

**Summary of
State Geological Surveys' Responses
to the April 18, 2008
Mt. Carmel, Illinois Earthquake**

**Compiled by Robert A. Bauer
Technical Director CUSEC State Geologists
Illinois State Geological Survey**

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Introduction

The April 18, 2008 Mt. Carmel 5.2 magnitude earthquake caused reported damage in four states Illinois, Indiana, Kentucky and Missouri. The damage prompted some level of response from the state geological surveys within these four states and a response in a fifth state due to requests for information from their emergency managers and press. The State Geological Surveys are working on earthquake response plans which include setting up technical clearinghouses in their individual states. Also the Central U.S. Earthquake Consortium (CUSEC), U.S. Geological Survey (USGS) in Memphis and the Center for Earthquake Research and Information (CERI) at the University of Memphis along with the State Surveys are working on a regional technical clearinghouse at CERI/USGS. The response to the April 18, 2008 Mt. Carmel, Illinois earthquake was a good learning experience and as such, we crafted this questionnaire to capture the CUSEC State Geologists' responses and lessons learned that could be used to benefit future responses. The April 18, 2008 earthquake main shock occurred at 4:37 am Central Time or 5:37 Eastern Time.

**Alabama Geological Survey's Response to the April 18, 2008 Mt. Carmel Earthquake
(main shock at 5:37 am Eastern Time for Alabama)**

1. Did your Survey have some type of response to the Mt. Carmel Earthquake?

Our response involved answering questions from news reporters in Alabama who wanted to know how this quake affected people in Alabama (USGS Did-You-Feel-It reports), what threat the respective seismic zone had to Alabama and what earthquakes and seismic hazards we have in our own state. At 7:00 am (ET). that morning, our state Emergency Management Agency (EMA) natural hazards program manager also wanted information on how many people in Alabama reported shaking and how strong the shaking was, where the epicenter was located, and any additional background information on the earthquake that we could provide for a morning briefing. We also put up an in-house poster by that afternoon for reference and included geology background, seismic source zone information, past seismic history of the area, maps of the region, print offs from Alabama seismographs that recorded the shaking, and a summary of reported shaking in Alabama.

2. Did you have staff in the state's Emergency Operations Center for this event?

No. We communicated with our state EMA via phone and email.

If yes, Was it your regular EOC assigned staff?

When was the EOC opened and when did they arrive?

What communications were available to this staff at the EOC??

Phone?

Your own assigned Computer?

Your own email account?

Internet?

GIS?

Able to display maps to the EOC?

What was your role in the EOC – what did you do in the EOC?

What files, communications or information do you wish you had at the EOC?

3. Did you stand up a clearinghouse within your organization?

No, but most of the emails and phone calls were directed to hazards division staff of the Alabama Geological Survey via our agency's executive secretary.

If yes, How did you communicate this to others?

When did you have information displayed on your Survey's website and what?

4. What communications did you have with other responders from the Central U.S. and when?

a) Universities - None

b) State DOT's - None

c) USACOE - None

5. Did you send staff into the field to document site information?

No, not required because of lack of damage.

What types of information did they gather?

What do they wish they had for their job?

When did they get to the site? Date and time.

6. Anything else you wish you had or knew during the event, etc?

Nothing else. Most of the information we needed was available on the websites of USGS, CERI, and CUSEC.

7. What could have been done better?

The CUSEC and CERI websites seemed to be down (overloaded with web users) later in the day. With this being a smaller event, it made me wonder how those sites would perform during a larger regional event and if there is any way to create either a mirror site to post the same information to (even basic background information on the seismic zone, etc.) or if there is a possibility of upgrading hardware/server capabilities to handle more traffic. For a larger, regional event, it would be great if the same information could be posted on multiple websites. This would allow the info to get out to everyone who needs it, but traffic would be divided up to multiple sites instead of just one site.

8. Outside of multiple press contacts and interviews, did you provide graphics? What were you asked to supply?

Regional maps showing seismic zones and historical earthquake epicenters as well as maps of Alabama showing earthquake epicenters. We were also asked for statistics of historical earthquakes in the region and in the state.

**Illinois State Geological Survey's Response to April 18, 2008 Mt. Carmel Earthquake
(main shock at 04:37 am Central Time for Illinois)**

1. Did your Survey have some type of response to the Mt. Carmel Earthquake?

Received location and magnitude information from the U.S. Geological Survey's National Earthquake Information Center (NEIC) at 5:01am Central Time. We had staff in our main office in Champaign within a half hour, others working from their homes starting at the time of the event. Ultimately we had staff in the state Emergency Operations Center (EOC), performed clearinghouse operations of coordination from the main office in Champaign, and had staff in the field documenting damage in the towns throughout the area. Performed many press interviews from the EOC and from the main office staff. Since this was a magnitude event that was similar to previous magnitude 5.0+ in the state, we were able to call the State Emergency Management Agency's communications center at 5:05 am and list what we expected for estimated damage and how many states would feel the event. This was provided in an attempt to assure SEMA that information reported was within reason.

2. Did you have staff in the state's Emergency Operations Center for this event?

Yes from 9am to 6 pm on April 18th.

If yes, Was it your regular EOC assigned staff? - Yes

When was the EOC opened and when did they arrive?

Received the call at 6:30 am (CT) for activation and arrived at the EOC at 9:00 am (CT). EOC is 2 hours away.

What communications were available to this staff at the EOC??

Phone? – Yes and personal cell phone.

Your own assigned Computer? - Yes

Your email? - Yes

Internet? - Yes

GIS? – available by EMA staff in EOC

Able to display maps in the EOC? – Yes, electronically displayed on large flat screens.

What was your role in the EOC – what did you do in the EOC?

Even before arriving at EOC was reviewing text for press releases for the State Emergency Managers concerning aftershocks and what to expect while driving to EOC. At EOC, monitored information coming in through EOC staff, emails and websites. Helped write many press releases for governor's office, EMA releases, for Director of

EMA for news conference, EMA and Homeland Security websites, was one of 3 people presenting information at the state's press conference, presented maps to press of historic earthquake events throughout the state, press interviews over the phone, communicated damage to other states and CUSEC, presented briefing to EOC on historic earthquakes in the state and Central U.S. and what to expect for aftershocks, and presented PowerPoint slide information to coal industry on what to expect for damage for safety course that was to be presented the next day.

What files, communications or information do you wish you had at the EOC?

Had downloaded many files of our response plans, graphs, historical earthquake information, pre-scripted press releases about aftershocks and how public should respond during an earthquake event, PowerPoint talks, graphics onto a thumb drive and had them available at the EOC. The one thing I wish I had was a list of who was responding in the other states and if the Center for Earthquake Research and Information at University of Memphis (CERI/USGS) was operating some type of clearinghouse for collection of regional information compiled from each state. I responded back with reports on damage information found in Illinois to people providing reports from the other states. Later in the day I realized there were responders in other states whom I did not send information. Sent info to CUSEC office in Memphis after a communications from Paul Hogue.

Needed to just send out reports of state damage/information to an email list of all potential CUSEC responders and not wait for establishing communications.

For a much larger event would need many GIS files that I did not have.

3. Did you stand up a clearinghouse within your organization?

Yes. After internal communications and coordination, Tim Larson coordinated communications out of our main office with CERI and Indiana University for deployment of portable seismographs and handling many press interviews.

If yes, How did you communicate this to others?

Left messages on work phones about who at ISGS was responding and what tasks people were doing and left cell phone numbers of each staff member responding. Communicated same to our staff that answers our main phone number.

When did you have information displayed on your Survey's website and what?

By 5:20 am (CT) we had links to the USGS earthquake site on our homepage. Later in the day we had a separate panel with lists of links to other sites and information being produced at our survey including graphs and information on aftershocks recorded. Maintained site for several months. Typically have about 40 to 100 hits a day on our earthquake section website. On April 18th we had 20,315 hits.

4. What communications did you have with other responders from the Central U.S. and when?

a) Universities

Called CERI staff on their cell phones about 6:30 am (CT) then on their office phones – left messages about who is coordinating responses in Illinois and that cell phone

and office numbers, also emailed same information to them. Later contacted Indiana University staff. Coordinated seismic equipment deployment by giving all their respective cell phone numbers and cell phone numbers of our staff in the field who were documenting damage.

b) State DOT's

Interacted with IDOT in EOC

c) US Army Corp of Engineers

Not in EOC and no communication.

5. Did you send staff into the field to document site information?

Yes, staff near affected region self deployed and were contacted by our organization to assist seismograph deployment if needed.

What types of information did they gather?

Went from town to town in Illinois and documented damage.

What do they wish they had for their job?

A way to get pictures back ASAP and reports from them ASAP. Also Survey photographic equipment. They had to pick up their own camera from home.

6. Anything else you wish you had, knew during the event, etc?

List of who was responding in other states, what they were doing and if others from a regional standpoint such as CERI or USGS Memphis had their website set up as a "clearinghouse". While working in the EOC, one didn't have the time to go searching – information has to be thrown at you through notifications such as through email!

7. What could have been done better?

Really need more prepared text for more information. Text is clipped by the Public Information Officers for press releases from various website sources. Much of it is basic information and may not be up to date resulting in "wrong" information. Had a number of pre-scripted texts on aftershocks and what to do during an earthquake event for press releases but needed more. Same thing with graphics. Had graphics in the EOC but Home office did not and people were so busy with coordination and press interviews, one couldn't make time to direct creation of graphics. Greatly slowed down info going out. Need more local information on the Survey website, not just links. Needed area on website for others responders to go to, to gain a perspective of response in state (location of clearinghouse set up, contact information, etc.)

8. Outside of multiple press contacts and interviews, did you provide graphics? What were you asked to supply?

Supplied maps of state with earthquake locations plotted for the past 213 years. Events plotted per magnitude and some had year of event next to it. Not asked for other graphics.

**Indiana Geological Survey's Response to April 18, 2008 Mt. Carmel Earthquake
(main shock at 5:34 Eastern Time for Bloomington, Indiana)**

1. Did your Survey have some type of response to the Mt. Carmel Earthquake?

Yes. An informational announcement about the earthquake on the Indiana Geological Survey (IGS) Web site with links to USGS and Indiana University information by 7:00AM (ET). The site was updated regularly for the next two weeks. The Director, Assistant Director for Research, Information Officer, and a Senior Staff Geologist fielded telephone and e-mail inquiries for several days after the event.

2. Did you have staff in the state's Emergency Operations Center for this event?

No.

3. Did you stand up a clearinghouse within your organization?

See # 1 above. The Director issued a statement late on the first day, but for the most part IGS staff stayed informed by monitoring news services and visiting the USGS Web site.

If yes, How did you communicate this to others?

When did you have information displayed on your Survey's website and what?

4. What communications did you have with other responders from the Central U.S. and when?

a) Universities

We were in communications with seismologists from Indiana University's Department of Geological Sciences by 8:00AM (ET).

b) State DOT's

The Director participated in a FEMA-initiated briefing at noon (ET) on the day of the earthquake.

c) USACOE

5. Did you send staff into the field to document site information?

No, but Seismologists from Indiana University's Department of Geological Sciences were deployed to the field the afternoon of the earthquake. (Norm Hester (previous IGS Director) spent several days photographing damage in towns in Indiana over the first weekend).

What types of information did they gather?

Indiana University (IU), along with several other institutions, sent several teams to the region of the epicenter to monitor aftershock activity. The teams set up five Global Positioning System (GPS) instruments and six seismographs to monitor the movement of the earth's crust associated with the earthquake and aftershock activity in the days following the event. (M. Hamburger, pers. comm.)

Additionally, IU has been involved for many years in running an outreach program placing seismographs at schools throughout the region. By virtue of that network, known as the Indiana PEPP Earthquake Science Program (see <http://www.indiana.edu/~pepp>

for additional information about the program), we now have an Indiana state seismograph network that has provided high-quality scientific data with which to study the earthquake. (M. Hamburger, pers. comm.)

What do they wish they had for their job?

When did they get to the site? Date and time.

6. Anything else you wish you had or knew during the event, etc?

7. What could have been done better?

8. Outside of multiple press contacts and interviews, did you provide graphics? What were you asked to supply?

We mailed out more than 6,500 copies of a brochure entitled, "Earthquakes in Indiana," and made a PDF of the brochure available for download from our Web site at:

<http://igs.indiana.edu/earthquakes/EarthquakeBrochure.pdf>

Brochures were sent to 750 middle and high schools, and more than 500 libraries across the state. We also mailed a brochure to each state representative and senator.

**Kentucky Geological Survey's Response to April 18, 2008 Mt. Carmel Earthquake
(main shock at 5:37 am Eastern Time for Lexington, Kentucky)**

1. Did your Survey have some type of response to the Mt. Carmel Earthquake?

Yes, held a press conference and sent one member to the state emergency operations center that was activated.

2. Did you have staff in the state's Emergency Operations Center for this event?

Yes (William Andrews)

If yes, Was it your regular EOC assigned staff? - NO

When was the EOC opened and when did they arrive?

1st situation report @ 6:39 am (ET) (est. center opened earlier). Arrived at ctr. ~ 9:30 am (ET).

What communications were available to this staff at the EOC??

Phone? YES

Your own assigned Computer? YES

Your email? NO

Internet? YES

GIS? NO

Able to display maps to the EOC? YES

What was your role in the EOC – what did you do in the EOC?

I provided background on typical seismic events (aftershocks, etc) for those in EOC. Confirmed 11:14 (ET) aftershock.

What files, communications or information do you wish you had at the EOC?

Better network/communication with prof. seismologists: relied on internet data. Logged onto our online seismic network site and were able to confirm aftershocks that had been reported.

3. Did you stand up a clearinghouse within your organization?

No, but we did host media interested in broadcasting information. We made seismograph traces available and maps of the recorded historic epicenters in the region. We fielded media requests radio, TV, Newspapers about 4 networks and 5 radio stations.

If yes, How did you communicate this to others?

The University of Kentucky Press Office coordinated the press conference and instructed the media where to go and what time. The press office also coordinated phone in requests from local radio outlets wanting experts for on air phone conversations.

When did you have information displayed on your Survey's website and what?

Yes, we had seismograph traces and later in the day we had more information posted.

4. What communications did you have with other responders from the Central U.S. and when?

a) Universities None to my Knowledge

b) State DOT's

c) USACOE

5. Did you send staff into the field to document site information? NO

What types of information did they gather?

What do they wish they had for their job?

6. Anything else you wish you had, knew during the event, etc?

7. What could have been done better?

Getting visual affects for the media is difficult. Had the damage been much worse we would have been hard pressed to organize our response.

8. Outside of multiple press contacts and interviews, did you provide graphics? What were you asked to supply?

We provided our online seismic network and copies of the earthquake and aftershock seismographic traces. These were the graphics on our website.

**Missouri Geological Survey's Response to April 18, 2008 Mt. Carmel Earthquake
(main shock at 4:37 am Central Time for Missouri)**

1. Did your Survey have some type of response to the Mt. Carmel Earthquake?

Yes. The Missouri Geological Survey Program fielded telephone calls from private citizens and local (St. Louis and Kansas City area) broadcast and print media. Individuals were directed to the USGS' "Did You Feel It?" website; media outlets were granted short interviews (approximately 10-15 "general-type" earthquake questions).

The program participated in two briefings with other state agencies and responders in the eastern region. A briefing on the actual earthquake event was given by the State Geologist.

2. Did you have staff in the state's Emergency Operations Center for this event?

No. However, conference calls with SEMA, other state & local agencies, and first responders identified potential dangers and other impacts from the EQ.

If yes, Was it your regular EOC assigned staff?

When was the EOC opened and when did they arrive?

What communications were available to this staff at the EOC??

Phone?

Your own assigned Computer?

Your own email account?

Internet?

GIS?

Able to display maps to the EOC?

What was your role in the EOC – what did you do in the EOC?

What files, communications or information do you wish you had at the EOC?

3. Did you stand up a clearinghouse within your organization?

CUSEC requested that some of the member-states (Illinois, Indiana, Kentucky) prepare to "stand-up" their Post-Earthquake Technical Information Clearinghouses. Missouri did not implement the clearinghouse plan.

If yes, How did you communicate this to others?

When did you have information displayed on your Survey's website and what?

4. What communications did you have with other responders from the Central U.S. and when?

a) Universities – NONE

b) State DOT's – Missouri DOT representatives participated in morning and afternoon sit-rep conference calls with Missouri SEMA, we learned of their activities during those calls.

c) USACOE – NONE

d) CUSEC, other states – received e-mail damage reports and reports of felt shaking.

5. Did you send staff into the field to document site information?

No

What types of information did they gather?

What do they wish they had for their job?

When did they get to the site? Date and time.

6. Anything else you wish you had or knew during the event, etc?

7. What could have been done better?

Missouri's Geological Survey Program recognized the need to improve our response plan, and communications capabilities, as well as finalizing and distributing our Post-Earthquake Technical Clearinghouse plans to those staff who will be directly involved in the implementation of said plans. Additionally, we believe that the program needs to find a way to go beyond the planning stage and begin to actually prepare (i.e. by acquiring equipment, supplies, etc.) to implement our Earthquake Response Plan and Clearinghouse plans. This will likely require budgetary adjustments, work plan MOUs/MOAs with SEMA, and better coordination with our state partners.

8. Outside of multiple press contacts and interviews, did you provide graphics? What were you asked to supply?

No. On the fourth week following the April 18 earthquake event (May 12-14, 2008) a previously scheduled, state-wide catastrophic planning workshop was conducted. On the opening day of the workshop, the State Geologist and the Geological Survey Program Director gave presentations that summarized the April 18th event, including some graphics from the USGS's Earthquake web pages, and the program's clearinghouse plan, respectively.