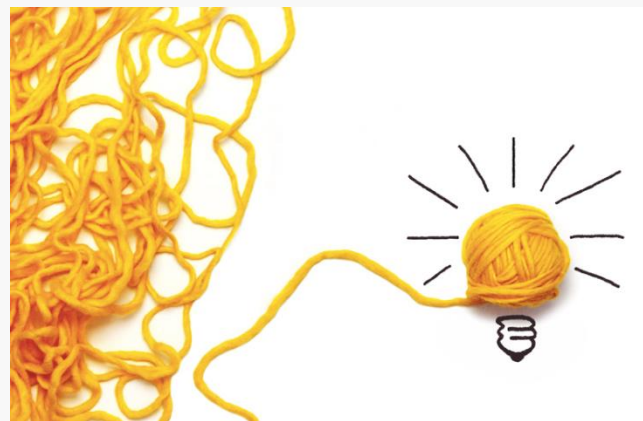




# **NWS Hazard Simplification Project:** ***Simplifying and Clarifying the Message***



***NWS Partner's Meeting***  
***July 18, 2016***

***Eli Jacks, Chief AFS Forecast Services Division***



**WATCH**

**WARNING**



**WARNING**

**WATCH**  
**ADVISORY**



**WARNING**

# 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?"*

*"Is this a downgrade?"*

**ADVISORY**

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

Fixed Impact, Increasing Certainty

Fixed Certainty, Increasing Impact



# **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

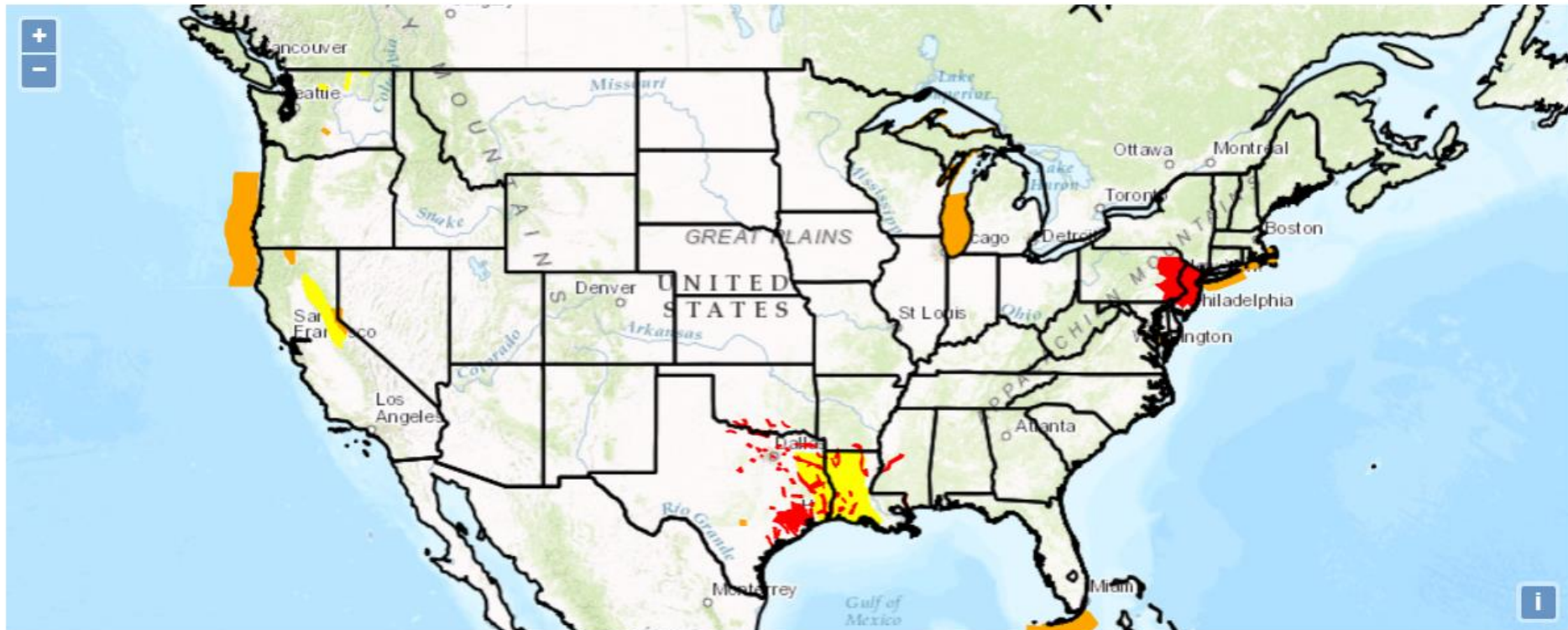


- **REPAIR**: WWA message improvements that could be implemented via policy and/or minor software change
- **REVAMP**: An overhaul and/or revisualization of the hazard messaging paradigm that would require major policy and infrastructure changes

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

# ***REPAIR:***

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







# ***REPAIR:***

## **Idea #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

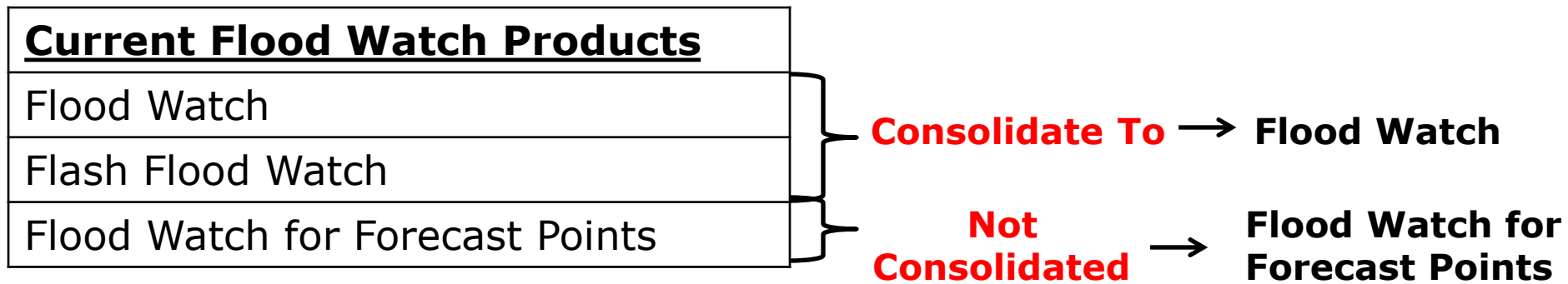
Freezing Rain Advisory

Wind Chill Advisory

**Consolidate To** → **Winter Weather Advisory**

# ***REPAIR:***

## **Idea #2b – Flood Watch Consolidation**



# REPAIR:

## Winter Weather Advisory Example

### Current Messaging

### Proposed Alternative

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

**"Urgent"  
Removed**



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**

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

**Hazards First**



\* Hazard Types...Spotty light freezing rain.

\* 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**



\* 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.

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

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

\* 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.

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

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

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

**Shortened**



\* 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.

# ***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.

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# ...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

5x

Outlook

Be Aware

Low R3

\*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](http://weather.gov/fwd).
- **Additional Details:** at [weather.gov/fwd/flood](http://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](http://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](http://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

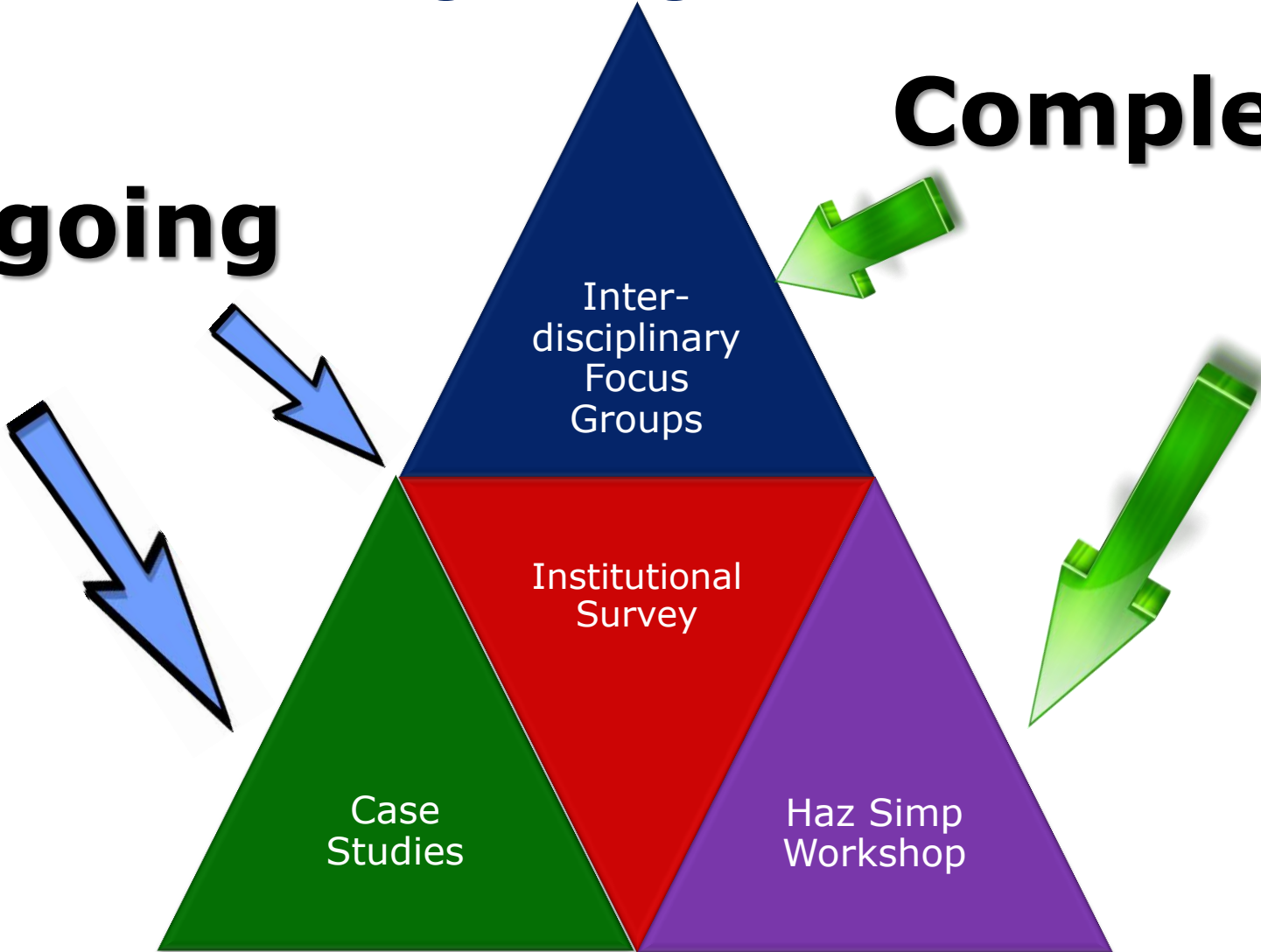
**Dec:** Based on comments, implement initial “Consolidation”



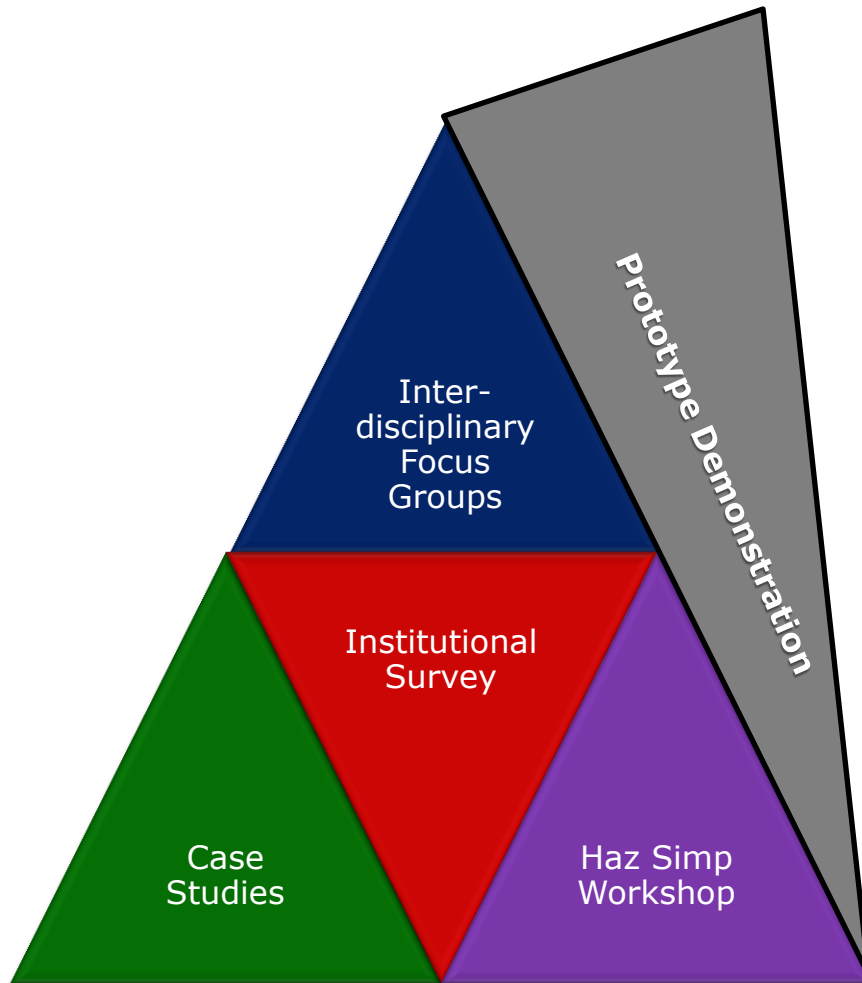
# Rolling It All Together: *“Triangulating” the Data*

**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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