

IE 482
Humanitarian Logistics

MOORE TORNADO

Group 3

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01

OVERVIEW OF THE DISASTER



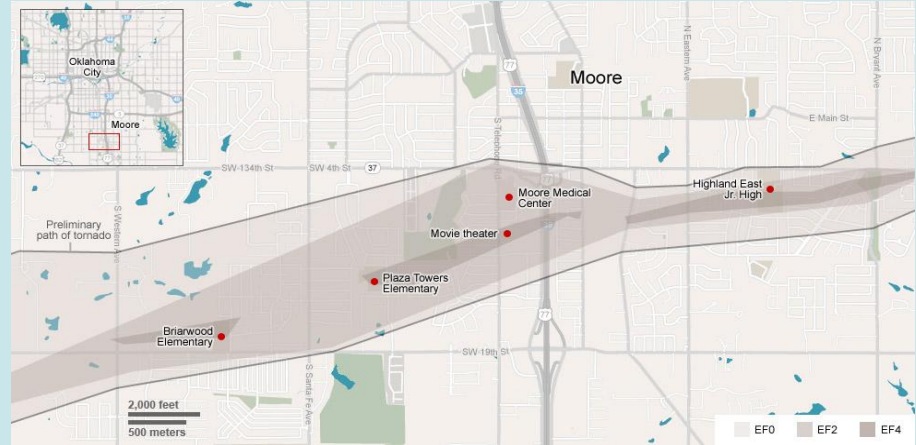
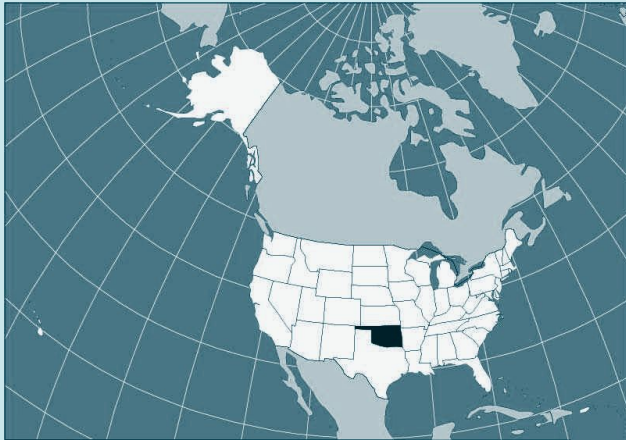
Overview of the Disaster



May 20, 2013

Moore, Oklahoma, USA

Part of the **tornado outbreak of May 18–21, 2013**



Areas affected: Counties of McClain and Cleveland, particularly the city of Moore.

- staying on the ground for 37 minutes
- travelling 27 km

Overview of the Disaster

- a large and extremely powerful **EF5** tornado

EFU
EF0
EF1
EF2
EF3
EF4
EF5

EF5: The Enhanced Fujita scale rates the intensity of tornadoes based on the damage they cause.

peak winds estimated at
340 km/h (210 mph)
and 2.1 km wide.



Overview of the Disaster

causalities

- 26 fatalities with 377 injuries
- > 33,000 people affected

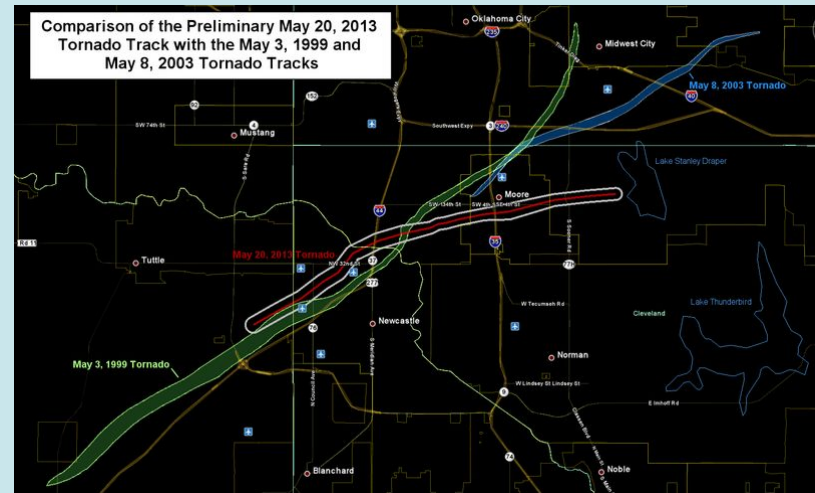
damage

- \$2 billion (estimate)
- major destruction of 2 schools
- > 1200 houses



Overview of the Disaster

Incident (Moore, EF5)	Damage (\$, current)	Fatality + Injury
1999 Bridge Creek – M.	1.6 billion	41 + 583
2003 M. – Choctaw	5.8 billion	50 + 713
2013 Moore	2 billion	26 + 377





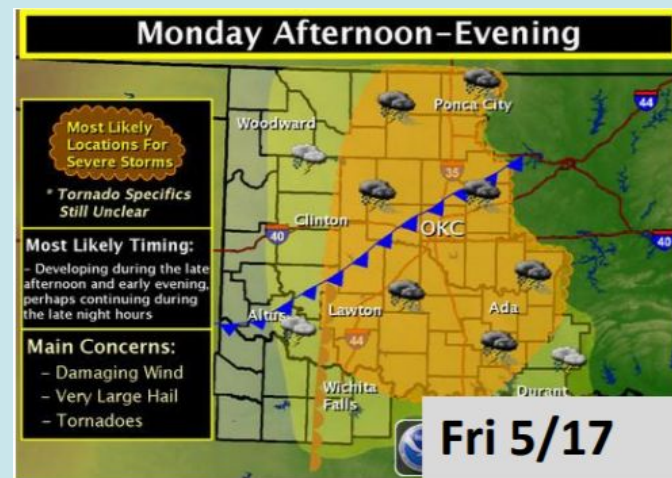
02

PRECAUTIONS

Precautions



- The Weather Forecast Office (WFO) Norman experienced two consecutive days of severe weather in mid-May, 2013
 - On Sunday evening, May 19, an EF4 tornado struck near Shawnee, OK
 - On Monday, May 20, an EF5 tornado struck near Moore, OK
- On May 13, Storm Prediction Center (SPC) predicted potential severe weather threat for May 17-19 and informed the necessary units
- On the morning of May 17, they emailed about the potential for a multi-day severe weather threat that included tornadoes



Precautions

- WFO Norman's management staff gathered early on May 20 to coordinate and plan the communication of the message of the day.
- On May 20, the National Weather Service office in Norman, Oklahoma, gave residents **16 minutes** of warning before the tornado even formed.
 - based on radar indicators that the storm clouds were circulating in such a way that a tornado was likely
 - average tornado warning time: 13 minutes





Precautions

- When asked to public for response to warnings on May 19 and May 20, most people said they had adequate time to take shelter and did so.
 - Interviews with the public indicated that on May 20, some people did evacuate ahead of the storms.
- Broadcasters warned people to seek shelter in underground or above-ground safe rooms.
- After the tornado outbreak on May 3, 1999, State of Oklahoma launched an initiative to promote and support the construction of storm shelters in homes (“safe rooms”)
 - hundreds of people took advantage of this rebate program

The background is a light blue gradient with several white circles of varying sizes, some containing smaller dark circles, resembling bubbles. At the bottom, there is a dark teal horizontal band with stylized white and light blue shapes representing coral or seaweed. Below this band is a dark purple band with light blue shapes representing rocks or sand. The overall aesthetic is clean and modern.

03

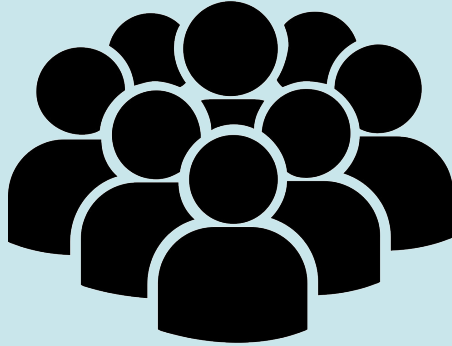
THE MANAGEMENT **AFTERWARDS**

Self-Response

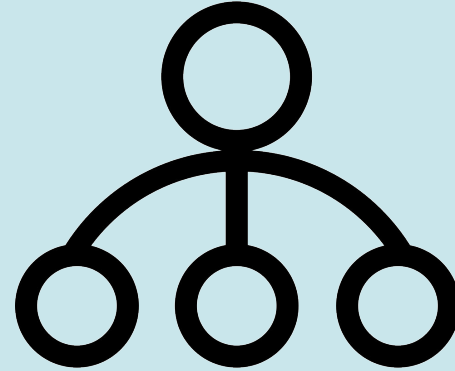
- Oklahoma Governor Mary Fallin declared a state of emergency on May 20.
- President Obama declared a major disaster for the State of Oklahoma.
- The Federal Emergency Management Agency (FEMA) deployed urban search and rescue teams to the tornado-hit areas.
- FEMA activated the National Response Coordination Center in Washington, D.C.
- The Oklahoma National Guard was deployed.



Emergency Relief



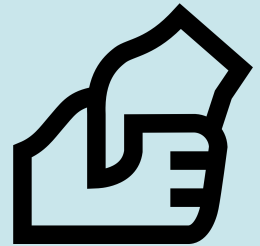
Local NGOs were on the ground in Moore since just minutes after the storm hit



Distribution centers were opened to coordinate loads of relief supplies shipped to Moore

Emergency Relief

- Until May 23, the disaster zone was off limits to debris removal and aid distribution teams.
- Law enforcement descended on the area, monitoring access and enforcing curfews.





Recovery and Rebuilding Phase

- On the morning of May 23, recovery and clean-up processes began.
- First main focus was on debris removal.
- On May 29, NBC aired Healing in the Heartland: Relief Benefit Concert, a fundraising concert that was held at Chesapeake Energy Arena in downtown Oklahoma City.
- By June 19, most of the disaster response phase in Moore, Oklahoma, was ended and teams were started to focus on helping in recovery efforts.

Global Response

- Delegates from several countries and Pope Francis offered condolences, and the United Nations offered assistance in the recovery efforts.
- The Canadian Red Cross began accepting donations of money and supplies for their American counterparts, to assist with disaster relief and recovery.
- Celebrities and NGOs worldwide pledged donations to the relief efforts.



The background is a light blue gradient. Scattered across the top half are several white circles of varying sizes, each containing two small black dots, resembling bubbles. The bottom half of the image features a stylized ocean scene. A dark teal horizontal band represents the water surface. Below it, a series of dark blue, rounded shapes represent hills or underwater mountains. Interspersed among these shapes are small, stylized green and blue plants or coral. At the very bottom, there are dark purple, irregular shapes that look like rocks or sand patches.

04

SPECIFIC ACTIONS

Specific Actions



- inspired by a partnership created by Joplin Chamber of Commerce following Joplin tornado, 2011.
- private sector partnership
- in order to quickly address vital community needs and begin the recovery process
- both used local networks,
- provide central locations for the community to connect with available recovery resources
- organized and sponsored meetings; gathered donations by businesses, colleges, libraries;
- shared plans for long term and near-term recovery efforts

- citizens to connect with non-profit organizations and government agencies (such as FEMA, the American Red Cross, local associations and schools)
- community partners to communicate with survivors, providing broader strategic information
- fostered collaborative dialogue about community-wide recovery efforts, and a foundation for ongoing community recovery efforts and discussions.



**American
Red Cross**



FEMA



05

RIGHTS & WRONGS

✓ Evacuation process

Evacuation happened quickly and efficiently with the correct guidance of the authorities

✓ First-aid of NGOs

Local NGOs were on the ground in Moore just minutes after the storm hit

✓ Receiving enough donation

There were donations from all across the nation and the rest of the world

Wrongs Regarding Pre-Disaster



Construction flaws, code violations

An analysis of the debris and interviews with experts turned up serious structural problems. Documents also revealed that an engineering firm with a history of design flaws had worked on one of the schools that was collapsed during the tornado.

Wrongs Regarding Disaster Management



Distribution of Help

Challenges about managing a large number of volunteers and high amounts of donations (almost all of the donations were sent to central Oklahoma)



Time Management

Bad coordination in rural areas, leading to a waste of time and manpower (e.g. many groups distributing food in the same locations)



Inaccuracy of Donations

Receiving unusable donations, such as very old and dirty clothes, rusted bicycles etc.

The background is a light blue gradient. Scattered throughout are several white circles of varying sizes, each containing two small dark dots, resembling bubbles. At the bottom of the image is a stylized ocean scene. It features a dark teal horizon line. Below this, there are rolling hills in shades of teal and dark blue. Interspersed among the hills are small, dark blue, branching shapes that look like coral or seaweed. The very bottom of the image consists of a dark purple band with irregular, light purple shapes underneath it, suggesting a sandy or rocky seabed.

06

LESSONS LEARNED

Meeting Announcement Outreach

Since the storm severely impacted Moore's critical infrastructure, First American Bank and the Chamber of Commerce developed a communications strategy to ensure awareness of community meetings



The strategy included:

- Social media
- Announcements on national television outlets
- Newspaper announcements
- Flyers distributed by the Chamber's member network at hotels where displaced residents were staying.

Meeting Announcement Outreach



This strategy enabled FEMA and other recovery agencies to disseminate their messaging to a wider audience, provide information about access to critical resources, and connect citizens with needed services.

- Governor Fallin dismissed an idea to make a law that would require all schools in Oklahoma to have a shelter.
- The Moore City Council proposed a measure making changes to its residential building codes, include requiring that new home construction in the city include hurricane clips or framing anchors, wind-resistant garage doors in order for homes to withstand winds up to 135 mph (equivalent to a high-end EF2 tornado).



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