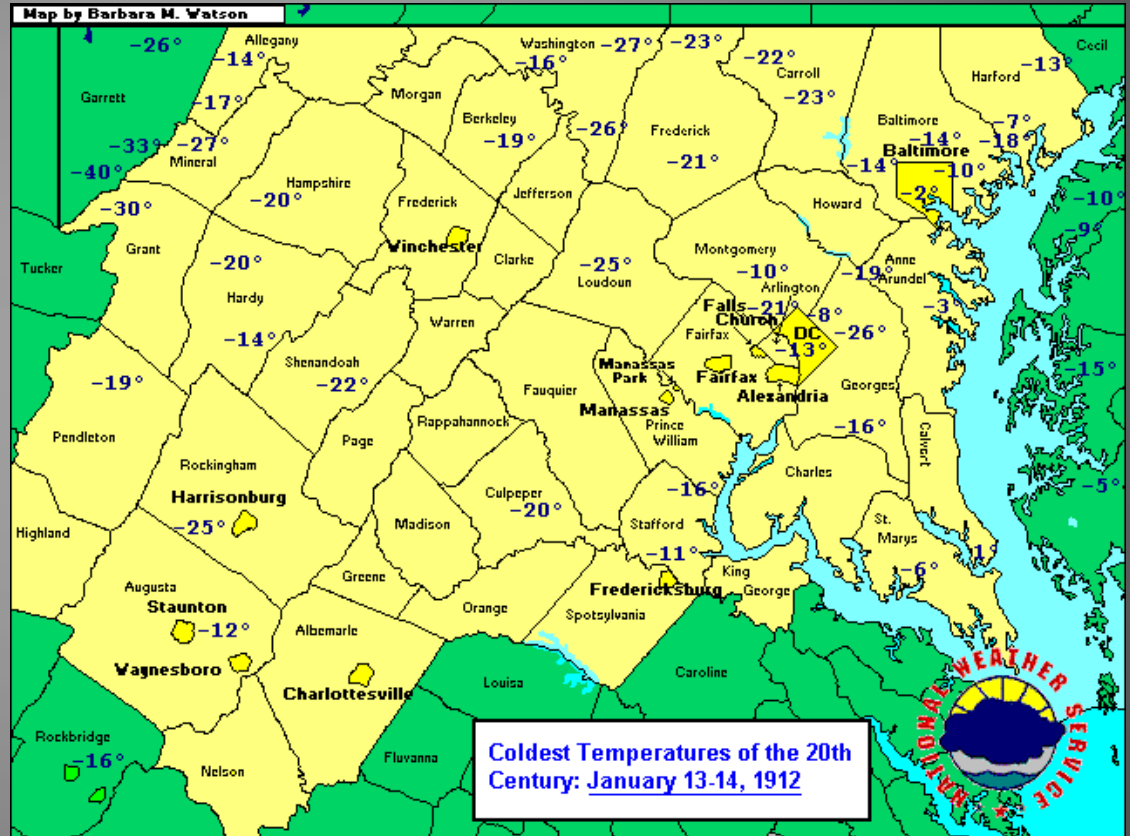
Photo By: Paul McCord, JR



Photo: Washington Post

Cold Air Outbreaks

- Exposure
 - Frost Bite
 - Hypothermia
- Auto Trouble
- Burst pipes
- Power shortages



Cold Air Outbreaks

Most Recent Sub-Zero Days

DC	Baltimore	Dulles
-4 1/19/1994	-1 2/5/1996	-4 2/24/2015

Wind

- Blizzards
- Blowing and Drifting Snow
- Heavy Surf and Beach Erosion
- Coastal Flooding
- Trees and Utility Lines
- Wind Chill

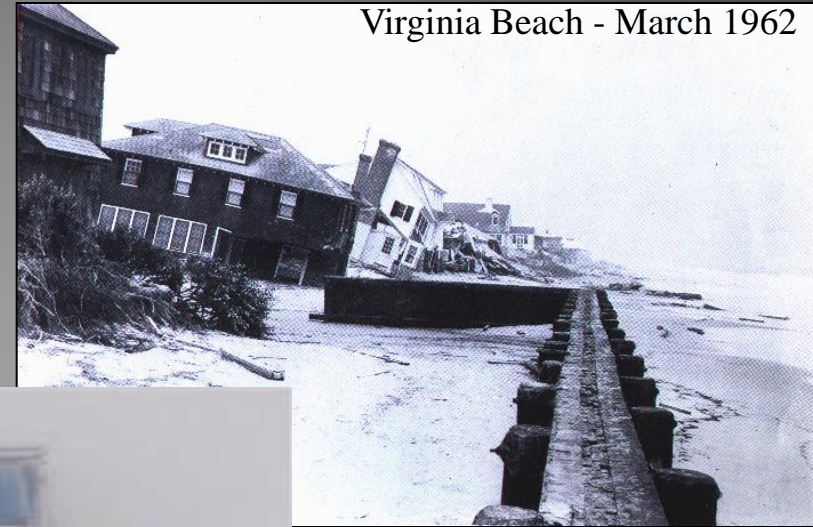
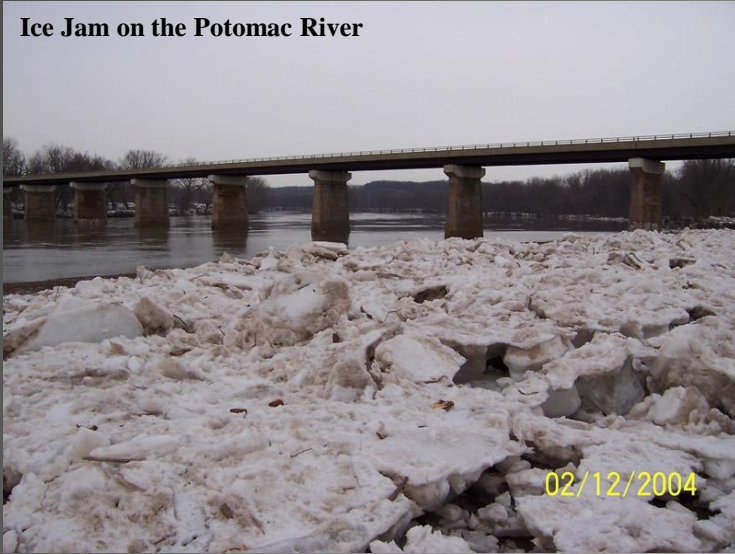


Photo By: Ian Sean Livingston

Winter Flooding

Ice Jam on the Potomac River



Stranded motorist near the Monocacy River
Photo Courtesy: Frederick News Post
December 2009



- **Coastal Flooding:** Tidal/coastal flooding generated by the intense winds in a coastal storm.
- **Ice Jams:** When a thaw or rise in water level breaks ice into large chunks that become jammed at man made and natural obstructions.
- **Sudden Snow Melt:** A sudden thaw of a heavy snow pack.

BREAK TIME

NWS Products & Services

Winter Weather Page

The screenshot shows the NWS Baltimore/Washington website interface. At the top, the NWS logo and 'NATIONAL WEATHER SERVICE' are visible. Below the navigation bar, there are sections for 'Local forecast by City, St or ZIP code' and 'News Headlines'. The main content area is titled 'NWS Forecast Office Baltimore/Washington' and includes a 'Customize Your Weather.gov' sidebar on the left. A red arrow points from the text 'Winter Weather Page' to the 'Winter' option in the 'Current Hazards' dropdown menu. Other options in the menu include Drought, Fire Weather, Space Weather, River Flooding, Briefing Page, Watches/Warnings, Thunderstorms, and Hurricanes. To the right of the menu is a map of the region with a legend for 'Watches, Warnings & Advisories' including Gale Warning, Winter Weather Advisory, Small Craft Advisory, and Hazardous Weather Outlook. Below the map is a grid of icons for various services: Radar, Current Weather, Rivers & Lakes, Satellite, Weather Information Display, Forecast Maps, Hour by Hour Forecast, Detailed Forecast, Marine Forecasts, Air Quality, Forecaster's Discussion, and Text Bulletin.

• Within 7 Days: NWS Baltimore/Washington

- Hazardous Weather Outlook
- Public/Marine Forecasts
- Watches/Warnings
- www.weather.gov/baltimore or www.weather.gov/washington

NWS Products & Services

Winter Weather Outlook
Hazardous Weather Outlook

Potential for hazardous weather in the next 48 hours.

• Issued when a winter weather event has the potential to threaten life and property in an area.

Winter Storm Watch

• Provides information to users that need considerable lead time to prepare for an event

Winter Storm Warning

- Imminent or Occurring
- Life Threatening Conditions
- Damage to Property

Winter Weather Advisory

- Imminent or Occurring
- Significant Inconvenience

Hazardous Weather Outlook

Outlook on potential for any Hazardous Weather through 7 Days.

Issued daily between 5 and 6 am and again around 11 am.

Day 1:
Updated as needed.

- More Details
- Watches/Warnings

in Effect:
Days 2-7:

- Timing
- Less areal and Areal Specificity
- Includes potential for Blizzards

Potential for

Watches/Warnings

MDZ003>006-501>507-VAZ025>031-036>040-050-051-501>508-WVZ050>053-055-501>506-061000-
WASHINGTON-FREDERICK MD-CARROLL-NORTHERN BALTIMORE-
EXTREME WESTERN ALLEGANY-CENTRAL AND EASTERN ALLEGANY-
NORTHWEST MONTGOMERY-CENTRAL AND SOUTHEASTERN MONTGOMERY-
NORTHWEST HOWARD-CENTRAL AND SOUTHEAST HOWARD-NORTHWEST HARFORD-
AUGUSTA-ROCKINGHAM-SHENANDOAH-FREDERICK VA-PAGE-WARREN-CLARKE-
NELSON-ALBEMARLE-GREENE-MADISON-RAPPAHANNOCK-ORANGE-CULPEPER-
NORTHERN FAUQUIER-SOUTHERN FAUQUIER-WESTERN HIGHLAND-
EASTERN HIGHLAND-WESTERN LOUDOUN-EASTERN LOUDOUN-
NORTHERN VA BLUE RIDGE-CENTRAL VA BLUE RIDGE-HAMPshire-MORGAN-
BERKELEY-JEFFERSON-HARDY-WESTERN GRANT-EASTERN GRANT-
WESTERN MINERAL-EASTERN MINERAL-WESTERN PENDLETON-
EASTERN PENDLETON-
332 PM EST THU MAR 5 2015

THIS HAZARDOUS WEATHER OUTLOOK IS FOR EASTERN WEST VIRGINIA...
NORTHERN AND CENTRAL VIRGINIA...AND CENTRAL AND WESTERN MARYLAND
WITH THE EXCEPTION OF GARRETT COUNTY.

.DAY ONE...THIS AFTERNOON AND TONIGHT

A WINTER STORM WARNING IS IN EFFECT UNTIL THIS EVENING...INTO THIS
EVENING FOR NORTH-CENTRAL VIRGINIA. PLEASE SEE WSWLWX FOR FURTHER
DETAILS.

A WIND CHILL ADVISORY IS IN EFFECT LATE TONIGHT FOR ALL LOCATIONS
ALONG AND WEST OF THE BLUE RIDGE MOUNTAINS AS WELL AS NORTHERN
MARYLAND AND THE SUBURBS OF WASHINGTON DC.

.DAYS TWO THROUGH SEVEN...FRIDAY THROUGH WEDNESDAY

THE WIND CHILL ADVISORY CONTINUES UNTIL 10 AM FRIDAY.

WIND CHILL ADVISORIES ARE POSSIBLE LATE FRIDAY NIGHT INTO SATURDAY
MORNING.

.SPOTTER INFORMATION STATEMENT...

SPOTTER ACTIVATION IS NOT EXPECTED AT THIS TIME. PLEASE RELAY
REPORTS OF SNOW OR ICE TO THE NATIONAL WEATHER SERVICE.

\$\$

What Kind of Information Does a **Winter Storm Watch** Include?

A Winter Storm Watch is

- When **5+ inches of snow** period
- Ice Accumulation of **1/4 inch**
- A damaging combination of winds within a 12 hour period
- Typically issued within **24 to 48 hours in advance** of the event

Key Word:

```
MDZ501-502-VAZ026>031-040-052-501-503-504-507-WVZ050-055-501>506-040400-
/O.NEW.KLWX.WS.A.0005.150305T0000Z-150306T0000Z/
EXTREME WESTERN ALLEGANY-CENTRAL AND EASTERN ALLEGANY-ROCKINGHAM-
SHENANDOAH-FREDERICK VA-PAGE-WARREN-CLARKE-RAPPAHANNOCK-
PRINCE WILLIAM/MANASSAS/MANASSAS PARK-NORTHERN FAUQUIER-
WESTERN HIGHLAND-EASTERN HIGHLAND-NORTHERN VA BLUE RIDGE-
PAGESBURG-HARDY-WESTERN GRANT-EASTERN GRANT-WESTERN MINERAL-
EASTERN MINERAL-WESTERN PENDLETON-EASTERN PENDLETON-
INCLUDING THE CITIES OF...FROSTBURG...CUMBERLAND...HARRISONBURG...
...THE POTOMAC FRONT RANGE...ASHTON...MANASSAS...
MANASSAS PARK...WARRENTON...HIGHTOWN...MONTEKEY...BIG MEADOWS...
MOOREFIELD...BAYARD...MOUNT STORM...PETERSBURG...ELK GARDEN...
KEYSER...FORT ASHBY...CIRCLEVILLE...FRANKLIN
250 PM EST TUE MAR 3 2015
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... WINTER STORM WATCH IN EFFECT FROM WEDNESDAY EVENING THROUGH THURSDAY EVENING...

THE NATIONAL WEATHER SERVICE IN BALTIMORE MD WASHINGTON DC HAS ISSUED A WINTER STORM WATCH...WHICH IS IN EFFECT FROM WEDNESDAY EVENING THROUGH THURSDAY EVENING.

* LOCATIONS...POTOMAC HIGHLANDS AND THE NORTHERN SHENANDOAH VALLEY.

* HAZARD TYPES...SNOW...HEAVY AT TIMES.

* TIMING...RAIN CHANGING TO SNOW WEDNESDAY EVENING. SNOW MAY BE HEAVY AT TIMES WEDNESDAY NIGHT INTO THURSDAY MORNING.

* IMPACTS...ROADS WILL BE SNOW COVERED WITH VISIBILITY REDUCED TO NEAR ONE-QUARTER MILE AT TIMES. TRAVELING POTENTIALLY WILL BE DANGEROUS.

* WINDS... NORTHWEST AROUND 10 MPH.

* TEMPERATURES...25 TO 30 DEGREES.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A WINTER STORM WATCH MEANS THERE IS A POTENTIAL FOR SIGNIFICANT SNOW...SLEET...OR ICE ACCUMULATIONS THAT MAY IMPACT TRAVEL. CONTINUE TO MONITOR THE LATEST FORECASTS.

Winter Storm Warning

- A Winter Storm Warning has a high probability of:
 - 5+ Inches of snow in 24 hours
 - A life threatening amount of snow and ice accumulation
 - A combination of snow, sleet and freezing rain

Key Word:

URGENT - WINTER WEATHER MESSAGE

NATIONAL WEATHER SERVICE BALTIMORE MD/WASHINGTON DC

342 AM EST SUN MAR 1 2015

MDZ005-006-011-507-508-011645-

/O.UPG.KLWX.WW.Y.0018.150301T1200Z-150302T0800Z/

/O.NEW.KLWX.WS.W.0008.150301T1200Z-150302T0800Z/

CARROLL-NORTHERN BALTIMORE-SOUTHERN BALTIMORE-NORTHWEST HARFORD-

SOUTHEAST HARFORD-

INCLUDING THE CITIES OF...WESTMINSTER...PARKTON...REISTERSTOWN...

COCKEYSVILLE...BALTIMORE...DUNDALK...CATONSVILLE...

JARRETTSVILLE...ABERDEEN

342 AM EST SUN MAR 1 2015

...WINTER STORM **WARNING** IN EFFECT FROM 7 AM THIS MORNING TO 3 AM EST MONDAY...

THE NATIONAL WEATHER SERVICE IN BALTIMORE MD/WASHINGTON DC HAS ISSUED A WINTER STORM **WARNING** FOR SNOW...SLEET AND FREEZING RAIN WHICH IS IN EFFECT FROM 7 AM THIS MORNING TO 3 AM EST MONDAY. THE WINTER WEATHER ADVISORY IS NO LONGER IN EFFECT.

* LOCATIONS...NORTHEASTERN MARYLAND.

* HAZARD TYPES...SNOW...SLEET...AND FREEZING RAIN.

* ACCUMULATIONS...1 TO 2 INCHES OF SNOW AND SLEET. ICE ACCUMULATION AROUND A QUARTER OF AN INCH.

* TIMING...SNOW WILL BEGIN BETWEEN 7 AM AND 10 AM THIS MORNING. SNOW WILL CHANGE TO SLEET AND FREEZING RAIN BETWEEN NOON AND 3 PM THIS AFTERNOON. PRECIPITATION WILL END AS FREEZING RAIN SUNDAY NIGHT.

* IMPACTS...ROADS WILL BE SNOW AND ICE COVERED TODAY AND TONIGHT. TRAVELLING WILL BE DANGEROUS DURING THIS TIME. VISIBILITY WILL BE REDUCED BELOW ONE-MILE AT TIMES IN SNOW SUNDAY MORNING AND AFTERNOON.

* WINDS...SOUTH AROUND 5 TO 10 MPH.

* TEMPERATURES...RISING THROUGH THE 20S TODAY. TEMPERATURES WILL REACH THE LOW 30S THIS AFTERNOON AND CONTINUE THROUGH TONIGHT.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A WINTER STORM **WARNING** MEANS SIGNIFICANT AMOUNTS OF SNOW... SLEET...AND ICE ARE **EXPECTED OR OCCURRING** THIS WILL MAKE TRAVEL VERY HAZARDOUS OR IMPOSSIBLE.

A Winter Weather Advisory contains the same information as a Winter Storm Warning.

814 PM EST SAT DEC 12 2009

...WINTER WEATHER ADVISORY REMAINS IN EFFECT FROM 1 AM TO 10 AM EST SUNDAY...

A WINTER WEATHER ADVISORY REMAINS IN EFFECT FROM 1 AM TO 10 AM EST SUNDAY.

* PRECIPITATION TYPE...A LIGHT WINTRY MIX OF SLEET AND FREEZING RAIN IS EXPECTED OVERNIGHT.

* ACCUMULATION...UP TO ONE TENTH OF AN INCH OF ICE WILL BE POSSIBLE ACROSS THE SHENANDOAH VALLEY.

* TIMING...A BRIEF PERIOD OF SLEET WILL MIX WITH AND CHANGE TO FREEZING RAIN ACROSS THE SHENANDOAH VALLEY AND SOUTHERN POTOMAC HIGHLANDS AFTER MIDNIGHT.

* TEMPERATURES...TEMPERATURES WILL STAY IN THE UPPER 20S AND LOWER 30S OVERNIGHT...AND RISE ABOVE FREEZING DURING THE MORNING.

* WINDS...WINDS WILL BE FROM THE SOUTH AROUND 5 MPH.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A WINTER WEATHER ADVISORY MEANS THAT PERIODS OF SNOW...SLEET...OR FREEZING RAIN WILL CAUSE TRAVEL DIFFICULTIES. BE PREPARED FOR SLIPPERY ROADS AND LIMITED VISIBILITIES...AND USE CAUTION WHILE DRIVING.

A Winter W

•When

significant

for a wa

•Average

within a

24 hour

•ANY a

freezing

•Usually

How much trouble can one tenth of an inch of ice cause???

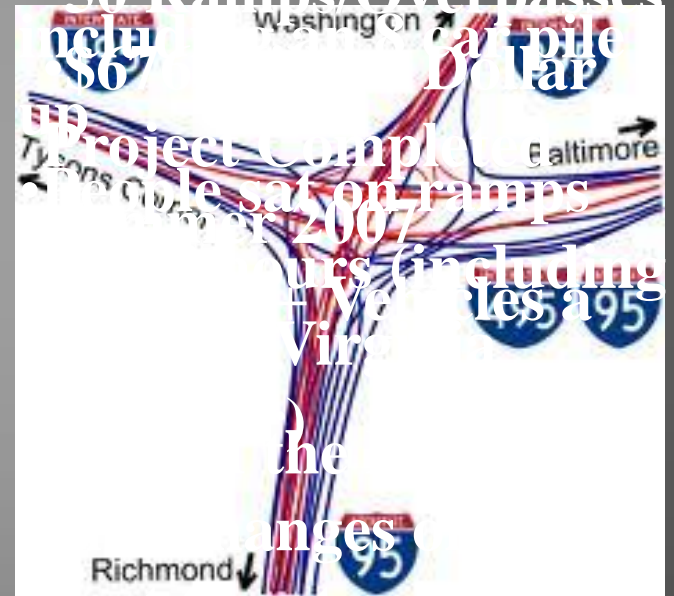
Date: February 12, 2008



- 15+ Car accidents
- 50 Ramps/Overpasses

Project completed 2007
19 miles (including Virginia)

East Coast



Just a Couple of Notes....

An **Ice Storm Warning** is issued when ice accumulations of $\frac{1}{4}$ inch or more are expected.

- Not Issued for a mixture of snow/sleet/ice

A **Freezing Rain Advisory** is issued when freezing rain will cause a significant inconvenience, but not serious enough for a warning.

- Not Issued for a mixture of snow/sleet/ice

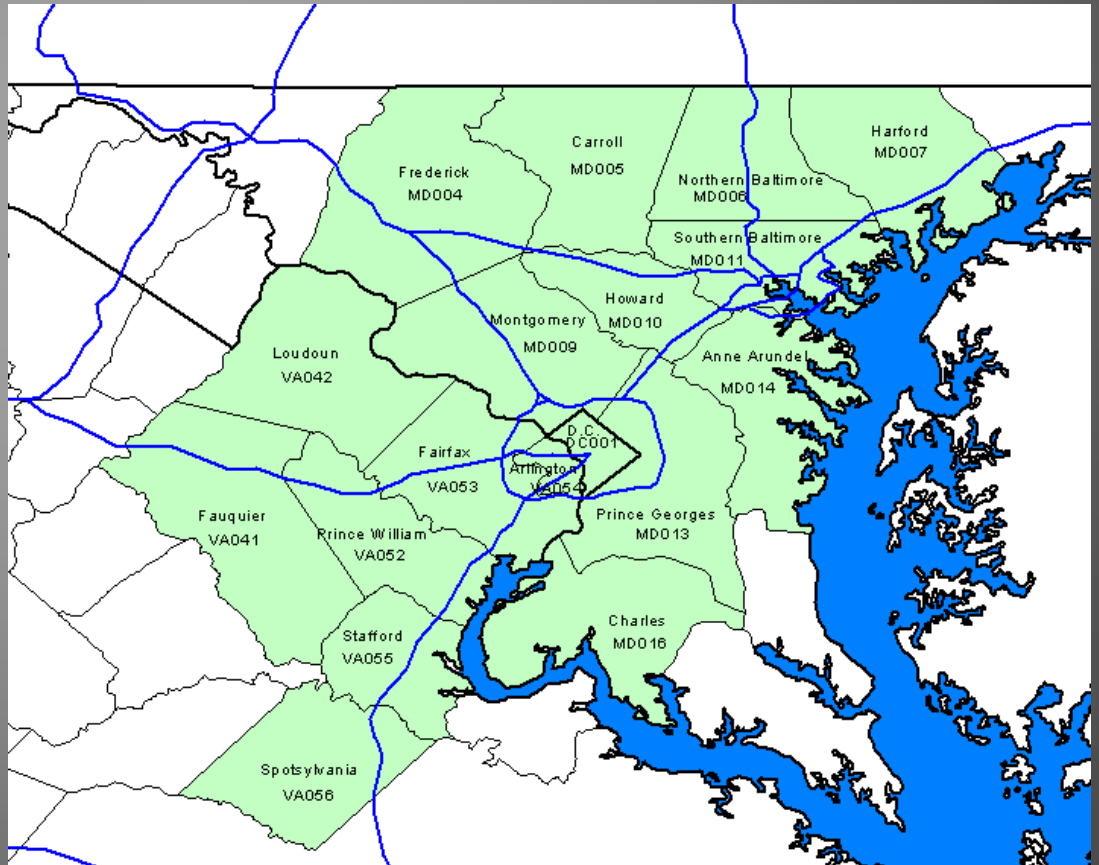
A **Blizzard Warning** is issued when the following conditions will be met for three hours or more:

- Considerable falling and/or blowing snow will reduce visibilities to less than $\frac{1}{4}$ mile
- AND sustained winds/frequent gusts of 35 mph or higher

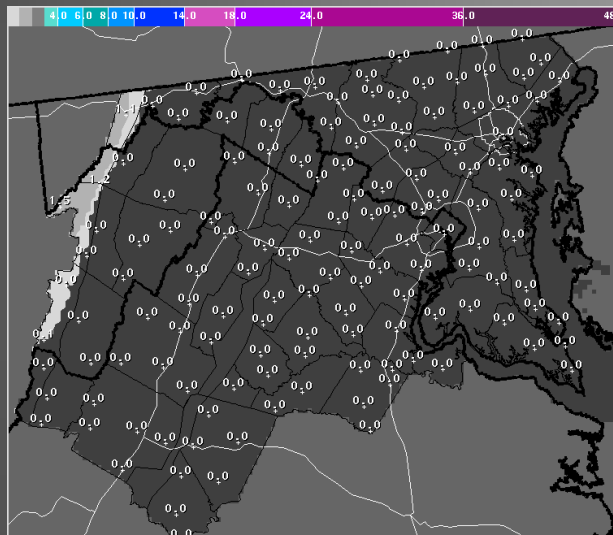
Just a Few More Notes on Advisories...

Advisories can be issued for sub-criteria events in the following cases:

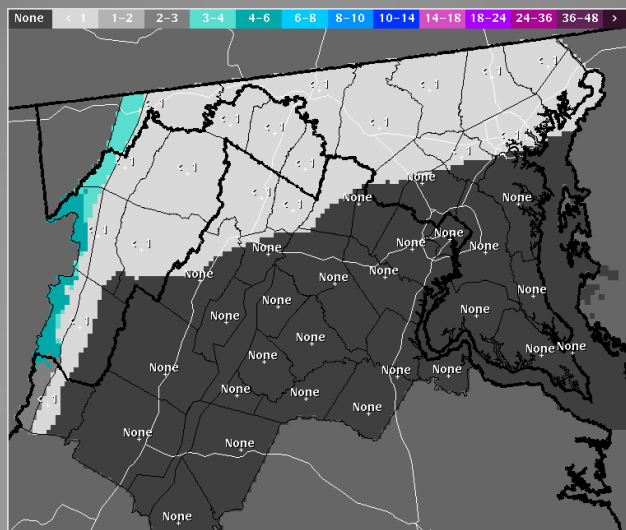
- First snowfall of the season
- If snow showers/squalls will produce locally heavy snowfall
- If one inch of snow is expected to impact the Baltimore/Washington Metro Areas during Rush Hour (4-9AM & 2-7PM)



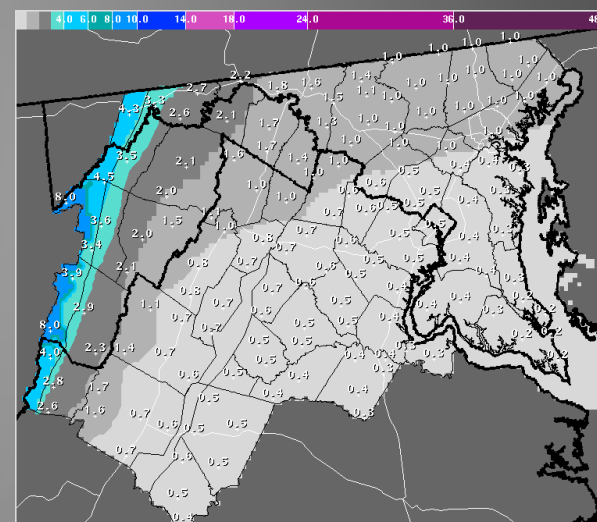
Winter Probabilistic Graphics



Minimum – Expect at least this much

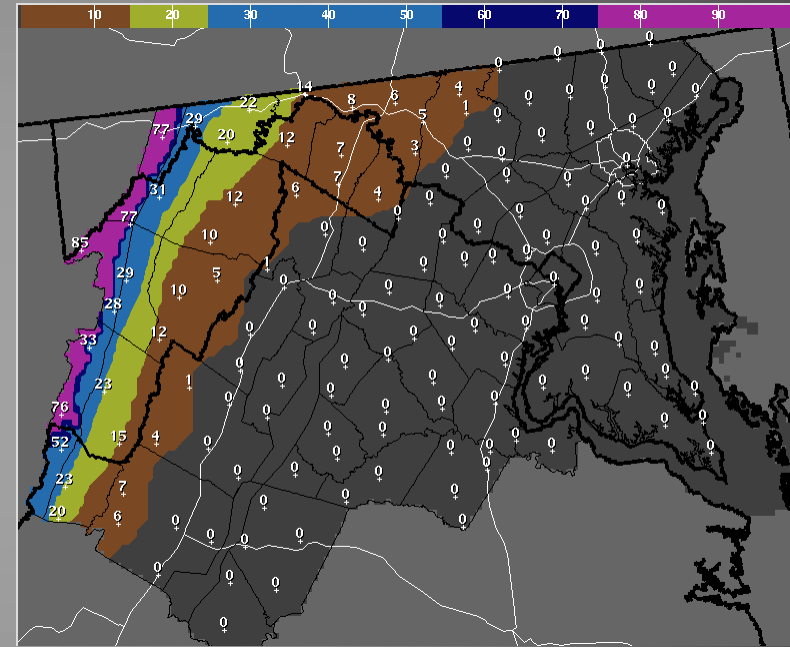
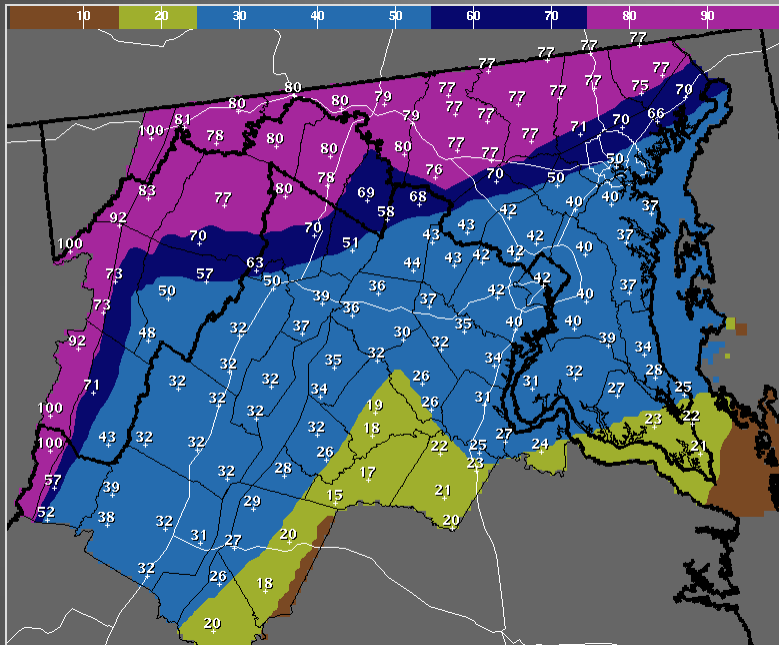


Most Likely Forecast



Maximum – Potential for this much

Winter Probabilistic Graphics



Chance that Snow Accumulations Will Be Greater Than...

- Trace, 1, 2, 4, 8, 12, 18 inches

Winter Storm Threat Graphics

Focus: 4-7 Days in the Future

Long Range Winter Storm Threat

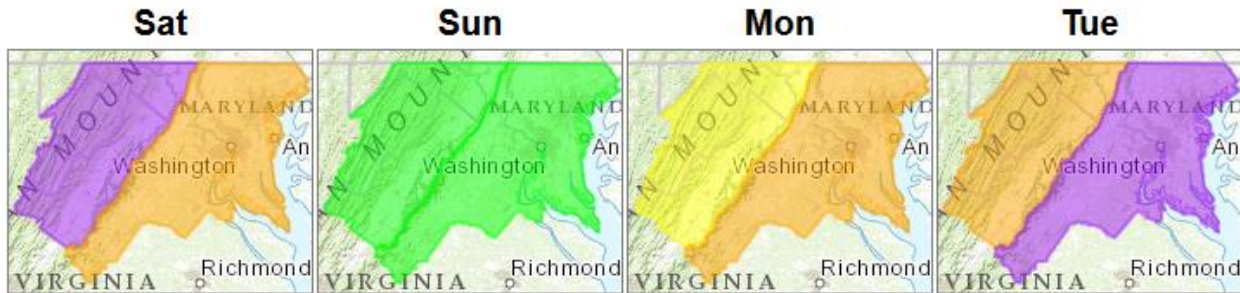
Prototype Under Development - not to be relied on for operational decision making.

[Leave feedback](#)

Last Updated: 11/24/2015 2:41 PM Eastern

[What's this?](#)

Monitor the forecast in the days ahead for updates!

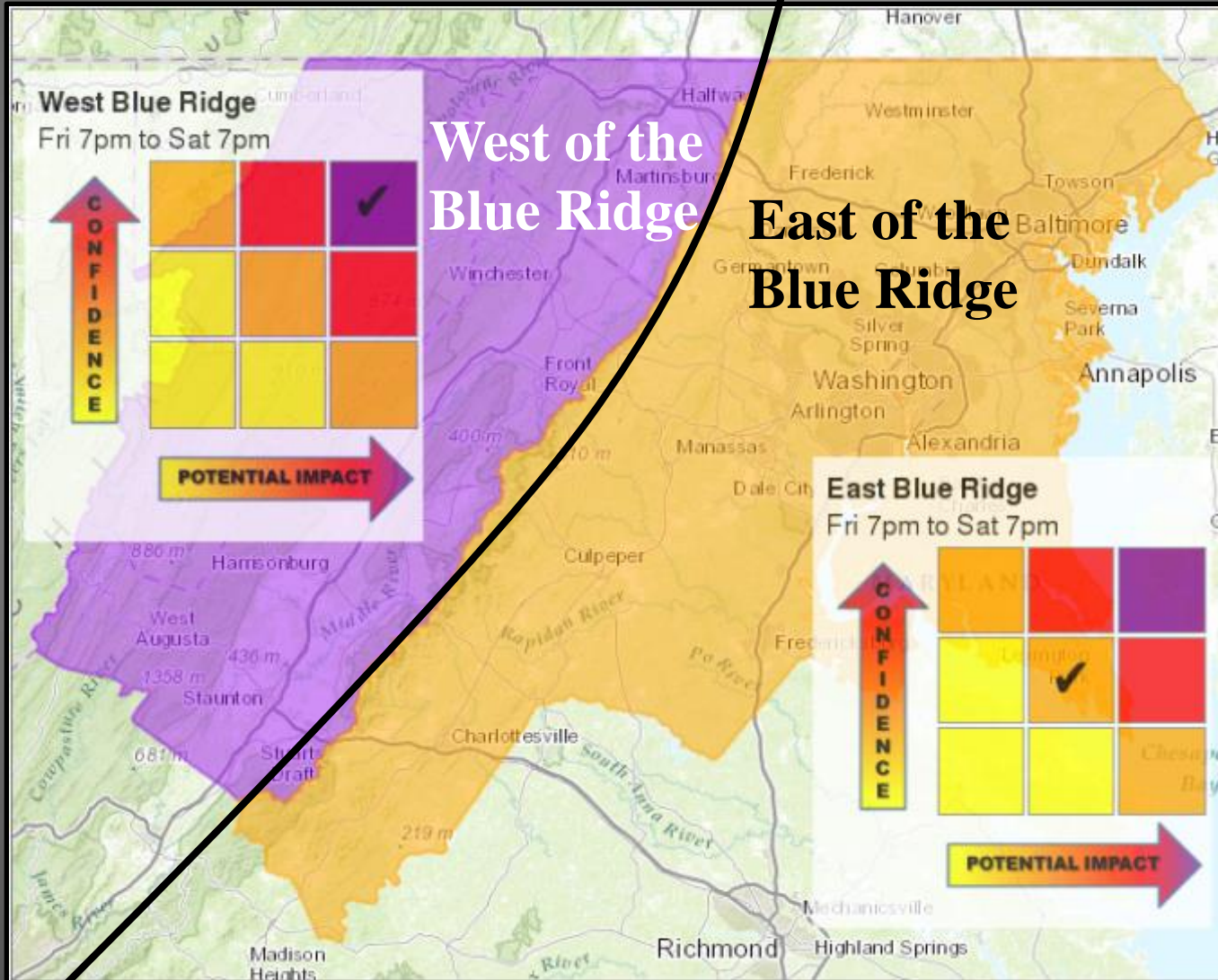


Click on maps to see daily Confidence vs. Potential impact. ([Click here to hide.](#))

High	High threat of high impact winter storm. Potential impacts include significant travel delays, closures, and threats to life and property. Plan ahead to minimize impact on you and your family.
Moderate	Moderate winter storm threat. Potential impacts include significant travel delays and closures. Plan ahead to minimize impact on you and your family.
Enhanced	Enhanced winter storm threat. Primary threat is disruption to travel.
Slight	Slight winter storm threat. May cause travel disruptions, particularly if threat increases.
None	No significant winter storm threat is currently expected. However, light wintry precipitation may still be possible.

Example

Broken into two areas:



What do the Colors Mean?



High	High threat of high impact winter storm. Potential impacts include significant travel delays, closures, and threats to life and property. Plan ahead to minimize impact on you and your family.
Moderate	Moderate winter storm threat. Potential impacts include significant travel delays and closures. Plan ahead to minimize impact on you and your family.
Enhanced	Enhanced winter storm threat. Primary threat is disruption to travel.
Slight	Slight winter storm threat. May cause travel disruptions, particularly if threat increases.
None	No significant winter storm threat is currently expected. However, light wintry precipitation may still be possible.

<http://www.weather.gov/lwx/WinterStormThreat>

NWS Products & Services

Beyond 7 Days: Climate Prediction Center

- Seasonal Outlooks
- Monthly Outlooks
- 8-14 Day & 6-10 Day Outlooks
- National Maps
- www.cpc.ncep.noaa.gov

National Weather Service
Climate Prediction Center

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MJO
Blocking
AAO, AO, NAO, PNA
Storm Tracks
Climatology
Global Monsoons

Expert Assessments
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Desks

Partnerships
Climate.gov
Climate Test Bed
NOAA
Interagency
JAWF
USAID
Alaska

Climate News

- [NOAA's 41st Climate Diagnostics and Prediction Workshop will be held in Orono, Maine, on 3-6 October 2016](#)
- [NOAA's 2016 Updated Atlantic Hurricane Season Outlook Released](#)
- [NOAA's 2016 Eastern Pacific Hurricane Season Outlook Released](#)
- [New CPC Web Page Design](#)

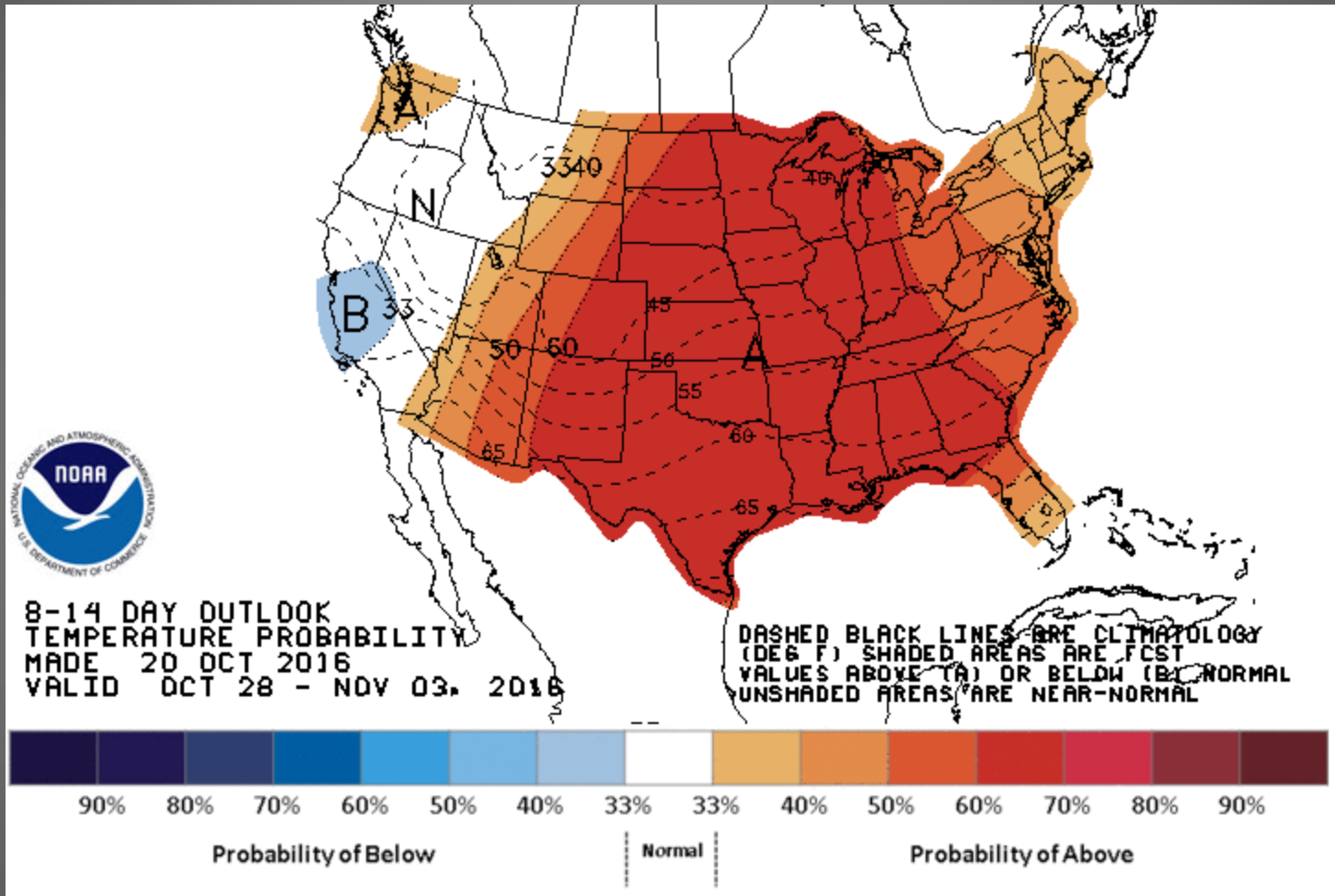
Click on product title to go to product page. Move cursor over product parameter name to display the graphic -- click to enlarge. Links to these same products are also available below.

6-10 Day Outlook (Interactive Display)		One Month Outlook	
Temperature	Precipitation	Temperature	Precipitation
8-14 Day Outlook (Interactive Display)		Three Month Outlook	
Temperature	Precipitation	Temperature	Precipitation
Experimental Week 3-4		U.S. Hazards Outlook	
Temperature	Precipitation	3-7 Day	8-14 Day 8-14 Day Temps
U.S. Drought Information		Global Tropics Hazards Outlook	
Monitor	Monthly Outlook Seasonal Outlook	Weeks 1 and 2	

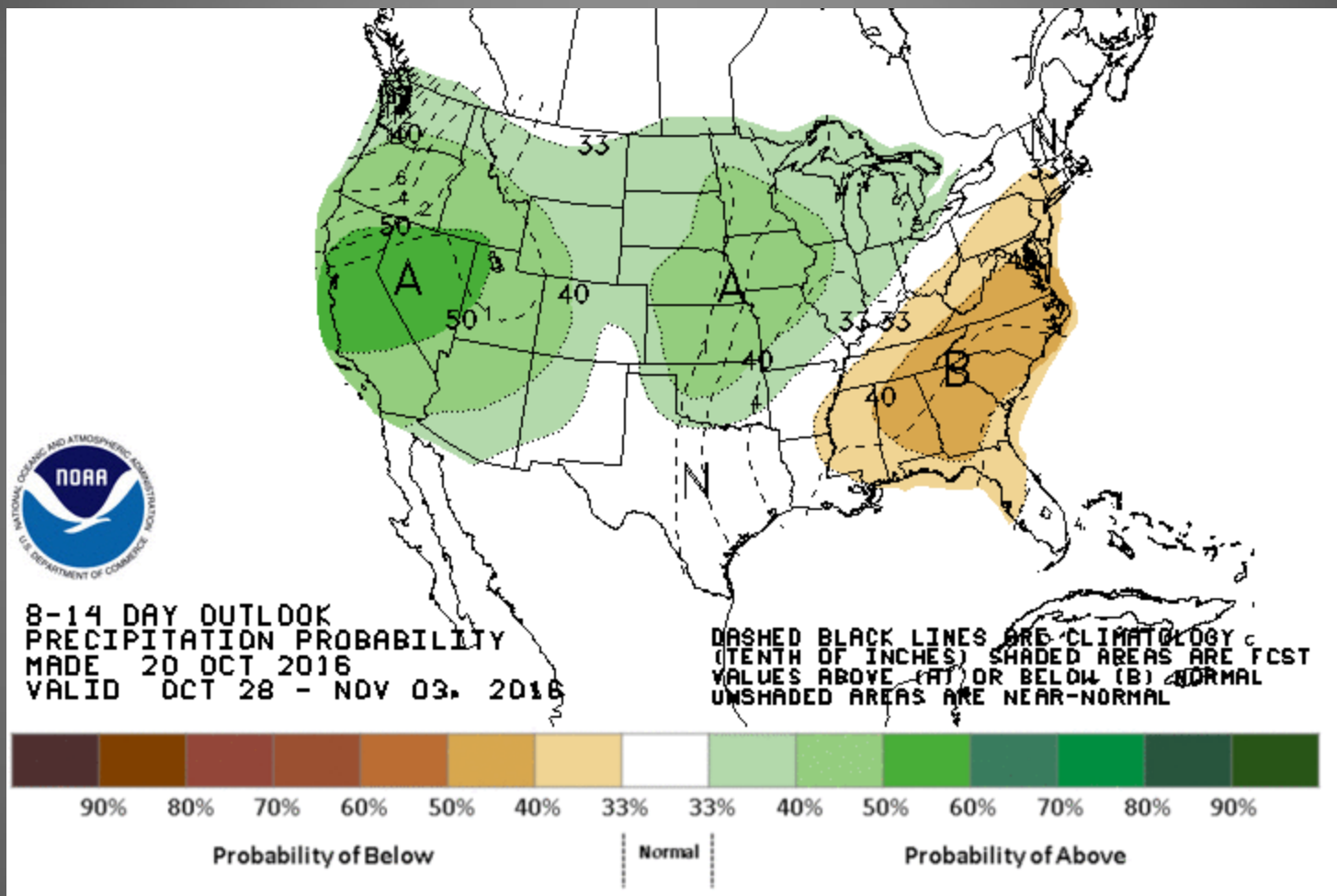
6-10 DAY OUTLOOK TEMPERATURE PROBABILITY

DASHED BLACK LINES ARE CLIMATOLOGY

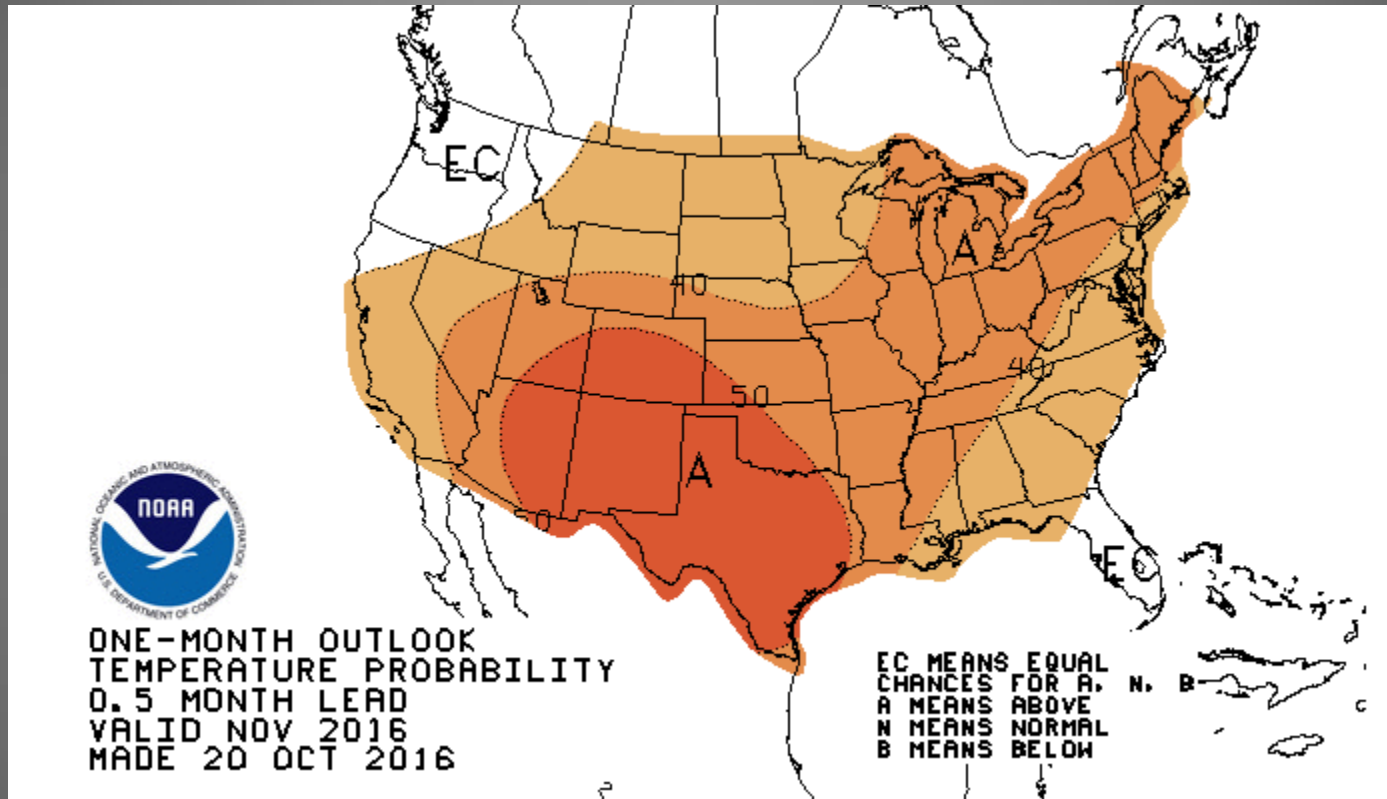
Temperature 8-14 Day Outlook



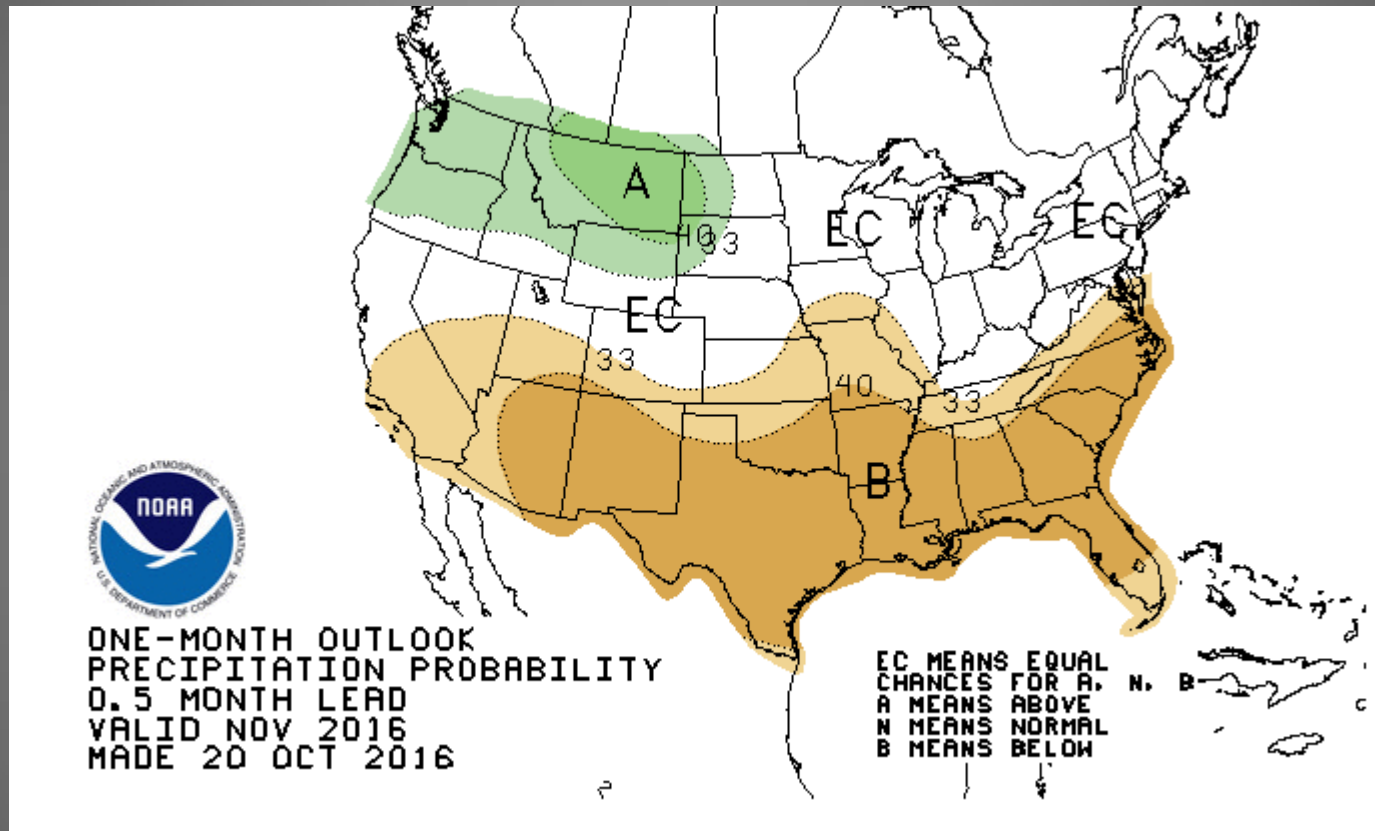
Precipitation 8-14 Day Outlook



Temperature 30-Day Outlook

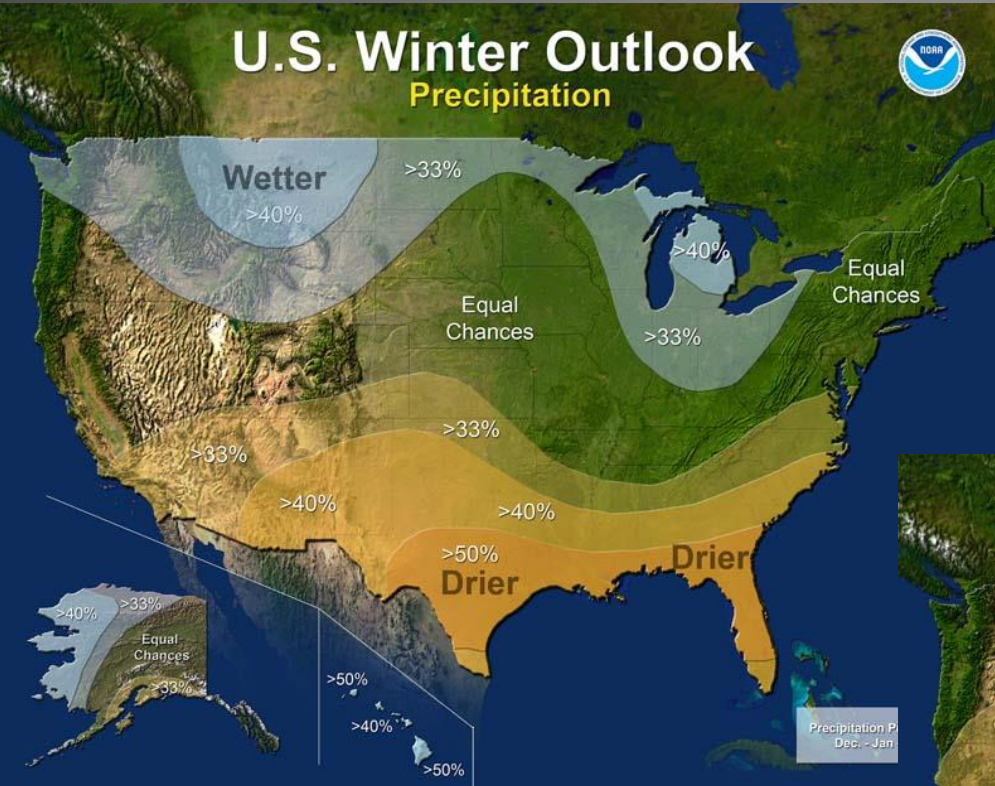


Precipitation 30-Day Outlook

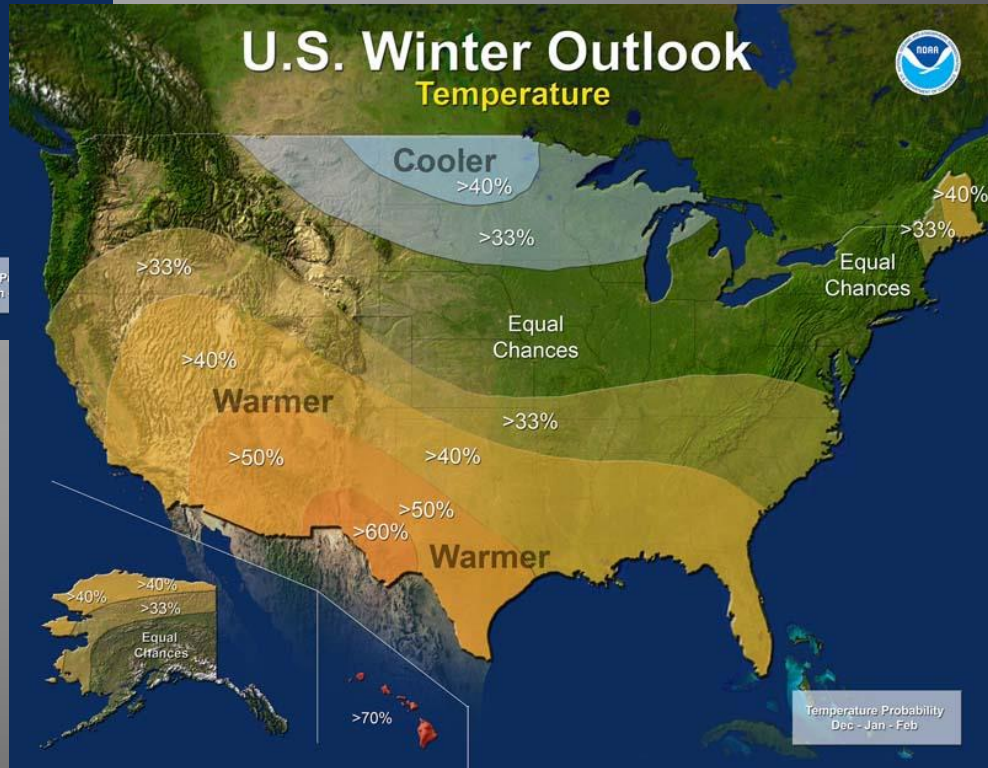


2016-2017 Winter Outlook

U.S. Winter Outlook Precipitation

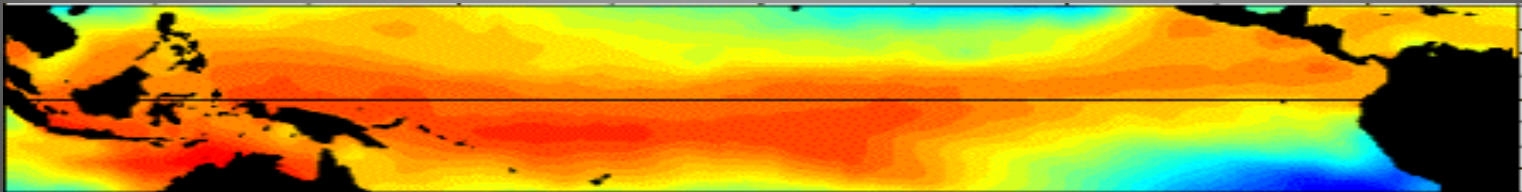


U.S. Winter Outlook Temperature

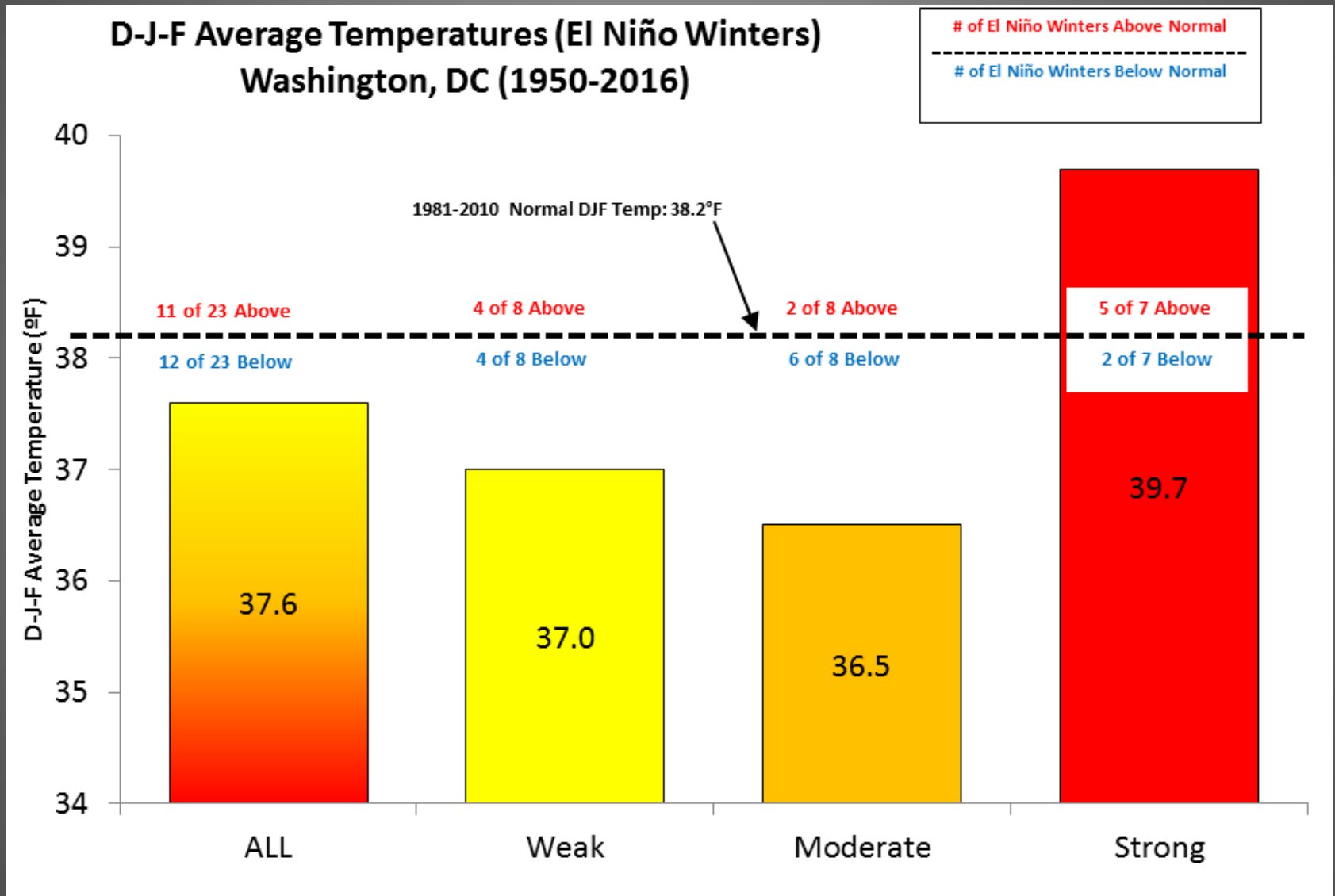


El Niño

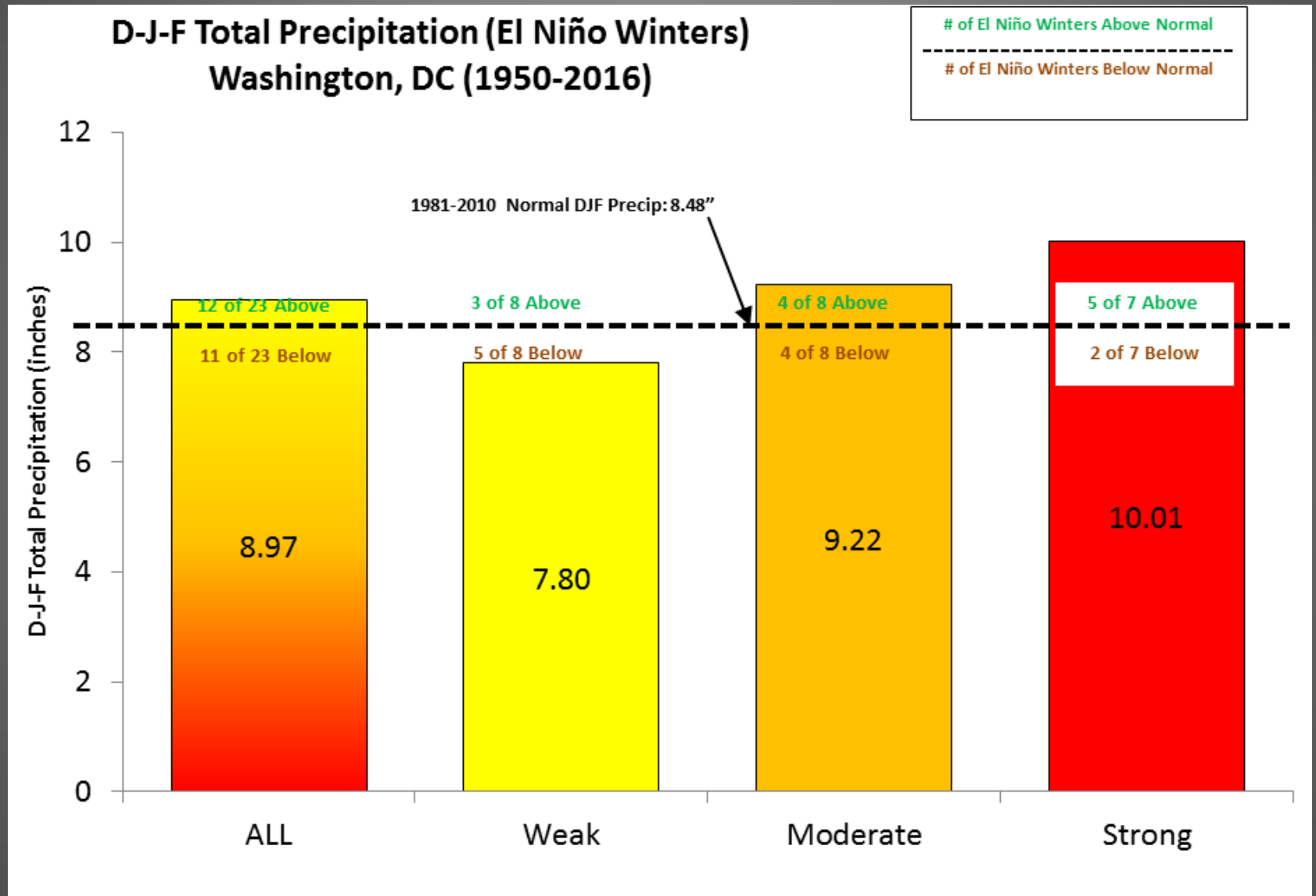
- Warmer than Normal Decembers
- Normal or below normal JFM
- Increases the strength of the Southern (or sub-tropical) jet stream
- Increase risk of Nor'easters
 - Cold air will determine if this is snow or rain and that will depend on the Polar Jet



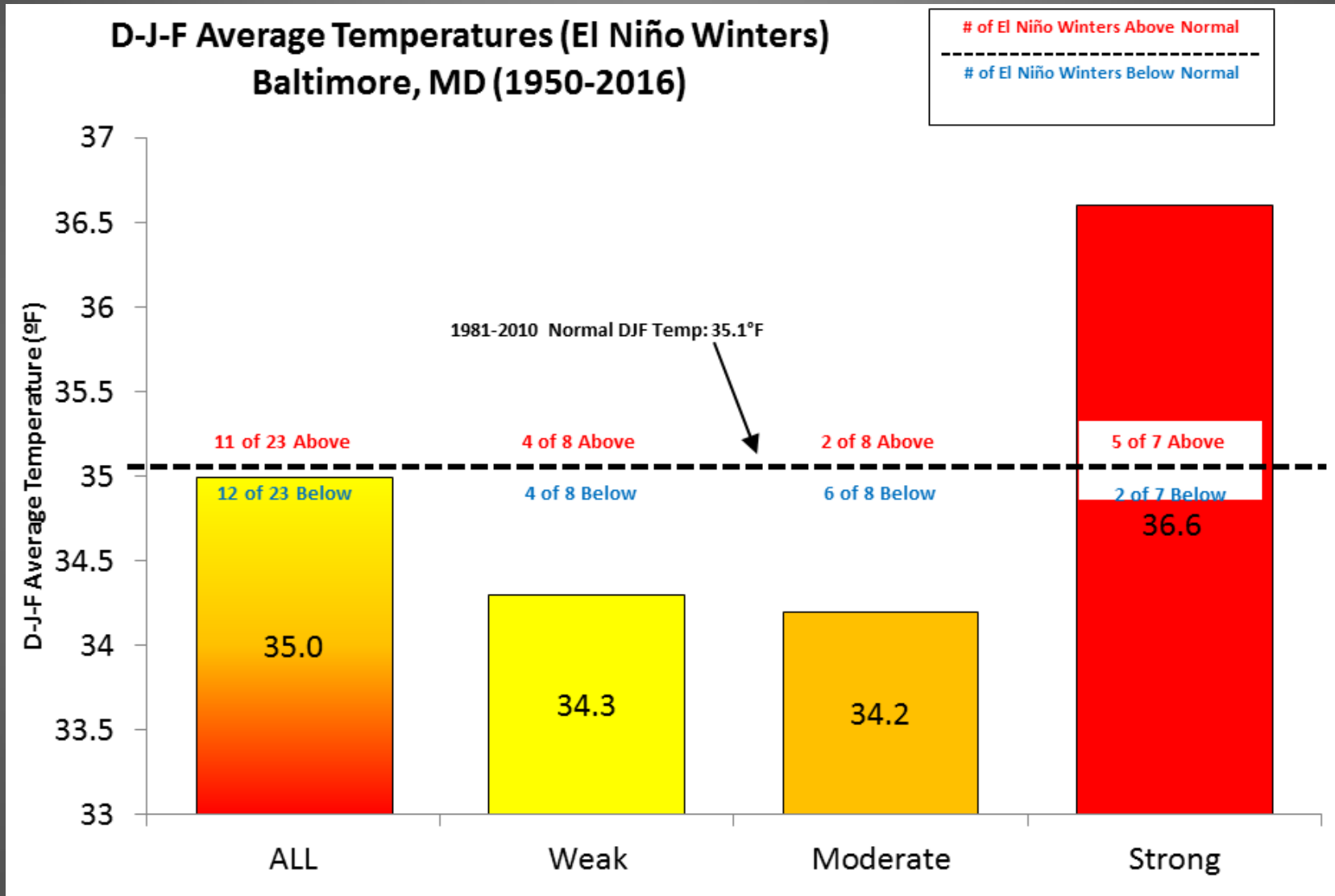
El Niño Winters at DC



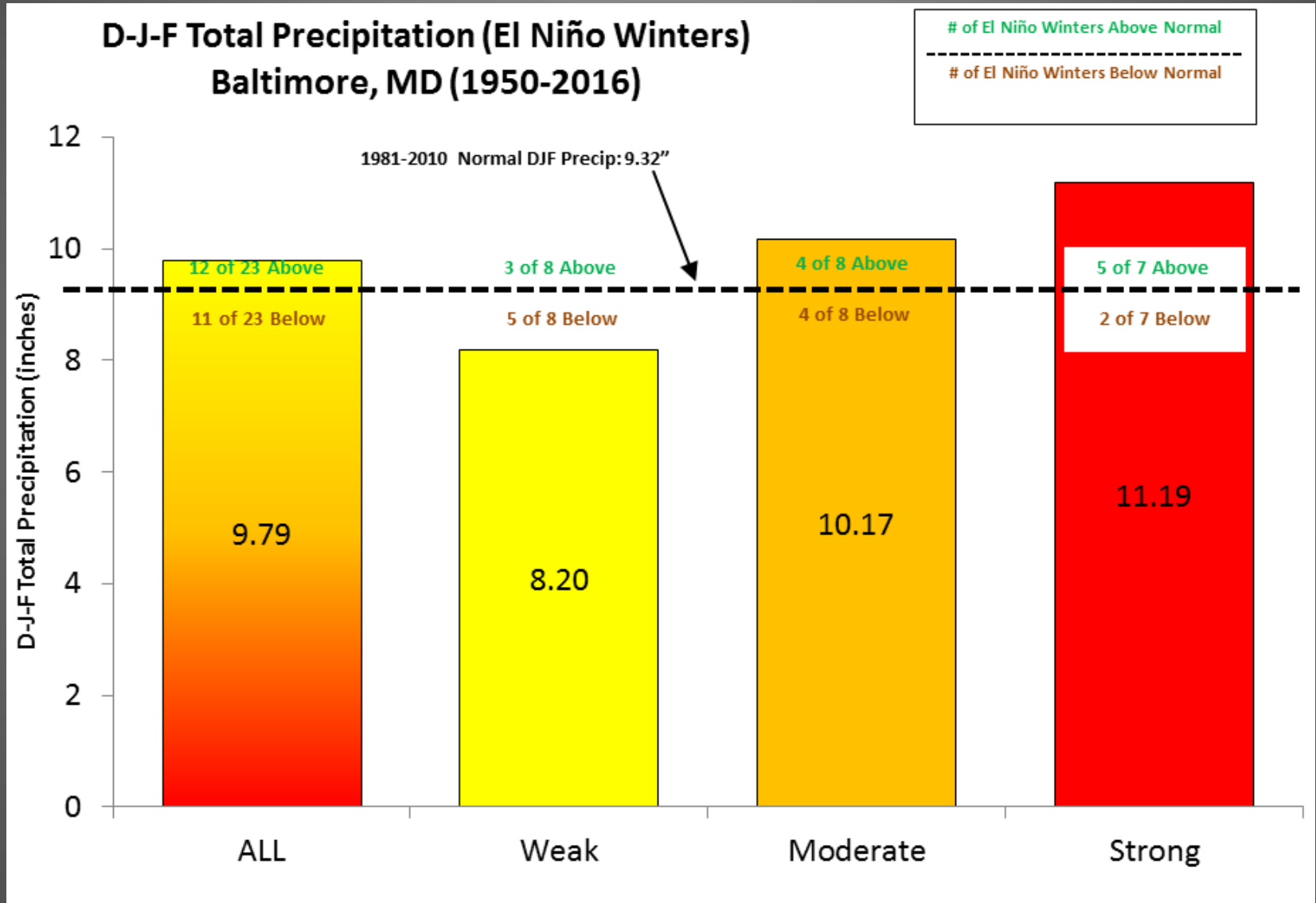
El Niño Winters at DC



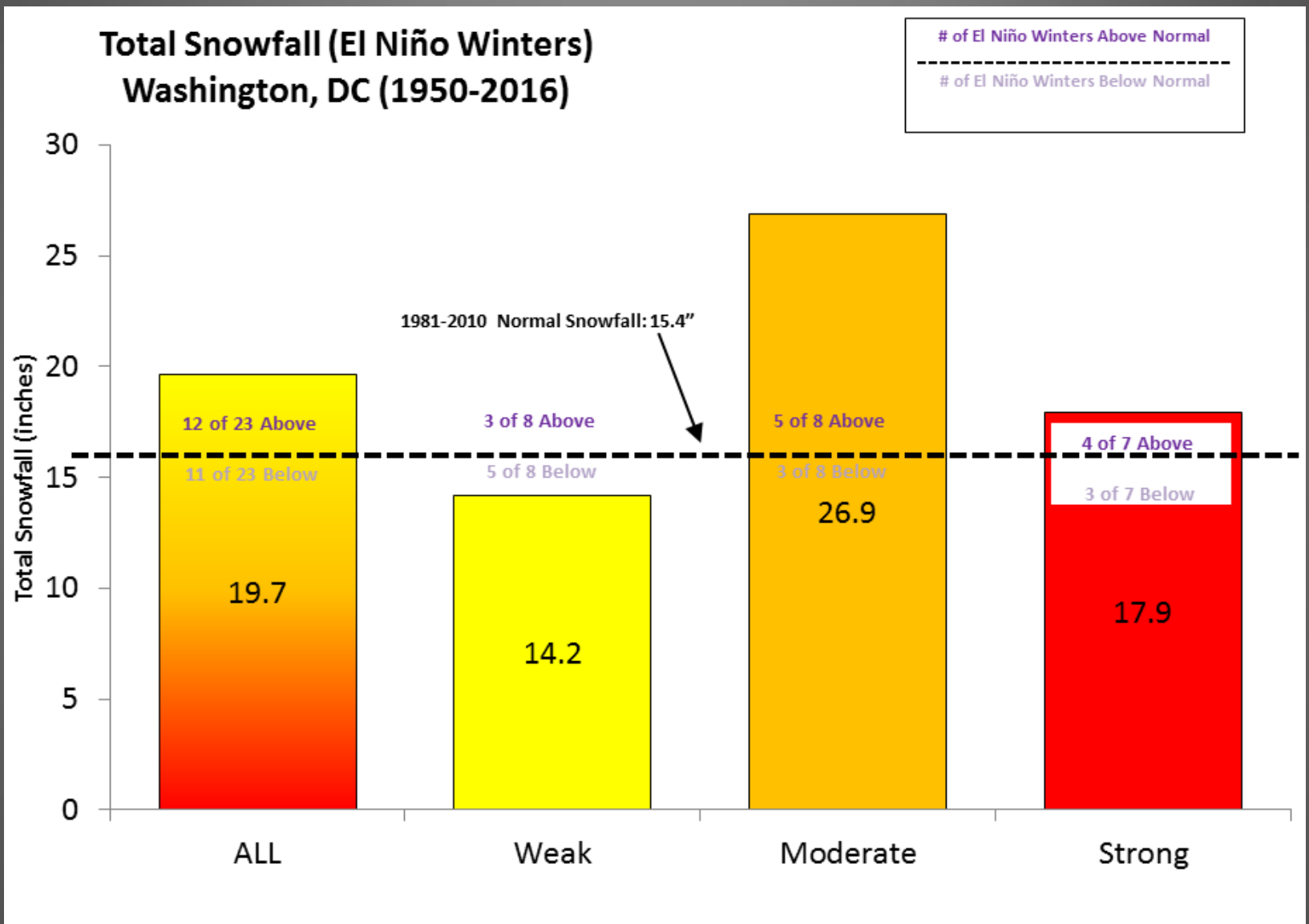
El Niño Winters at BWI



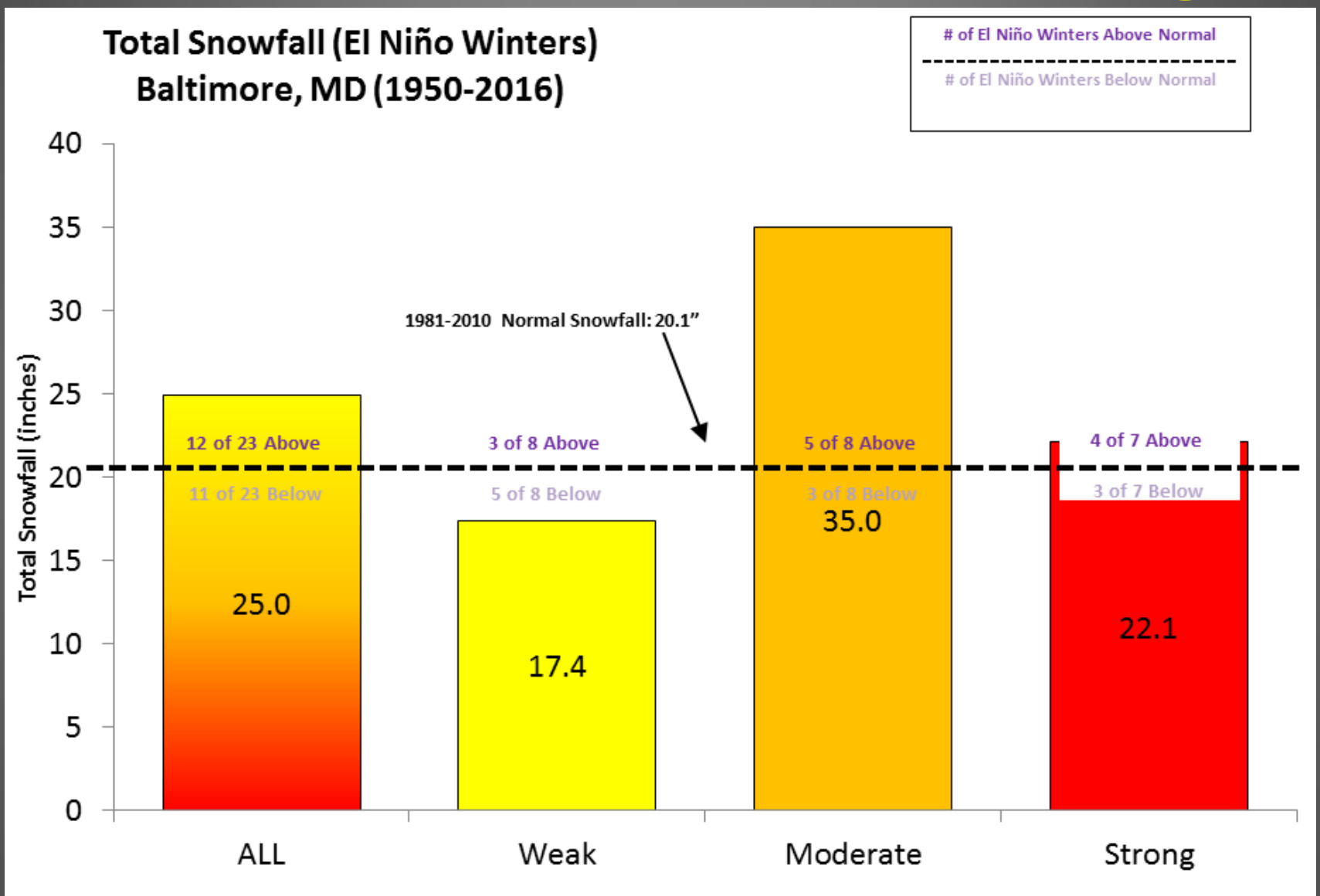
El Niño Winters at BWI



El Niño Winters Snowfall Averages

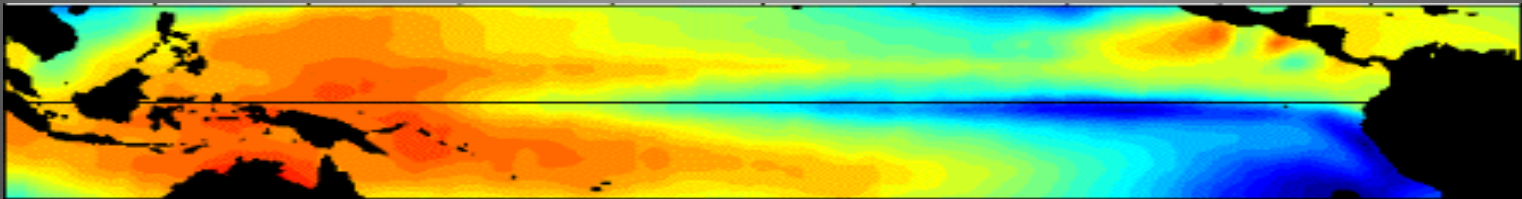


El Niño Winters Snowfall Averages

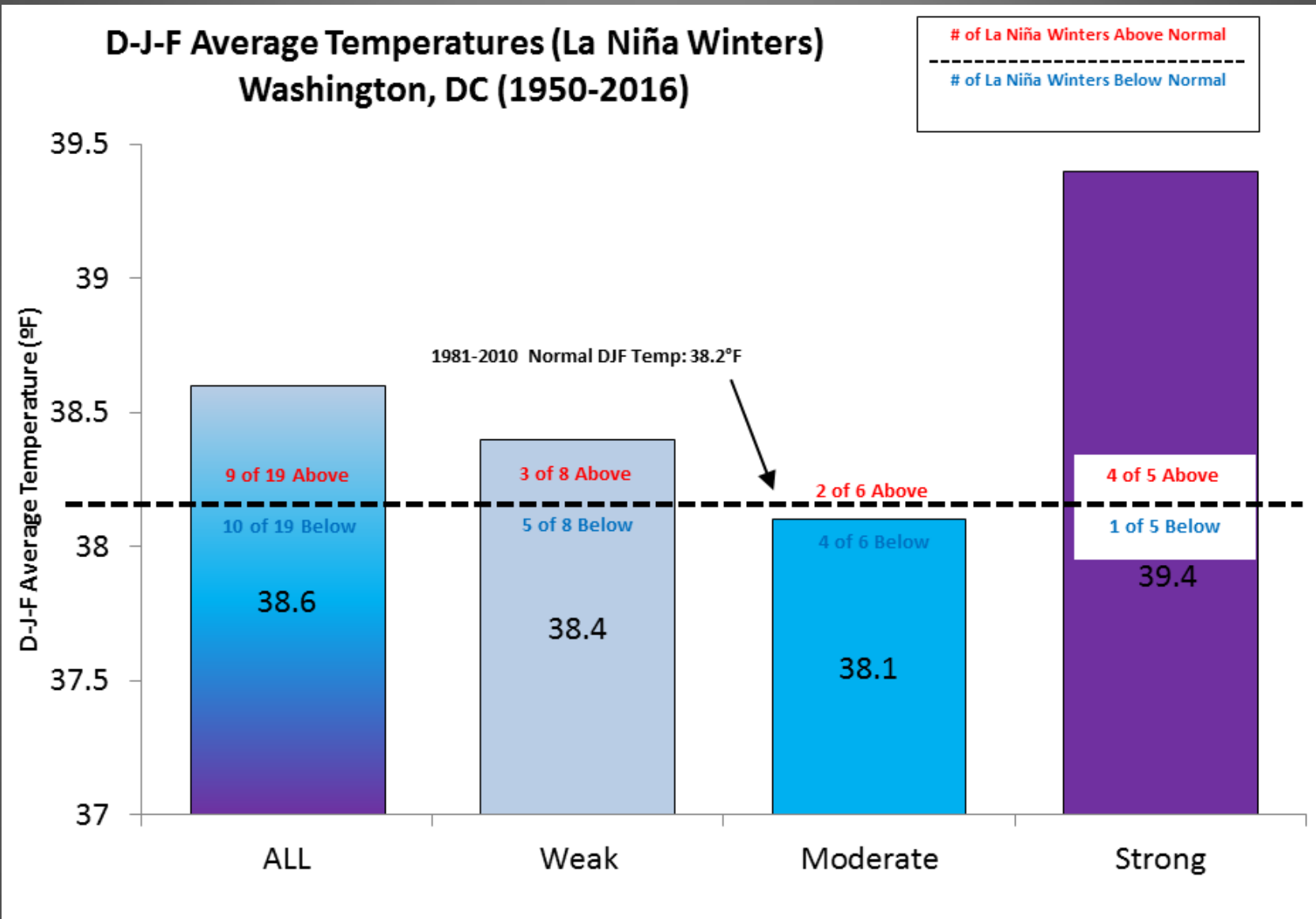


La Niña

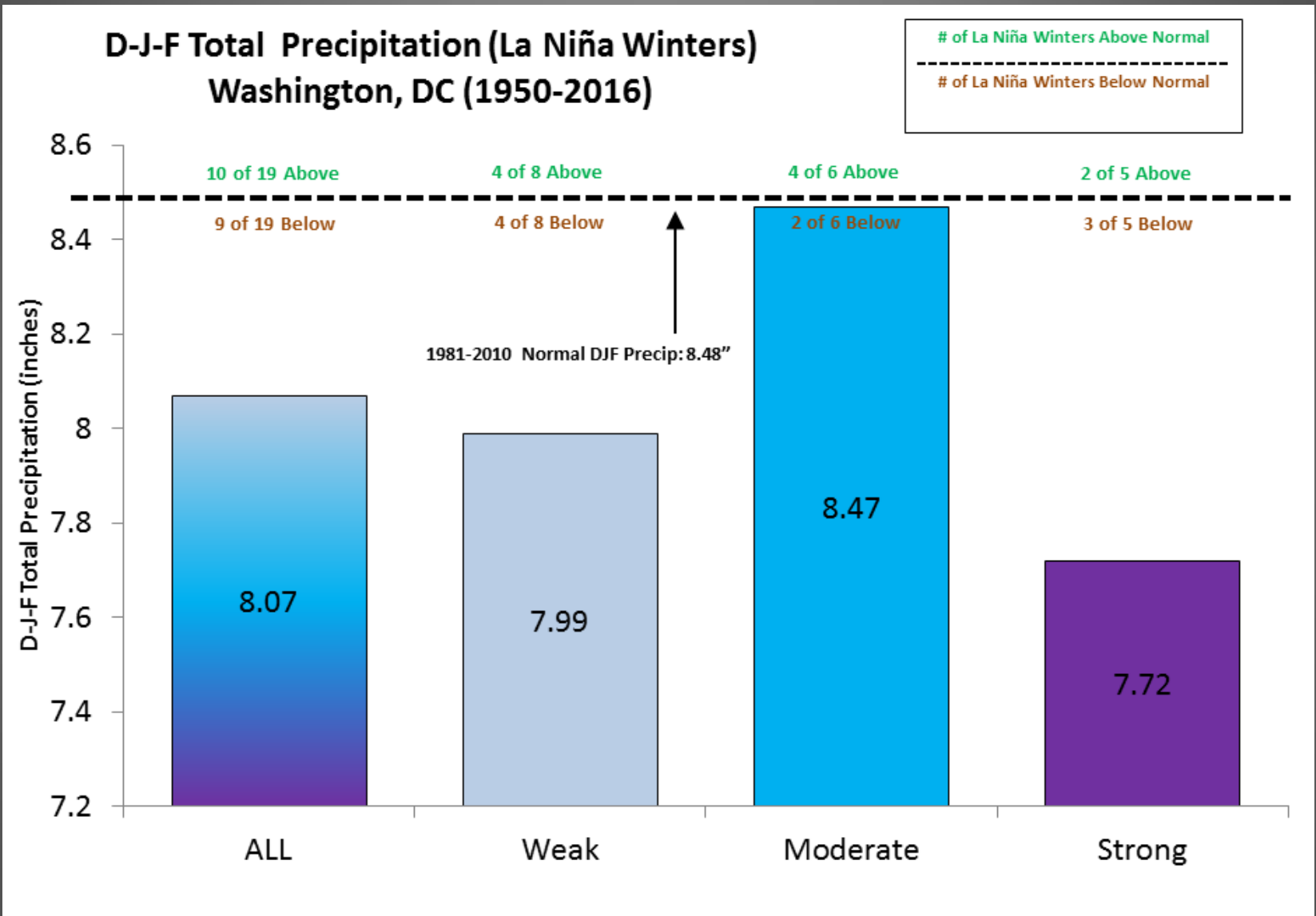
- Milder Winter
- Drier Winter
- Decreased risk of Arctic Outbreaks



La Niña Winters at DC



La Niña Winters at DC

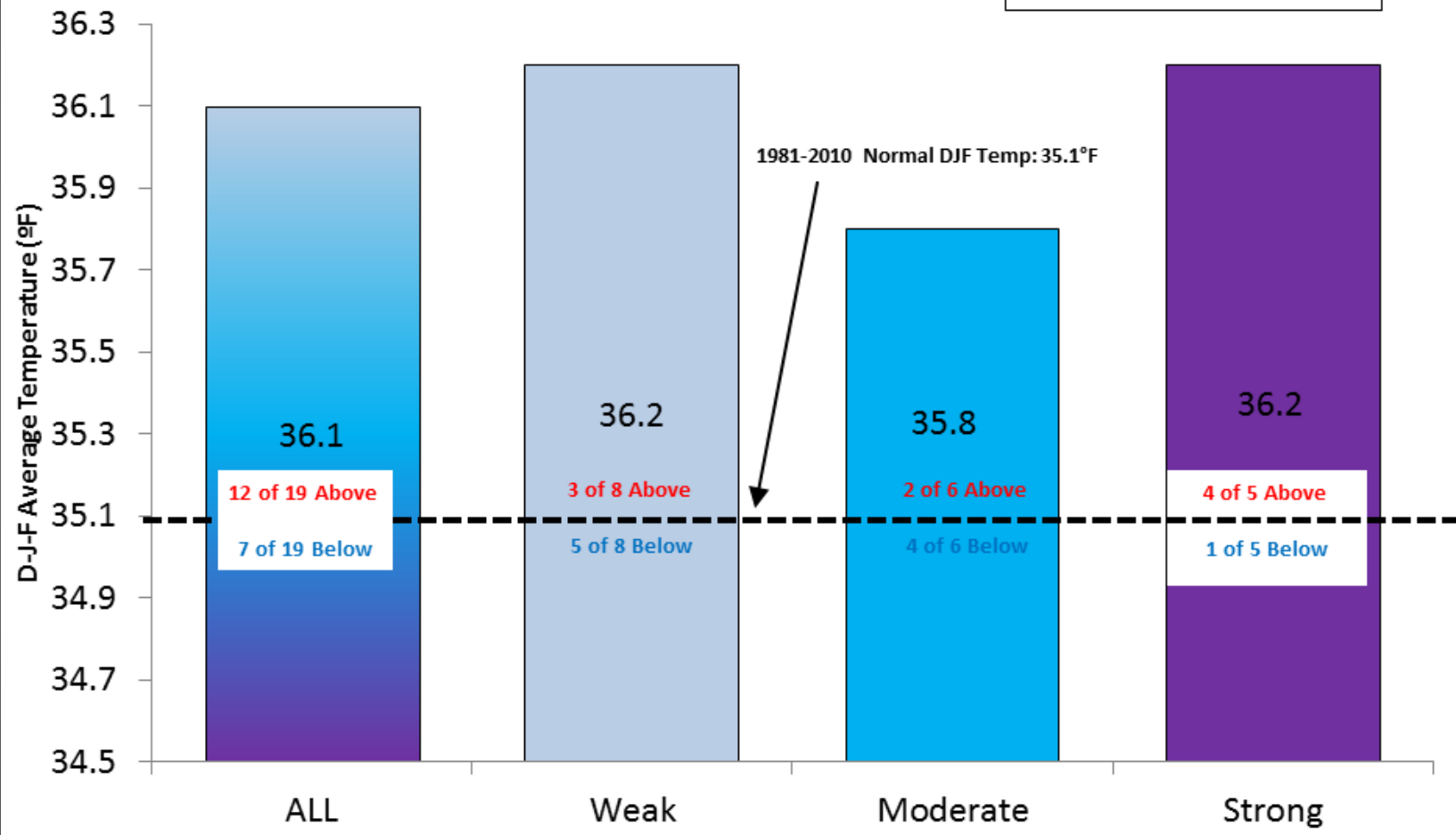


La Niña Winters at BWI

**D-J-F Average Temperatures (La Niña Winters)
Baltimore, DC (1950-2016)**

of La Niña Winters Above Normal

of La Niña Winters Below Normal

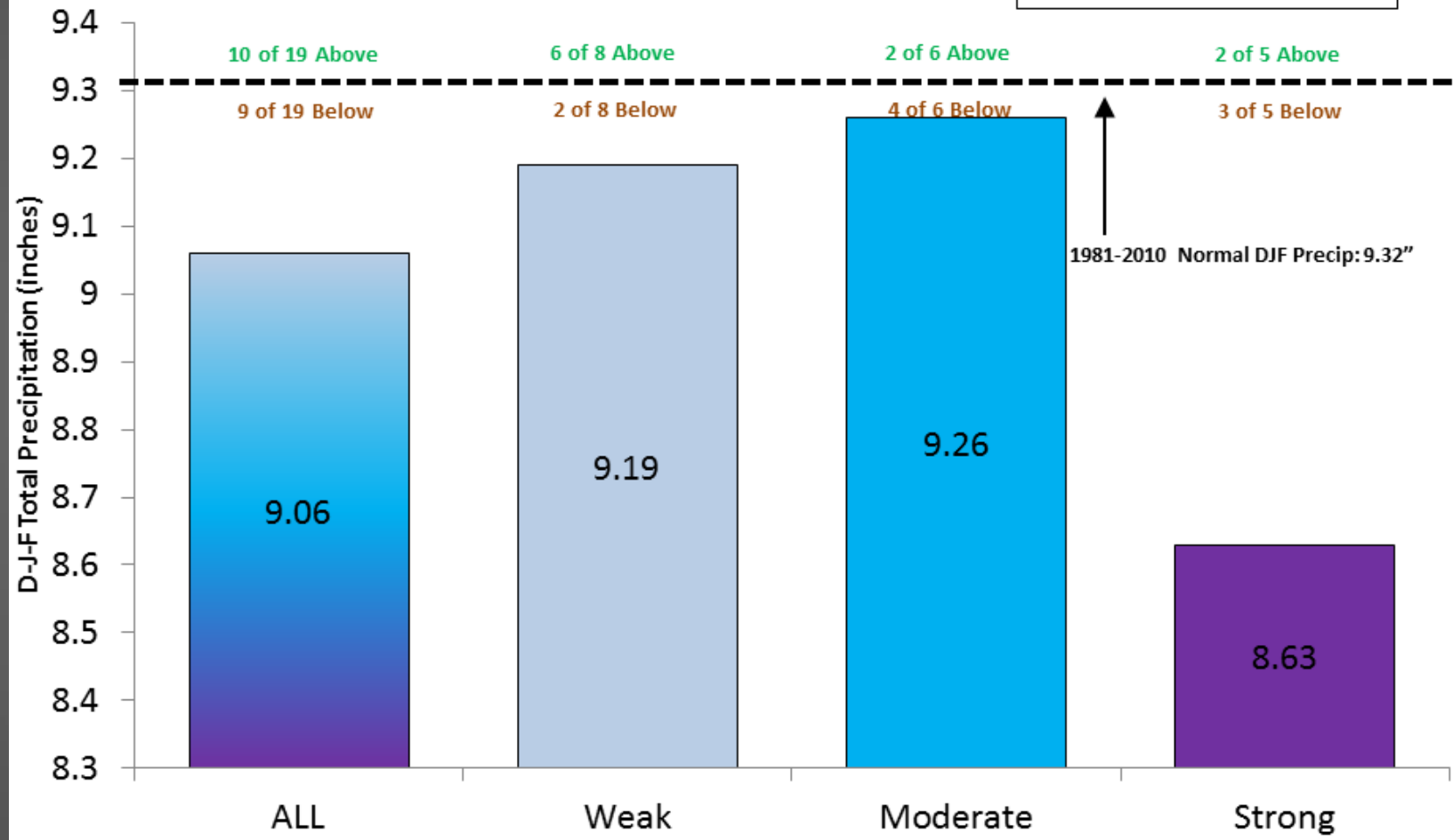


La Niña Winters at BWI

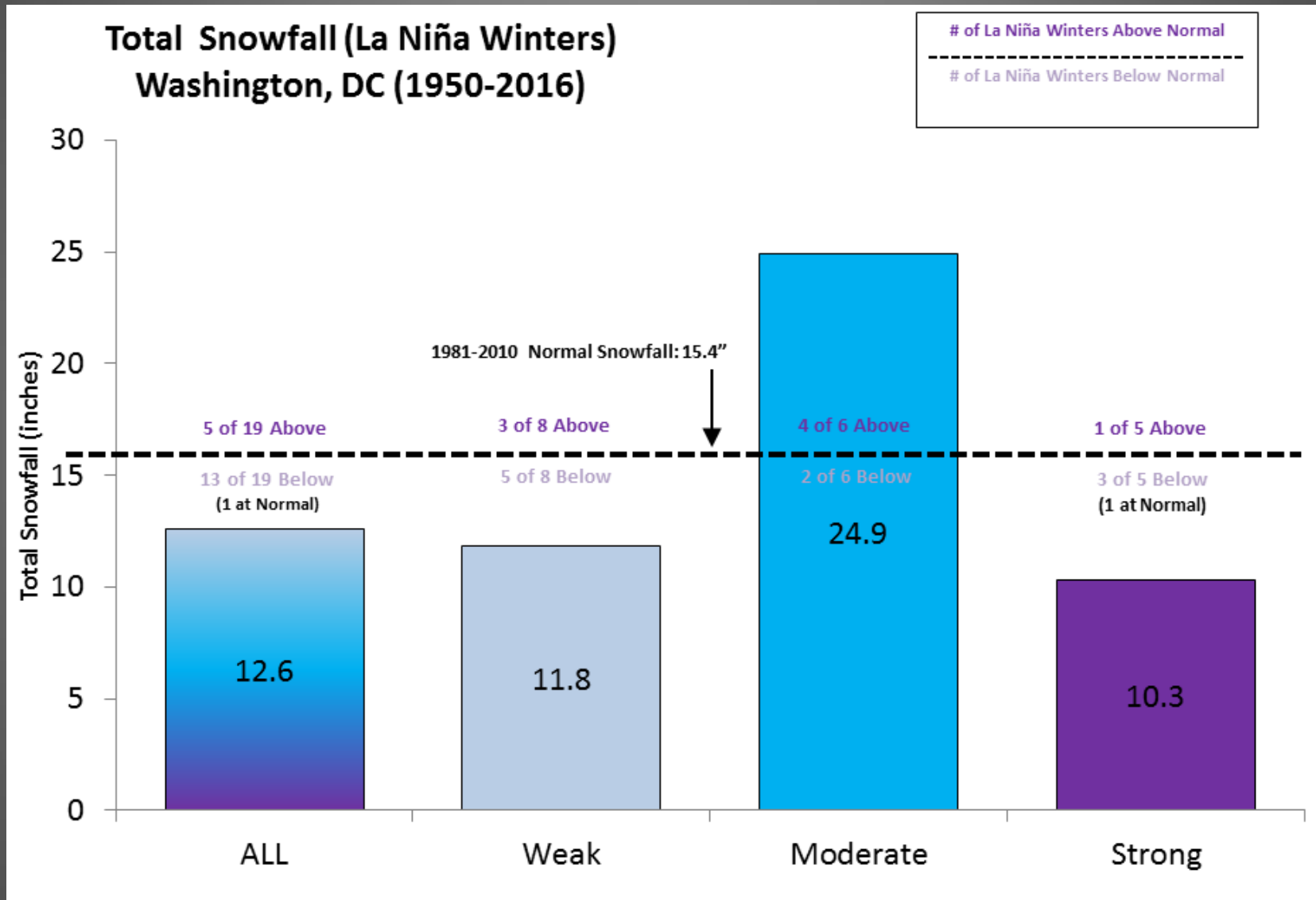
D-J-F Total Precipitation (La Niña Winters)
Baltimore, MD (1950-2016)

of La Niña Winters Above Normal

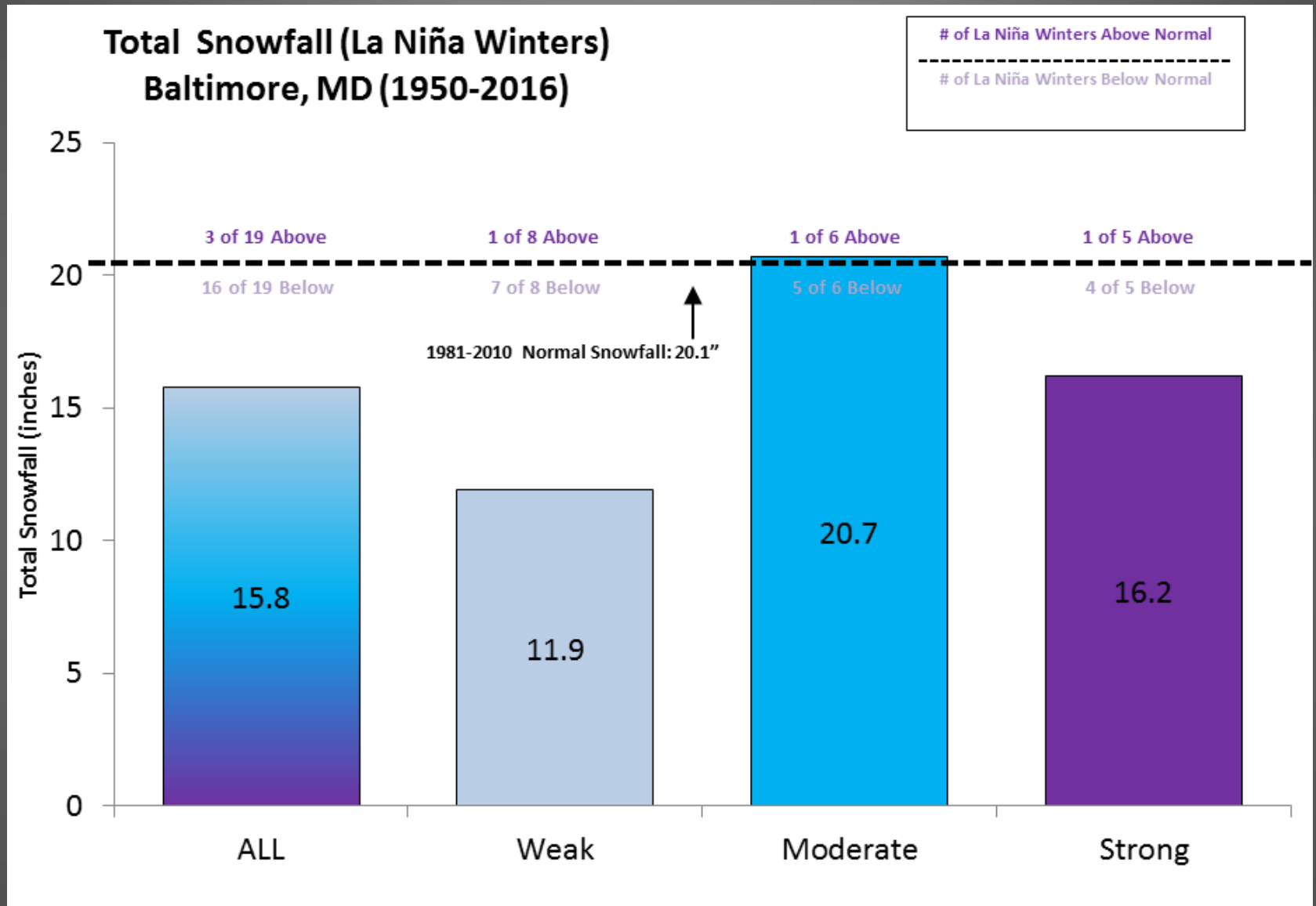
of La Niña Winters Below Normal



La Niña Winters Snowfall Averages



La Niña Winters Snowfall Averages



Local La Niña (?) Impacts This Winter

- This winter may be ENSO neutral or weak La Niña
- Mid-Atlantic: La Niña can impact us, but not always
 - Temps: No strong relationship here
 - Precipitation: Slightly stacks the deck for less

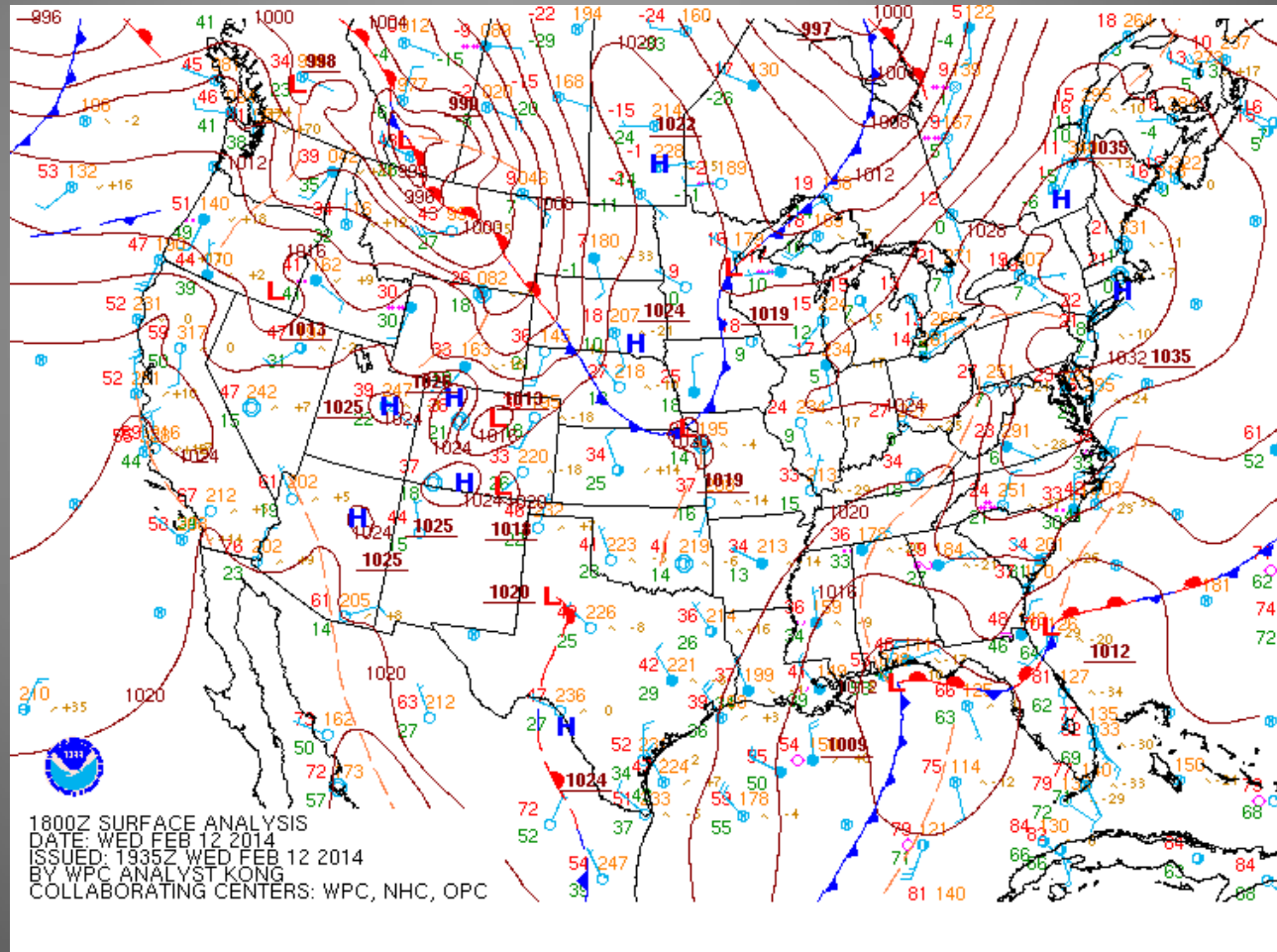
**There is more than one atmospheric oscillation
to consider when looking at impacts
in the Mid-Atlantic.**

Case Study

- February 13, 2014

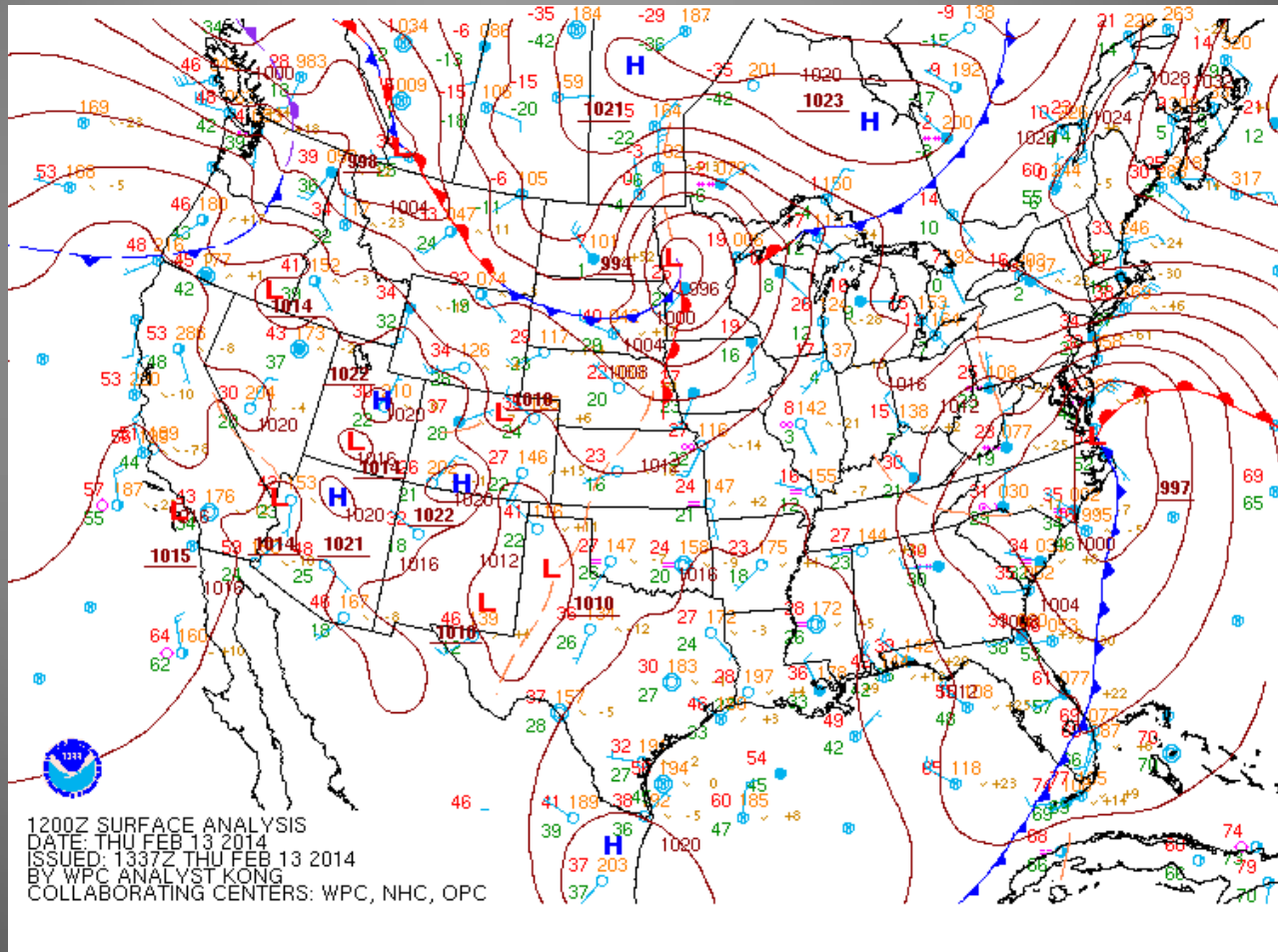
February 13, 2014

High pressure for pling over the Gulf of Mexico, moving westward and inland through the 20s. Chasing the high over the night, reaching the NC coast by midnight the night of the 12th

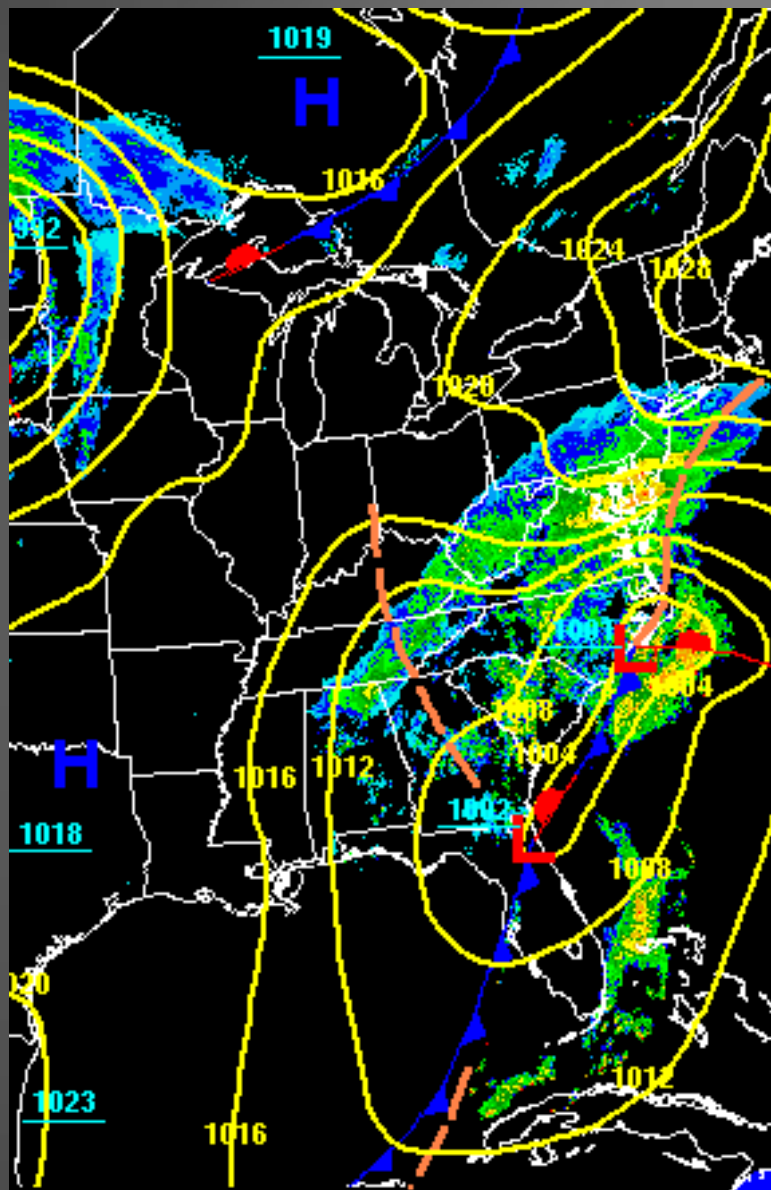


February 13, 2014

The low brought an abundance of moisture from the Gulf of Mexico and the Atlantic Ocean while rapidly intensifying off the Mid-Atlantic Coast

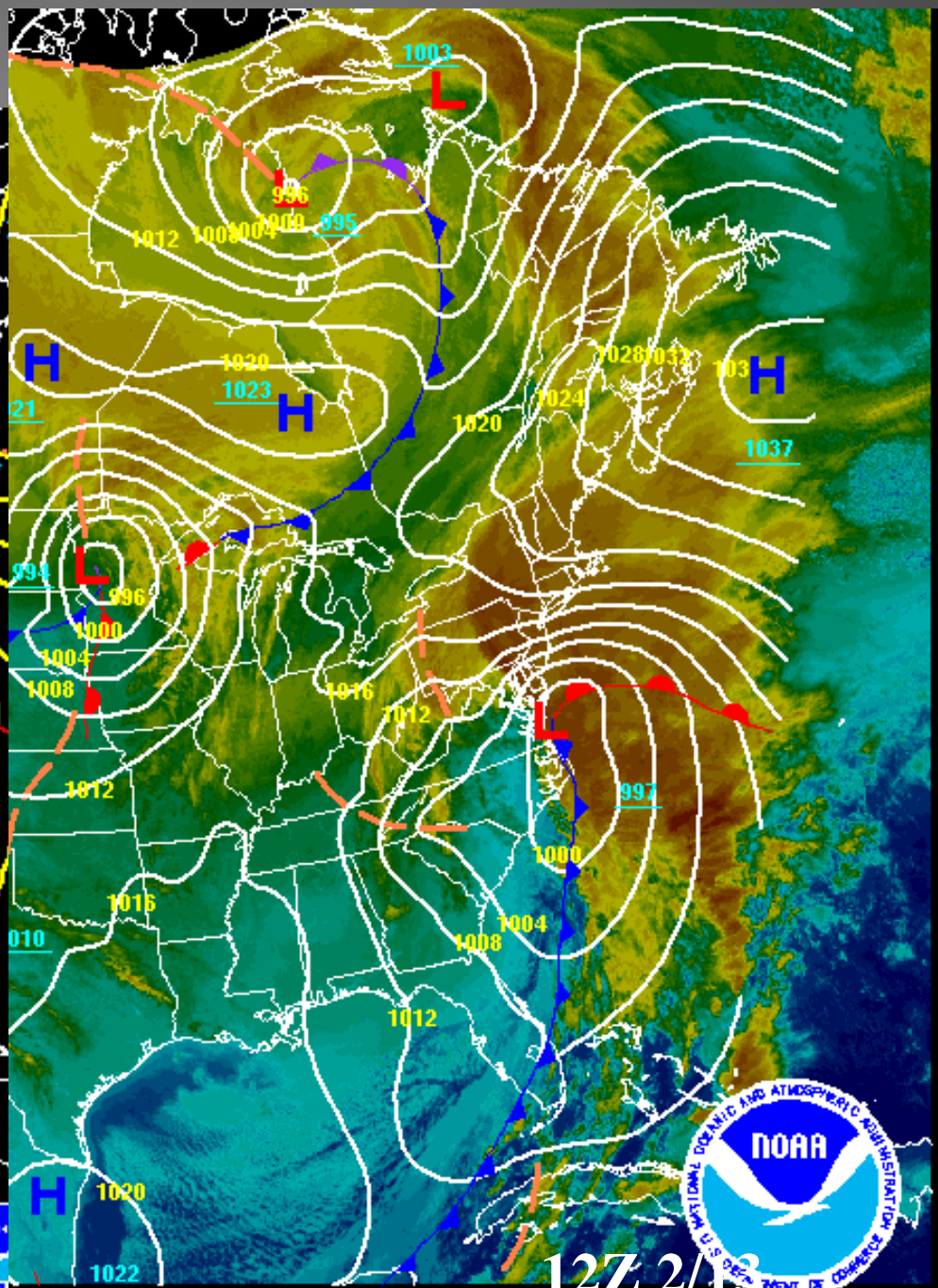


February 13, 2014



ADAR IMAGE

06Z 2/13



12Z 2/13

February 13, 2014

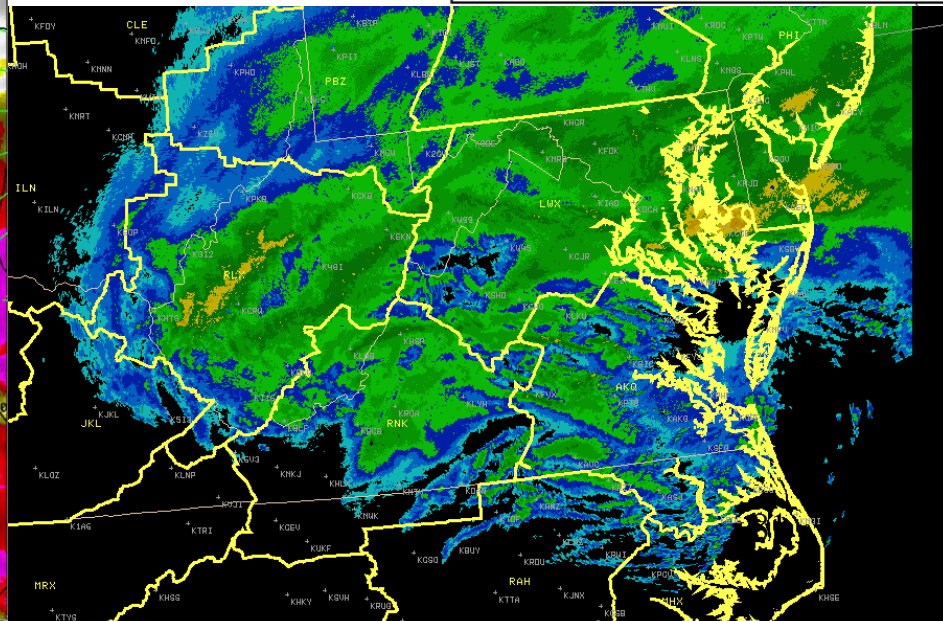
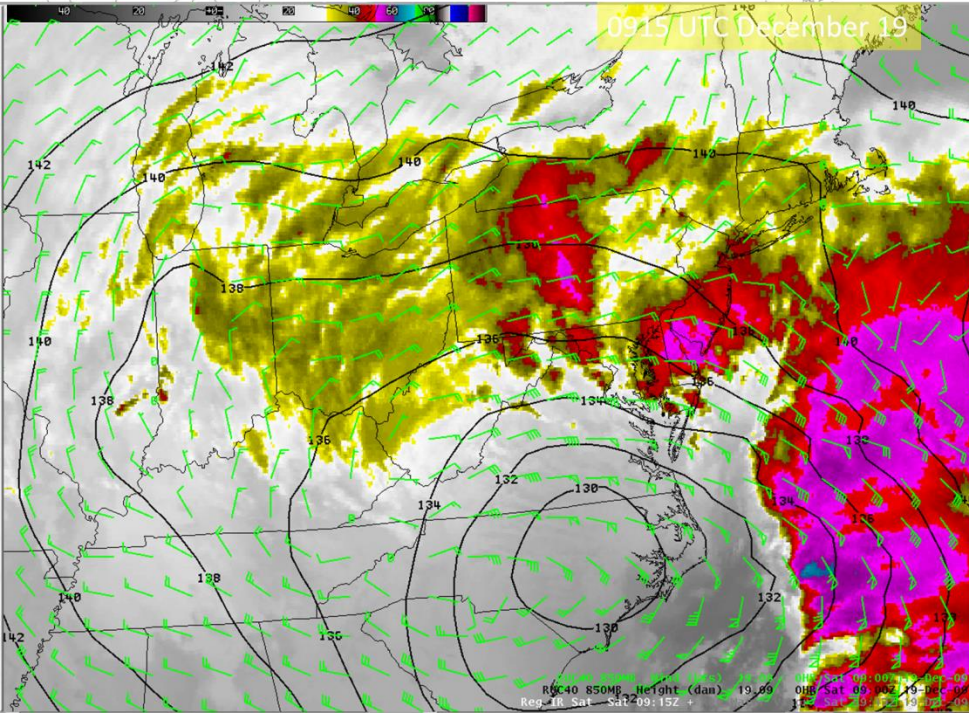
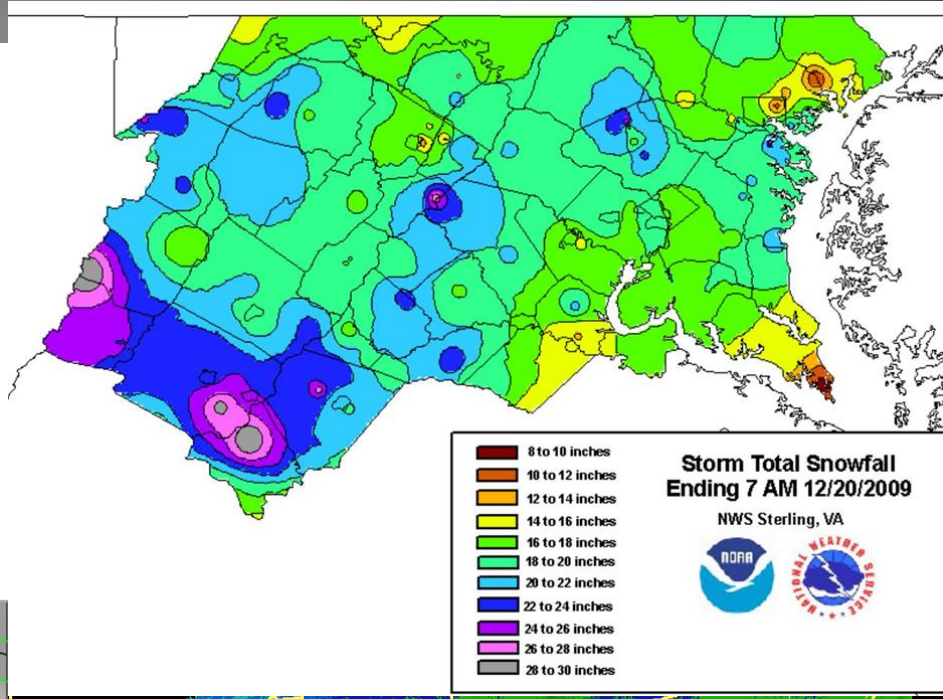
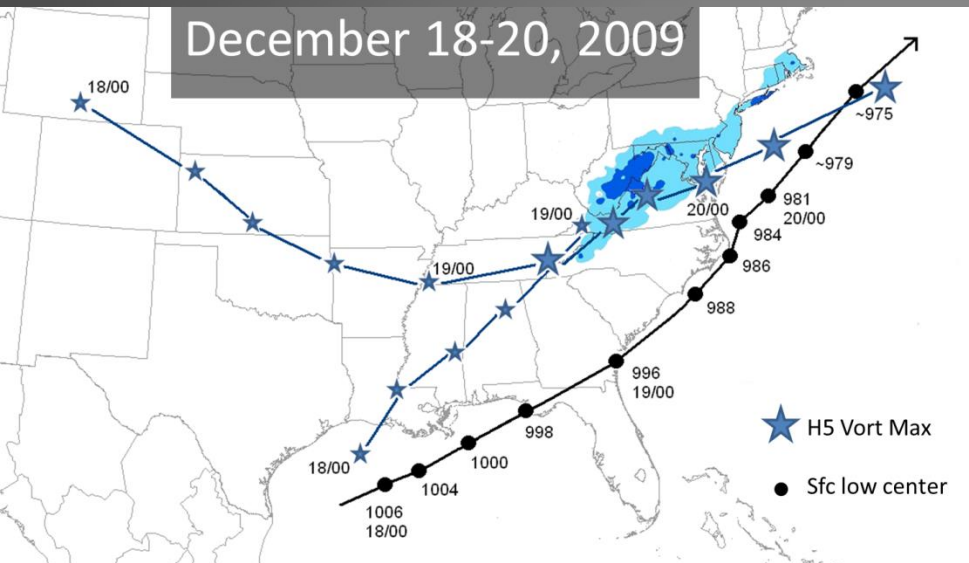
...MONTGOMERY COUNTY...				
3 SSW DAMASCUS	21.3	740 PM	2/13	CO-OP OBSERVER
3 NNW GERMANTOWN	19.0	1031 AM	2/13	NWS EMPLOYEE
1 S OLNEY	19.0	1000 PM	2/13	PUBLIC
DAMASCUS	19.0	1030 AM	2/13	NOW GLAZE OF ICE ON TOP
1 ENE OLNEY	18.6	715 AM	2/14	COCORAHS
1 ESE NORBECK	17.9	700 AM	2/14	COCORAHS
1 ENE GAITHERSBURG	17.6	1010 PM	2/13	TRAINED SPOTTER
3 NE GAITHERSBURG	17.3	700 AM	2/14	COCORAHS
2 SSW GERMANTOWN	17.1	750 AM	2/13	NWS EMPLOYEE
1 NNE WASHINGTON GRO	17.0	820 PM	2/13	TRAINED SPOTTER
2 W COLESVILLE	17.0	700 AM	2/14	COCORAHS
1 SE DAMASCUS	17.0	1200 PM	2/13	TRAINED SPOTTER
2 ENE GERMANTOWN	17.0	800 AM	2/13	TRAINED SPOTTER
1 ESE DAMASCUS	17.0	1000 AM	2/13	PUBLIC
2 NNE WHEATON-GLENMO	16.8	700 AM	2/14	COCORAHS
5 NNW SILVER SPRING	16.6	700 AM	2/14	COCORAHS
3 SW GAITHERSBURG	16.5	700 AM	2/14	COCORAHS
1 ESE ROSSMOOR	16.3	700 AM	2/14	COCORAHS
2 NNW BOYDS	16.2	1111 AM	2/13	PUBLIC
HILLANDALE	15.8	910 PM	2/13	NWS EMPLOYEE
7 N SILVER SPRING	15.7	700 AM	2/14	COCORAHS
1 N WHITE OAK	15.5	700 AM	2/14	COCORAHS
SE POOLSVILLE	15.5	800 AM	2/14	COCORAHS
BRIGHTON DAM	15.0	350 PM	2/14	CO-OP OBSERVER
GLENMONT	14.5	625 AM	2/13	PUBLIC
2 ESE GERMANTOWN	14.5	801 AM	2/13	TRAINED SPOTTER
GERMANTOWN	14.0	812 AM	2/13	PUBLIC
1 SSW MONTGOMERY VIL	14.0	700 AM	2/14	COCORAHS
1 NNE FAIRLAND	14.0	910 PM	2/13	TRAINED SPOTTER
1 NNW FOUR CORNERS	14.0	745 AM	2/13	TRAINED SPOTTER
1 WNW OLNEY	13.9	943 AM	2/13	TRAINED SPOTTER
6 NW SILVER SPRING	13.3	545 AM	2/14	COCORAHS
NORTH POTOMAC	13.0	700 AM	2/13	BROADCAST MEDIA
5 NNE GERMANTOWN	12.6	700 AM	2/13	COCORAHS
3 E CLARKSBURG	12.6	754 AM	2/13	TRAINED SPOTTER
N ROCKVILLE	12.5	1023 AM	2/13	NWS EMPLOYEE
1 NNW TAKOMA PARK	12.5	700 AM	2/14	COCORAHS
1 W FAIRLAND	12.0	730 AM	2/13	TRAINED SPOTTER
BETHESDA	12.0	620 AM	2/13	PUBLIC
POOLSVILLE	12.0	620 AM	2/13	COUNTY EMRG MGMT
1 SSE COLESVILLE	12.0	838 AM	2/13	TRAINED SPOTTER
1 ENE POTOMAC	12.0	1130 AM	2/13	TRAINED SPOTTER
1 SSW OLNEY	12.0	920 AM	2/13	TRAINED SPOTTER
1 N KENSINGTON	12.0	600 AM	2/13	NWS EMPLOYEE
SILVER SPRING	11.5	830 AM	2/13	TRAINED SPOTTER
1 S FOUR CORNERS	11.5	1200 PM	2/13	TRAINED SPOTTER
2 N ROCKVILLE	11.2	605 AM	2/13	NWS EMPLOYEE
2 SSW ROCKVILLE	11.0	1024 AM	2/13	TRAINED SPOTTER
2 WNW BETHESDA	10.9	700 AM	2/13	COCORAHS
1 N HILLANDALE	10.5	535 AM	2/13	NWS EMPLOYEE
1 ESE TAKOMA PARK	10.1	1000 PM	2/13	TRAINED SPOTTER
1 NNW DALECARLIA RES	10.0	530 AM	2/13	TRAINED SPOTTER
1 SW WHITE OAK	8.5	625 AM	2/13	NWS EMPLOYEE
1 WSW GERMANTOWN	8.3	415 AM	2/13	PRIVATE COMPANY
2 S LAYTONSVILLE	7.5	315 AM	2/13	PUBLIC
...PRINCE GEORGES COUNTY...				
2 SE SUITLAND	11.5	700 AM	2/14	COCORAHS
1 N UNIVERSITY PARK	11.3	900 AM	2/13	TRAINED SPOTTER
1 NE COLLEGE PARK	11.0	730 AM	2/14	COCORAHS
ESE CAMP SPRINGS	10.8	700 AM	2/14	COCORAHS
1 N GREENBELT	10.6	700 AM	2/14	COCORAHS
4 S BOWIE	10.5	700 AM	2/14	COCORAHS
1 E BOWIE	10.1	700 AM	2/14	COCORAHS
3 NNW UPPER MARLBORO	10.0	421 PM	2/14	CO-OP OBSERVER

*****STORM TOTAL ICE*****

LOCATION	STORM TOTAL ICE / INCHES/	TIME/DATE OF MEASUREMENT	COMMENTS
MARYLAND			
...CALVERT COUNTY... NORTH BEACH	T	708 AM 2/13	TRAINED SPOTTER
...CARROLL COUNTY... WESTMINSTER	T	105 PM 2/13	TRAINED SPOTTER
...MONTGOMERY COUNTY... 1 SSE COLESVILLE	T	838 AM 2/13	TRAINED SPOTTER
...ST. MARYS COUNTY... 1 WNW CUCKOLD CREEK	0.05	300 AM 2/13	TRAINED SPOTTER
VIRGINIA			
...FAUQUIER COUNTY... 3 NNW WOOLSEY	0.15	400 PM 2/13	TRAINED SPOTTER
...LOUDOUN COUNTY... 1 NNE ASHBURN	T	939 AM 2/13	NWS EMPLOYEE
...ORANGE COUNTY... 2 WSW LOCUST GROVE	0.10	940 AM 2/13	TRAINED SPOTTER

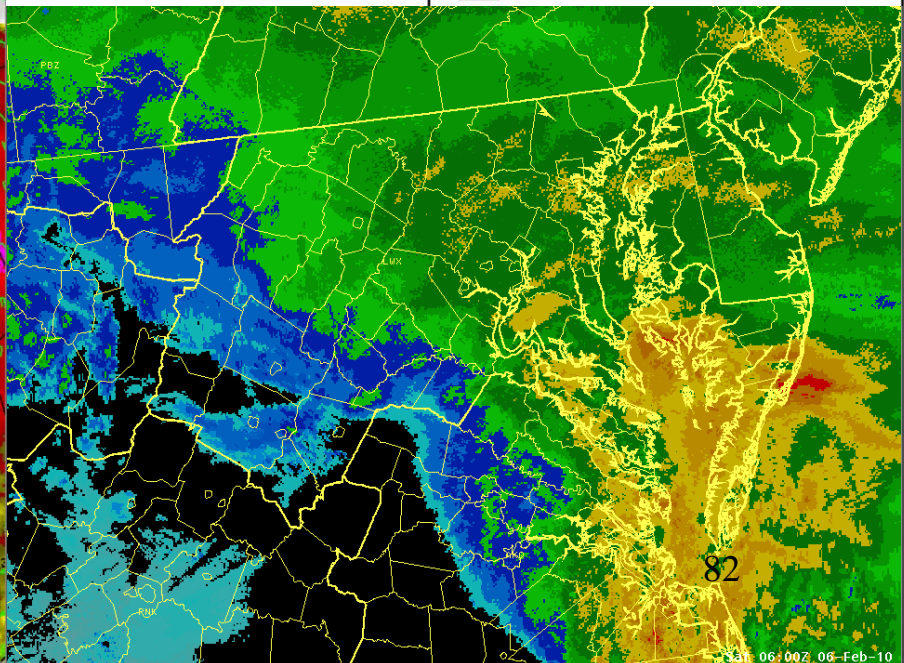
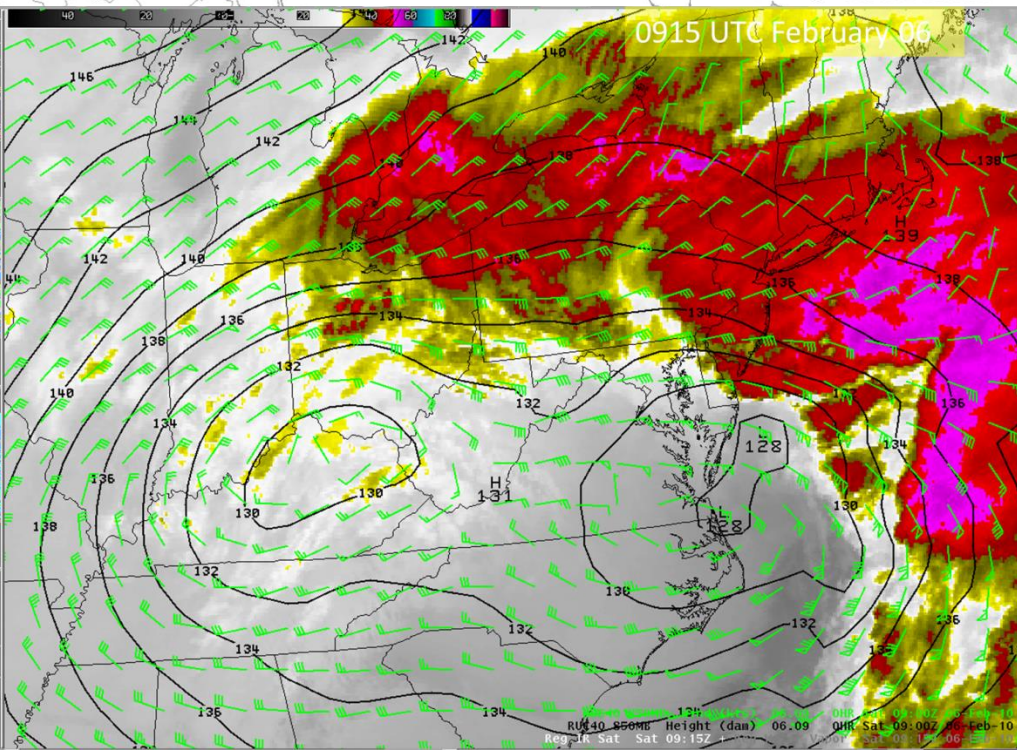
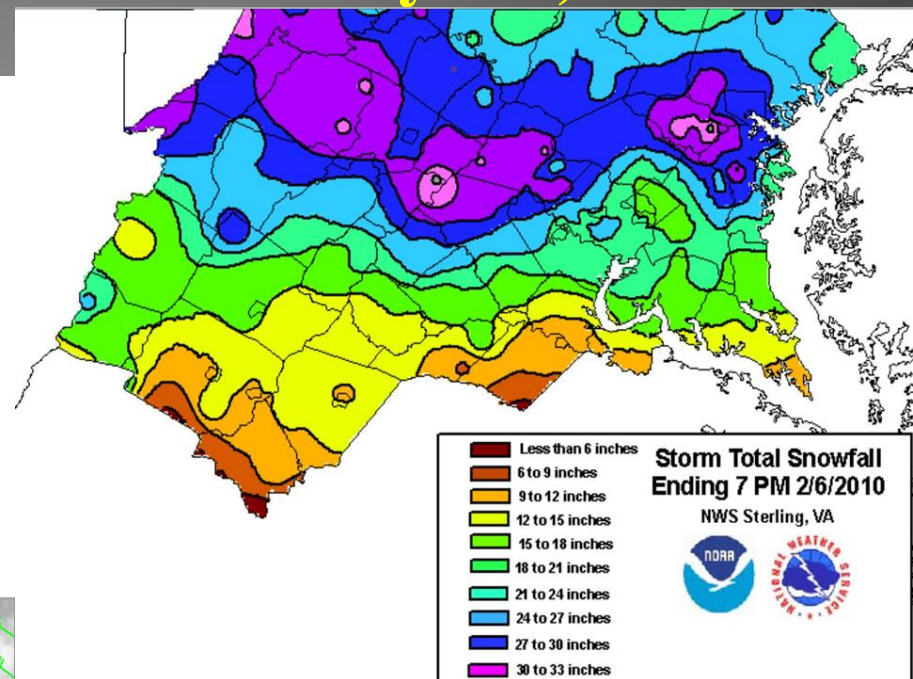
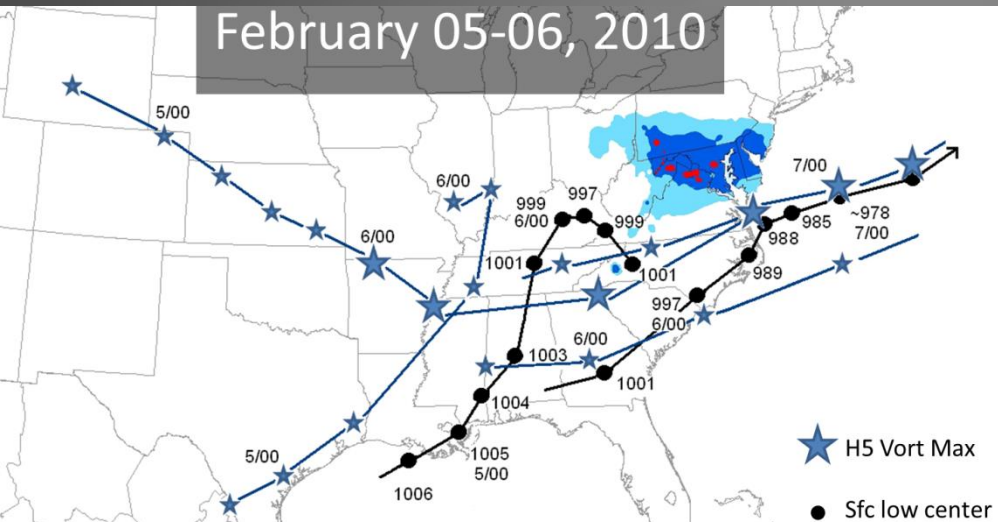
Other Notable Winter Storms December 19, 2009

December 18-20, 2009



Other Notable Winter Storms February 5-6, 2010

February 05-06, 2010



Other Notable Winter Storms February 10, 2010

900 AM EST WED FEB 10 2010

Note: "FAIR" indicates few or no clouds below 12,000 feet with no significant weather and/or obstructions to visibility.

* =Non NWS site. Station does not report significant weather and/or obstructions to visibility.

...DOWNTOWN AREAS...

CITY	SKY/WX	TMP	DP	RH	WIND	PRES	REMARKS
WASHINGTON NAT	HVY SNOW	24	19	81	NW22G32	29.42R	VSB 1/4 WCI 9
MD SCIENCE CTR	N/A	31	28	89	MISG	29.32F	

...WASHINGTON SUBURBS...

CITY	SKY/WX	TMP	DP	RH	WIND	PRES	REMARKS
DULLES	HVY SNOW	22	17	81	NW24G43	29.42F	VSB 1/8 WCI 5
MANASSAS*	CLOUDY	25	18	74	NW18G25	29.45S	WCI 11
LEESBURG*	CLOUDY	23	19	86	W26G39	29.41F	WCI 6
GAITHERSBURG*	CLOUDY	23	19	86	NW21G32	29.40S	VSB 1/4 WCI 8
FT BELVOIR	LGT SNOW	25	19	80	W18G37	29.41S	VSB 3/4 WCI 11
QUANTICO	LGT SNOW	25	20	81	NW20G26	29.44S	VSB 3/4 WCI 11
ANDREWS AFB	MIX PCPN	24	22	96	NW17	29.37S	VSB 1/4 WCI 10

...CENTRAL VIRGINIA...

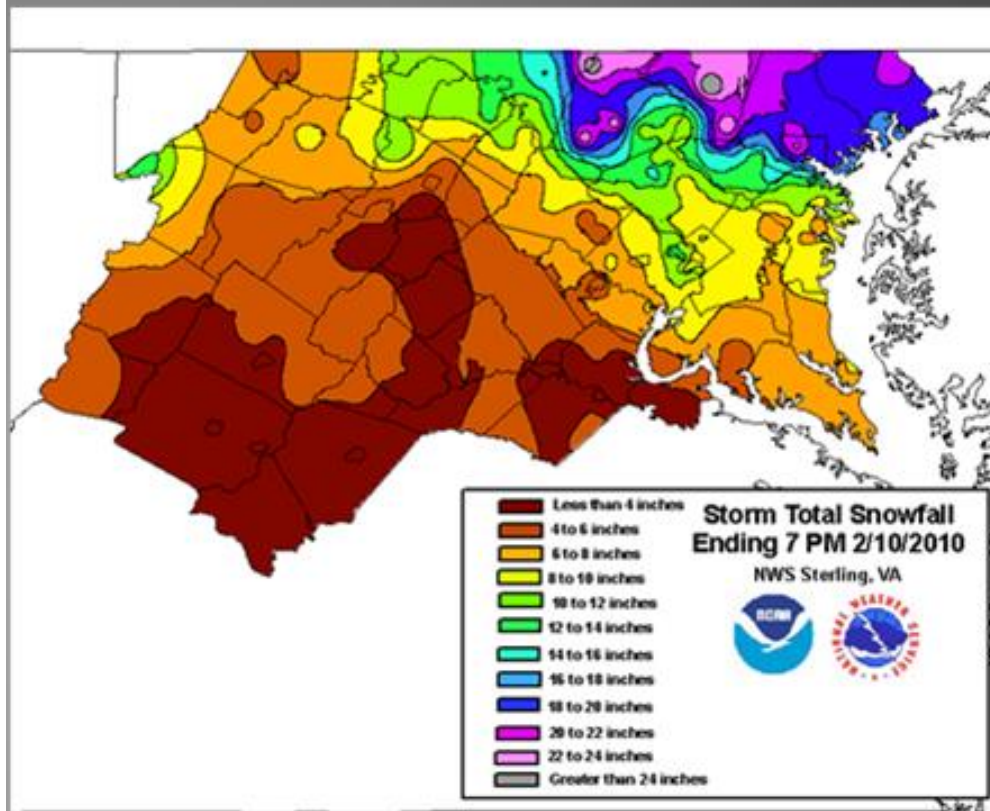
CITY	SKY/WX	TMP	DP	RH	WIND	PRES	REMARKS
CULPEPER*	LGT SNOW	25	19	80	W18G28	29.46S	WCI 11
CHARLOTTESVILL	CLOUDY	22	13	68	W16G29	29.48S	WCI 8
WARRENTON*	LGT SNOW	25	21	86	NW13	29.44F	WCI 13
ORANGE*	LGT SNOW	25	23	93	SW12G18	29.48F	WCI 14
LOUISA*	LGT SNOW	25	N/A	N/A	W15G21	29.46S	WCI 12
RICHMOND	HVY SNOW	26	22	84	NW17G33	29.46R	VSB 1/4 WCI 13

...NORTHEAST/CENTRAL MARYLAND...

CITY	SKY/WX	TMP	DP	RH	WIND	PRES	REMARKS
BWI AIRPORT	SNOW	29	27	92	NW16G31	29.32F	VSB 1/4 WCI 17
ANNAPOLIS	SNOW	30	27	86	NW17G24	29.31F	VSB 1/4 WCI 18
MARTIN AIRPORT	HVY SNOW	30	30	100	NW16G23	29.32F	VSB 1/4 WCI 19
WESTMINSTER*	SNOW	28	25	86	NW13G21	29.36F	VSB 1/4 WCI 18
FREDERICK*	SNOW	25	23	93	CALM	29.47R	VSB 1/4
FORT MEADE*	CLOUDY	28	28	100	NW12G25	29.37S	VSB 1/4 WCI 18

...SOUTHERN MARYLAND...

CITY	SKY/WX	TMP	DP	RH	WIND	PRES	REMARKS
PATUXENT RIVER	SNOW	28	27	93	W36G48	29.33S	VSB 1/4 WCI 12
ST MARYS CITY	LGT SNOW	34	28	80	W16G24	29.34R	VSB 3/4 WCI 23
LEONARDTOWN*	CLOUDY	30	30	100	NW9G22	29.35S	VSB 3/4 WCI 22



•Blizzard Conditions
•Up to 26 inches in
Westminster, MD

Other Notable Winter Storms

Knickerbocker Storm

January 27-28, 1922

- 28 Inches of Snow in Washington, DC
- 27 Inches of Snow in Baltimore
- 30-32 Inches of Snow across Howard & Prince Georges Counties
- Gusts to 50 MPH causing blizzard conditions
- Roof Collapsed on Knickerbocker Theater (Washington DC)
 - 98 Died
 - Hundreds Injured

Images Courtesy: Washington Post



Preparing Yourself for Winter

...At Home...Before the Storm...

- Flashlights & Extra Batteries
- Extra Food & Water
- Extra Medicine, First Aid Kit & Baby Items
- Alternate Heat Source & Fuel
- Have Your Heating System Checked
- Fire Extinguishers & Smoke/Carbon Monoxide Detectors Checked
- NOAA Weather Radio



Preparing Yourself for Winter

...In the Car...Before the Storm or Trip...



- Cell Phone & Charger
- Flashlight & Batteries
- Keep Your gas tank near full
- First Aid Kit
- Let someone know where you are going
- Knife, Shovel, & Ice Scraper
- Don't travel alone
- Tool Kit
- Blankets/Sleeping Bags
- Water Container & Non Perishable High Energy Food
- Battery Cables
- Extra Clothing
- Sand/Cat Litter for Traction

Fully check and winterize your vehicle before the season!

Heavy Snow Safety

- **Heart Attack!** **Cold Weather Stresses the Heart** When shoveling, move smaller amounts of snow and take frequent breaks. Know your limits.

- Add shoveling snow
- Or pushing cars
- Or walking through deep

Photo By: Lee Hobbins (Flickr)

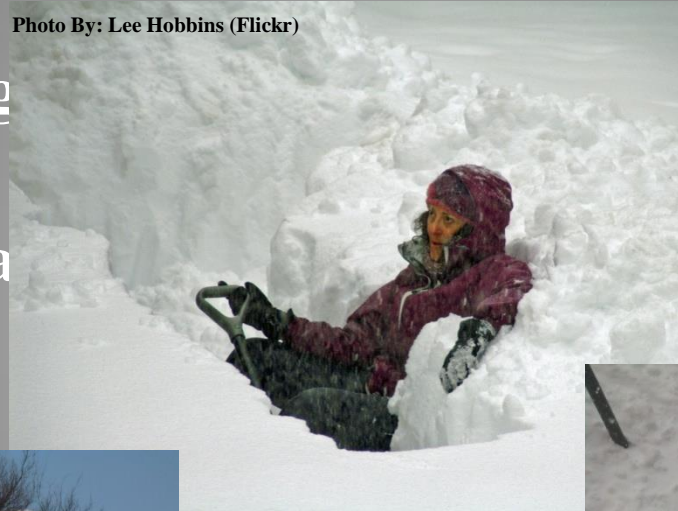


Photo By: Harold Neal (Flickr)



Photo By: Gersemalina (Flickr)



Dress for the Season

- 50% of your body heat is lost through your head and neck area
- Wear layers to trap heat
- Wear hats, scarves, gloves, snow boots

Stay Warm and Dry



Wind Chill

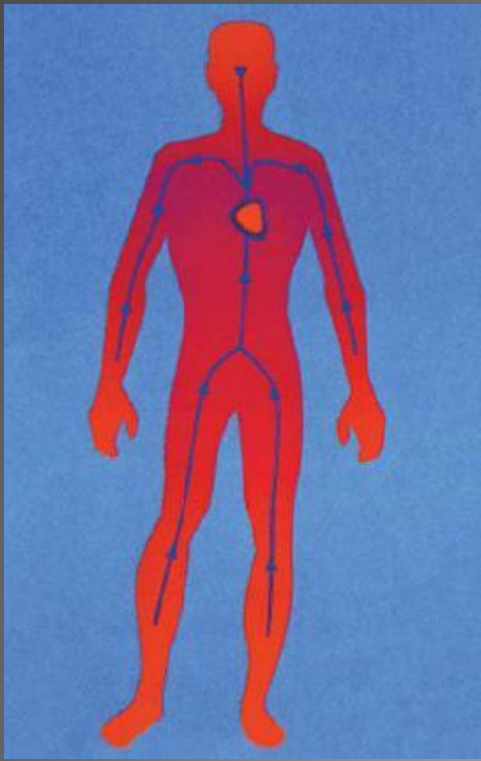
is not the actual temperature but rather how wind and cold feel on exposed skin.

Frostbite

- Damage to body tissue caused by extreme cold
- Frostbite causes a loss of feeling and a white or pale appearance in extremities, such as fingers, toes, earlobes, or the tip of the nose
- If symptoms present: **Get Medical Attention**



Hypothermia



Hypothermia occurs when the body's extremities are too cold, leading to vasoconstriction of blood vessels, which reduces blood flow to the heart, leading to heart failure.

- Condition brought on when the body temperature drops to less than 95 F
- Warning signs include:
 - Uncontrollable Shivering
 - Memory Loss/Disorientation
 - Incoherence/Slurred Speech
 - Apparent Exhaustion/Drowsiness

If Medical Care is Not Available

- Warm the person slowly – starting with the body core
- If necessary, use your body heat to help
- Get the person into dry clothing and wrap in a warm blanket covering head and neck
- **DO NOT** give the person alcohol, drugs, coffee or any hot beverage or food

Injuries Related to Cold

- **50%** Happen to people over 60 years old
- **More than 75%** happen to males
- **About 20%** occur in the home

Stuck Outdoors in Heavy Snow

- Get out of the wind and try to stay warm and dry
- Find shelter or build one with sticks and/or snow
- If possible, build a fire
placing rocks around it to absorb heat
- Eat high-energy food. **Do not eat snow!** Melt it first and then drink it if necessary



Photo By: Fancypicnic (Flickr)

Stuck Outdoors in Your Vehicle

- Stay in your car or truck
- Run motor about 10 minutes every hour for heat
 - Make sure the exhaust pipe is clear of snow
 - Open window a crack to prevent carbon monoxide poisoning
- Exercise from time to time to stimulate your circulation and help keep you warm
- Tie a red cloth to your antenna or door to help indicate to rescuers that you are in trouble



National Guard Troops help clear stranded motorists from U.S. 15 on Feb 11, 2010.

Reporting Criteria for Winter Storms



- **Ice Accumulation** Any amount

- **Snow Accumulation** Every 2 inches, or any accumulation not reflected in the forecast



Severe Weather Reporting Criteria

- **Tornado or Funnel**

(Please be clear on this!).

- **Hail:** Pea sized or larger.

- **Rotation** within a storm.



- **Heavy Rain:** Measured 1 inch or more

- **Flooding:** Streams, creeks or rivers out of banks or flooding of roads from poor drainage

- **Wind:** 50 MPH or greater (Indicate gust or sustained, measured or estimated.)

- **Damage:** Any weather related damage to trees or property. Give as many details as possible.



**We are grateful to have you as a
member of our team!**

Thank You



Any Questions or Comments?



Christopher Strong

Warning Coordination Meteorologist

Christopher.Strong@noaa.gov

or

Heather Sheffield Kenyon

General Forecaster/SKYWARN® Coordinator

Heather.Sheffield@noaa.gov

National Capital Area SKYWARN Support Group

Amateur radio volunteers helping NWS Sterling, Virginia
in its mission to protect life and property.



Amateur Radio Relay League (ARRL) National Weather Service (NOAA-NWS) Memorandum of Understanding



ARRL amateur radio operators (HAMS) coordinate their services, facilities and equipment with NWS in support of nationwide, state and local early weather warning and emergency communications functions ... to enhance the nationwide posture of early weather warning and readiness for any conceivable weather emergency.

The Role of Amateur Radio

Our Mission

Move time-critical spotter reports to the NWS forecasters by the most expedient means possible.

Assist NWS by seeking out reports from areas where Severe Weather is occurring, or thought to have occurred.

Sterling SKYWARN Program

- We use Amateur Radio as our primary means of reporting severe weather to the forecasters in real time.
- This is primarily done using:
 - home based or mobile VHF FM radios through area wide repeaters
 - but also use UHF, VHF Simplex, HR and APRS Packet equipment and frequencies.

Why Amateur Radio?

- There are over 730,000 amateur radio operators in the United States, many of them trained SKYWARN spotters.
- Amateur radio doesn't rely on commercial communications infra-structure.
- Spotters using amateur radio are able to transmit reports to the NWS, when other communication methods fail.

Amateur Radios



Hand Held UHF/VHF Transceivers

Single and Multi Band UHF/VHF Mobile Transceivers

Multi Band High Frequency Transceivers

Mobile Radios



What we do:



We work directly with the forecasters at the Sterling Weather Forecast Office (WFO) to provide *real time, ground truth* about severe weather events happening within the County Warning Area (CWA).

Amateur Radio Supports:

- Severe Thunderstorm and Tornado Watches and Warnings
- Hurricane and Tropical Storm Watches and Warnings, and the remnants of those systems.
- Flash Flood Watches and Warnings
- Winter Storm Watches and Warnings

Amateur Radio Does This Through:

- Operation of WX4LWX at NWS Sterling, VA
- Directed Nets on Local Repeaters
- Use of “Report Mode” to gather reports during less intense weather events

SKYWARN Desk NWS Sterling, VA

- 3 VHF Radios – 144-148 MHz
- UHF Radio – 440-450 MHz
- HF Radio – 1.8-30 MHz
- APRS on VHF at 144.390 MHz
- Multiple UHF/VHF and HF antennas
- Desktop Computer



This radio station was initially funded by a grant from the National Capitol Foundation for Amateur Radio – and addition equipment has been provided by Amateur Radio Operators.

NWS Sterling, VA



Real Time Communications

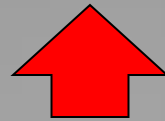
- Main SKYWARN Net – 147.300 Mhz (Bluemont)
Backup Net – 146.955 Mhz (Rockville)
Backup Net – 145.210 Mhz (High Knob)
Subnets – those reachable throughout the CWA
- Hurricane Watch Net – 14.325 Mhz
- Old Dominion Emergency Net – 3.947 Mhz
Virginia Digital Emergency Net – 3.578.5 Mhz
- Local ARES/RACES/Red Cross nets and adjacent State
Emergency Nets.
- Communication with adjacent SKYWARN support groups
if required.

Also ...

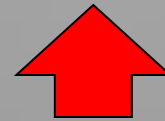
- Any licensed amateur may report severe weather through the amateur radio nets. We require that reports meet severe weather criteria.
- Many amateur radio SKYWARN spotters are also members of ARES, RACES and other emergency response groups.
- Amateur radio operators may be called on to perform emergency communications and damage assessment support in addition to our SKYWARN mission.

Movement of Information

NWS Forecasters



WX4LWX (when active, phoned in when not)



Amateur Radio Net



SKYWARN Spotters

NOAA - National Weather Service National Capital Area SKYWARN Support Group

Chris Patton W3CUM – Amateur Radio Coordinator

Tim Dennison AI4TD - Amateur Radio Coordinator Emeritus

Tom Horn W3TDH – Assistant Amateur Radio Coordinator

For Net Control

Richard Morani KE4AJL - Assistant Amateur Radio Coordinator

For Subnets

Paul Savidge N4PSS – Assistant Radio Coordinator

For Outreach/Education/Training

Rob Seastrom AI4UC – Assistant Amateur Radio Coordinator

For Station Management

... and a cast of thousands!!

Does it work?



Joplin, MO May 22, 2011

SKYWARN

Emergency Communications

Red Cross/Local Agencies

ARES/RACES Support

Statewide Coordination



More Information

Amateur Radio Nets

Scanner listeners are invited to monitor our Amateur Radio Nets

147.300 Bluemont – Primary Net

146.955 Rockville – Backup Net

145.210 High Knob – Backup Net

For more information about the
National Capital Area SKYWARN Support Group

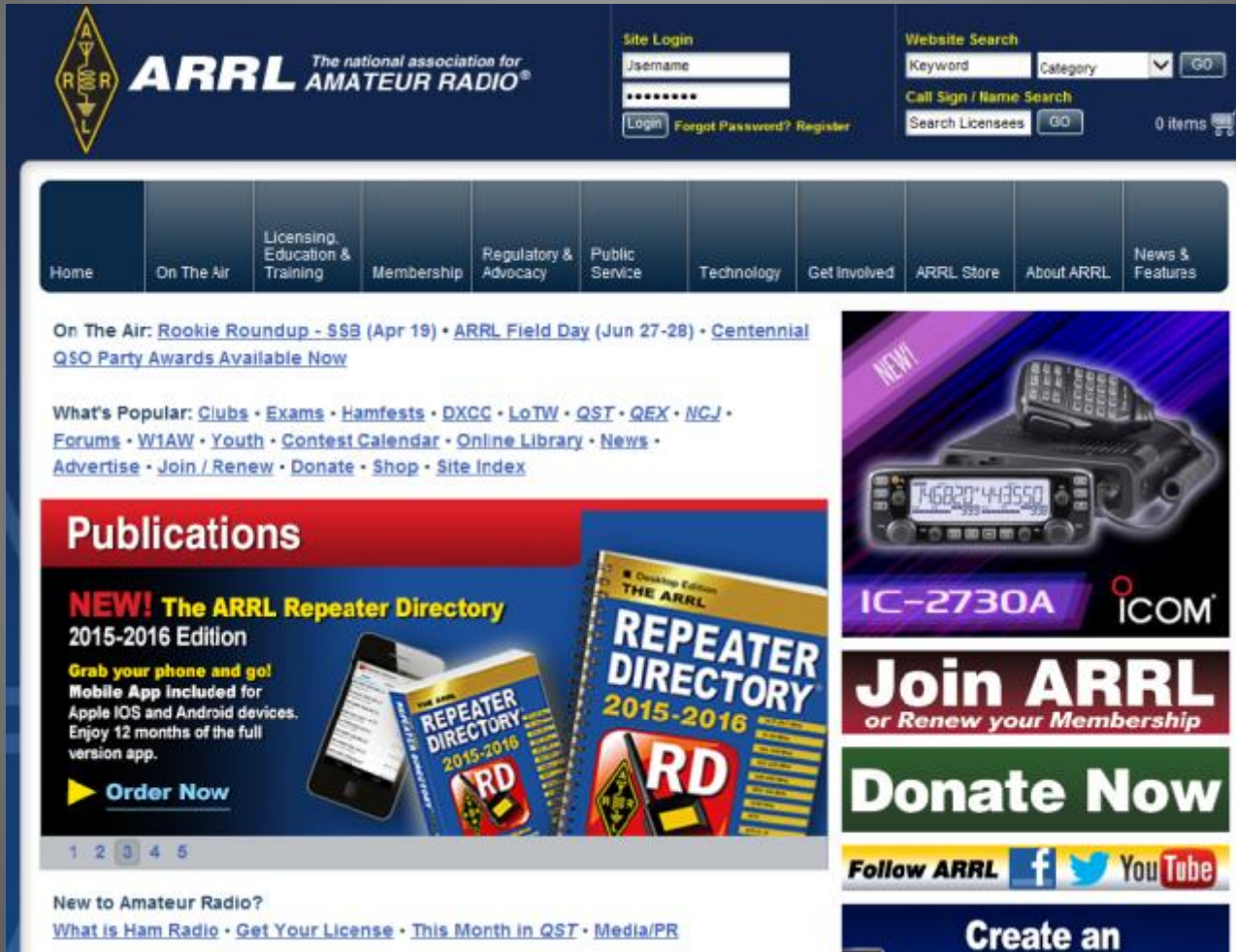
www.wx4lwx.org

For more information about
Amateur Radio

www.arrl.org

More about Amateur Radio

www.arrl.org



The screenshot shows the ARRL website homepage. At the top left is the ARRL logo, a diamond shape with 'A', 'R', 'R', 'L' and 'ARRL' inside. To its right is the text 'ARRL The national association for AMATEUR RADIO®'. Further right is a 'Site Login' section with fields for 'Username' and 'Password', and buttons for 'Login', 'Forgot Password?', and 'Register'. To the right of that is a 'Website Search' section with a 'Keyword' field, a 'Category' dropdown, and a 'GO' button. Below that is a 'Call Sign / Name Search' section with a 'Search Licensees' button and a 'GO' button, and a shopping cart icon showing '0 items'.

The main navigation bar includes: Home, On The Air, Licensing, Education & Training, Membership, Regulatory & Advocacy, Public Service, Technology, Get Involved, ARRL Store, About ARRL, and News & Features.

Under 'On The Air', there are links for: [Rookie Roundup - \\$5B \(Apr 19\)](#), [ARRL Field Day \(Jun 27-28\)](#), [Centennial QSO Party Awards Available Now](#).

Under 'What's Popular', there are links for: [Clubs](#), [Exams](#), [Hamfests](#), [DXCC](#), [LoTW](#), [QST](#), [QEX](#), [NCJ](#), [Forums](#), [W1AW](#), [Youth](#), [Contest Calendar](#), [Online Library](#), [News](#), [Advertise](#), [Join / Renew](#), [Donate](#), [Shop](#), and [Site Index](#).

The 'Publications' section features a red header and a blue background. It promotes 'NEW! The ARRL Repeater Directory 2015-2016 Edition'. It includes an image of the directory book and a smartphone displaying the app. Text says: 'Grab your phone and go! Mobile App Included for Apple iOS and Android devices. Enjoy 12 months of the full version app.' There is a yellow 'Order Now' button. Below the main image are page numbers 1, 2, 3, 4, 5.

To the right of the 'Publications' section is a purple and black advertisement for the 'NEW! IC-2730A ICOM' mobile radio. Below that is a red banner that says 'Join ARRL or Renew your Membership'. Below that is a green banner that says 'Donate Now'. Below that is a yellow banner with social media icons for Facebook, Twitter, and YouTube, and the text 'Follow ARRL'. At the bottom right is a blue banner that says 'Create an'.

At the bottom left of the page, there is a section titled 'New to Amateur Radio?' with links for: [What is Ham Radio](#), [Get Your License](#), [This Month in QST](#), and [Media/PR](#).