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NOAA SAB Colorado Flood Panel July 29, 2014

Eve Gruntfest

Professor emeritus
Geography

NOAA SAB member
2010-2012

NSF Program Director
in Atmospheric &
Geospace Science
10/2012-10/2013

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1976 Big Thompson Flood

Studied the behaviors that night

- Who lived?
- Who died?

Career – "socio/hydro/ meteoro/logist"

Add-on social scientist in world of engineers/physical scientists

GREAT success in 2013:
Low death toll in BIG flood
People not caught on roads as they washed out
Roads/Businesses/Schools closed

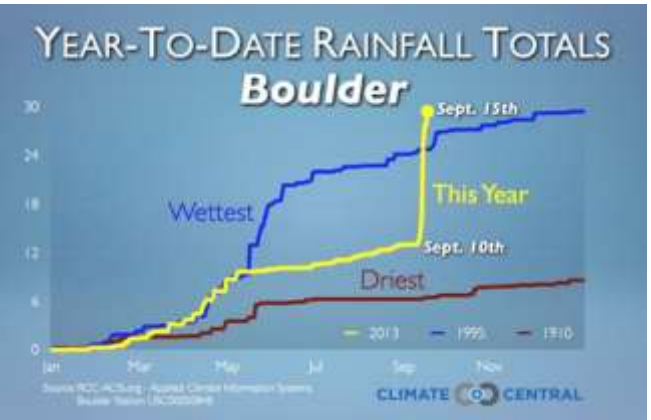
Examples of grand NOAA progress:
Collaborations & Observations
Complement new forecasting tools

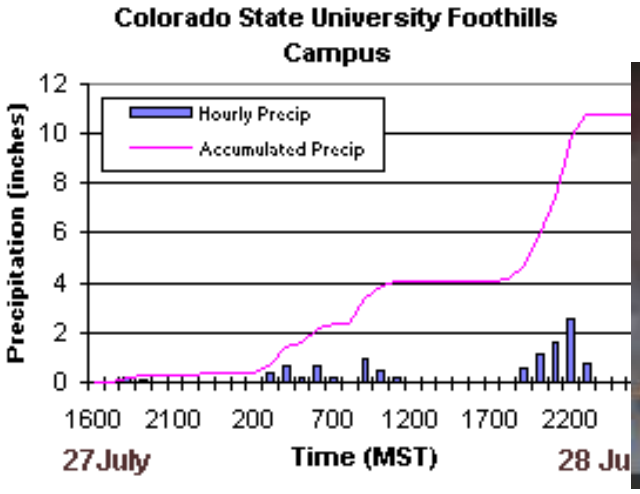
Webcam Waldo Canyon Burn Scar
http://co.water.usgs.gov/webcams/waldo/

More extreme events?

Relevance of past records?

- Record rainfalls
- Fire/flood threat
- Seasonality
- Small drainages





Real-time cameras inform all stakeholders & officials

Tailoring warnings to where people ARE & where they NEED them

New tools observe actual behavior – NOT what people say they would do

Research collaboration funded by NSF, NOAA & Dallas/Fort Worth Council of Governments

Precision in time & space

- New radar for metroplex with plans for mobile warnings based on personal vulnerability
- Physical & social scientists, engineers, policy makers *Social science research follow up / why did you do what you did?*
- Less emphasis on perception – more on behavior

Social media – NWS Chats, Facebook, Twitter - Everyone benefits

- 2014 Twitter collaboration between National Weather Service, 2 TV stations &
- University during recent major rain in Colorado Springs
- More info is not always better

Tim Stoecklein @TornadoTimmy Jul11@NWS Pueblo@RachaelPlath @BrianBledsoe Thanks for all the info gang! One of the guys helping w/ harvest was asking. Got a call w/ 2.5" also”

Call for technology to address expressed warning needs of stakeholders is not new

The committee recognizes that

- thorough assessments of the benefits of weather forecasting or of other weather services do not exist
- that dissemination of information to the public is largely based on traditional procedures using outmoded technology &
- that there is often insufficient interaction between the user & the information system

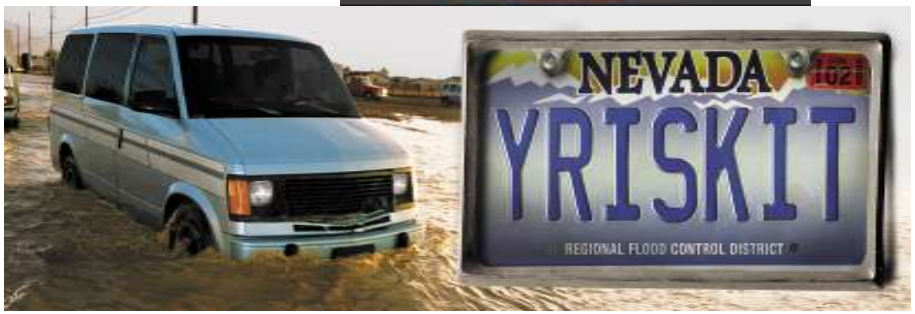
National Research Council Committee on Atmospheric Sciences *The Atmospheric Sciences & Man's Needs Priorities for the Future* **1971**

Research findings challenge assumptions –USE them --- No need to re-invent! Build on what we know

Warnings confront optimism bias & warning fatigue that limit ability or willingness to respond to warnings even if they are accurate

Business Professor Robert Meyer: "The faulty mental models that lead to poor disaster preparation" 07/07/2014

Gray Bender/CU Independent)



2013: *In the Nation's Best Interest: Making the Most of NOAA's Science Enterprise – NOAA SAB Final* Report from Research & Development Portfolio Review Task Force

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

From parallel universe to woven fabric of physical & social science

Develop forecasting tools that respond to expressed needs of stakeholders – in space & time

Weather-Ready Nation

Decision Support Services

Impact based warnings

References

- Collaborative Adaptive Sensing of the Atmosphere http://www.casa.umass.edu/
- Committee on Atmospheric Sciences National Research Council (1971) *The Atmospheric Sciences & Man's Needs Priorities for the Future* National Academy of Sciences
- Gruntfest, E (1977) What people did during the Big Thompson Flood http://www.colorado.edu/hazards/publications/wp/wp32.pdf
- Meyer, R (video) The faulty mental models that lead to poor disaster preparation 07/07/2014 http://knowledge.wharton.upenn.ed/article/wind-rain-worse/
- NOAA SAB (2013) In the nation's best interest: Making the most of NOAA's science enterprise