

# National Weather Service

*2019-20 Winter Outlook*

*NWS Tools*

*NWS & Transportation Partnership*



Chris Strong  
National Weather Service

# Outline

- **Winter outlook 2019-20**
- **The NWS – COG/Transportation partnership has helped develop new tools to assist decision-making**
  - 3-7 day forecast *threat level*
  - 0-3 day forecast *range of possibilities* for accumulation
  - 0-1 day Potential Winter Commuting Hazard
  - 1-2 hour Snow Squall Warning
- **Constant teamwork for improvement**



# **2019-20 Winter Outlook And Recent Winters**

# What is a “Normal” Winter

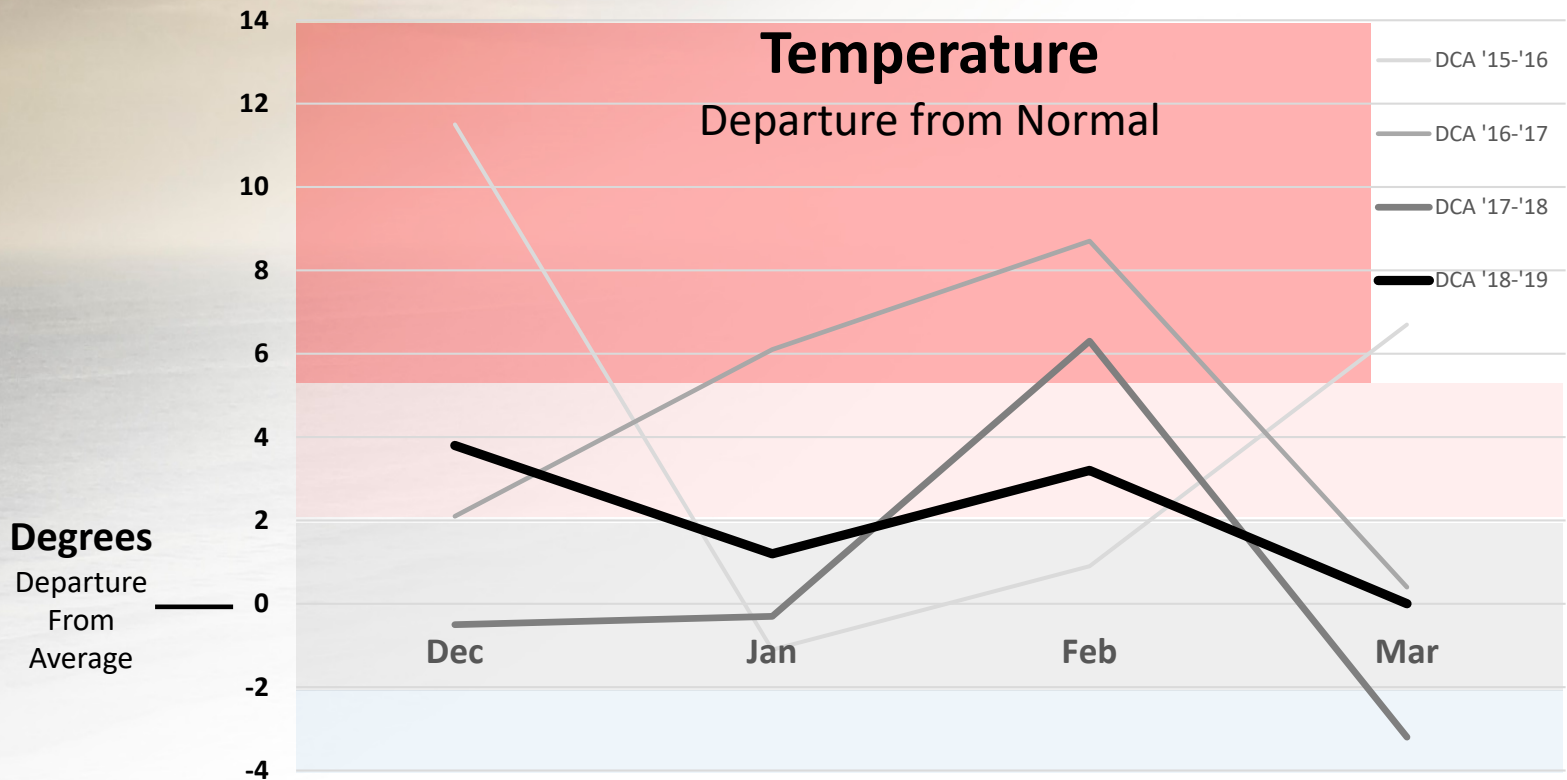
*1981-2010*

DCA	Nov	Dec	Jan	Feb	Mar
Temperature (High/Low)	58°/41°	47°/33°	43°/29°	47°/31°	56°/38°
Snowfall 14.5” total	0.5”	2.3”	5.6”	4.8”	1.3”

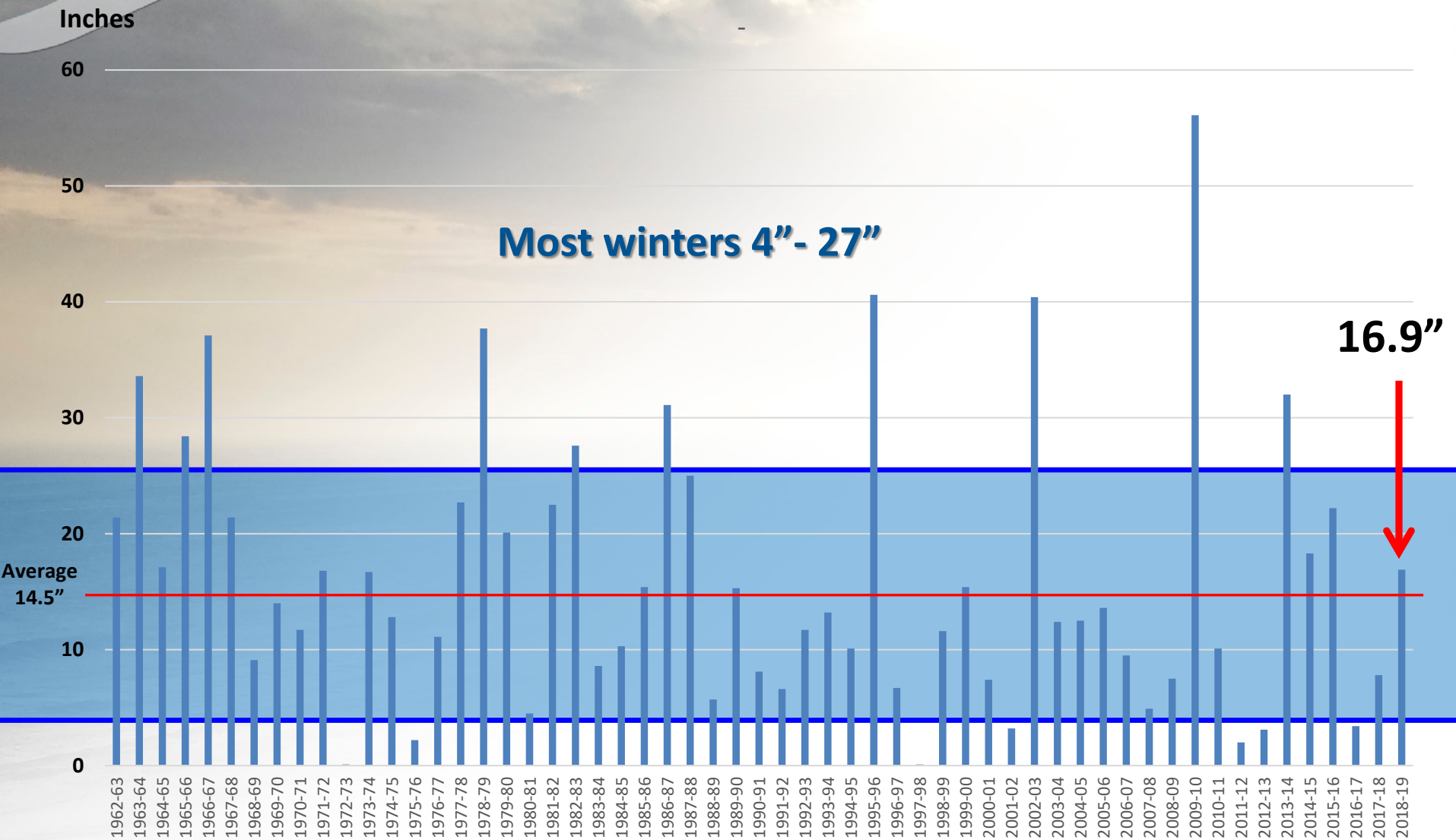


# Recent Winters Temperature (DCA)

- Mild in temperature (as a whole)



# DCA Annual Winter Snowfall



# 2019-20 Winter Outlook

El Niño / La Niña Cycle

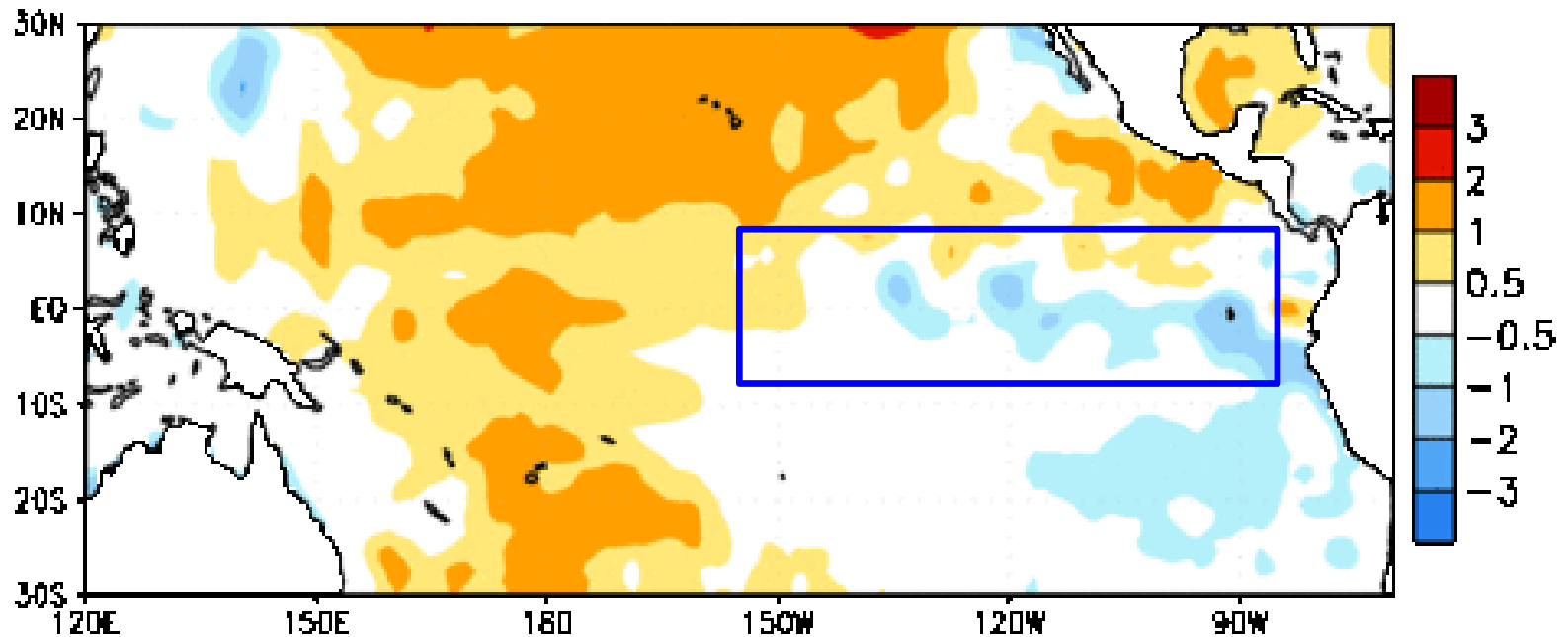
**Just one piece of the puzzle...  
...but an easier to forecast piece!**



# 2019-20 Winter Outlook

## El Niño / La Niña Cycle

Week centered on 14 AUG 2019  
SST Anomalies (°C)

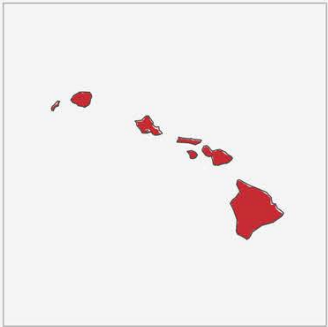


**Neutral to weak El Niño expected this winter**

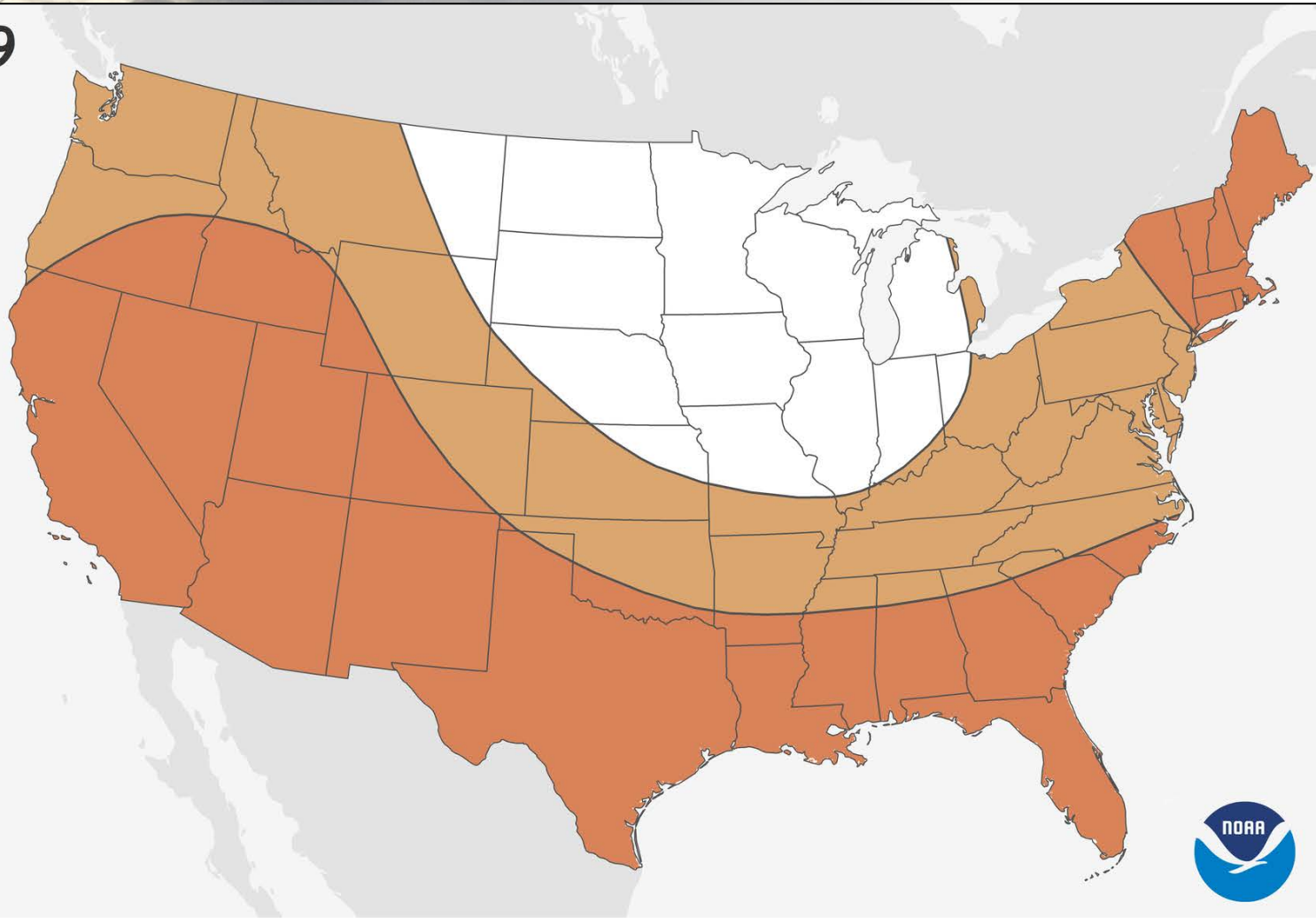


# Winter 2019

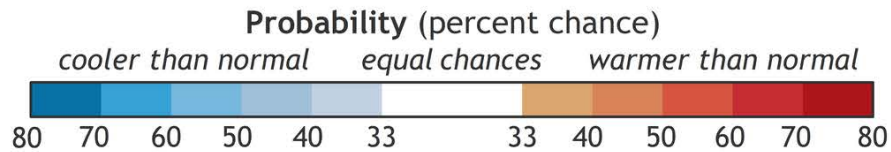
## U.S. Temperature Outlook



AK and HI not to scale



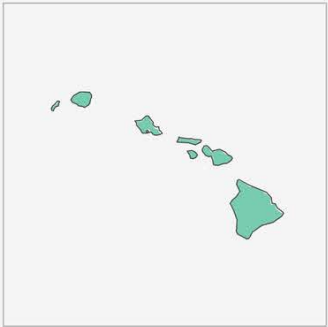
Temperature Outlook  
for December 2019 – February 2020  
Issued 17 October 2019



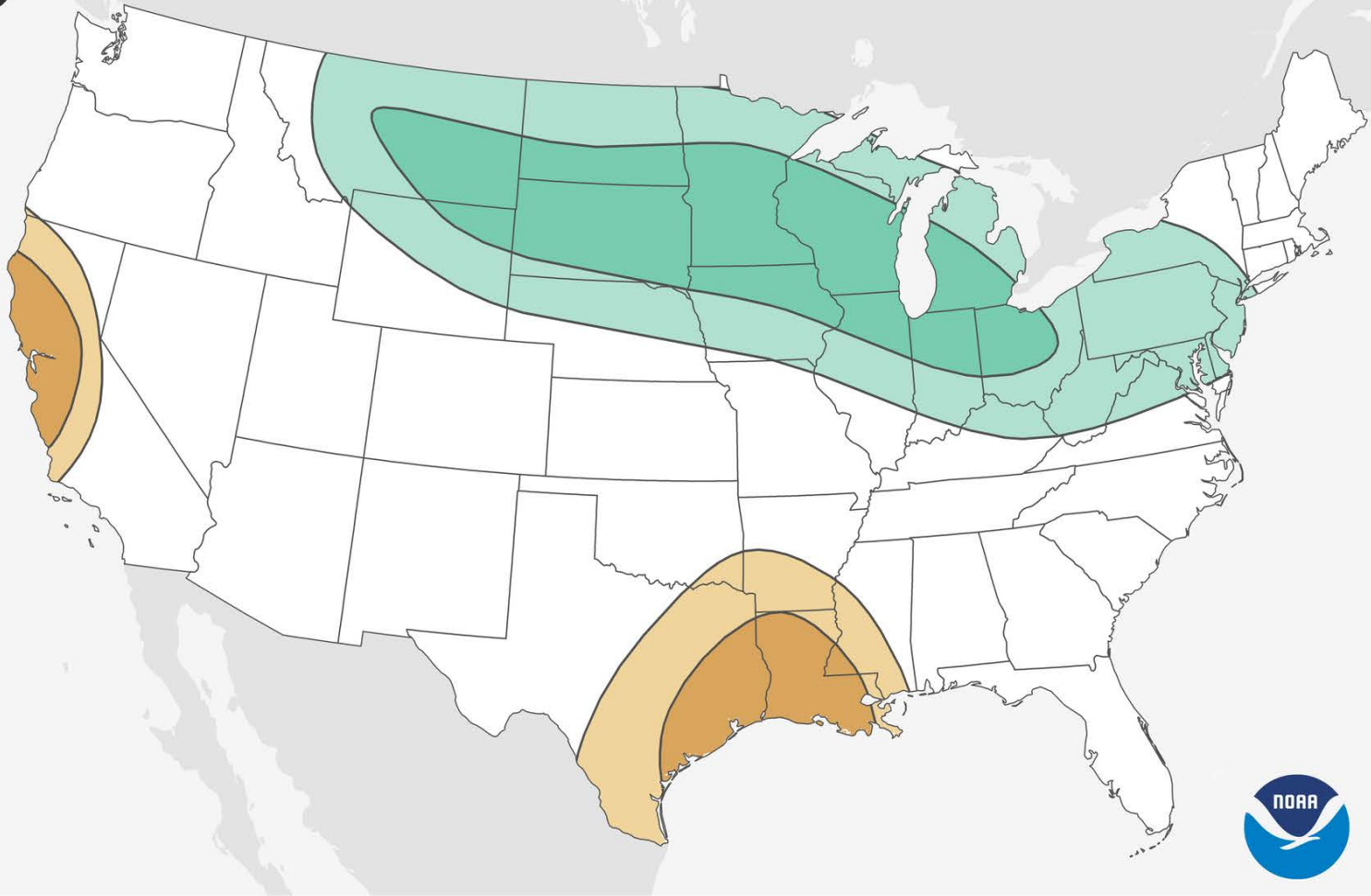
NWS Climate Prediction Center  
Map by NOAA Climate.gov

# Winter 2019

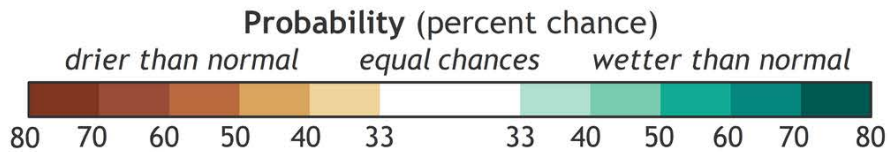
## U.S. Precipitation Outlook



AK and HI not to scale



Precipitation Outlook  
for December 2019 – February 2020  
Issued 17 October 2019



NWS Climate Prediction Center  
Map by NOAA Climate.gov

# Mid-Atlantic Winter Outlook 2019-20

- **El Niño/La Niña Cycle**
  - Neutral, to possibly weak El Niño
- **Mid-Atlantic Outlook:**
  - **Temperature**
    - Lesser chance of long-lasting cold
    - Fewer arctic outbreaks
  - **Precipitation**
    - Slight tilt towards more precipitation
  - **Early start possible**
    - A cold November can produce early season snow



**Everything we will discuss is on our  
NWS Winter Page**

**[www.weather.gov/washington/winter](http://www.weather.gov/washington/winter)**

# Why Uncertainty?

- **Looking forward...**

Modeling of storms becomes increasingly hazy about location & strength, which affects:

- Temperatures
- Amount of precipitation
- Type of precipitation

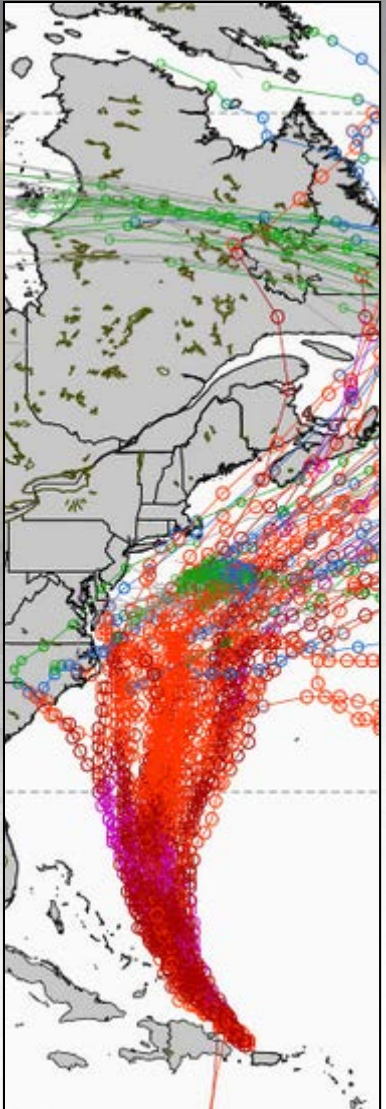
- **Dozens of international models**

- Not simply U.S. vs. European

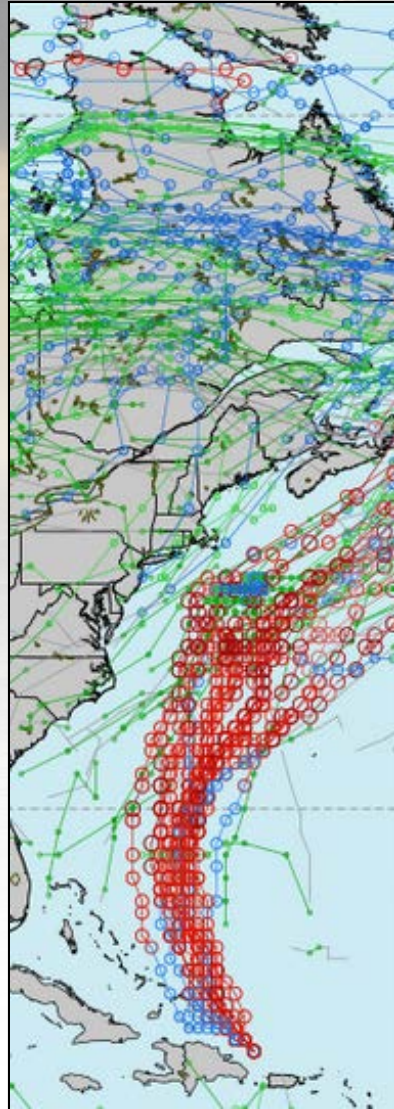
# Why Uncertainty?

## Dozens of Model Forecasts

European



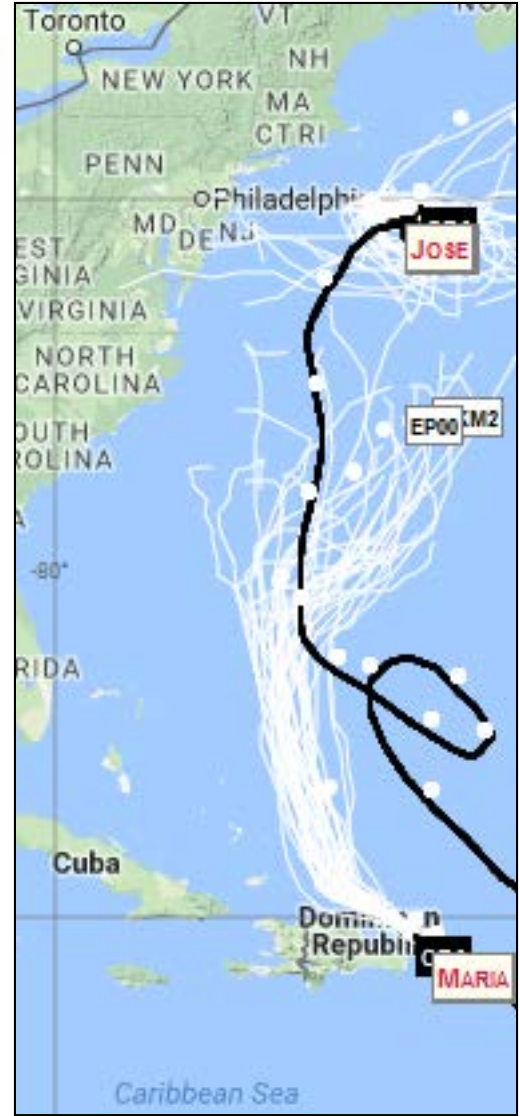
American



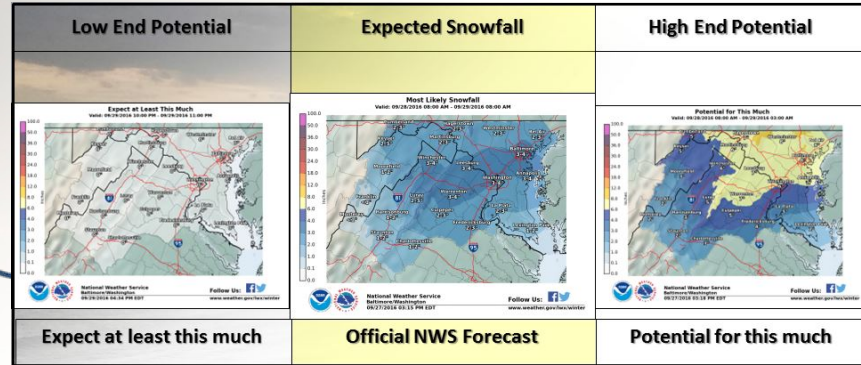
Canadian



United Kingdom



# “Range of Possibilities” Shrinks & Level of Detail in Forecast Increases as event nears



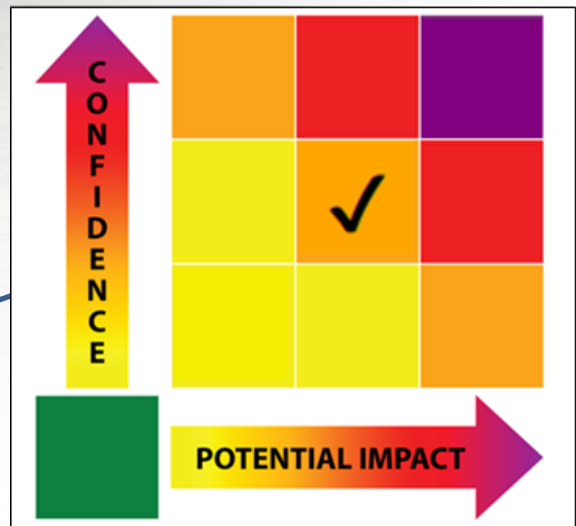
Threat Level

Possible Amounts

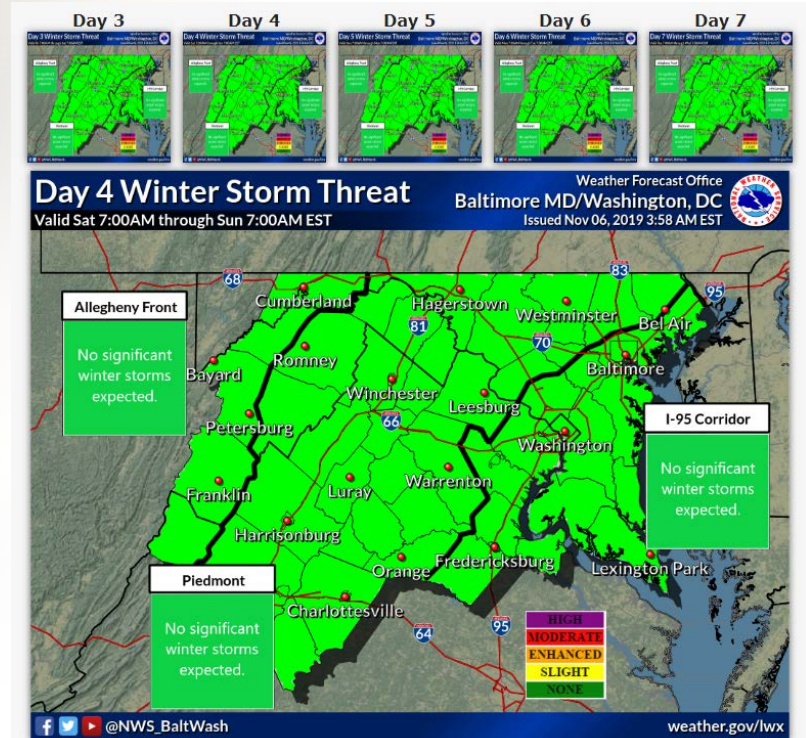
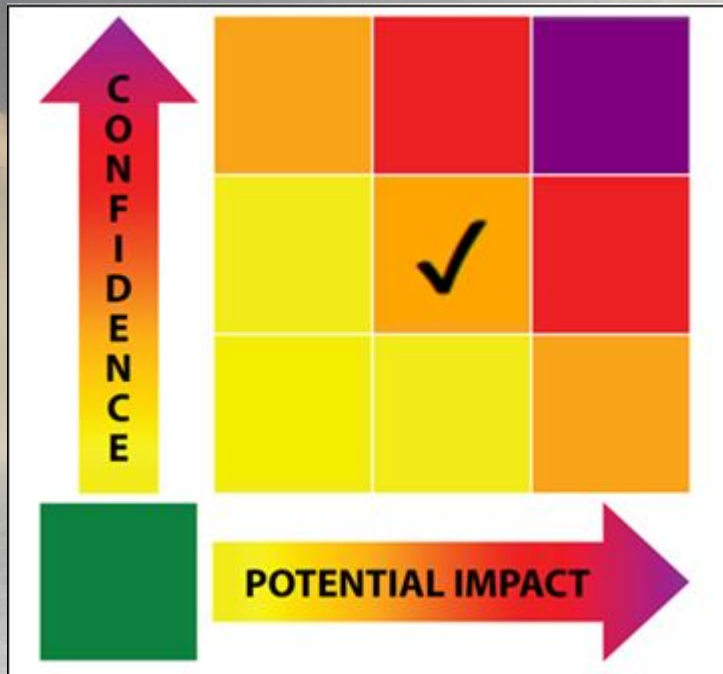


Small Weather,  
BIG Impact

Range  
of  
Possibilities



# 3-7 Days in Advance Winter Storm Threat



- Before accumulation #'s are reliable
- Not just “chance of snow”, but **how big a threat?**



# 3-7 Days in Advance

## Winter Storm Threat



- **A real-world example: Mid-Atlantic Blizzard of Jan 2016**
  - 7 days of threat
  - Threat increased
  - “**High**” threat 4 days before first flakes

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

# 0-3 Days in Advance

Range of Possibilities – Snow Accumulation



- Provide the “Goal Posts” of what *could* happen
  - Limits surprises
- Better decisions, based on fuller set of information
- Leads to less impact on the economy & society

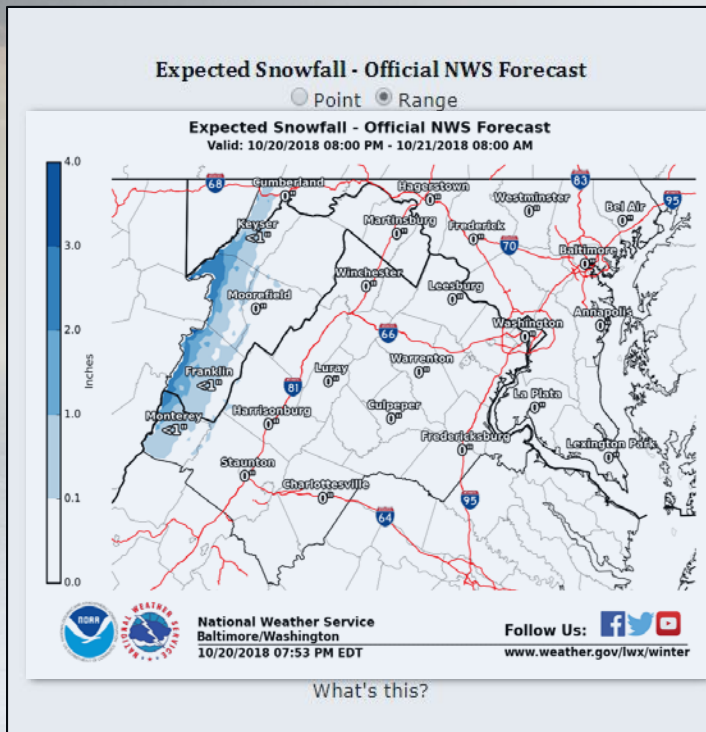
# 0-3 Days in Advance

## Range of Possibilities – Snow Accumulation

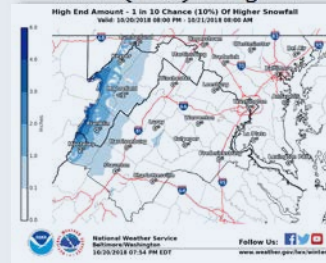
**Current  
Snowfall  
Expectation**

What our  
forecasters  
expect now.

Based on the  
latest, constantly-  
evolving models

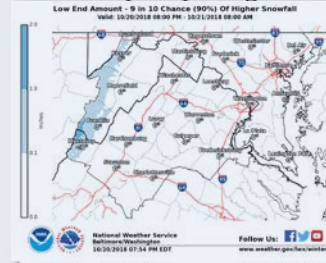


**High End Amount**  
1 in 10 Chance (10%) of Higher Snowfall



What's this?

**Low End Amount**  
9 in 10 Chance (90%) of Higher Snowfall



What's this?

**High-End  
Potential**

How much/little  
could it be,  
given what  
some models  
still show

**Low-End  
Potential**

# 0-3 Days in Advance

## Other Information

### Storm Track



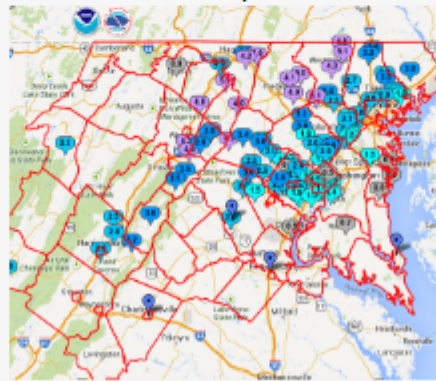
Where is storm coming from?

### Onset of Wintry Precipitation



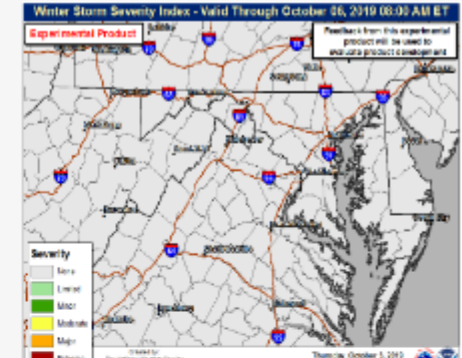
When will it start?

### Observed Snow/Ice Amounts



How much has fallen?

### Winter Storm Severity Index



How severe an event?

# 0-1 Days in Advance

## Potential Winter Commuting Hazard

**Combating the 8-10 Hour Commute**



# 0-1 Days in Advance

## Potential Winter Commuting Hazard

### Recipe for Traffic Disaster

- \* 1" or less of snow
- \* During urban rush hour
- \* Sub-freezing road temperatures



**Together, these often create gridlock.**

But typically...

Road crew's plan & response time > "Confident forecast" lead-time

# 0-1 Days in Advance

## Potential Winter Commuting Hazard

w/ D.O.T. Notification Calls ~24hrs in Advance

...POTENTIAL WINTER COMMUTING HAZARD STATEMENT FOR THE WASHINGTON METRO AREA TUESDAY MORNING.....

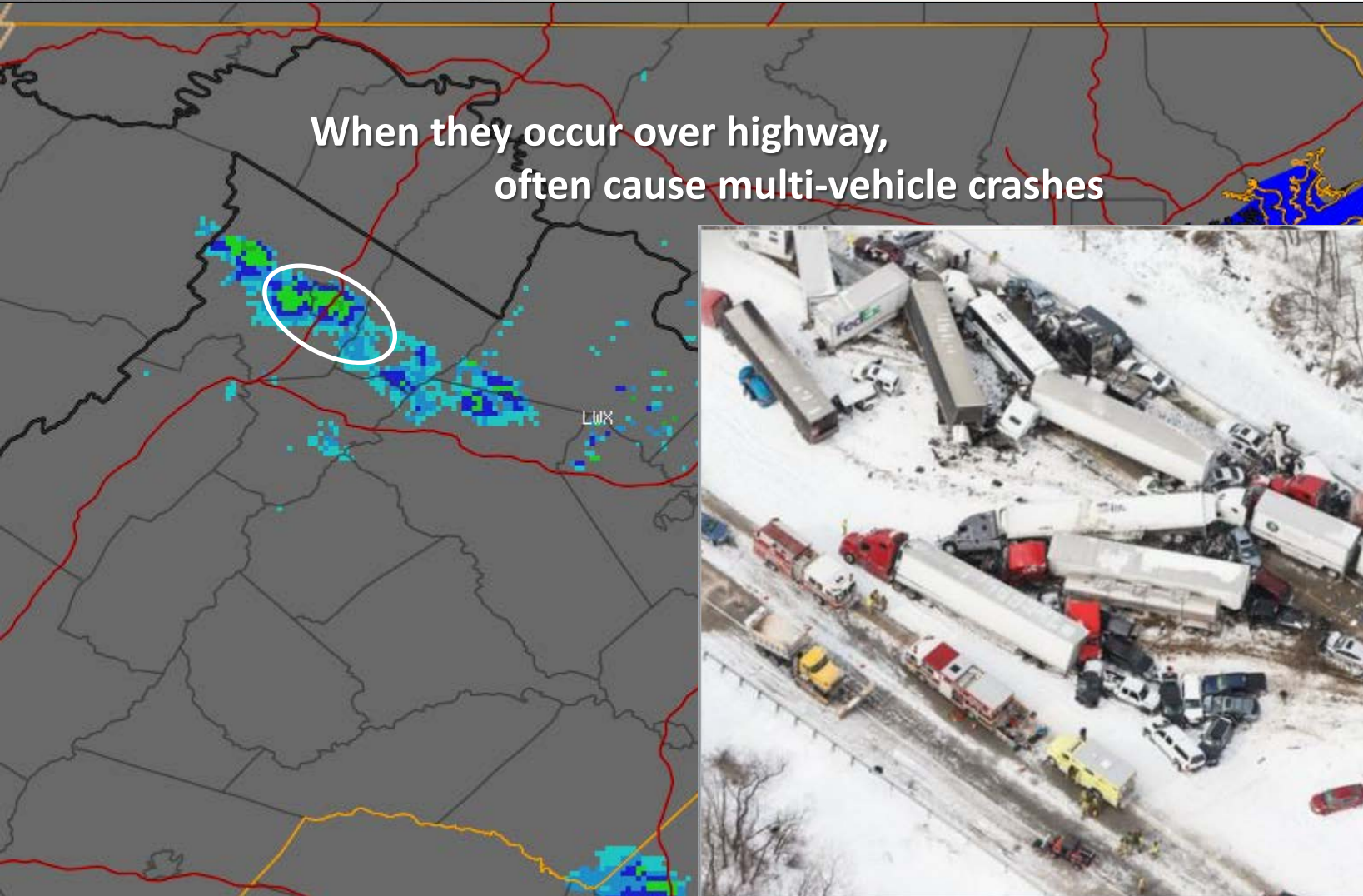
There is a POSSIBILITY for icy commuting conditions Tuesday morning. A period of snow is POSSIBLE (30 percent) across the Washington metro area during rush hour, with up to an inch of snow accumulation possible on sub-freezing roads.

If this threat does materialize during Tuesday morning rush-hour, untreated roads would turn icy. This could lead to hazardous commuting conditions, with extensive delays.

The most important action at this point is to stay informed. Know what you would do if this threat materializes, and plan accordingly. Stay tuned for updates and possible winter weather advisories.

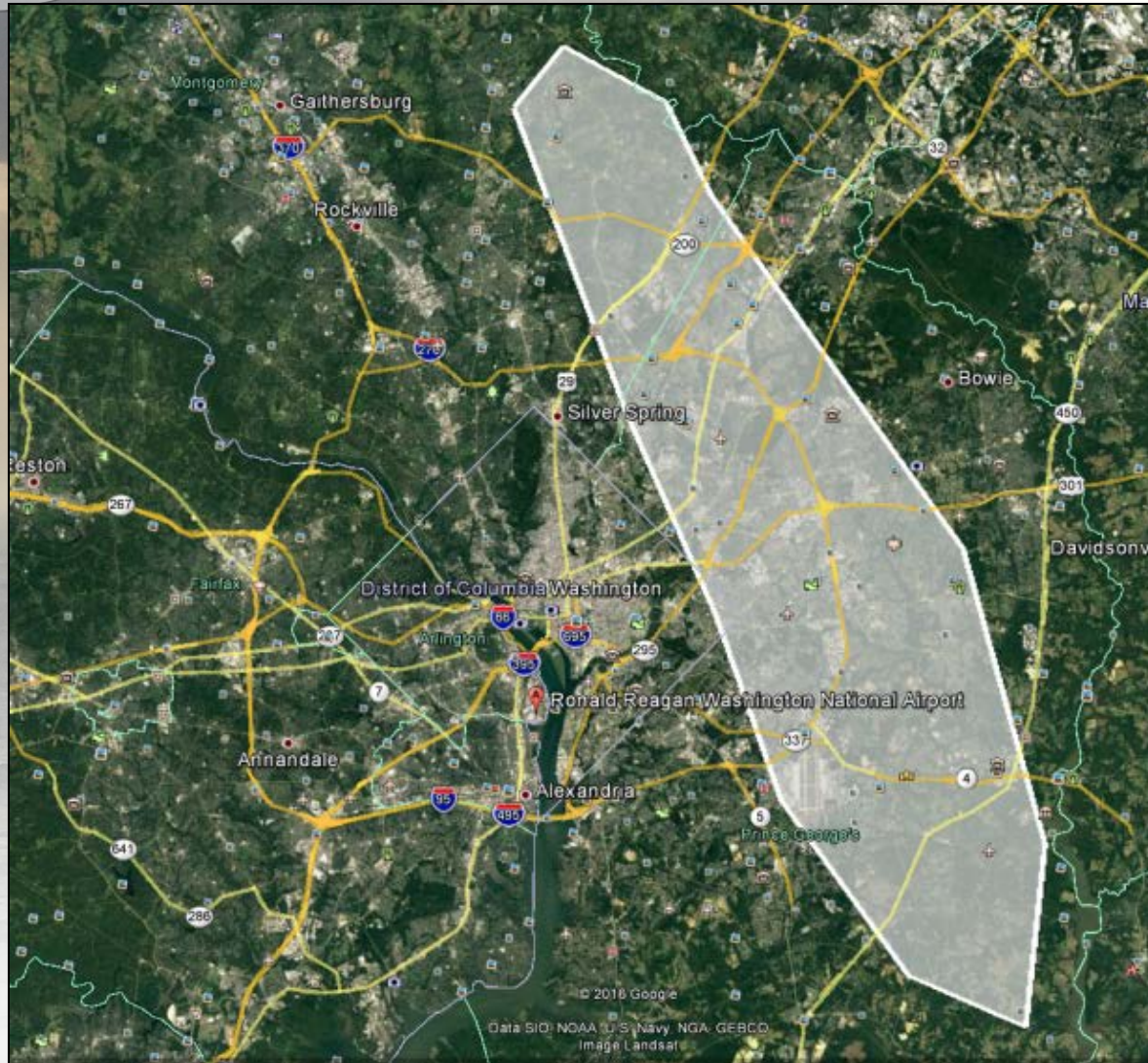
# 0-1 Days in Advance Snow Squall Warning

When they occur over highway,  
often cause multi-vehicle crashes





# 0-1 Hour in Advance Snow Squall Warning



- Issued when we see it forming
- Typically last 30-60 minutes
- Sub-freezing road temps
- High-speed highways/interstates

# Existing Communication

- **Winter Storm Watch**
  - Possibility of 5+” snow
  - ~1-3 days in advance
- **Winter Storm Warning** 5”+
- **Winter Weather Advisory** 1-4”
  - Expectation
  - ~12-24 hours in advance



# weather.gov/washington

**NATIONAL WEATHER SERVICE**  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS SEARCH ABOUT

Local forecast by "City, St" or ZIP code  
Enter location    
[Location Help](#)

**News Headlines**

- [Click for our winter page. Tracks snow/ice threats through the next 7 days](#)
- [SKYWARN Spotter Classes: Become a spotter for us. New fall classes have been added. Click here for more info.](#)

**NWS Forecast Office Baltimore/Washington** Baltimore/Washington  
Weather Forecast Office

[Weather.gov](#) > Baltimore/Washington

[Current Hazards](#) [Current Conditions](#) [Radar](#) [Forecasts](#) [Rivers and Lakes](#) [Climate and Past Weather](#) [Local Programs](#)

Click a location below for detailed forecast.

**Customize Your Weather.gov**

  
Enter Your City, ST or ZIP Code  
 Remember Me  
  
[Privacy Policy](#)

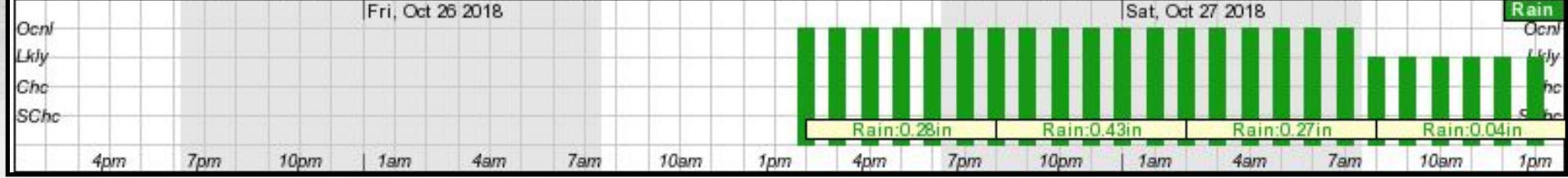
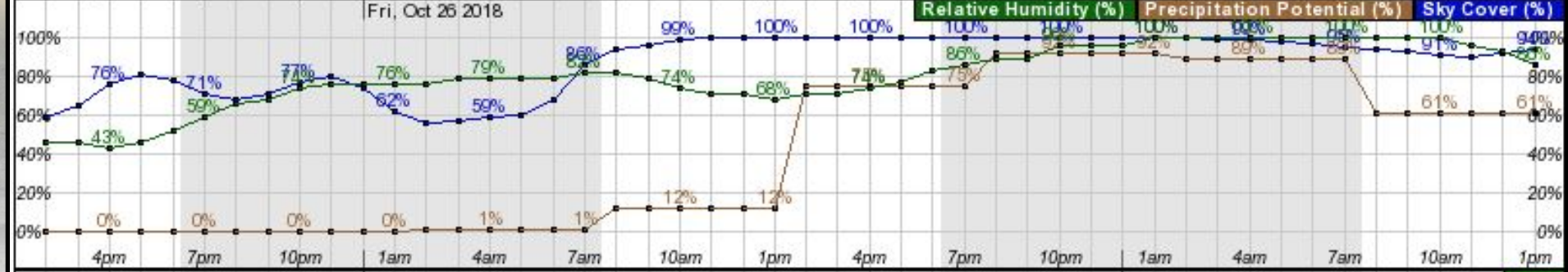
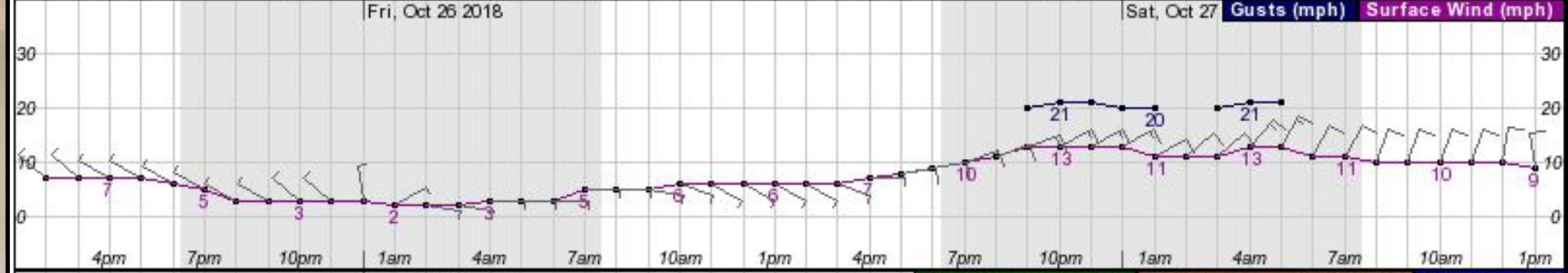
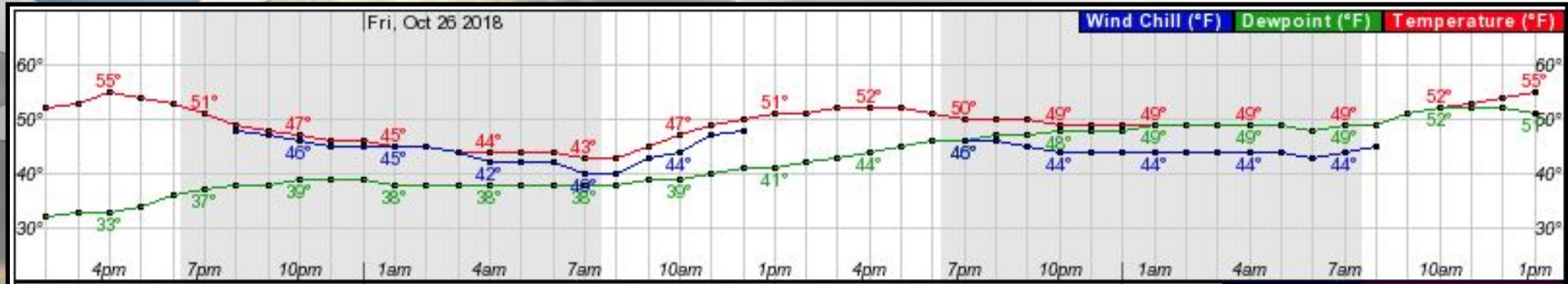
[Watches, Warnings & Advisories](#)

[Small Craft Advisory](#)

[Hazardous Weather Outlook](#)

Type-in or Click Your Location

Last Map Update: Thu, Oct. 25, 2018 at 2:32:27 pm EDT





**Again,  
everything we have discussed is on our**

**NWS Winter Page**

**[www.weather.gov/washington/winter](http://www.weather.gov/washington/winter)**

Where you can go to get info.

But what about info pushed to you?

# iNWS Text Alerts

- NWS Watch/Warning/Advisories immediately
- Highly recommended
- Customize it for you

*To Register*

Google **iNWS**

The screenshot displays the iNWS mobile application interface. At the top, the status bar shows AT&T 4G, 9:48 AM, and a battery icon. The app title is "InteractiveNWS - Alert Information". Below the title is a search bar with the URL "inws.wrh.noaa.gov/weat" and a "Google" button. Navigation links for "Home", "My Alerts", "FAQ", and "About" are visible. The main content area shows a "New Event for Fairfax County" titled "Severe Thunderstorm Warning" valid from Aug 5 5:31 PM to 6:15 PM EDT, sent to SMS at Aug 5 5:27 PM EDT. A radar map shows the warning area in Fairfax County, Virginia, with a "User Alert Area" highlighted. Below the map, the "Radar Time: Aug 5 2012 5:30 PM EDT" is displayed. The bottom of the screen features a navigation bar with icons for back, forward, home, and a notification icon showing the number 5.

# Existing Communication

The image shows a screenshot of the Facebook page for the US National Weather Service Baltimore/Washington. The page header includes the Facebook logo, a search bar, and the user's name 'Chris Strong' with a 'Home' button. The main content area features the NWS Baltimore/Washington logo, a 'Wall' section with a post from 'US National Weather Serv...' dated 'Yesterday at 11:41am', and a 'People You May Know' section listing several individuals. The left sidebar contains navigation links like 'Wall', 'Info', and 'Friend Activity', along with statistics such as '86 like this' and '22 talking about this'. The post content includes a link to 'National Weather Service Sterling' and a photo album titled 'October 29, 2011 Early-Season Snow'.



**NWSBaltWash**

# Constant Teamwork

## for Constant Improvement

- **COG's MATOC Group**
  - Monthly meetings
- **Pre-winter visits & Exercises**
- **When threats arise - Phone calls to government transportation sector**
- **Event-based conference calls**
- **Regional COG conference calls**





# Summary

- **The NWS – COG/Transportation partnership has helped develop new ways to communicate snow forecasts:**
  - Days 3-7 Winter Storm Threat
  - Days 0-3 Range of Possible Accumulations
  - Days 0-1 Potential Winter Commuting Hazard
  - 1-2 hour Snow Squall Warning
- **Constant Teamwork with Regional Transportation Sector**
  - Watch / Warning / Advisory
  - Regular & event-driven meetings & conference calls
- **NWS winter outlook 2019-20**
  - Fewer arctic outbreaks
  - More likely to see more than average precipitation (not necessarily snow)
  - Possible early start