NHC’s Social Media Efforts: A Focus on Hazards

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National Hurricane Center
Outline and Objectives

- Common messaging challenges
- NHC’s messaging objectives
- Examples of national level messaging during various stages of a hurricane threat
- How can we ensure that the public is taking appropriate action!
Messaging Challenges

Too much focus on category and/or storm intensity

“Just” a Tropical Storm

Alberto (1994) and Allison (2001) both minimal tropical storms produced significant flood events.
Messaging Challenges
Using “Downgraded” – No!!!
Keep Focus on Life-Threatening Hazards

The Latest: Florence Downgraded to a Category 1 Hurricane

Florence downgraded to a Category 1 hurricane with top sustained winds of 90 mph (150 kph).

Stay focused on hazards!!!
Messaging Challenges

Only a Category 1

Since 2010

In the U.S., Category 1 hurricanes* have caused:

175 direct deaths
$103 billion

*Irene, Isaac, Sandy, Hermine, Matthew, Nate, Florence
Messaging Challenges

Too Much Focus on Exact Forecast Track and Timing of Landfall

Hurricane Michael: Where is it going; what time will it make landfall?

The current model has Michael heading north up the eastern side of the Gulf of Mexico early Wednesday.

Forecasters say that Michael is expected to begin making a turn toward the northeast sometime on Wednesday morning. That turn would bring Michael into Florida somewhere near Panama City Beach around 2 p.m. Wednesday, according to the NHC.

Use New Time of Arrival Graphics
Messaging Challenges
Cone on a diet – but storm size unchanged!
More impacts outside the cone!
Messaging Challenges
Hazards Extend Far From the Center!
A Hurricane is Not a Point!
Messaging Challenges

NHC Storm Surge Inundation Estimate

Hurricane Irma
September 6-14, 2017
5805 sites

- 1-2.99"  
- 3-4.99"  
- 5-6.99"  
- 7-8.99"  
- 10-14.99"  
- 15-19.99"  
- 20-21.66"

Maximum: 21.66"  
Fort Pierce Water Plant

Track
Careful with Analogs

Every storm is different (size, intensity, structure, angle of approach). Analogs can be carefully used to explain how this storm is going to be different than a past one.

Higher Storm Surge from Isaac in parts of SE Louisiana due to angle of approach and different landfall location.
Anchoring

Tendency to “anchor” on one piece of information in decision making – not accounting for forecast changes

Conservative initial intensity forecasts for Michael and Maria
Past Experience

“Didn’t think it would be that bad!”

“That wasn’t bad at all!”

Depends on your perspective
NHC’s Social Media Objectives

- Raise awareness
- Describe evolving threat
- Address uncertainty
- Focus on hazards, not storm “details”
- Encourage preparedness
- Direct users to trusted sources of information
Why not just use automated tweets?

• As a rule, people are not using social media for automated information

• The general public can tell very quickly that this information is from a computer and not from a human (usage, syntax, grammar etc)

• Usage statistics show that manual tweets are viewed & shared 3-4x as much as the automated ones, even with similar information

• In Matthew, 19 of 20 top tweets were manual

• Automated tweets do not encourage people to follow NHC’s message.
NATIONAL WEATHER SERVICE
Tropical Cyclone Products & Messaging Strategy

> 5 Days
Large uncertainty
Less specificity

3-5 Days
Threat increasing
Highlight potential impacts/areas

2-3 Days
More clarity in impacts/timing

Impacts

Outlook

5 Day Forecast
Public Advisory
Wind Speed %
Forecast Discussion

TS/Hurricane Watches

TS/Hurricane Warnings
TS/Hurricane Local Statements
Operational Storm Surge Products
More Products, More Specificity as Threat Materializes

- Days out, not possible to provide detailed information on specific impacts, exact locations that will be affected, and timing.

- As threat increases, impact area is highlighted but information on locations that will experience the worst conditions is not yet know. Exact timing not clear.

- Focus during watch/warning phase is on potential impacts and need for preparedness actions and evacuation.
Mention potential for impacts, but no specific information on timing, magnitude and location of impacts

Encourage interests to monitor the storm and ensure they have a hurricane plan in place

As event approaches and confidence increases, messaging becomes more specific and focused
Pre-Storm Messaging

- Strongly worded Tropical Weather Outlooks begin emphasizing hazards
  - Storm Surge
  - Tropical storm or hurricane-force winds
  - Potential for heavy rainfall

- Mention that watches or warnings could be required

- Overall focus is on potential impacts – not track or intensity
Key Messages can be introduced during this phase

Emphasize is on preparedness and broad areas that could be impacted

Storm surge, rainfall, and wind impacts mentioned - too early for details
Messaging Threats Three to Five Days Out

- Messaging begins to focus on area where impacts could occur
- Risk of impacts continues to increase, but uncertainty still too large to get specific about timing and magnitude
  - Time of Arrival graphics can be helpful!
- Life-threatening wording can be included at this stage, if confidence allows.
- Preparedness actions typically underway
  - Mention hurricane plan and to seek advice of local officials
Keeping Focus Off the Track and Awareness of Hazards Beyond the Cone

National Hurricane Center 📲 @NHC_Atlantic · 10 Sep 2018

Don't concentrate on the exact forecast track of Hurricane #Florence. Significant effects will extend outside the cone, and will arrive at the coast sooner than the eye. For more information about impacts at your specific location, go to weather.gov
Messaging Threats in the Watch/Warning Phase

- Important to keep messaging focused on hazards not track or intensity.
- Concentrate messaging on individual hazards, with more detail provided at this stage
  - Life-threatening storm surge likely somewhere within the warning area
  - Life-threatening freshwater flooding likely for Carolinas and mid-Atlantic
  - Hurricane-force winds possible (likely) within the watch (warning) area
Messaging Threats in the Watch/Warning Phase

- Remember that the each hazard is likely to required a different response
- Hazards also likely to occur at different locations and times
  - Harvey – storm surge and extreme wind at landfall, flooding rains days later
- Watches/Warnings and other NWS hazard-specific graphics can help to message location and timing of surge, rainfall, and wind hazards and impacts
Messaging A Quickly Evolving Threat

- **Life-threatening** storm surge likely - worst surge from Mexico Beach to Keaton Beach
- **Potentially catastrophic** wind damage where the core of Michael moves onshore
- Dangerous hurricane-force winds will extend well inland into southern GA and southeast AL

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**Key Messages for Hurricane Michael**

Advisory 15: 4:00 AM CDT Wed Oct 10, 2018

1. Life-threatening storm surge is likely along portions of the coasts of the Florida Panhandle, Big Bend, and Nature Coast, where a storm surge warning is in effect. The worst storm surge is expected between Tyndall Air Force Base and Keaton Beach, where 9 to 13 feet of inundation is possible.

2. Michael is likely to produce potentially catastrophic wind damage where the core of the hurricane moves onshore in the Florida Panhandle, and everyone in the hurricane warning area should prepare for life-threatening hurricane winds. Dangerous hurricane-force winds will also extend well inland across portions of the Florida Panhandle, southern Georgia, and southeast Alabama as Michael moves inland.

3. Heavy rainfall from Michael could produce life-threatening flash flooding from the Florida Panhandle and Big Bend region into portions of Georgia, the Carolinas, and southeast Virginia.

4. Tropical storm conditions will likely affect portions of the southeast U.S. coast from northeast Florida through North Carolina, and tropical storm watches and warnings are in effect for these areas.

For more information go to [hurricanes.gov](https://www.hurricanes.gov)
Messaging Takes Coordination

- NWS Decision Support Services (DSS) Coordinator is initiated when threat is identified
  - Person deploys and works within NHC operations
- Facilitates communication between deployed NWS personnel, WFOs, RFC, national centers, HLT, and other parts of NOAA
- Ensures consistent messaging within the organization and assists with forecast coordination

Jenifer McNatt serving as DSS Coordinator during Hurricane Irma

Consistency is the building block of trust
Words Matter

● Choose words carefully!
  ○ Careful when saying weakening, downgraded – hazards often continue!
  ○ Careful when describing improving conditions or ending time of a particular hazard – does not necessarily mean all clear!
  ○ Public can perceive words related to probabilities very differently – try to be clear when describing

● Keep headlines focused on hazards and impacts not storm statistics!

<table>
<thead>
<tr>
<th>Perceptions of Probability</th>
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<tbody>
<tr>
<td>Almost Certain</td>
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<tr>
<td>Probable</td>
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<tr>
<td>Likely</td>
</tr>
<tr>
<td>Good Chance</td>
</tr>
<tr>
<td>Possible</td>
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<tr>
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<tr>
<td>Unlikely</td>
</tr>
<tr>
<td>Improbable</td>
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<tr>
<td>Doubtful</td>
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<tr>
<td>Almost Impossible</td>
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</tbody>
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Carolinas Brace for Hurricane Florence and Widespread Flooding

Hurricane Florence still poses grave threat despite weaker winds
Trusted Sources

- Resist posting and sharing computer model graphics
- Put out “official” information and products from trusted sources
- Share and re-tweet information from trusted sources
- Use social media to politely dispel rumors and provide general preparedness tips

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**Natl Hurricane Ctr**
@NHC_Atlantic

With the peak of the hurricane season upon us, be prepared and make NHC your trusted source of forecast information on.fb.me/1odlGjO

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**National Hurricane Center**
@NHC_Atlantic

For information on local impacts from #Michael, follow @NWSMobile @NWSTallahassee @NWSTampaBay @NWSAtlanta @NWSJacksonville @NWSCharlestonSC @NWSColumbia @NWSWilmingtonNC @NWSGSP @NWSMoreheadCity @NWSRaleigh

2:34 AM - 10 Oct 2018
Don’t Be Afraid to Dispel Rumors

● If misinformation is being spread, don’t hesitate to address it!
  ○ Do it politely
  ○ Don’t call out source
  ○ Use it as a general reminder for preparedness and/or re-direct message back to potential hazards & impacts

● Work with the entire weather enterprise (media, private sector, and EM community) to provide consistent, actionable messages!
Summary of tweet best practices

- Use a hashtag - #Matthew
- Include an image or loop
- Use jpg not gif (only allowed 1 gif)
- Colors are a big plus (don’t tweet out the Dvorak curve)
- Include interesting and relevant information
- Consider tweeting relevant 5 am advisory information after you finish the 8 am TWO (people miss it)
- Official links only
Tropical Storm and/or Hurricane Watches are likely for portions of the Florida Peninsula & Florida Keys later this morning for #Matthew.

#Matthew made landfall near Les Anglais, Haiti at 7 am EDT. This is the first Category 4 hurricane landfall in Haiti since Cleo in 1964.

Remember effects (wind, rainfall, high surf etc) will extend well outside of the forecast cone (which is only for the center of #Matthew)

A Tropical Storm Watch has been issued for Florida from the 7 Mile Bridge to south of Deerfield Beach #Matthew hurricanes.gov

Record-breaking flooding is ongoing in North Carolina. Please see statements from @NWSRaleigh @NWSWilmingtonNC @NWSMoreheadCity #Matthew

#Matthew is now a category 5 #hurricane, the first in the Atlantic basin since Felix of 2007. More info: nhc.noaa.gov/#MATTHEW

Top Tweets in Matthew (detailed)
Summary

- Remain focused on hazards & impacts, not track or category
- Every storm is different
- Hurricane is not a point – significant impacts occur far from the center – outside the cone
- Consistency and words matter
- Only share information from reliable sources