Why I'm here…

Integrated Operations and Simulations for Effective Decision Support

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The views presented are the authors and do not necessarily represent those of NOAA/NWS

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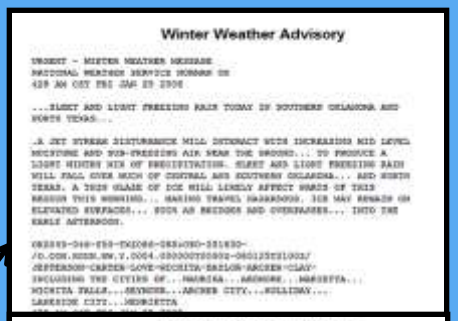
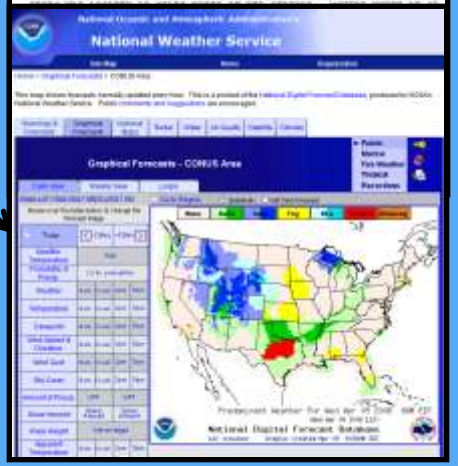
Overview

- **Emerging Decision Support Services**
  - Past practice
  - Present status and future plans
- **Simulation methodology**
  - Theory
  - WFO Example
  - True Collaboration Plans

Weather Forecast Office (WFO) Support



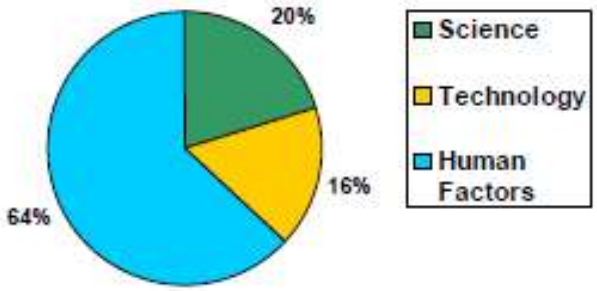


Info ➡ Forecaster ➡ Product

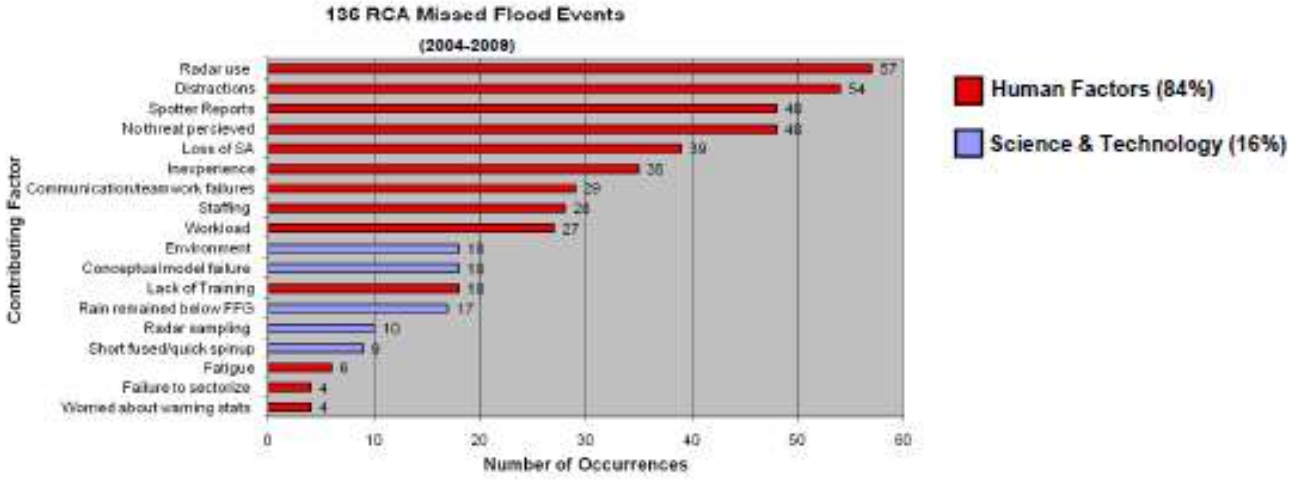
Where to place effort and resources

Needs: Root Cause Analysis

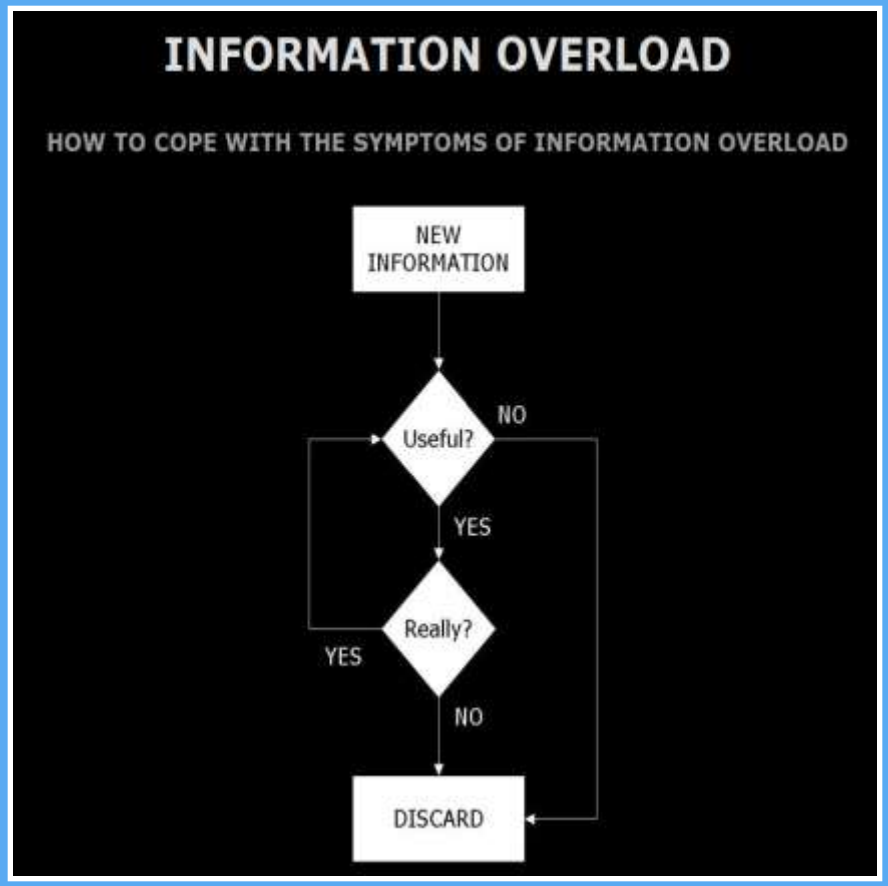
Factors contributing to 127 missed tornadoes (2004-2005)



- Human Factors Causes
  - Communication/Teamwork with EM/Spotters/Forecasters
  - Incorrect Use of Tools
  - Distractions/Loss of SA
  - Staffing, Workload, Fatigue, Inexperience

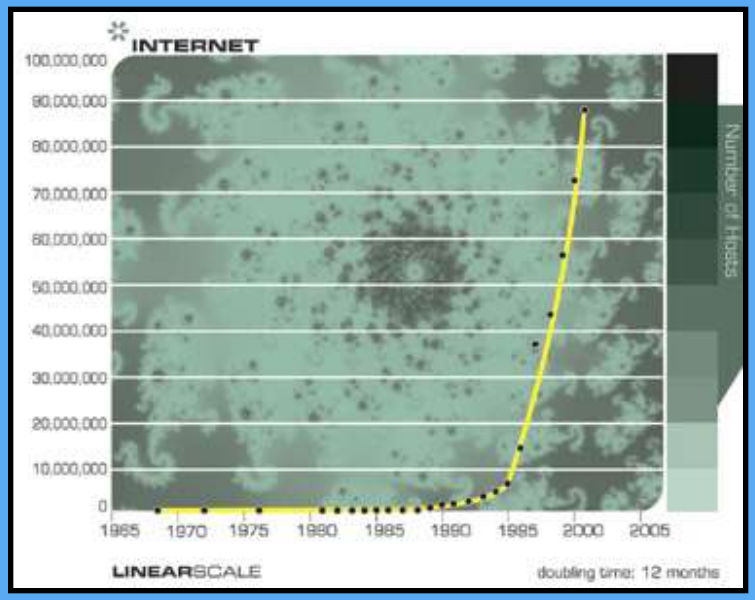


How do you view NWS services?



Emerging Interpretive Services

- Explosion of “information” and devices (smartphones)
- Decision makers need concise interpretation
- Standardization of decision support systems (ICS, EOC)
- Weather data feed directly into DSS (GIS, models)
- Value of weather information increasing (accuracy and accessibility)



Emerging Interpretive Services

NWSChat

WebEOC

Spectrum of Services

Web Briefing

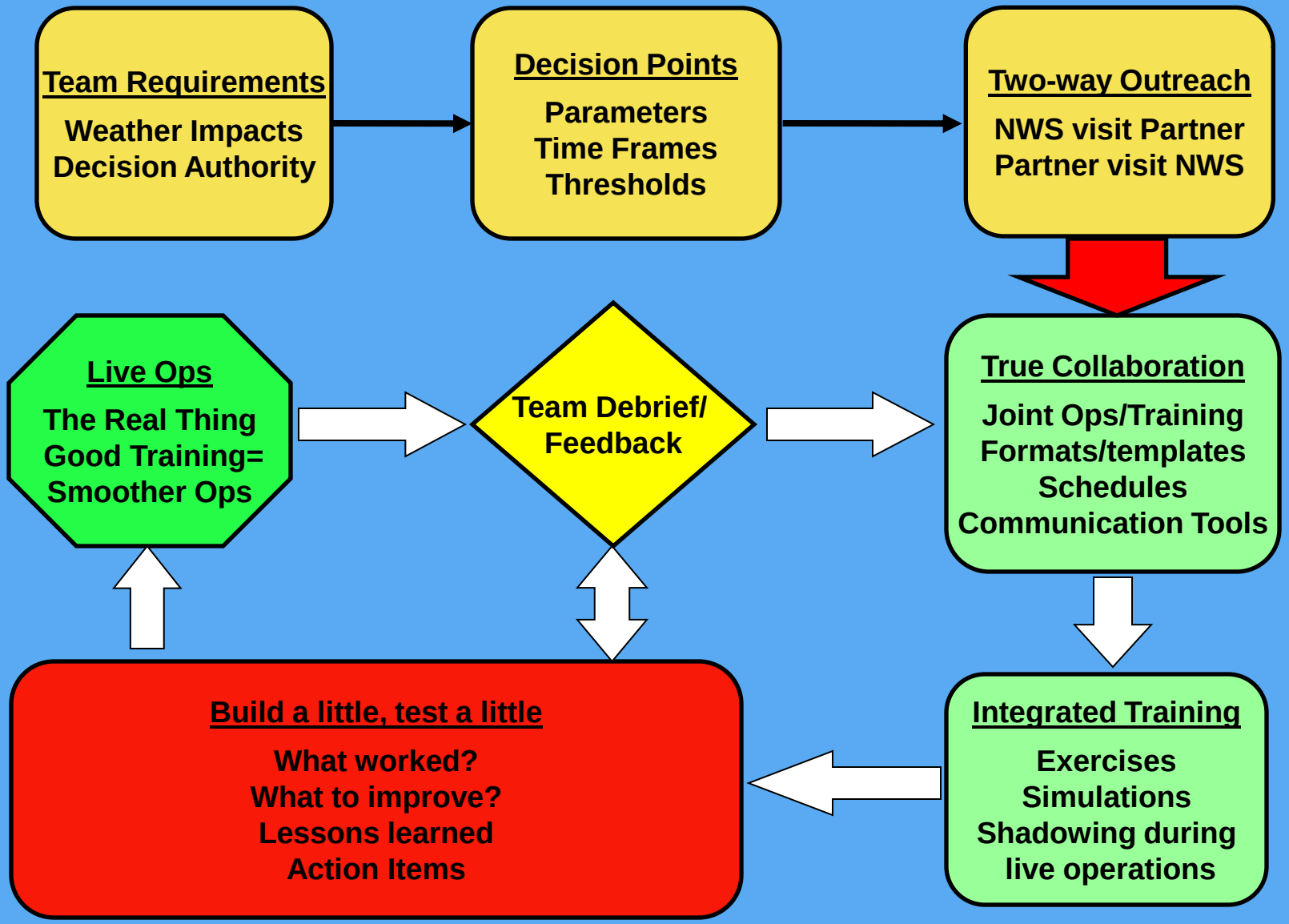
Recorded Briefing

Live Virtual Briefing

EOC Center (Off- and On-site)

ICS Incident On-site

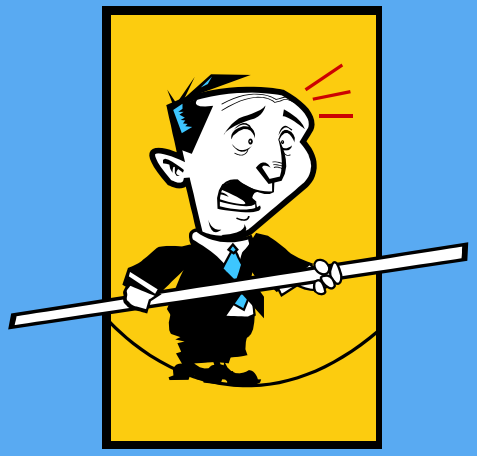
Decision Support Model



Interpretive Services Challenges

External

1. Not co-located with partners
2. Unlimited/unknown event possibilities
3. Multiple partner requirements



Internal

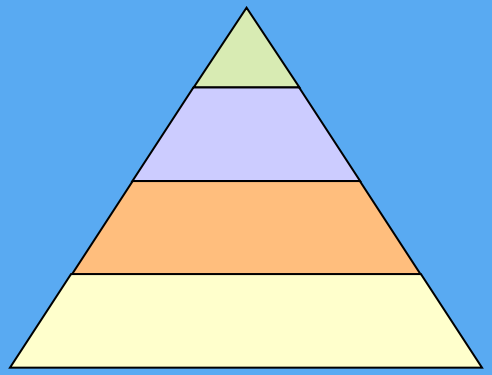
1. All staff not present
2. Face threat (fear of debrief/ evaluation)
3. Limited staff time
4. Current technology limitations (WES)

Proposed Simulation Levels

- Level 0: Training, Professional Development, EOC Visits, NIMS/ICS
- Level 1: Developmental Simulation
  - Verification of plans, procedures, equipment – possibly segmented
  - Can serve as a pre-training opportunity for Level 2
- Level 2: Internal Simulation (local participation)
  - 1 - 2 Forecasters training, 1 - 4 hours duration
  - Local Simulation Supervisor
  - Not focused on "training/learning" but working out the kinks before real time ops

- Level 3: Train with your local decision makers
  - Use available (local) partners, (1 - 2 forecasters training)
  - Local Simulation Supervisor or one from another forecast office
  - 4 - 8 hour duration
  - Opportunity to interact with the decision maker

Proposed Simulation Levels



- Level 4: Full WFO Team/Partners
  - WFO shift team, with partners
  - Play the scenario through to completion
  - Use "real" team members in their roles
- Level 5: FEMA Table Top (WFO Team/multiple agencies/ROC-SRH)
  - Full Team (customers, WFO team, SRH ROC, EOC, kitchen sink)
  - Could be a multi-day (most likely would be a FEMA Tabletop with WFO spinning their training into the FEMA big picture)
  - Use all available bodies and any additional that can be loaned
  - Long fuse planning required
  - Major time/resource requirements

Simulation Starters

- Conducted monthly service backup exercises with WFOs Corpus Christi and Brownsville since 2005
- "Build a little, test a little." Turn small successes into the full program over time.
- Full simulation capability in AWIPS/ WES2 (including Partner data push)

Simulation Plan

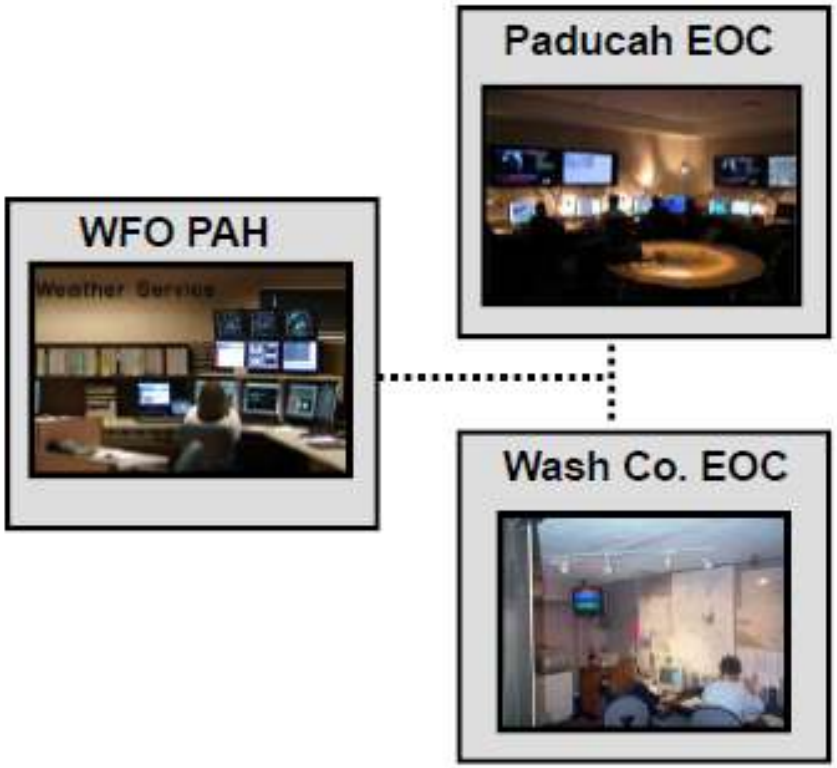
- Utilize WFO Austin/San Antonio Tropical Cyclone Operations Plan
- Staff work through procedures from 120 hours to landfall for Hurricane Dolly (2008)
- Goals of the Simulation:
  - Test Tropical Cyclone Plan and procedures
  - Test communications systems
  - Evaluate staff briefing skills
  - Develop WFO simulation methodology

Simulation Timeline

- ~~Identify staff: Fall 2009~~
- Complete Level 1 activities: February- March 2010
- Complete pre-Level 2 simulation work: April 2010
- Perform Level 2 simulation: May 2010

End State Vision -- 2014

Examples: Interagency Simulations



- Decision Support
- Weather Support for EM Exercises
- Partnerships
- Polish Communication Skills
- Practice Collaboration prior to Real Events (e.g., FEMA)

- AWIPS2 "Thin Client"
- Web Page populated by AWIPS2 during simulation

THANK YOU!

Questions? Comments?

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