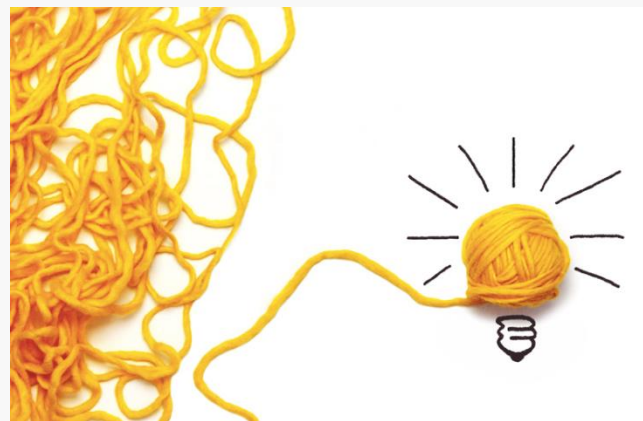




NWS Hazard Simplification Project: ***Simplifying and Clarifying the Message***



NWS Partner's Meeting
July 18, 2016

Eli Jacks, Chief AFS Forecast Services Division



Presentation Outline

- Review: What are the issues?
- Project Goals: How can we meet them?
- Engagements so far; feedback to date
- Options for **“REPAIR”** & **“REVAMP”**
- Plans for this year: How you can help!



WWA: What Are The Issues?

Orthogonal Logic!

"How far in advance can I issue this?"



WATCH

"WA-WA!"

WARNING

"Which is worse?"



ADVISORY

"Is this a downgrade?"

"You're advising me to do - what?"

"Watch out!"

Fixed Impact, Increasing Certainty

Fixed Certainty, Increasing Impact

WWA: What Are The Issues?

Product Proliferation: An “Element” of Confusion!



NWS Watch, Warning, Advisory Periodic Table

511 TO Tornado Warning																	513 BZ Blizzard Warning				
511 SV Severe Thunderstorm Warning	511 SV Severe Thunderstorm Statement																	513 WW Winter Weather Advisory	513 WS Winter Storm Watch	513 WS Winter Storm Warning	513 BZ Blizzard Watch
512 TO Tornado Watch	512 SV Severe Thunderstorm Watch	<div style="text-align: center;"> <p>NWS Directive (Prefix 10-1)* (*WWA may be in multiple directives)</p> <p>513 WW Winter Weather Advisory</p> <p>← VTEC Phenomena or AWIPS ID ← VTEC Phenomena Full Name</p> <p>← VTEC Significance</p> <p>Background color according to http://www.weather.gov/help/wwa Text color is chosen to be most viewable</p> <p>Questions/Comments? andrew.ansorge@noaa.gov</p> </div>																513 LE Lake Effect Snow Watch	513 LE Lake Effect Snow Advisory	513 LE Lake Effect Snow Warning	513 IS Ice Storm Warning
601 HU Hurricane Warning	601 HU Hurricane Watch	601 TS Tropical Storm Warning	601 TS Tropical Storm Watch	601 TY Typhoon Warning	601 TY Typhoon Watch	601 EW Extreme Wind Warning	601 HL Hurricane Local Statement	601 HL Tropical Storm Local Statement	601 HL Typhoon Local Statement	601 HL Tropical Depression Local Statement	922 FF Flash Flood Warning	922 FF Flash Flood Watch	922 FF Flash Flood Statement	513 WC Wind Chill Watch	513 WC Wind Chill Advisory	513 WC Wind Chill Warning	513 ZR Freezing Rain Advisory				
922 FL Flood Warning	922 FL Flood Advisory	922 FL Array and Small Stream Flood Advisory	922 FL Small Stream Flood Advisory	922 FL Urban and Small Stream Flood Advisory	922 FL Flood Watch	922 FL Flood Statement	922 HY Hydrologic Advisory	922 ESF Hydrologic Outlook	320 CF Coastal Flood Warning	320 CF Coastal Flood Advisory	320 CF Coastal Flood Watch	320 CF Coastal Flood Statement	320 LS Lakeshore Flood Warning	320 LS Lakeshore Flood Advisory	320 LS Lakeshore Flood Watch	320 LS Lakeshore Flood Statement	320 RP Rip Current Statement				
320 SU High Surf Warning	320 SU High Surf Advisory	320 BH Beach Hazard Statement	313 MA Special Marine Warning	314 MW Marine Weather Statement	315 AF Ashfall Warning	315 AF Ashfall Advisory	315 BW Brisk Wind Advisory	315 FG Dense Fog Advisory	315 SM Dense Smoke Advisory	315 ZY Freezing Spray Advisory	315 GL Gale Warning	315 GL Gale Advisory	315 SE Hazardous Seas Warning	315 SE Hazardous Seas Watch	315 UP Heavy Freezing Spray Warning	315 UP Heavy Freezing Spray Watch	315 HF Hurricane Force Wind Warning				
315 HF Hurricane Force Wind Watch	315 LO Low Water Advisory	315 SC Small Craft Advisory	315 SC Small Craft For Hazardous Seas Advisory	315 RB Small Craft For Rough Bar Advisory	315 SI Small Craft For Winds Advisory	315 SR Storm Warning	315 SR Storm Watch	701 TS Tsunami Warning	701 TS Tsunami Advisory	701 TS Tsunami Watch	401 FW Red Flag Warning	401 FW Fire Weather Watch	401 Extreme Fire Danger	517 HWO Hazardous Weather Outlook	517 NOW Short Term Forecast	517 SPS Special Weather Statement	519 AQA Air Quality Alert				
515 AS Air Stagnation Advisory	515 DU Blowing Dust Warning	515 DU Blowing Dust Advisory	515 EH Excessive Heat Warning	515 EH Excessive Heat Watch	515 EC Extreme Cold Warning	515 EC Extreme Cold Watch	515 FZ Freeze Warning	515 FZ Freeze Watch	515 ZF Freezing Fog Advisory	515 FR Frost Advisory	515 HZ Hard Freeze Warning	515 HZ Hard Freeze Watch	515 HT Heat Advisory	515 HW High Wind Warning	515 HW High Wind Watch	515 LW Lake Wind Advisory	515 WI Wind Advisory				
518 AV Avalanche Warning	518 AV Avalanche Advisory	518 AV Avalanche Watch	518 TOE 911 Telephone Outage	518 ADR Administrative Message	518 CAE Child Abduction Emergency	518 CDW Civil Danger Warning	518 CEM Civil Emergency Message	518 EQ Earthquake Warning	518 EVI Evacuation Immediate	518 FR Fire Warning	518 HM Hazardous Materials Warning	518 LEW Law Enforcement Warning	518 LAE Local Area Emergency	518 NUW Nuclear Power Plant Warning	518 RH Radiological Hazard Warning	518 SP Shelter in Place Warning	518 VO Volcano Warning				

Project Goals

Clarity, Brevity and Consistency!

From the 2011 WRN “Vital Conversation”:

“Develop clear, consistent, and concise messages issued by NWS, commercial weather services, emergency managers and the media in formats that are easily understood”

From the Hurricane Irene Service Assessment:

“A more streamlined and simplified product suite for NWS hydrologic headlines would enable greater consistency regarding the types of inland flood watches and warnings and would reduce the potential for confusion”

Project Engagement to Date

Social Science Analysis Still Ongoing!

- **2014 Focus Groups:**
 - 4 cities, 5 constituent groups (including EMs)
 - Spectrum of understanding, “Advisory” misunderstood
- **2015 American Meteorological Society:**
 - Town Hall, survey, exhibit booth
 - Results indicated a desire for change
- **2016 “Institutionalization” Survey**
 - How deeply is WWA embedded in policy and/or law?
 - Wide survey to be publicized soon
- **2015 WWA Case Studies**
 - Asked for cases to illustrate WWA strengths & weaknesses
 - Over 800 responses (550 from EMs); first draft is complete



The Haz Simp Workshop

An Intensive and Rewarding Experience!

- Held Oct 27-29 at the NWS Training Center
- **115 attendees:** NOAA/NWS staff, EMs, Weather, Water and Climate Industry, social scientists
- Breakout group process used to identify prototypes and ideas
- We got what we asked for – and more!
- Common themes emerged for discussion/follow-on



Feedback Received Up Until The Workshop

There Were Some Recurring Themes



- WWA terms: A spectrum of understanding
- Support for a color and/or numbering scheme, and symbols
- “Advisory” is generally *misunderstood*; “Watch” and “Warning” are sometimes confused
- Support for an “Emergency” tier for *This one is different!*
- Shorten and focus the message

Feedback From Workshop

We Kept Hearing The Same General Things!



- Consolidate the current 122 WWA products
- Little support for retaining “Advisory”; a number of groups also suggested replacing “Watch”
- Many groups suggested replacing WWA terms with action, risk and/or impact statements (Be Aware, Prepare, Emergency):
Example: “Winter Storm - Take Action!”
- Suggestions for a 3-5 tier, hierarchical color scheme to communicate different levels of “Warning” or “Take Action”

2015 Case Study Findings

Even More Of The Same...



- Reduce the number of WWA products, improve formatting, use concise, easy-to-understand language
- No clear indication of which WWA words should be changed; but some indication of need to maintain “Warning”
- Collaboration/coordination challenges due to rigid WWA criteria
 - Results in WFO product delays, inconsistent messaging
- Need to balance WFOs’ flexible messaging before an event with the rigid WWA constraints closer to event

2015 Case Study Findings

But Some Sector *Differences* Were Noted



- WWA products are typically the last piece of information in a continuous information flow
 - EMs depend upon a trigger word (per WWA)
 - The “Take Action” label was too vague
- Different users of the WWA system have different needs:
 - Media and public needs may differ from that of EMs
 - EMs/Media want detailed information, but they believe the public needs simplified messages (needs testing)
- Bullets can be too simple! Need sentences to read on TV/radio or “copy/paste” for EMs

Two Categories of Potential Change Have Emerged

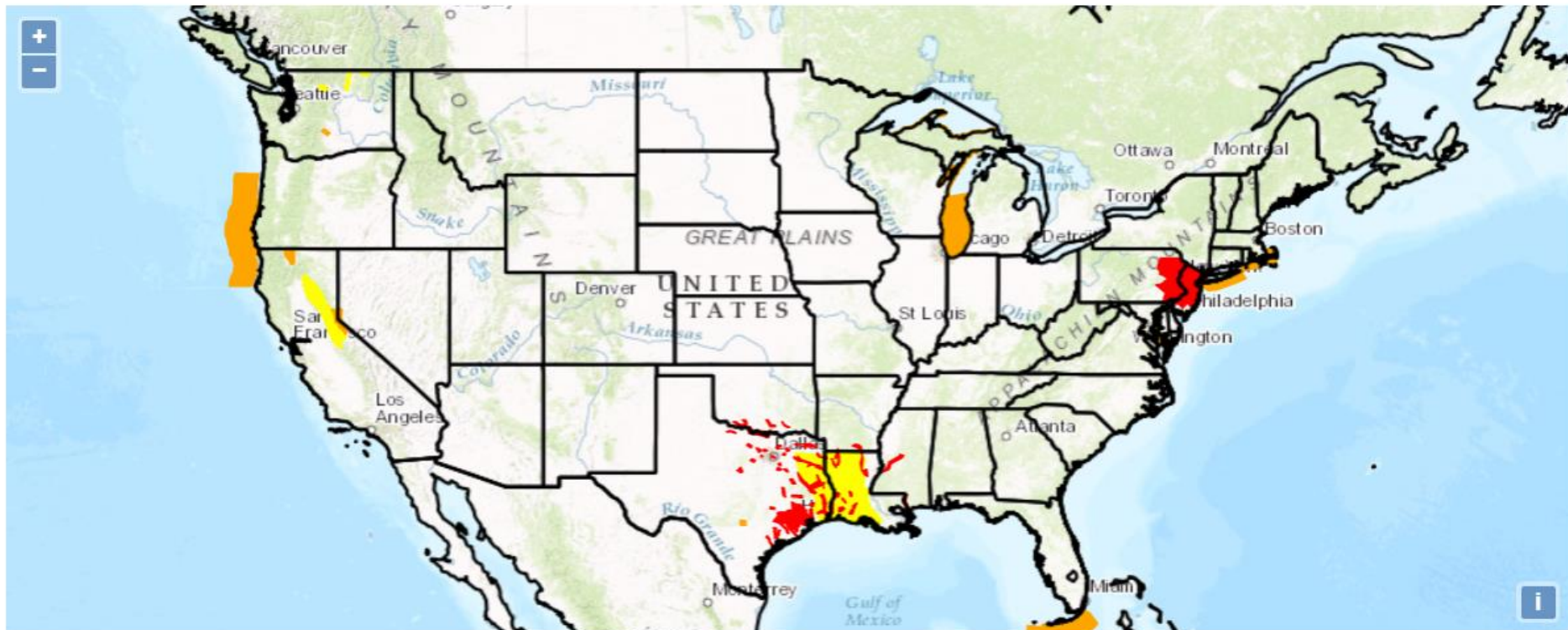


- **REPAIR:** WWA message improvements that could be implemented via policy and/or minor software change
- **REVAMP:** An overhaul and/or revisualization of the hazard messaging paradigm that would require major policy and infrastructure changes

***We are getting ready to demonstrate
both types of change!***

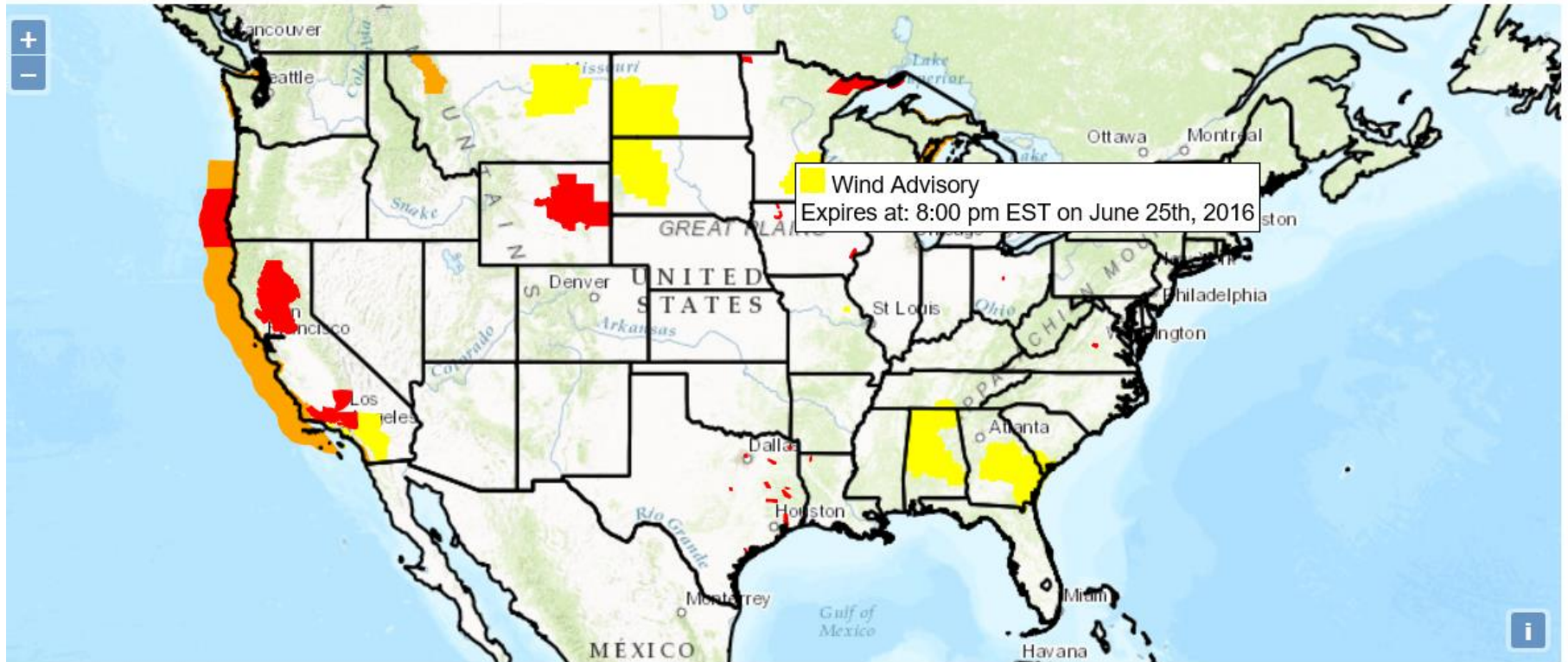
REPAIR:

Idea #1A – 4 Color Hazard Map (WWA-Based)



REPAIR:

Idea #1B - 4 Color WWA Map (Action-Based)



REPAIR:

Idea #2a – Advisory Consolidation

Current Flood Advisory Products

Urban and Small Stream Advisory

Small Stream Flood Advisory

Arroyo and Small Stream Advisory

Flood Advisory

Hydrologic Advisory

Consolidate To → **Flood Advisory**

Current Winter Advisory Products

Lake Effect Snow Advisory

Winter Weather Advisory

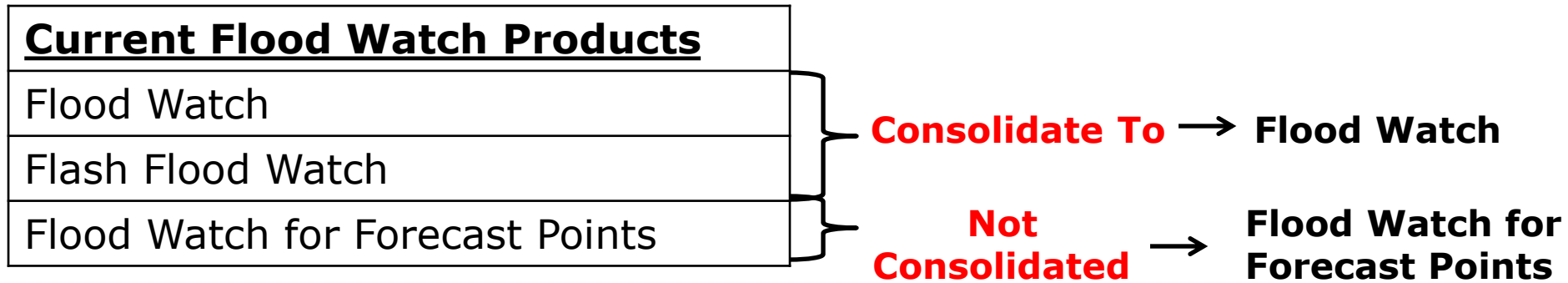
Freezing Rain Advisory

Wind Chill Advisory

Consolidate To → **Winter Weather Advisory**

REPAIR:

Idea #2b – Flood Watch Consolidation



REPAIR:

Winter Weather Advisory Example

Current Messaging

Urgent - Winter Weather Message
National Weather Service Baltimore MD/Washington Dc
129 AM EST Tue Jan 26 2016

“Urgent”
Removed



Proposed Alternative

Winter Weather Message
National Weather Service Baltimore, MD/Washington DC
129 AM EST Tue Jan 26 2016

...Freezing Rain Advisory in effect until 11 AM EST this morning...

...Winter Weather Advisory in effect until 11AM EST this morning...

The National Weather Service in Baltimore MD/Washington has issued a Freezing Rain Advisory...which is in effect until 11 AM EST this morning.



Remove Attribution
Line

* Hazard Types...Spotty light freezing rain.

* Ice Accumulations...Generally trace amounts...with up to a few hundredths of an inch possible. Even a small amount of ice can cause significant safety issues.

* Timing...Overnight tonight through mid-morning Tuesday.

* Impacts...A light glaze of ice will make roadways and sidewalks slippery and hazardous. A thin layer of ice may be difficult to distinguish from a surface that is simply wet.

* Winds...South 5 To 10 mph with gusts up to 20 mph.

* Temperatures...In the teens and 20s early this morning...especially valley locations. Temperatures will rise above freezing by late morning.

Precautionary/Preparedness Actions... A freezing rain advisory means that periods of freezing rain or Freezing drizzle will cause travel difficulties. Be prepared for slippery roads. Slow down and use caution while driving.

* Hazards...Spotty freezing rain, generally trace amounts... with up to a few hundredths of an inch...

Hazards First



* Impacts...A light glaze of ice will make roadways and sidewalks slippery and hazardous. A thin layer of ice may be difficult to distinguish from a surface that is simply wet.

Impacts
Next



* Timing... Overnight tonight through mid morning Tuesday.

* Winds...South 5 to 10 with gusts up to 20 mph

* Temperatures...In the teens and 20s early this morning...especially valley locations. Temperatures will rise above freezing by late morning.

Precautionary/Preparedness Actions...Be prepared for slippery roads; slow down and use caution when driving.

Shortened



REPAIR:

Flood Advisory Example

Current Messaging

The National Weather Service in League City has issued a Urban and Small Small Stream Flood Advisory for northeastern Harris County in southeastern Texas, southern Liberty County in southeastern Texas, northern Chambers County in southeastern Texas Until 1145 AM CDT

At 845 AM CDT, Doppler radar and automated rain gauges indicated heavy rain due to thunderstorms. This will cause urban and small stream flooding in the advisory area. Up to one inch of rain has already fallen in the past hour.

Some locations that will experience flooding include Baytown, Liberty, Dayton, Beach City, Barrett, Channelview, Highlands, Cloverleaf, Kingwood, Crosby, Mont Belvieu, Old River-Winfree, Ames, Daisetta, Cove, Devers, Sheldon, Hunterwood, Northshore and Atascocita.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Excessive runoff from heavy rainfall will cause flooding of small creeks and streams, urban areas, highways, streets and underpasses as well as other drainage areas and low lying spots.

A flood advisory means river or stream flows are elevated or ponding of water in urban or other areas is occurring or is imminent.

Proposed Alternative

...FLOOD ADVISORY IN EFFECT UNTIL 1145 AM CDT...

HAZARD TYPES...Urban and small stream flooding

IMPACTS...One inch of rain in the last hour and additional heavy rain from thunderstorms will cause urban and small stream flooding across the advisory area.

WHERE: Baytown, Liberty, Dayton, Beach City, Barrett, Channelview, Highlands, Cloverleaf, Kingwood, Crosby, Mont Belvieu, Old River-Winfree, Ames, Daisetta, Cove, Devers, Sheldon, Hunterwood, Northshore and Atascocita.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Excessive runoff from heavy rainfall will cause flooding of small creeks and streams, urban areas, highways, streets and underpasses as well as other drainage areas and low lying spots.

A flood advisory means river or stream flows are elevated or ponding of water in urban or other areas is occurring or is imminent.

...After **“REPAIR”** Comment Collection Period...



- If comments/feedback are positive for Optional Maps and Advisory/Watch consolidation:
 - Could make one or both four color maps available on NWS Homepage as an alternative
 - Could implement initial Advisory and Watch consolidation this winter

REVAMP:

Prototype From Haz Simp Workshop - Eliminate Advisory & Watch; Delineate Warning

CURRENT WWA	NEW HEADER	VERB/COLOR?	IMPACT
<i>Emergency</i>	Warning	Take Action	Widespread/Catastrophic
<i>Warning</i>		Take Action	Life-Threatening
<i>Advisory</i>		Take Action	Potentially Dangerous
<i>Watch</i>	Potential*	Prepare	Higher Risk
<i>Outlook</i>		Be Aware	Lower Risk

*Will replace some current advisories.

REVAMP:

Another Prototype From Haz Simp Workshop - Eliminate WWA Terms Entirely!

Wednesday October 28

Flood - Be Aware

- **What:** Heavy rain of 3-5"; low areas, creeks, streams and low water crossings may flood.
- **Where:** Much of central Texas including the Dallas/Fort Worth Metro area.
- **When:** Thursday, October 29 - Sunday, November 1
- **Actions:** Monitor local media; NWS at weather.gov/fwd.
- **Additional Details:** at weather.gov/fwd/flood.

Thursday October 29

Flood - Prepare Now

- **What:** Heavy rain of 4-6" forecast. Flooding of low areas, creeks, streams and low water crossings is anticipated. Roads may be closed due to flooding.
- **Where:** Much of central Texas including the Dallas/Fort Worth Metro area.
- **When:** early evening Friday, October 30 to early evening Saturday, October 31.
- **Actions:** Prepare to adjust travel plans. Stay away from rising rivers. Ranchers: move livestock out of floodplains.
- **Additional Details:** at weather.gov/fwd/flood.

Friday, October 30

Flood - Take Action

- **What:** Flooding is imminent along Tuttle Creek, Trinity River, and in urban areas of the Dallas/Fort Worth metroplex. Roads may be impassible on the west side of Dallas. Interstates may flood especially interchanges.
- **Where:** South Central Dallas County, eastern Denton County, including Dallas, Fort Worth, Plano, Arlington.
- **When:** Now until 2 pm CDT Saturday, October 31.
- **Actions:** Motorists need to avoid west Dallas. Stay away from rising rivers and creeks. Turn Around, Don't Drown!.
- **Additional Details:** at weather.gov/fwd/flood.

REVAMP:

Upcoming Comment Collection Opportunity

■ A Winter Weather “Episode” that adapts Workshop ideas to realistic (but generalized) scenarios. For example:

National Weather Service
729 PM EST Friday Feb 10 2017

Outlook: Be Aware. Snow Possible Monday

Forecast Confidence - Possible
Potential Impact - Moderate

What: Accumulating snow, with increasing winds and blowing snow, is possible Monday into Tuesday.

Where: Areas west of Any Town.

When: Monday morning through Tuesday.

Actions: Be aware that you may need to make alternative travel arrangements.

Additional Details:

<http://www.nws.noaa.gov/om/winter/index.shtml>

Urgent - Weather Message
National Weather Service
301 PM EST Mon Feb 13 2017

Heavy Snow Now Expected: Take Action

Forecast Confidence - Observed
Impact - Moderate

What: An additional 8-12 inches will accumulate through Tuesday; blowing snow also expected

Where: Areas west of Happy Town.

When: Now through Tuesday afternoon

Actions: **STAY HOME!** Roads will become treacherous for traveling

State Road Conditions Link

Additional Details:

<http://www.nws.noaa.gov/om/winter/index.shtml>

Latest **“REPAIR”** and **“REVAMP”** Timeline

- Release “Episodes” that adapt Workshop ideas to realistic scenarios across multiple hazards – gather public comment
- Collect comment on proposed repairs; implement change (and/or retain new ideas as alternatives) if feedback is positive



Jul: Collect comments on 4-Color maps, Winter Episode

Aug: Collect comments on “Consolidation” proposal; refine and possibly make available as alternative views

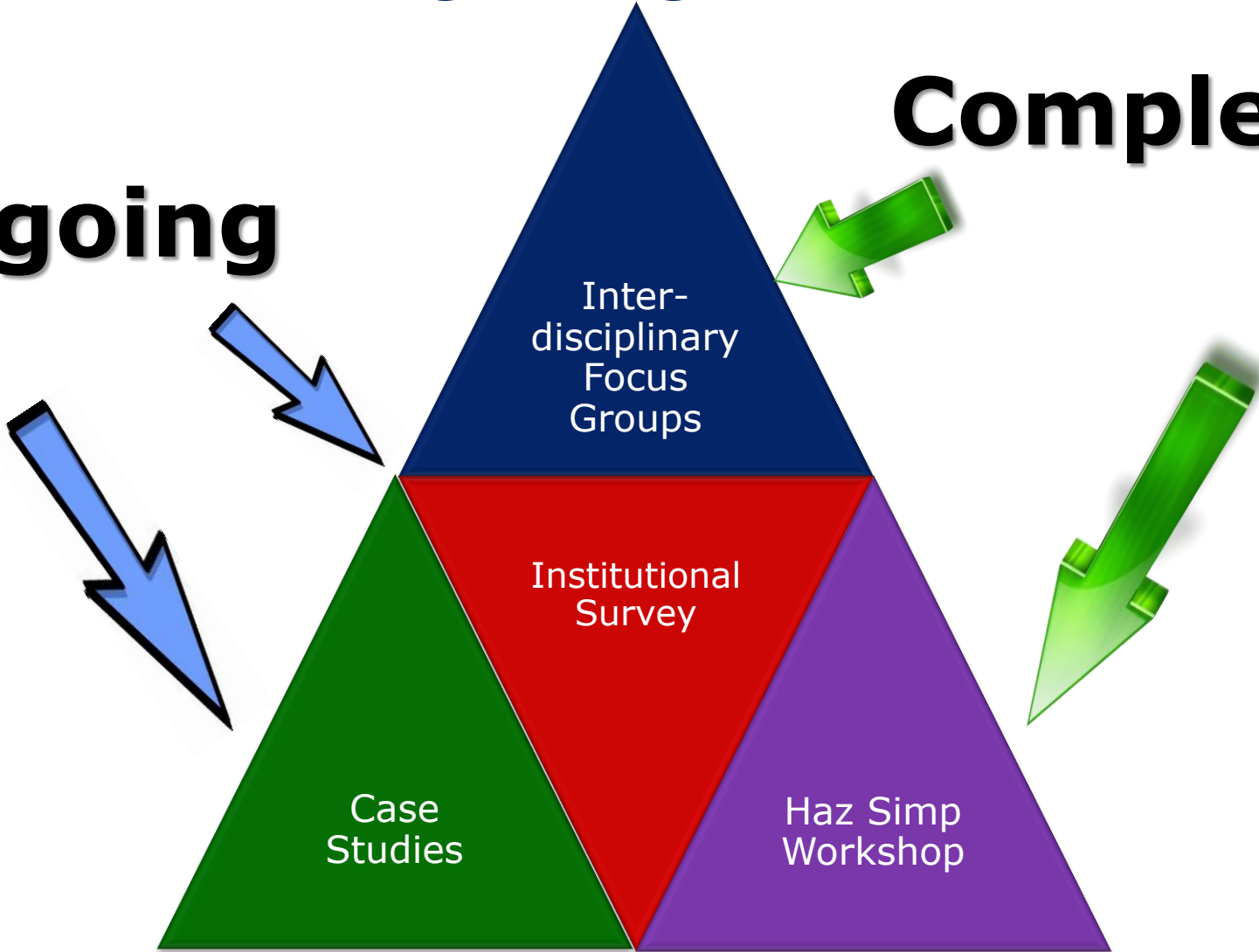
**Aug -
Nov:** Possible Flooding, Heat and/or Severe Episodes

Dec: Based on comments, implement initial “Consolidation”

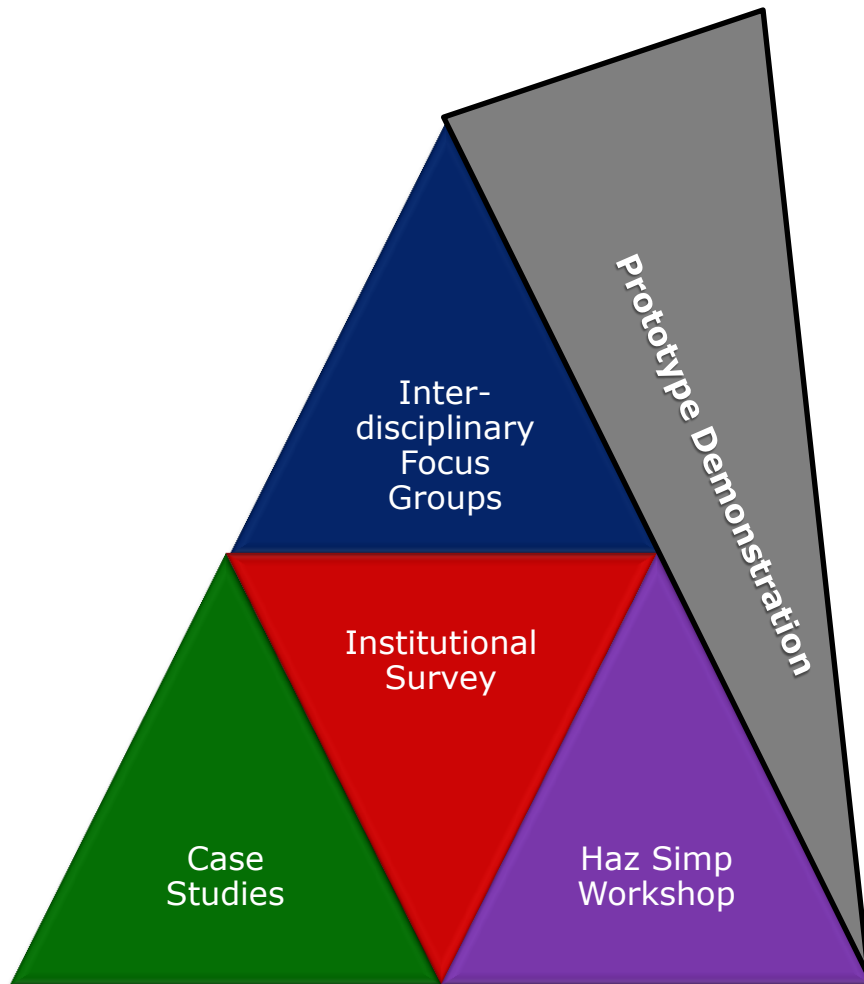
Rolling It All Together: *“Triangulating” the Data*

Ongoing

Completed



Rolling It All Together: **We'll Integrate the Prototype Demo Too!**



With everything considered together, the plan is to create a single prototype for the 2017 Generalizable Survey

Here's How You Can Help!

- The **REPAIR** and **REVAMP** comment opportunities will be widely publicized
 - Please watch for surveys coming soon
 - We will release a new project website to house project details and comment opportunities
- We need your ideas and comments:
 - What options presented here (or beyond) could better support you in conveying hazards?
- Contact me or the Haz Simp team with questions or ideas:



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