2015 ANNUAL REPORT

Utah Chapter

of the Earthquake Engineering Research Institute

Report Date: April 4, 2016

This report summarizes the membership and activities conducted by the Utah Regional Chapter of the Earthquake Engineering Research Institute during 2015.

MISSION & GOALS

Chartered in 2012, the Utah Chapter is the 10th regional chapter of the Earthquake Engineering and Research Institute (EERI). We hope to advance EERI's goals of promoting the advancement of the science and practice of earthquake engineering, improving understanding of the impact of earthquakes, and advocating comprehensive and realistic measures for reducing the harmful effects of earthquakes by:

- Being a source of collective expertise on seismic hazards and risk reduction
- Partnering with other organizations and agencies involved with seismic-risk issues
- Being an advocate for seismic safety at the State and local government levels
- Increasing awareness through education and lecture opportunities
- Promoting student chapters and activities

Involving members through participation in committee work.

MEMBERSHIP SUMMARY

The Utah Regional Chapter had a total of 31 members in 2015.

OFFICERS

The Board consisted of the following members:

Role	Name	Affiliation	Email
President	Brent Maxfield	The Church of Jesus Christ of Latter-day Saints	maxfieldba@ldschurch.org
Secretary-Treasurer	Kevin Franke	Brigham Young University	Kevin_franke@byu.edu
President Elect	Ron Dunn	Dunn & Associates	RDunn@dunn-SE.com
Past President	Les Youd	Brigham Young University (Retired)	Youd1132@comcast.net
Director	Jerod Johnson	Reaveley Engineers	jjohnson@reaveley.com
Director	Bill Lund	Utah Geological Survey (Retired)	williamlundugs@gmail.com
Director	Bob Carey	Utah Division of Emergency Management	bcarey@utah.gov

Board meetings were held each month, typically on the 1st Wednesday of the month. Each meeting was held as a conference call, with the exception of the February 2015 which was held at the office of Dunn & Associates.

BUDGET & FINANCIALS

Our Short Course programs – see below – have provide a good source of income for the chapter to help fund the various events that we sponsored and to help fund the chapter.

CHAPTER ACTIVITIES

The major accomplishment of the Utah Chapter in 2015 was the publication of the report, *Scenario for a magnitude 7.0 Earthquake on the Wasatch Fault – Salt Lake City Segment: Hazards and Loss Estimates*. The funding for this report was provided by the Federal Emergency Management Agency (FEMA) channeled through the national EERI office. It was a collaborative effort with the Utah Division of Emergency Management and the University of Utah Seismograph Stations. A PDF copy of the report can be downloaded from the Utah Chapter website: http://utah.eeri.org. This 53 page report was written for the Utah Seismic Safety Commission to convey the implications the scenario earthquake. The report concludes with nine recommendations to the Commission.

The Utah Chapter does not have regularly scheduled meetings. The meetings are scheduled as needed and tend to reach out to the community beyond the EERI membership.

2015 EERI Short course on Seismic Ground Motions – March 5, 2015

In 2015, the Utah Chapter hosted its second annual Short Course on March 5. The title of the 2015 course was, *2015 EERI Short Course on Seismic Ground Motions*. The main speakers were Dr. David Boore of the USGS, and Ivan Wong, Principal Seismologist, AECOM. Refer to flyer below.

About 80 persons attended this short course

Joyner Lecture with David Boore – March 4, 2015

As part of the *Short Course on Seismic Ground Motions*, Dr. David Boore presented the Joyner Lecture at the University of Utah the night prior to short course. This event was attended by about 50 persons. Refer to flyer below.

2014 EERI Distinguished Lecture with David Wald – February 10, 2015

Dr. David Wald presented his discussion about the USGS tools for near-real time earthquake information systems. The audience was comprised of both technical and non-technical participants. There were over 100 people who attended. Refer to flyer below.

2015 EERI Distinguished Lecture with Robert Olshansky – July 21, 2015

Dr. Robert Olshanksy presented the 2015 EERI Distinguished Lecture – Earthquake, Cities, and Time. This event was well attended by engineers, seismologists, and planners. It began a multi-year effort to discuss resiliency in Utah. There were about 50 in attendance. Refer to flyer below.

Joint meeting with the EERI Utah Chapter and the Structural Engineers Association of Utah (SEAU) October 15, 2015

For the second year in a row, the EERI Utah Chapter and SEAU joined forces to sponsor a joint meeting in October 2015. The topic was the Nepal Earthquake Reconnaissance. The invited speakers were Dr. Judith Mitrani-Reiser of Johns Hopkins University and Dr. Youssef Hashash from the University of Illinois. There were about 65 attendees at this event. This will become an annual event. Refer to flyer below.

OTHER ACCOMPLISHMENTS

- With the assistance of the National Office, the Utah Chapter created a Utah Chapter logo which is at the top of this document.
- With the assistance of the National Office, the http://utah.eeri.org website was greatly simplified and redundant sections were removed making it much easier to navigate.

COMMUNICATIONS

The Utah Chapter does not have a set Newsletter publication schedule. During 2015, 3 issues of the newsletter were published. The newsletter is sent to multiple organizations for distribution to their membership. We attempt to get the newsletter distributed to as many persons as possible. The newsletters are archived on the Utah.eeri.org website.

STUDENT CHAPTER COORDINATION

Brigham Young University has an active student chapter. We have asked the BYU Student Chapter to contribute articles to the Utah Chapter Newsletter. The Utah Chapter is an active supporter of the BYU participation in the Student Design Competition. We made a financial contribution to help students from the BYU Student Chapter attend the Annual Meeting in Boston to compete in the Student Design Competition.

During 2015 the Utah Chapter has actively pursued creating a student chapter at the University of Utah. We have made some progress in this this effort and hope to have a fully functioning chapter during 2016. Once the U of U chapter is organized, we will pursue a chapter at Utah State University.

ELECTION & ELECTION RESULTS

An election for officers was held during December 2015. The table below shows the new officers appointed to the Chapter board who will take office on January 1, 2016.

Role	Name	Affiliation	Email
President Elect	Jim Nordquist	AGEC	nord@agecinc.com
Secretary-Treasurer	Luis Ibara	University of Utah	Luis.ibara@utah.edu
Director	Robert Snow	AECOM	Robert.w.snow@aecom.com

Ron Dunn will assume the role of President; Brent Maxfield will become the Past President, and Bill Lund and Bob Carey will continue as Board members.

Les Youd, Jared Johnson, and Kevin Franke will leave the board.

2016 GOALS

See Separate Document

LIST OF ATTACHMENTS

Included at the end of this report are various attachments to supplement the information included above. A list of the attachments is included below:

- Item 1: Scenario Cover
- Item 2: Short Course
- Item 3: Joyner Lecture
- Item 4: Wald Lecture
- Item 5: Olshansky Lecture
- Item 6: Mitrani-Reiser & Hashash Lecture

Scenario for a Magnitude 7.0 Earthquake on the Wasatch Fault–Salt Lake City Segment

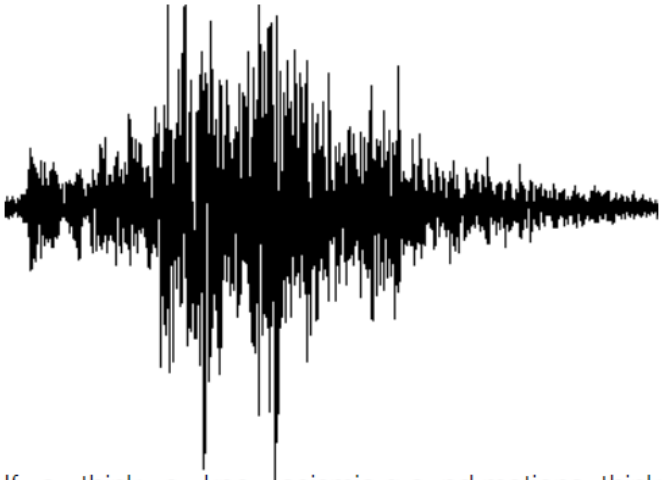
Hazards and Loss Estimates

Developed by the
Earthquake Engineering Research Institute,
Utah Chapter

Prepared for the
Utah Seismic Safety Commission

June 4, 2015

EERI Utah Chapter Short Course on Seismic Ground Motion



If you think you know seismic ground motions, think again:

Course Website: http://utah.eeri.org/?p=259

Contact Info: Brent Maxfield - 801.240.1529
maxfieldba@ldschruch.org

A practical course for working professionals to understand the basis for code-mandated seismic ground motions

Purpose:

The seminar is intended to bridge the gap of understanding between seismologists, civil, structural, and geotechnical engineers. Attendees will leave the short course with an improved understanding of seismic ground motions and with an understanding of the background used to develop the ground motion values used in the building code. Speakers will help demystify and clarify the terms and concepts used in the development of seismic ground motions.

Location:

Thursday, March 5, 2015

The Gathering Place at Gardner Village

1100 West 7800 South, Building 24, West Jordan, Utah 84088

Invited instructors:

Dr. David Boore, Geophysicist, U.S. Geological Survey
Ivan Wong, Principal Seismologist, AECOM.

Speakers on Selected Topics:

Brent Maxfield, SE, Church of Jesus Christ of Latter-day Saints
Barry Welliver, SE, BHW Engineers,
Leah O'Neill, EIT, Reaveley Engineers

Associated EERI Joyner Lecture by David Boore:

Ground Motion Prediction Equations - Past, Present, and Future

Wednesday, March 4, 2015 - 5:30 P.M. Social, 6:00 P.M Lecture

Warnock Engineering Building - Room ~~2230~~ L103

72 Central Campus Drive, Salt Lake City, Utah 84112

The Joyner Lecture will provide background and context to the short course. This lecture will have a different focus than Dr. Boore's presentation at the short course.

http://utah.eeri.org/?p=255

Who Should Attend:

- Structural Engineers
- Geotechnical Engineers
- Seismologists
- Civil Engineers
- Geologists
- Students

EERI Utah Chapter Short Course on Seismic Ground Motions

Bios:

David M. Boore is a geophysicist with the USGS in Menlo Park, CA. He is one of the developers of one of the Next Generation Attenuation Relationships Ground Motion Prediction Equation (GMPE) Models. David will be speaking on the topic of deterministic ground motions and explain how ground motion prediction equations are developed.

Ivan Wong is a principal seismologist with AECOM (previously URS/Woodward-Clyde), based in Oakland, California, a firm for which he has worked since 1976. He is an internationally recognized expert in seismic hazard evaluations with 38 years of experience in seismology, seismic geology, seismotectonics, and earthquake ground motions. Ivan will be speaking on the specific characteristics of the Wasatch Fault and other Utah Faults. He will also discuss the development of probabilistic and code ground motions and explain how these differ from deterministic ground motions.

Brent Maxfield is a structural engineer with the Church of Jesus Christ of Latter-day Saints based in Salt Lake City, Utah. Brent will introduce the topic of seismic ground motions and lay a foundation of understanding for the topic covered in the short course. He will help bridge the gap of understanding between structural engineers, geotechnical engineers, geologists, and seismologists.

Leah O'Neill is a structural engineer with Reaveley Engineering in Salt Lake City, Utah. Leah will introduce the PEER Ground Motion Prediction Equation (GMPE) Excel spreadsheet and provide direction on how to use it. A newly-developed Ground Motion Comparison spreadsheet will also be presented.

Course schedule:

7:15 am	Registration opens, continental breakfast
8:00 am	Welcome and Introduction - Brent Maxfield | 2015 President, EERI Utah Chapter
8:15 am	Simplified Seismic Ground Motions - Bridging Information between Science and Engineering - Brent Maxfield
9:45 am	Morning Break
10:00 am	Deterministic Seismic Ground Motions and the PEER NGA Ground Motion Prediction Equations (GMPEs) - David Boore
11:15 am	Utah Fault Parameters for use in GMPEs - Ivan Wong
12:00 pm	Introduction of GMPE Excel Worksheet - Leah O'Neill
12:30 pm	Lunch and GMPE Variable Study (Please bring your laptop)
1:30 pm	Results of Variable Study - Leah O'Neill
2:00 pm	Design Ground Motions. Comparing Code, Site-Specific Deterministic and Probabilistic Ground Motions in Utah - Ivan Wong
3:15 pm	Afternoon Break
3:30 pm	Utah Earthquake Scenario - Barry Welliver
4:15 pm	Wrap-up Discussion - Brent Maxfield
4:45 pm	Adjourn

Registration fees:

Online until February 26, 2015:

- All Attendees $220.00
- Students $30.00

Online after February 26, 2015 or at the door: (registration will be capped at 200 persons. Please register early to ensure a seat.)

- All Attendees $250.00
- Students $35.00

You can register for the short course at the following website.
http://utah.eeri.org/?p=259

Utah Chapter of EERI - Ground Motion Prediction Equations

Course Website: http://utah.eeri.org/?p=255 - **Contact Info:** Brent Maxfield maxfieldba@ldschurch.org - Phone: 801.240.1529

GROUND-MOTION PREDICTION EQUATIONS: PAST, PRESENT, AND FUTURE

Date & Location:

March 4, 2015 | Social at 5:30 P.M. | Lecture at 6:00 P.M.

Warnock Engineering Building Room ~~2230~~ L103

72 Central Campus Drive, Salt Lake City, Utah 84119

Lecturer: Dr. David Boore. U.S. Geologic Survey Research Geophysicist - Earthquake Science Center.

Overview: This lecture is in conjunction with the EERI Utah Chapter Short Course on Seismic Ground Motions. http://utah.eeri.org/?p=259 The Joyner Lecture will provide background and context to the short course. This lecture will have a different focus than Dr. Boore's presentation at the short course.

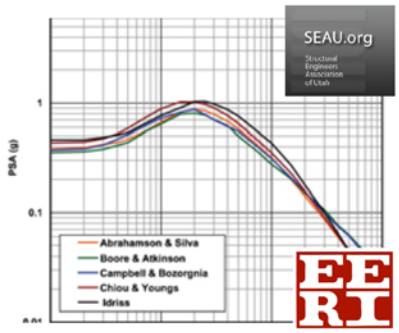
David M. Boore is a geo-scientist with the USGS in Menlo Park, CA. He is one of the developers of one of the Next Generation Attenuation Relationships Ground Motion Prediction Equation (GMPE) Models. The William B. Joyner Lecture is awarded by the SSA, in cooperation with EERI, to those who have provided outstanding earth science contributions to the theory and practice of earthquake engineering or outstanding earthquake engineering contributions to the direction and focus of earth science research.

Who Should Attend:

- Seismologists, Structural Engineers, Geotechnical Engineers, Geologists, Civil Engineers, Earth Scientists, Emergency Managers

Focus Topics:

- Earthquake Engineering
- Ground Motion Prediction Equations
- Seismology
- Earth Science
- Building Science



WE JUST HAD A MAJOR EARTHQUAKE
WHERE ARE RESPONDERS AND RESOURCES NEEDED?

Come Learn About USGS Tools to Rapidly Assess and Earthquake's Economic and Human Impact

Date & Location:

Tuesday, February 10, 2015 at 3:30 P.M.

Utah Cultural Celebration Center

1335 West 3100 South, West Valley City, Utah 84119

Lecturer: Dr. David Wald. Seismologist with the U.S. Geological Survey and Colorado School of Mines.

Overview: The U.S. Geological Survey (USGS) has developed several near-real time earthquake information systems that provide rapid and automated alerting of estimated economic and human impacts following earthquakes. In this lecture Dr. Wald describes the benefits and use of each of these systems and also describes how this information is collected, analyzed, and displayed.

David Wald has been a pioneer in developing and operations of several real-time information systems at the USGS National Earthquake Information Center such as "Did you feel it?", Shake Map, ShakeCast, and PAGER, that serve a broad audience including first responders, government officials, utilities, earth scientists, and engineers. More than 70,000 individuals receive alerts in California, Washington, Utah, Hawaii, Nevada, and Alaska.

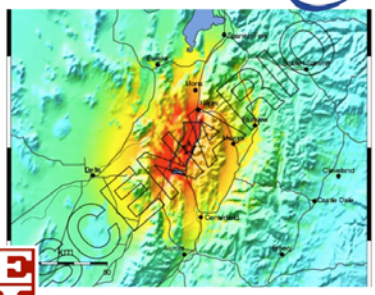
Who Should Attend:

- Emergency Managers, First Responders, Government Officials, Utilities, Earth Scientists, Seismologists, Geologists, and Engineers.

Focus Topics:

- ShakeMap
- ShakeCast
- PAGER
- Emergency Management

Salt Lake County Emergency Management



Course Website: http://utah.eeri.org/ - **Contact Info:** Brent Maxfield maxfieldba@ldschurch.org - Phone: 801.240.1529

Sponsored by:

EERI Utah Chapter - Salt Lake County Emergency Management

Utah Chapter of EERI - 2015 Distinguished Lecture

Course Website: http://utah.eeri.org/?p=300 - **Contact Info:** Brent Maxfield maxfieldba@ldschurch.org - Phone: 801.240.1529

CITIES, EARTHQUAKES, AND TIME

Date & Location:

July 21, 2015 | Lecture at 3:30 P.M.

Utah Cultural Celebration Center, Suite A on Lower Level

1355 West 3100 South, Salt Lake City, Utah 84119

Lecturer: Dr. Robert Olshansky. Professor and Head at the Department of Urban and Regional Planning, University of Illinois at Urbana-Champaign.

Overview:

Earthquakes occur suddenly, in a brief instant of time. But their effects—and the actions we take to reduce their effects—stretch over many years.

In this talk, Dr. Olshansky will explore some of the characteristics of the relationship between earthquakes and time. More importantly, he will explain how these various time characteristics affect policy decisions. Dr. Olshansky draws four policy conclusions from this rumination on time, relating to: mitigation, speed and quality of recovery, planning for resilience, and construction standards.

Who Should Attend:

- Emergency Planners, Emergency Managers, Urban Planners, Policy Makers, Seismologists, Engineers, Geologists

EERI Utah Chapter and SEAU Joint Fall Meeting – Nepal Earthquake

April 2015 Nepal Earthquake

Structural and Geotechnical Reconnaissance

Date and Location

Thursday, October 15, 2015

Warnock Engineering Building (WEB), Room L103 at the University of Utah
72 Central Campus Drive, Salt Lake City, Utah 84112

5:30 – 6:00 Refreshments and Socializing
6:00 – 8:00 Presentations and Questions

The seminar is free
No registration is required to attend

This seminar will feature the first-hand accounts of two individuals involved with the earthquake reconnaissance in Nepal, with a focus on the related structural and geotechnical issues. It will address the resiliency of healthcare and other facilities along with the geotechnical, geoseismic, and soils issues related to this event.

Invited Instructors:

Judith Mitrani-Reiser, PhD. Assistant Professor, Dept. of Civil Engineering, Johns Hopkins University.

Youssef Hashash, PhD. Professor, Dept. of Civil and Environmental Engineering, University of Illinois

Dr. Mitrani-Reiser's research is focused on the performance assessment of critical infrastructure, the safety and economic impact of hazards on the built environment, the effective communication of these risks to the public, informed decision making for use in emergency management and policy making, and the interaction of humans with the built environment.

Dr. Hashash's research focus includes deep excavations in urban areas, earthquake engineering, continuum and discrete element modeling and soil-structure interaction. He also works on geotechnical engineering applications of visualization, augmented reality, imaging and drone technologies. He has published over 80 journal articles and is co-inventor on four patents. His research group developed the software program DEEPSOIL that is used worldwide for evaluation of soil response to earthquake shaking.

EERI UTAH CHAPTER

STRUCTURAL ENGINEERS ASSOCIATION OF UTAH

Websites: http://utah.eeri.org
www.seau.org
Contact: Brent Maxfield
utah@eeri.org

Who Should Attend?

- Structural Engineers
- Geotechnical Engineers
- Geologists
- Emergency Managers
- Others interested in lessons learned from earthquakes and how they relate to Utah

Focus Topics:

- Structural Engineering
- Geotechnical Engineering
- Lessons Learned
- Resiliency