

Weather Emergency Room

Saving Lives, Minimizing Damage

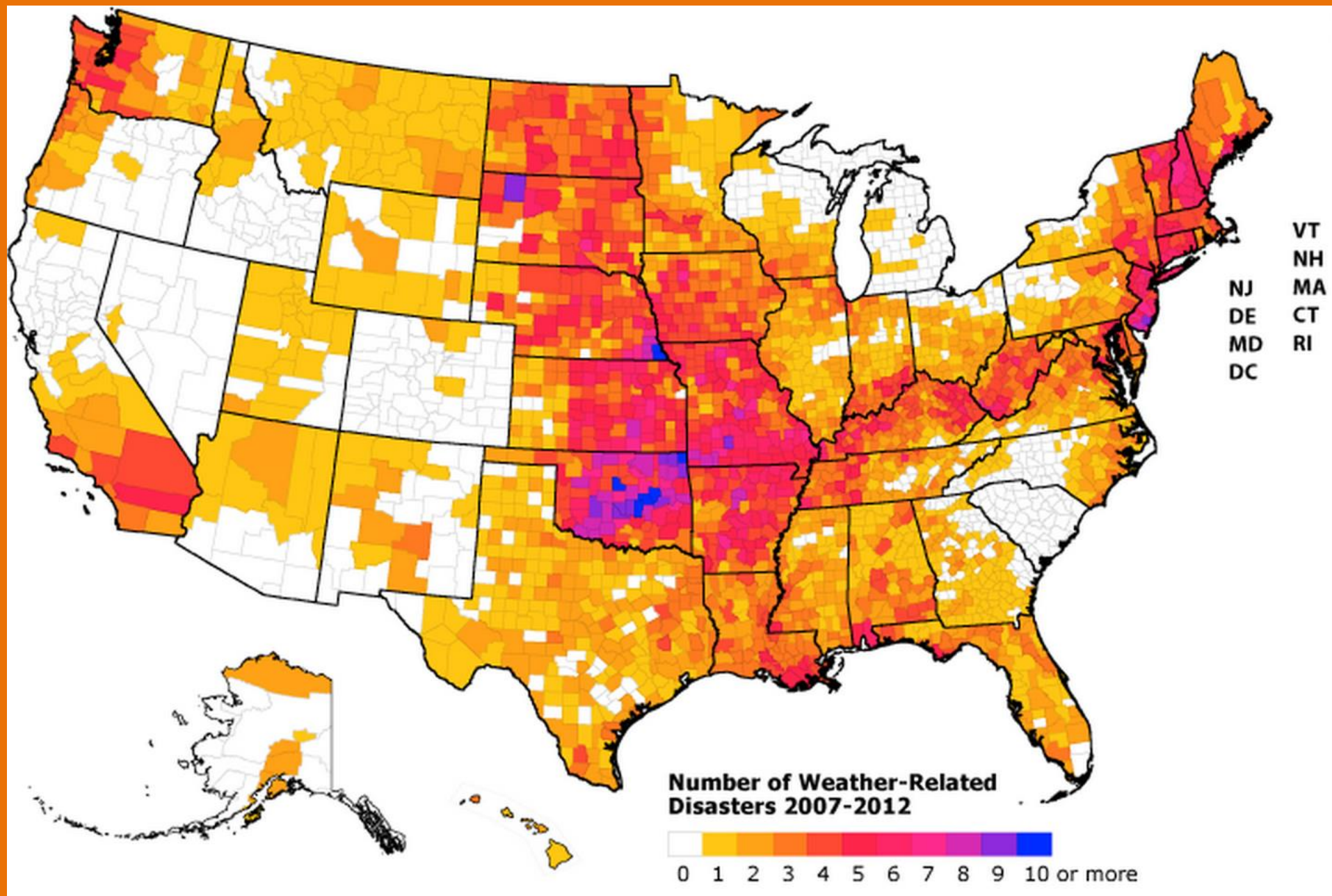
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Each Year (on average) the United States Experiences:

100,000 thunderstorms
...10,000 severe

1,000 tornadoes

5000 floods

2 landfalling deadly hurricanes

as well as

Fog, smog, snow squalls, freezing drizzle, frost, rapid temperature changes, stifling heat, hyperborean cold, high winds, wild fires, rush hour sun glare, sudden showers, whiteouts, street flooding, uncertainty in forecasting, social media **assistance**
...and **threat**... ...



Elliot Abrams

@accuElliot

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This is not the Comet ISON, but it may be the clearest picture you will see of a comet over a coastline.

pic.twitter.com/6OwYG0v3G1

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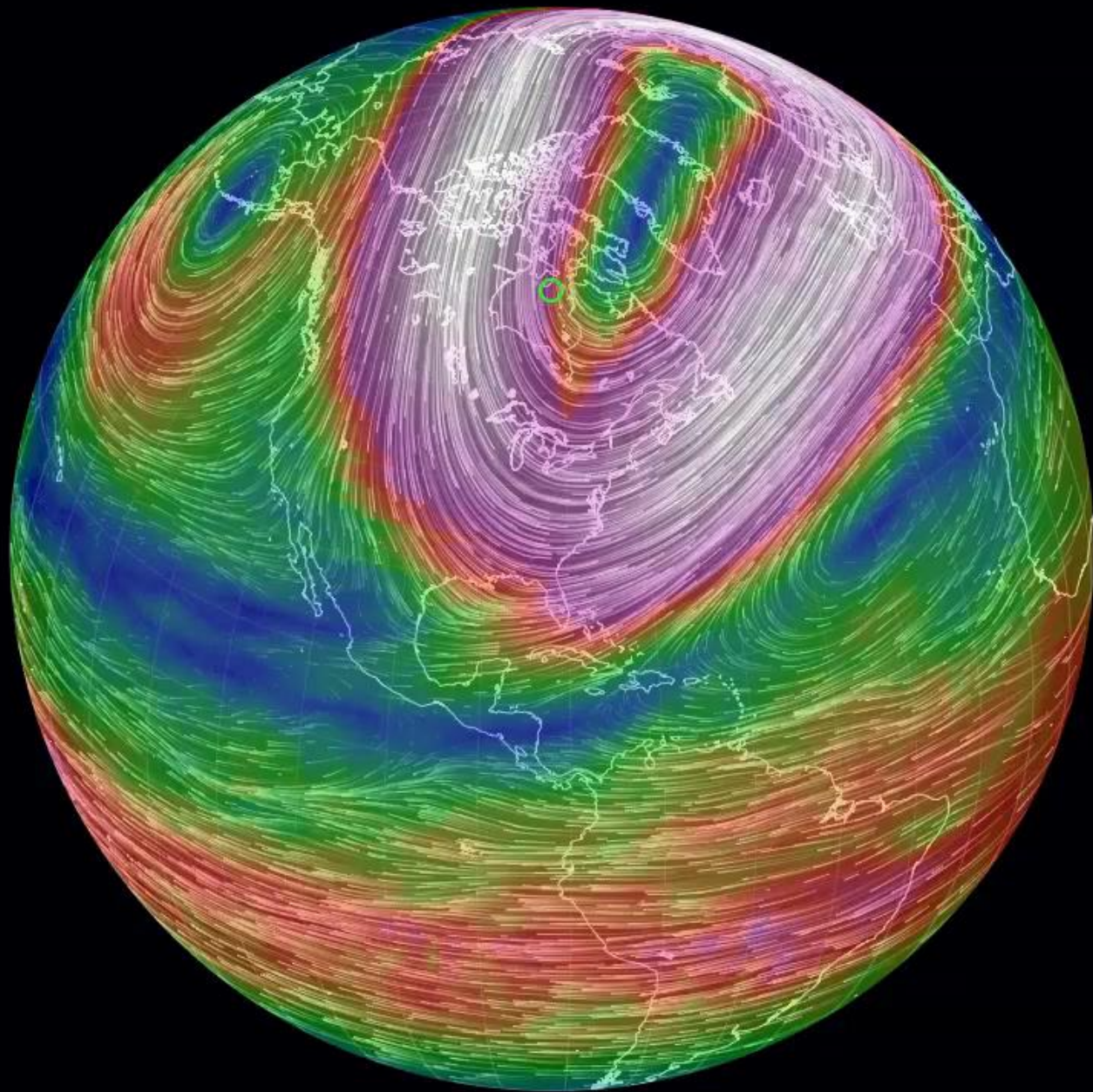
RETWEETS FAVORITES

Most forecasts, whether for severe or routine events, short term or long range are issued for areas and populations, but do not directly target a specific person, activity or task*.

- * Some forecasts are issued for specific groups and/or events/venues, etc.
 - But, the issuing person, firm or agency may not know what info each individual or group needs:
 - It's just put out there.
 - Workers at events have varying roles and potentially different management structures.
 - How do you know if the most useful information reaches those who can actually use it.
 - **Key details may or may not get through to those who must make critical decisions**
 - Decision makers may not recognize the implications of what is being forecast. Actionable items, urgency???

When a well qualified meteorological consultant works with an engaged and proactive customer, limitations can be mitigated or removed.

Example: Two Winters Ago
and the **Polar Vortex**





Traffic on the connector of I-75 and I-85 as snow blankets Atlanta Tuesday afternoon. (AP)

Sudden Trouble



Please scroll down for ice storm and driving information.

WARNINGS

Deterioration of Atlanta highway conditions on Tuesday afternoon, January 28, 2014

Matthew Sitkowsky (@MattSitkowski) via Twitter

After blaming bad forecasts for Atlanta's gridlock nightmare in a 2 inch snow storm on January 28, 2014 Governor Nathan Deal announced he was appointing a severe weather warning and preparedness task force.

What do you think?

What kind of experts should be on such a board?

Role of Local Governments

Role of America's Weather Enterprise?

How would they have done things differently?

What specific objectives and milestones should they set?

How should they measure success / failure?

Other questions?

Data Sources Explode

- * Conventional text data
- * Ubiquitous model availability
- * Twitter and Facebook observations
- * Web cams
- * Lightning maps
- * Advanced radar imagery, dual-pol advances in such things as identifying different types of precipitation.
- * Innovative IR scales to highlight clouds that were poorly detected
- * Public, private and hybrid surface data

What level of detail is financially viable?

Track Alignment

Last Updated by [Eagle.FasTracks](#) on Feb 26, 2013

Between 78th Avenue and Runway 7/25, we call this area "The Big Cut" because of all the dirt that had to be excavated here.

[Directions](#) [Search nearby](#) [Save to map](#) [more](#)

Snow clearance timing

Track expansion/
contraction

Plowing,
salting?
sanding?



Moore, Oklahoma, on May 23 *Zhang Yongxing/ZUMA*



Budapest, Hungary, on June 9 *Attila Volgyi/ZUMA*

Ice Storms



WDIV/WXYZ



Major pileups [edit]

Main article: List of road accidents

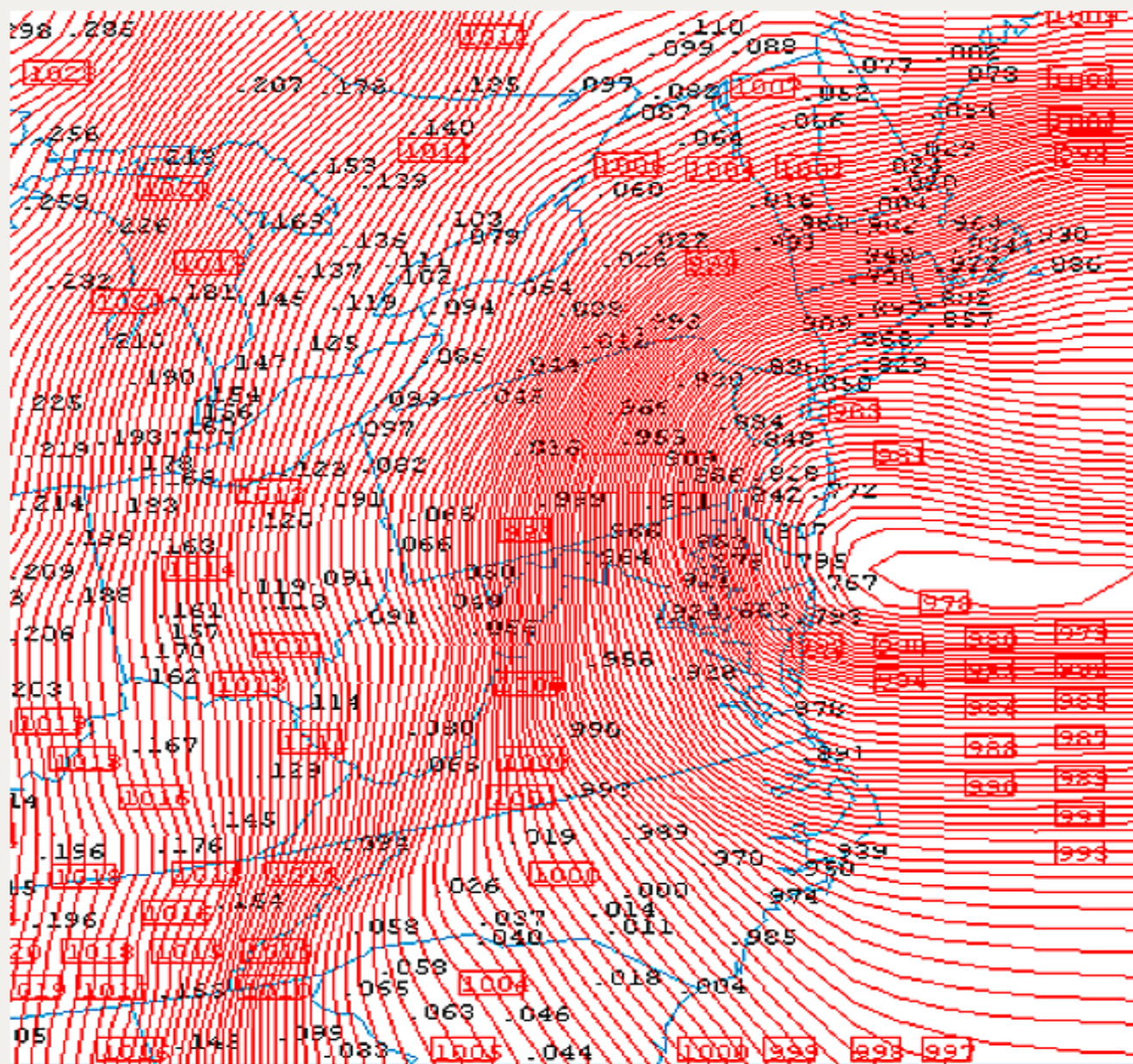
Date ↕	Killed ↕	Injured ↕	Vehicles ↕	Details
22 November 1999	2	29	83	Interstate 70 in Golden, Colorado , United States, when a car spun out in the westbound lanes in heavy snow and fog, then was hit by other vehicles as it attempted to resume westbound travel. ^[2]
12 March 1990	3	30	52	Interstate 43 in Green Bay, Wisconsin , United States, on the Tower Drive Bridge over the Fox River , due to very heavy fog; fiery crash involved 52 vehicles; 3 deaths and more than 30 injuries. A fog warning system was immediately installed, and bridge lighting was installed in the mid 2000s, after more fog related issues.
11 December 1990	12	42	99	Interstate 75 in Calhoun, Tennessee , United States, between Chattanooga and Knoxville near the Hiwassee River , due to very heavy fog; fiery crash involved 99 vehicles; 12 deaths and 42 injuries. A fog warning system has since been installed, and the highway patrol enforces speed limits aggressively. ^[3]
13 March 1991	10	51	51	M4 in Hungerford, Berkshire , United Kingdom, between Membury and Hungerford due to very heavy fog; fiery crash involved 51 vehicles ; 10 deaths. A van driver either fell asleep or swerved to miss a pigeon, in the outside lane. Huge pile-up ensued.
April 1992	2	dozens	60	Interstate 64 in Virginia near Afton Mountain, due to fog, 60 vehicles, 2 deaths, dozens injured. ^[4]
October 1991	1	64	150	A15 Motorway near Ochten, Netherlands , due to fog, 150 vehicles, 1 death, 64 injuries. ^[5]
2 December 1994		67	127	Interstate 35 in San Antonio, Texas , United States, 127 car pile-up caused by blinding glare and rain-slicked roads, 67 injuries. ^[6]
20 March 1995	1	90	200	Interstate 10 in Mobile, Alabama , United States, due to fog, 200 vehicles, 1 death, 90 injuries. ^[7]
27 February 1996	10	80	200	E17 motorway near Nazareth, Belgium , due to fog. ^[8]

Date ↕	Killed ↕	Injured ↕	Vehicles ↕	Details
21 January 2013	0	9	52	Interstate 75 – Middletown, Ohio. Flash snowburst caused a large pileup. Same storm as Cincinnati 103 vehicle accident that killed a 12 year girl. ^[68]
25 January 2013	0	5	80	Highway 401 east of Oshawa – Ontario, Canada. ^[69]
31 January 2013	3	20+	35+	Interstate 75 - Detroit, Michigan. Flash snowburst caused a pile-up along an urbanized section of Interstate 75 in Detroit, killing a 46-year-old Allen Park man, and two children from nearby Windsor, Ontario . ^[70]
31 March 2013	3	25	95	Interstate 77 in Carroll County, Virginia approximately 95 vehicles were involved in an accident on the southbound lane of I-77 near the base of Fancy Gap Mountain near Fancy Gap, Virginia . Virginia State Police say that excessive fog could be to blame for the accident. Three people were killed. ^[71]
5 September 2013	0	60	130+	60 people were injured as more than 130 vehicles were involved in a series of crashes in thick fog on the A249 Sheppey crossing in Kent, UK. ^[72]
3 December 2013	2	67	132	One person was killed and 67 injured as 132 vehicles were involved in a triple chain collision in thick fog on the A19 in Zonnebeke, Belgium . ^[73] A second person died four days later. ^[74]
23 January 2014	3	20+	~46	Interstate 94 in LaPorte County, Indiana , United States, more than 40 vehicles, due to lake-effect snow . ^[75]



A firefighter in Groveland, California, battles the Rim Fire. *Elias Funez/Modesto Bee/ZUMA*

As the storm approached the coast, the pressure gradient (change of pressure with distance) tightened from noon. Near the coast, the lines should really be closer together because the surface pressure in the storm is not captured by the data set used to make this map.



HOURLY DATA (SAO)
VALID 16Z 29-OCT-12



Nature Rules!



Nature Rules!









Lightning strikes the Willis Tower (formerly Sears Tower) in downtown on June 12, 2013 in Chicago, Illinois. (AFP Photo / Scott Olson)

We Have Come A Long Way







Summary

- * Convergence of ability to accurately predict and ability to change more details of an operation in less time. Slice and dice.
- * Potential for individual businesses, Local and state governments to obtain tailored forecasts at an acceptable cost
- * In an emergency, increased capability to adjust immediate term forecasts allows decision makers to make mid-course corrections in very little time.
- * Mitigate what cannot be prevented or diverted.

Success Requires

- * Pre-planning with staff and customers
 - * Set performance expectations
 - * Your capabilities must match agreed-on customer expectations
 - * Recognize and disclose limitations
 - * Establish rapport and communication with customers and colleagues.
- * Ability to think and act quickly when lives and property are on the line. If you offer a service, can you deliver?
- * Ability to to establish and enhance commercial viability



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