



*We develop seismic policies and share information to promote programs intended to reduce earthquake related losses.*



*A non-profit earthquake consortium for the western states*

**Summer 2018  
 e-Newsletter**

**Western States  
 Seismic Policy Council**

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**WSSPC NEWS**

**2018 WSSPC Annual Business Meeting Minutes**

The 2018 WSSPC Annual Business meeting was held in early May. The draft meeting minutes are available to read on the WSSPC website: <https://www.wsspc.org/us/minutes/annual-business-meeting-minutes/>. Send any comments to the WSSPC office.

**WSSPC Committee Policy Assignments**

The five draft policies up for review were split amongst the three committees to be reviewed this summer.

**Basin & Range Province Committee**

- 16-3: Post-Earthquake Technical Clearinghouses
- 16-10: Joint Policy for the Evaluation and Seismic Remediation of School Buildings
- 16-12: Earthquake Actuated Automatic Gas Shutoff Devices

**Engineering, Construction & Building Codes Committee**

- 16-3: Post-Earthquake Technical Clearinghouses
- 16-10: Joint Policy for the Evaluation and Seismic Remediation of School Buildings
- 16-11: Reliability of Lifeline Services
- 16-12: Earthquake Actuated Automatic Gas Shutoff Devices

**Tsunami Committee**

- 16-1: Rapid and Effective Tsunami Identification and Response
- 16-3: Post-Earthquake Technical Clearinghouses
- 16-10: Joint Policy for the Evaluation and Seismic Remediation of School Buildings

The draft policies can be read on the WSSPC website: <https://www.wsspc.org/public-policy/2019-wsspc-draft-policy-recommendations/>.

**Jackson Laboratory Community Resource Day**

On June 27 WSSPC’s Program Manager, Erin MommSEN, attended the Safety Fair at Jackson Laboratory in Sacramento, California. The fair was held in the morning and was open to all employees of the company. Approximately 60 employees visited the WSSPC table to learn more about who we are and what to do before, during and after an earthquake.

In the course of discussions, there were a surprising number of people who still believed that standing in a doorway during an earthquake was the safest place to be. They left the fair with the knowledge of the best action to reduce any chance of injury: to “DROP, COVER, and HOLD ON.”

## NEWS

### **California Bill to Create Public Inventory of Seismically-Vulnerable Buildings**

California Assembly Member Adrin Nazarian along with coauthors Assembly Members Chiu and Reyes introduced Assembly Bill 2681 *Seismic Safety: Potentially Vulnerable Buildings*. The authors found inspiration from the Seismic Resilience Initiative, a working group led by the United States Resiliency Council (USRC) to promote policies and education related to earthquakes and to protect people and the communities they live in.

The bill will require cities and counties in California to create an inventory of buildings that are identified as vulnerable to seismic activity. Single-family homes, duplexes, triplexes and fourplexes would be exempt. Owners would first need to hire engineers to evaluate their building(s), then cities and counties would be required to send their building inventory to the state Governor's Office of Emergency Services (CalOES). CalOES would be instructed to have the information available as a searchable database on their website.

David Khorram, Long Beach's superintendent of Building & Safety and president of the California Building Officials organization is in favor of the bill. He believes it will help current and new elected officials to better understand where their vulnerable buildings are located.

AB 2681 is currently an active bill in the committee process. Once it's passed the tentative deadline for building departments to have inventories ready is 2020.

References:

<http://www.govtech.com/fs/infrastructure/California-Lawmaker-Calls-for-Changes-to-Earthquake-Building-Codes.html>

<http://temblor.net/earthquake-insights/new-california-bill-aims-to-create-a-public-inventory-of-collapse-risk-buildings-6497/>

[https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=201720180AB2681](https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB2681)

There are so many ways to stay connected!

Online- [www.wsspc.org](http://www.wsspc.org)

Twitter- [@WSSPC](https://twitter.com/WSSPC)

Facebook- [www.facebook.com/WSSPC](https://www.facebook.com/WSSPC)

## California Bill to Change Existing Earthquake Building Codes

With a goal to keep new buildings usable after an earthquake, California Assemblyman Adrian Nazarian proposed Assembly Bill 1857 *Building Codes: earthquake safety: immediate occupancy standard* which would require the California Building Standards Commission to increase minimum mandatory standards for the majority of the buildings in the state. The only exemptions to the bill would be single-family homes and duplexes. AB 1857 is an active bill currently sitting with the Senate.

According to Assembly Floor Analysis notes, which were amended April 12, 2018, AB 1857: “Requires the California Building Standard Commission (CBSC) to assemble a working group to investigate and...determine criteria for a “functional recovery” standard following a seismic event for all or some building occupancy classifications. The working group shall direct the CBSC and the Department of Housing and Community Development (HCD) to propose the appropriate building standards for consideration by the CBSC.”

The new bill has support from several different entities to include: Seismologist Lucy Jones, former science advisor for risk reduction with the USGS and the board of the Structural Engineers Association of California (SEAOC). Janah Risha, president of SEAOC, states that when looking at economic survivability the existing minimum building codes are not enough: “What happens to our regional economy when residential buildings cannot be reoccupied, when people cannot go into offices for an extended period of time?”

While the bill has support, there are some who believe that tougher mandatory minimum building codes are not needed for the entire state. The California Building Industry Association, which represents construction companies, is one such group. Bob Raymer, the group’s senior engineer, stated, “I think there is very good merit to having a more stringent standard available for use on a voluntary basis [however], a one-size-fits-all [approach] is probably not appropriate for California.”

Nazarian wants the new building codes to become effective by 2023: this would correspond with a scheduled update of the California Building Standards Code.

### References:

<http://www.govtech.com/fs/infrastructure/California-Lawmaker-Calls-for-Changes-to-Earthquake-Building-Codes.html>

[https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=201720180AB1857](https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB1857)

[https://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill\\_id=201720180AB1857](https://leginfo.legislature.ca.gov/faces/billAnalysisClient.xhtml?bill_id=201720180AB1857)

## Seismological Society of America Briefing on Capitol Hill

On Tuesday, June 19 the Seismological Society of America (SSA) held a public briefing on Capitol Hill—*Forensic Seismology for Situational Awareness: Seismic Monitoring beyond Earthquakes*. Keith Koper, University of Utah geology and geophysics professor and member of the Utah Seismic Safety Commission and Michael West, Alaska state seismologist and director of Alaska’s Earthquake Center presented at the briefing. The briefing highlighted how seismic monitoring and networks are used to address issues beyond just earthquakes. Seismic monitoring is also an essential forensic tool for issues such as industrial accidents and protecting critical infrastructure and facilities. “If it is big enough to shake the earth, seismic monitoring provides a tool to explain why” (SSA).

To read more about the briefing and the presenters, view the invitational flyer [here](#).

## San Francisco Buildings at Risk

While there have been a number of seismic safety accomplishments in San Francisco such as mandating retrofits of soft-story buildings, the city still has a long way to go. Brittle non-ductile concrete buildings, tilt-up buildings and steel moment-framed buildings are also vulnerable to seismic activity. Creating a list of the most vulnerable buildings for each construction type is critical in order to know where to begin retrofits.

In April, a list of 39 steel moment-framed, high-rise buildings in downtown San Francisco was published in *The HayWired Earthquake Scenario* by the U.S. Geological Survey, compiled by the Structural Engineers Association of Northern California in Appendix 12. The list of buildings includes: technology and finance companies, law firms, shopping arcades, at least three major hotels, the headquarters of Pacific Gas & Electric, the San Francisco office of Senator Dianne Feinstein, and the former Bank of America building (one of the city’s tallest).

Steel moment-framed buildings built between 1960 and 1994 had the skeleton of buildings (i.e. the columns and the beams) welded together as opposed to being constructed with rivets and bolts. The technique saved time and money while simultaneously making the buildings more rigid. According to engineers, hundreds of these steel moment-framed buildings of all sizes can be found across the state of California.

### References:

<https://www.nytimes.com/2018/06/14/us/california-earthquakes-high-rises.html>

<http://www.latimes.com/local/lanow/la-me-quake-safety-bay-area-20180422-htmlstory.html>

<https://pubs.usgs.gov/sir/2017/5013/sir20175013iq.pdf>

## Earthquake Emoji

An international steering group has created a competition for an emoji that depicts an earthquake. Other natural hazards have emojis; however, there has never been a universal image for earthquakes. The goal of the competition is to find an image that surpasses both language and culture as a universal symbol.



A good earthquake emoji will incorporate the following:

1. “Evocative: An iconic representation of earthquakes that clearly represents the process and/or effect of earth shaking (e.g. ground shaking, building damage/collapse, etc.).
2. Simple: The design should have as little complexity as possible, so that it will remain easily recognizable even at very small sizes.
3. Universal: It should be easily understood across language and cultures.
4. Distinctive: It should be distinct from any other emoji in the [Unicode](#) list.”

“We need an emoji so we can communicate quickly with much larger groups of people,” said Sara McBride, of the USGS, and a member of the steering group. “People can process pictures faster than words, and not everybody is fluent in English.”

There are currently over 40 submissions with images varying from the Earth cracking open, to houses and people being rattled, to a seismograph tracing. The final decision will be up to popular vote via Twitter, before submitting it to Unicode for acceptance. The entry deadline is July 14. For more information and instructions visit the [#emojiquake website](#).

### References:

<https://www.emojiquake.org/>

<https://www.seattletimes.com/seattle-news/science/could-an-earthquake-emoji-save-lives-experts-seek-a-universal-symbol-for-ground-shaking/>

## PREPAREDNESS

### Los Angeles Earthquake Early Warning App

A long-awaited earthquake early warning mobile system was approved by the Los Angeles City Council Information, Technology and General Services Committee. The Annenberg Foundation funded \$300,000 for the contract with AT&T and the GYRD Foundation to create and deploy the EEW System Mobile Application.

The app will join an existing commercial early warning system in beta development by [EarlyWarningLabs' QuakeAlert](#). Both systems rely on ShakeAlert, developed by the USGS. Using USGS underground sensors, residents will be able to receive mobile phone alerts just before an earthquake occurs.

“By the end of 2018, we will deploy an earthquake early warning system to every corner of [Los Angeles], in schools, at businesses, even on your smartphone,” Mayor Eric Garcetti said. “It will give you a head start when an earthquake is coming — precious seconds that save lives.”

#### References:

<https://losangeles.cbslocal.com/2018/06/19/earthquake-warning-app-shakealert-la/>

<http://www.hub-la.com/news/earthquake-early-warning-system-moves-forward/>

## RESEARCH

### Very Low Frequency Earthquakes (VLFs)

In 2015, Carl Tape, a University of Alaska Fairbanks associate professor of geophysics, installed 13 seismic stations in the Minto Flats, west of Fairbanks, to monitor the area's fault activity. Only nine days after the installation a very low-frequency signal was recorded. A similar event occurred in 2016, but this time it developed into an earthquake. Prior to the M 3.7 earthquake, a 12-hour accelerating sequence of very low frequency earthquakes (VLFs) was recorded along the Minto Flats faults. According to Tape, this kind of low frequency event transitioning into a rupture had previously only been seen in laboratory experiments.

“In some ways, I wish there wasn't anything special. I wish it was a global phenomenon that we discovered, but it's not,” Tape said. “It appears there is something special about the conditions in Minto Flats.” The fault is located along the Minto Flats which has a deep sedimentary basin, strike-slip faulting, active tectonics and deep earthquakes.

Tape, along with his co-authors, wrote *Earthquake Nucleation and Fault Slip Complexity in the Lower Crust of Central Alaska* as a result of their findings; it was published in the journal *Nature Geoscience*.

#### References:

<https://www.nature.com/articles/s41561-018-0144-2>

<https://www.alaskapublic.org/2018/06/07/new-uaf-research-could-help-scientists-develop-an-early-warning-system-for-earthquakes/>

<https://www.sciencedaily.com/releases/2018/06/180605103503.htm>

## PUBLICATIONS

### **Miscellaneous Publication 160: *Active Faulting and Seismic Hazards in Alaska***

Alaska Division of Geological & Geophysical Surveys Miscellaneous Publication 160: *Active Faulting and Seismic Hazards in Alaska* by R.D. Koehler and G.A. Carver represents the first comprehensive compilation of paleoseismic data for Alaska.

The purpose of the report is to “provide guidance for future earthquake research in Alaska, serve as a resource for seismic hazard studies, and complement the Alaska Quaternary fault database.”

The report is organized into eight seismic source regions, and encapsulates the known knowledge of the distribution of active faults and geologic and paleoseismic data across the state, as well as identifies the fact that active faults may exist that have yet to be mapped or haven't produced a significant earthquake. In order to better characterize the seismic hazard and risk in the state of Alaska more detailed paleoseismic investigations along previously identified faults are necessary.

Read the full publication [here](#).



*Image: Figure 17. View to the southwest along the Kaltag fault where it projects along the northern flank of the Kaiyuh Mountains toward the Yukon River floodplain. The trace of the fault is marked by pingos aligned with trees through the center of the photo. Photo taken from GPS coordinate 64.457867°, -157.520967°.*

*continued on page 9*

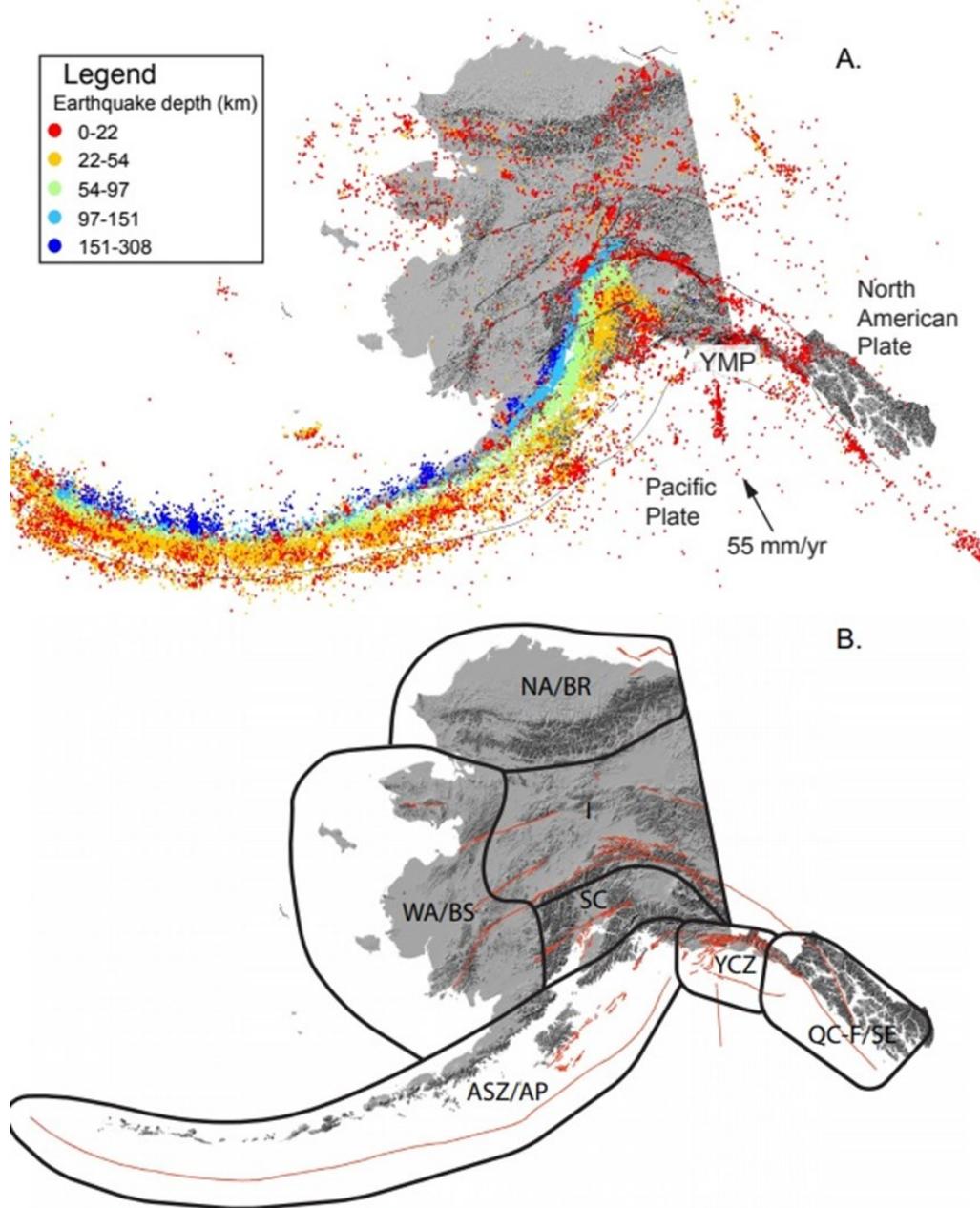


Image: Figure 1. A. Distribution of Quaternary faults in Alaska (black lines) from Quaternary fault and fold database for Alaska (Koehler, 2013; Koehler and others, 2012). Yellow circles denote crustal seismicity from 1980-2011. B. General boundaries of seismic source regions in Alaska used in this paper. Plate boundary source regions include: ASZ/AP = Alaska–Aleutian subduction zone and Alaska Peninsula, QC-F/SE = Queen Charlotte–Fairweather fault and southeastern Alaska, YCZ = Yakutat collision zone. Intraplate seismic source regions include: I = Interior Alaska, NA/BR = Northern Alaska and Brooks Range, SC = South-central Alaska, WA/BS = Western Alaska and Bering Sea. Benioff zone is in the subsurface and is not labeled. Red lines show active faults

## PEOPLE

### WSSPC Welcomes New Members

- Mulivanu Aiumu, NEHRP Project Coordinator, American Samoa Department of Homeland Security

### New USGS Director—James Reilly II



James Reilly was confirmed as the new director of USGS on Monday, April 9. He was formerly a NASA astronaut where he flew on three Space Shuttle missions, logged 856 hours in space, and went on five spacewalks. Prior to working for NASA, Reilly worked as both an exploration and petroleum geologist.

On Tuesday, March 6 a U.S. Senate Committee Hearing took place with its primary purpose being to consider the nomination of Reilly to be the new Director of the USGS. Reilly spoke on several topics, but his primary focus was on scientific integrity, the USGS budget, and the Organic Act of 1879. In response to a question from Senator Maria Cantwell (D-Wash) Reilly stated, “Scientific integrity has got to be a key element of the USGS because, as we mentioned, it’s an independent organization that is designed to deliver unbiased science to the decision makers.” He continued by stating that scientific integrity will be “one of the highest priorities” that he will uphold as director.

The proposed USGS budget for the 2019 fiscal year is \$857.7 million, a cut of 21%.

#### References:

<https://eos.org/articles/usgs-nominee-calls-scientific-integrity-a-high-priority>

<https://www.energy.senate.gov/public/index.cfm/2018/3/full-committee-nomination-hearing-030618>

<http://www.sciencemag.org/news/2018/01/retired-astronaut-picked-lead-us-geological-survey>

## CONFERENCES, WORKSHOPS & EVENTS

### **AEG 61<sup>st</sup> Annual Meeting/13<sup>th</sup> IAEG Congress**

September 17-21, 2018  
San Francisco, California  
<http://www.aegweb.org/mpage/iaeg18m>

### **NEMA Annual Forum**

October 1-4, 2018  
Savannah, Georgia  
<https://www.nemaweb.org/index.php/forums-meetings/save-the-date>

### **Earth Science Week**

October 14-20, 2018

### **Great ShakeOut**

October 18, 2018

### **FLASH National Disaster Resilience Conference**

November 7-9, 2018  
Clearwater Beach, Florida  
<http://flash.org/nationaldisasterresilienceconference/>

### **WSSPC Board Meeting**

November 15, 2018  
Sacramento, California

### **Seismological Society of America (SSA) Annual Meeting**

April 23-26, 2019  
Seattle, Washington

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If you have a newsworthy item for our e-Newsletter, please forward it to  
Erin Mommsen Program Manager at: [emommsen@wsspc.org](mailto:emommsen@wsspc.org)