

# The Evolution of Communications in the National Weather Service: A Brief Review of the Past and Addressing Challenges with Modern Platforms

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# Overview

History Definition of Mitigation the NWS

# What is *communication*?



**Communication is:**

**Providing or Receiving Information  
-Needs, Desires, Perceptions, Knowledge or State-**

**Communication may:**

**Intentional or Unintentional  
Include Conventional or Unconventional Signals  
Linguistic or Non-Linguistic  
Verbal or Non-Verbal**

***Involve Multiple Sources, Mediums and Receivers***

# History of Communication

## Prior to NWS

- Various forms of weather observations dated back to 3000 B.C.
- 1830s-1840s the telegraph was invented and came into play
- Very small network of observers communicated over the telegraph
- Espy's convective storm theory was devised

## NWS Founded Feb. 1870

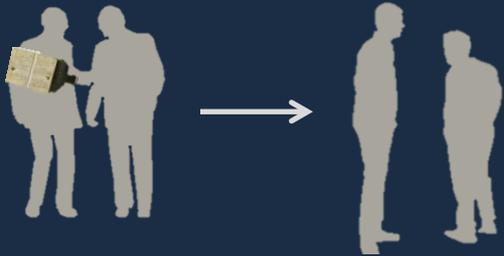
- Biggest interests were commercial and military
- Shipping industry suffered heavily prior to any vast network
- Invention of the telephone in 1876
- Eventually teletype was utilized after its invention in the 1940s

## Expanding the Network

- Establishing the NWSTG (telecomm gateway)
- Reorganizing the WMO
- WMO establishes the Global Telecomm System
- Data and information is now produced and dispersed globally
- Social media!

# History

## Written and Oral



## Telecommunication



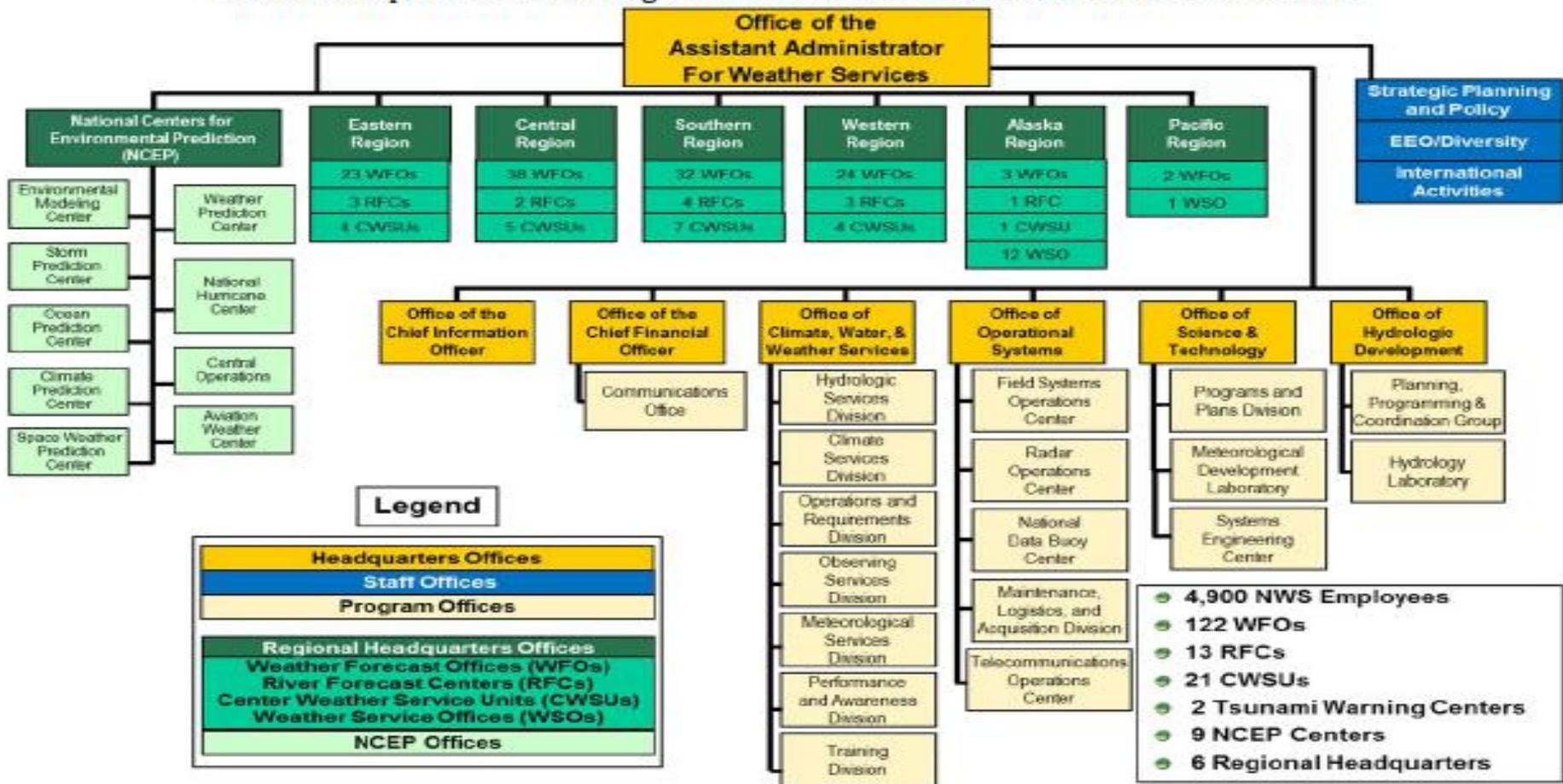
## Electronic Communication



# History of Communication

## National Weather Service Organizational Structure

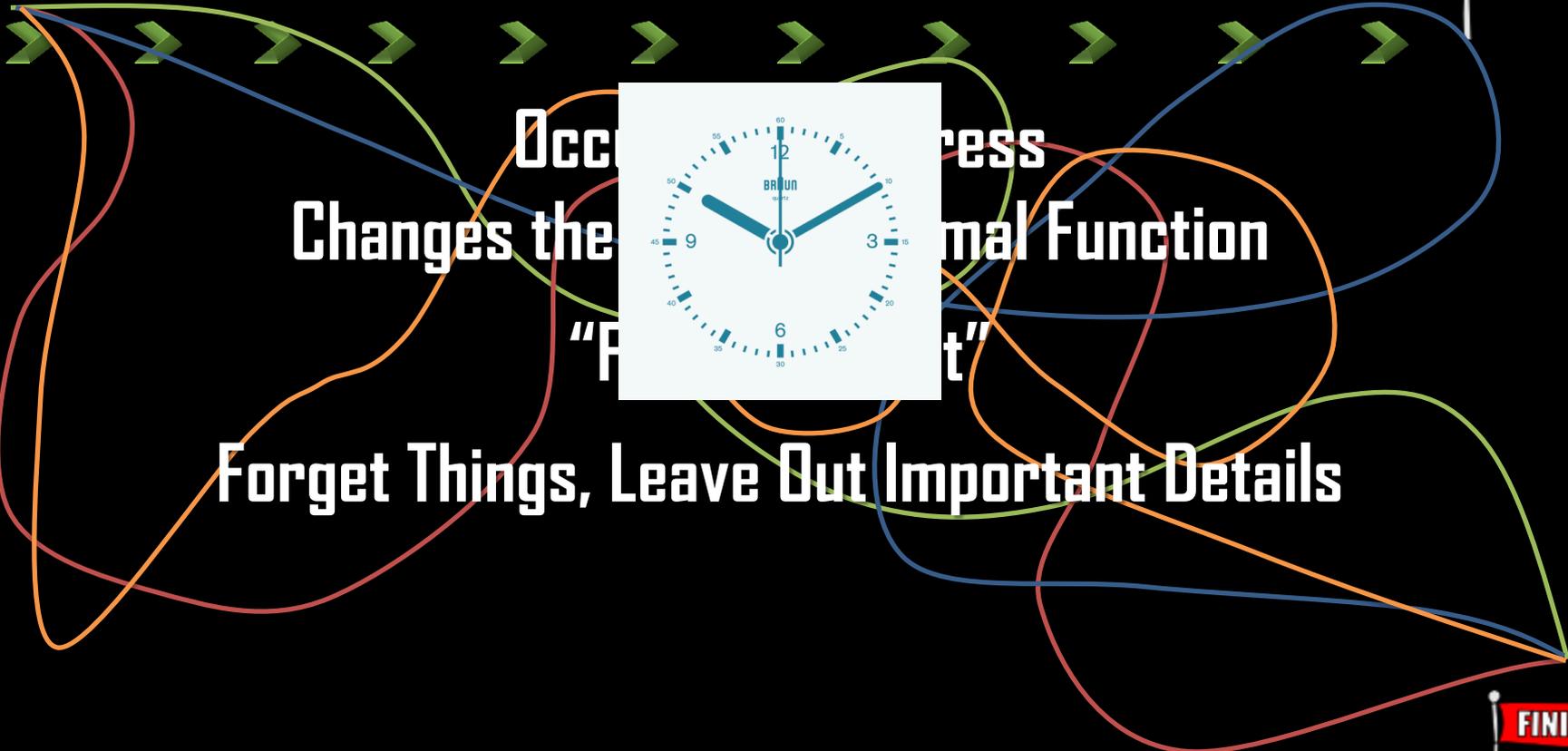
This chart depicts the current organizational structure of the National Weather Service



# Challenges

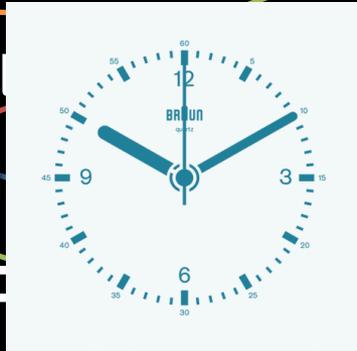
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# Time



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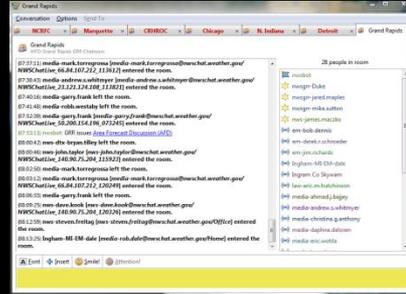
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Forget Things, Leave Out Important Details

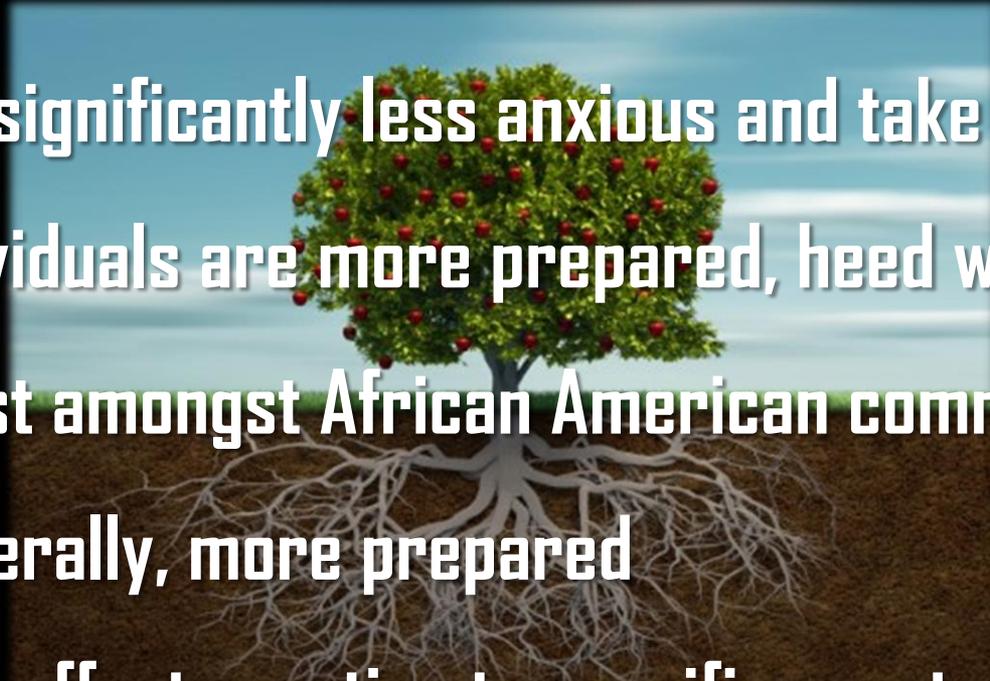


# Multiple Mediums



# Demographics

Perception is reality...



**Gender:** Males significantly less anxious and take on more risk

**Age:** Elder individuals are more prepared, heed warning

**Race:** Less trust amongst African American community

**Education:** Generally, more prepared

**Residence:** Can affect reaction to specific events

...reality is shaped by experience

# Social Media!

What's happening?

[View 4 new Tweets](#)

**Grand Rapids Press** @GRPpress · 6m  
75+ Consumers Energy customers without power near @FlyGRFord



**Outage Area Information**

- Customers Affected: 79
- Time of Outage: 8/21/2015 12:33 PM
- Estimated Time of Restoration: 8/21/2015 4:00 PM
- Status: Crew assigned

[Information Usage](#)

**Grand Rapids Press** @GRPpress · 5m  
@FlyGRFord says power pole down, part of Patterson Avenue closed

**FlyGRFord** @FlyGRFord  
Airport travelers be advised: power pole down has closed Patterson between 44th & 52nd. Repairs to take min. of 4 hours #wmitraffic

**SanpellegrinoFruitUS** @SanpelFruit\_US · Aug 11  
Where there's Aranciata, there's the #LifeDeliziosa. [bit.ly/1FFHzrZ](http://bit.ly/1FFHzrZ)



Update Status Add Photos/Video Create Photo Album

What's on your mind?

Friends Post

In case you missed it this morning I got to play with some cold blooded reptiles check it out



**Cold-blooded reptiles soak up Texas sun.**

Like · Comment · Share

6 people like this.

So scary. 1 · 13 mins

Write a comment...

**Suggested Post**

**Ancestry** Sponsored Like Page

The Story Behind Your Last Name Might Surprise You

**RECOMMENDED GAMES**



See More

**SPONSORED** Create Ad



**Survive HIV. Get Help.**  
michigan.gov  
To survive HIV, you need to know your status and where to get free help. Learn more now.



Get 7 Days Free

# Social Media!

**25%** *Teens forgetting major details of family/friends*

**7%** *Percent of people who forgot their own birthdays*

**4%** *Percent of page views that lasted more than 10 minutes*

**49%** *Percent of words read on web pages with  $\leq 111$  words*

**12 Seconds** *Average attention span in 2000*

**9 Seconds** *Average attention of this guy →*

**8 Seconds** *Average attention span in 2000*



# Simplification

.SHORT TERM...(THIS EVENING THROUGH THURSDAY NIGHT)  
ISSUED AT 318 PM EDT TUE AUG 18 2015

Forecast numerical models IS FOR SOME SEVERE WEATHER WEDNESDAY...FOLLOWED BY A DRY AND BREEZY DAY ON THURSDAY. OUR FOCUS CONTINUES TO REMAIN ON CHANCES FOR SEVERE THUNDERSTORMS WEDNESDAY AFTERNOON IN PARTICULAR.

NOT ALL SEVERE WEATHER PARAMETERS ARE LINED UP FOR WEDNESDAY...BUT ENOUGH WILL BE PRESENT THAT THE THREAT REMAINS FOR AT LEAST SOME **SCATTERED** SEVERE THUNDERSTORMS ACROSS CENTRAL AND SOUTHERN LOWER MI DURING THE AFTERNOON AND EVENING WITH DAMAGING WIND GUSTS BEING THE PRIMARY HAZARD. THE BEST **ELEMENT** GOING FOR THIS EVENT WILL BE GOOD DEEP LAYER **SHEAR** LATER IN THE AFTERNOON...FAVORING THE EASTERN HALF OF THE FORECAST AREA. VALUES WILL INCREASE TO AROUND 40 KNOTS BETWEEN 18Z AND 00Z. WITH EQUILIBRIUM LEVELS TO 40K **FT** AND **SFC** BASED **CAPE** OF AROUND 1000 **J/KG** POSSIBLE...SOME **HAIL** IS POSSIBLE AS WELL THOUGH IT IS A LESSER SEVERE THREAT THAN THE 50+ **KT** WIND GUSTS THAT COULD MIX DOWN IN THE MOST MATURE STORMS. 0-1 KM **SRH** IS NOT OVERLY IMPRESSIVE WITH THIS EVENT...PERHAPS 50-100 **M2/S2** DEPENDING ON WHAT MODEL YOU ARE REFERENCING AND ALSO THE TIME PERIOD...BUT THERE MAY BE SOME **ROTATION** ALOFT TO MONITOR.

THE 12Z **ECMWF** IS SQUASHING THE SEVERE THREAT FOR THE LAKESHORE REGION AND INLAND TO US 131 WEDNESDAY WITH LITTLE TO NO **INSTABILITY** PRESENT DURING THE DAY...**LIKELY** DUE TO LINGERING **CONVECTION** THAT MAY BE PRESENT IN THE MORNING...WHICH IS PLAUSIBLE GIVEN A DECENT 40 **KT LLJ** POINTED TOWARD THE STATE BETWEEN 06Z-12Z WED. IF THIS SCENARIO HOLDS TRUE...AFTERNOON **THUNDERSTORM** DEVELOPMENT WOULD BE MORE **LIKELY** EAST OF THE GRAND RAPIDS AREA AND TOWARD MOP/LAN/JXN. CRAVEN/BROOKS SIG SEVERE PROBS FOR >20000 ARE ONLY 10-30% OFF THE **SFC** SREF FOR OUR REGION. SO...SEVERE STORMS ARE NOT A GIVEN.

ANY OF THE SHOWERS AND STORMS FROM THIS EVENING THROUGH WEDNESDAY NIGHT COULD HAVE SOME HEAVY DOWNPOURS IN A VERY **MOISTURE**-RICH ENVIRONMENT AND 1000-500 **MB RH** OF 80% OR BETTER AND SW **FLOW** ALOFT. SOME LAKESHORE AREAS COULD PICK UP A ROUND OF MODERATE TO HEAVY **RAINFALL** LATE TONIGHT AND EARLY WEDNESDAY MORNING...THOUGH **HI** RES MODELS SUCH AS THE EXPERIMENTAL HRRR...NAMNG...AND **HI** RES WRF ARE SHOWING DECAYING **CONVECTION** OVER THE LAKE BETWEEN 03Z-09Z. IT REMAINS TO BE SEEN WHETHER WE CAN ERODE ANY CLOUD COVER WEDNESDAY MORNING TO DESTABILIZE ACROSS THE WESTERN PORTION OF THE **CWA** AND KEEP THE LOCALLY HEAVY **RAINFALL** THREAT GOING.

THE TRAILING COLD **FRONT** WON'T ARRIVE UNTIL LATE WEDNESDAY NIGHT/EARLY THURSDAY MORNING. UNTIL THAT HAPPENS THE THREAT FOR SHOWERS AND A FEW STORMS MAY CONTINUE PAST 00Z THURS. **PW** VALUES HOLD UP TO AROUND 1.50-1.75" SO SOME HEAVIER SHOWERS/STORMS MAY PERSIST.

THURSDAY LOOKS BREEZY WITH SOME DECENT MIXING THAT COULD TAP 30 **KT** WINDS OR BETTER. WOULD NOT BE SURPRISED TO SEE SOME GUSTS IN THE 30-40 MPH RANGE JUST ABOUT ANYWHERE ON THURSDAY.

## Today's Weather:

Tuesday August 18th



## Life-Threatening Swimming Conditions

Wednesday-Thursday, August 19-20, 2015



Wave Heights 9PM WED

Wave Heights 10AM THU

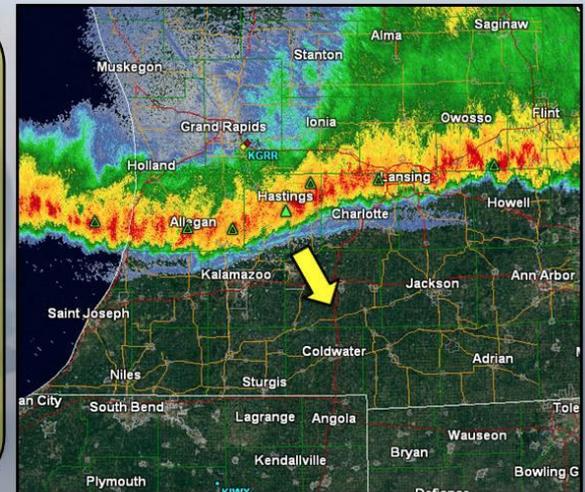


## Line of Storms Pushing Southeast

10:08 PM, Sunday, August 2, 2015



- **Expected:**  
Dangerous Lightning  
Minor Wind Damage  
Periods of Heavy Rainfall
- **Possible:**  
Brief Spin-up Tornado  
Power Outages  
Localized Minor Flooding  
Quarter-Size Hail
- Shelter should be taken from these storms as they move through



[www.weather.gov/grr](http://www.weather.gov/grr)



US National Weather Service  
Grand Rapids Michigan



@NWSGrandRapids

# Effective Strategies

**Identify Challenges**

**Test New Ways of Doing Things**

**Form Relationships to Create Trust and Openness**

**Be Concise , Just Get to the Point!**

**Let Others Talk and Actually Listen**

# Conclusion

95% of Communication is Non-Verbal

Take Advantage of the Verbal

Gain Trust

*You cannot easily predict human behavior,  
but the quality of your communication just  
may determine how someone behaves*



## STAR TREK

Predicting  
the future  
since 1966



# Current Challenges

## External

- Increasing Population...Wider Variety Audience
- Time Constraints
- Ease of Comprehension

## Internal

- Consistency in the Message
- Increased Number of Products
- Training for Advanced Methods
- Dependence on Outside Sources to Relay the Message
- Message Quality!
- ...demographics, time, region

# References

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