WSSPC
WESTERN STATES SEISMIC POLICY COUNCIL

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

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In This Issue

WSSPC Annual Meeting and Awards Banquet

WSSPC will hold its 2015 Annual Meeting and Awards Banquet in Pasadena, California on Friday, April 24, 2015. The all day event will be held at the Hilton Pasadena. In addition to the Awards Banquet, the day will include three committee meetings, a WSSPC Board of Directors meeting, and an annual business meeting. The schedule can be found at this link: *http://www.wsspc.org/wp-content/uploads/2015/02/2015_Schedule_rev.pdf*.

Register by April 17th!

It's free to attend the WSSPC annual business and committee meetings, but we require pre-registration to make sure we have allocated sufficient space and materials. If you plan to attend the Annual Awards Luncheon, the cost is $40.00 per person for the catered meal. In order to have your meal guaranteed at the luncheon, registration must be received by April 17, 2015. Registration can be found at this link: *http://www.wsspc.org/programs-events/conferencesworkshops-board-meetings/upcoming-events/*.

Image: Pasadena, California
cityofpasadena.net

The WSSPC Board of Directors have chosen three Awards in Excellence to be recognized at the Awards Luncheon in Pasadena.

Continue to Page 2 to read about them!

http://www.wsspc.org/awards/current-awards/

Join us as we congratulate the 2015 WSSPC Awards Winners!

Overall Award in Excellence for Legislation
Senator Alex Padilla for sponsoring Senate Bill 135, Earthquake Early Warning System.

Former California State Senator Alex Padilla, representing District 20 (parts of Los Angeles and San Bernardino Counties), is the author of S.B. 135 "Earthquake Early Warning System", a bill that requires California to build an earthquake early warning system. Padilla was successful over the course of five months in achieving unanimous approval of the bill by the Senate and Assembly and Governor Jerry Brown's signature on September 24, 2013.

The law requires California Office of Emergency Services, in collaboration with the California Seismic Safety Commission, California Institute of Technology, California Geological Survey, University of California at Berkeley, the U.S. Geological Survey, and other stakeholders, to develop a comprehensive statewide earthquake early warning system that would disseminate earthquake information in support of public safety, emergency response, and loss mitigation.

The cost to build and operate the system for five years is $80 million. The Office of Emergency Services has until January 1, 2016 to identify funding sources other than the State's General Fund. Alex Padilla is now serving as the California Secretary of State.

Award in Excellence for Education Outreach
Prepare Del Norte for their "Tsunami Safe Week".

Prepare Del Norte coordinates training programs including CERT, C.O.A.D. (Del Norte Community Organizations Active in Disaster), D.A.R.T. (Disaster Animal Response Team), and Neighbors Helping Neighbors, coordinates drills and exercises, provides emergency resources (weather, road, earthquake, tsunami information), promotes ShakeOut and Tsunami Week activities, provides detailed community tsunami information and is the Del Norte Coordination point for the Redwood Coast Tsunami Work Group. Details of these programs are found on the Prepare Del Norte web site – *preparedelnorte.com*. The group also maintains a Facebook page *www.facebook.com/DelNorteOfficeOfEmergencyServices* and a twitter account *@PrepareDN*.

Award in Excellence for Multi-Jurisdictional Planning
Alaska Department of Homeland Security and Emergency Management for their Alaska Shield Earthquake Exercise; a full-scale exercise, live test of the ability of State and Federal agencies, local government, and non-governmental entities to respond to a devastating earthquake.

The Alaska Shield 2014 exercise was the capstone event for the *White House*-directed 2014 cycle of national planning and preparedness exercises. The Alaska Shield exercise was a full-scale, live test of the ability of numerous State and Federal agencies (including the military), along with local government and non-government entities to respond to a devastating earthquake affecting a significant area (modeled after the M9.2 1964 Great Alaska Earthquake). This exercise was designed and conducted by the Alaska Department of Military & Veterans Affairs, Division of Homeland Security & Emergency Management (DHS&EM), with the support of FEMA Region X.

Alaska Shield 2014 was a linked exercise intended to improve Alaska's emergency response capacity (individual/organization/interagency), validate the State's, FEMA, Department of Defense, and local community response plans, test interagency coordination; and to explore recovery plans in the face of a catastrophic earthquake.

NEWS

Legislature hears from CalOES on Early Earthquake Warning System

On February 25, 2015, experts from the California Governor's Office of Emergency Services (CalOES), the U.S. Geological Survey (USGS), California Geological Survey and others went before a joint informational Legislative hearing of the Committee on Governmental Organizations to discuss the future of an operational Early Earthquake Warning System. Cal OES Director Mark Ghilarducci expressed that California has a unique set of impacts and risks from earthquakes making it unworkable to just overlay models from other countries onto California. He is confident that California has the best minds to work on this system.

On October 15, 2014, former State Senator Alex Padilla, the sponsor of the 2013 bill S.B. 135 that authorized California to develop an earthquake early warning system, held another informational hearing on the system. The Early Earthquake Warning System will add valuable seconds before the earthquake shaking arrives. While people may think that seconds don't sound like much, it could halt industrial processes or even warn doctors in the middle of an operation. Every second could help to save lives and property in the future.

Image: Mark Ghilarducci, Director of CalOES
CalOES

Reference:

https://caloesnewsroom.wordpress.com/2015/02/25/state-federal-experts-update-legislature-on-status-of-early-earthquake-warning-system-in-california/

House Passes Tsunami Warning, Education, and Research Act of 2015

On January 7, 2015, the House passed H.R. 34, the Tsunami Warning, Education, and Research Act of 2015, a bill introduced by Representative Suzanne Bonamici (D-OR). This legislation "authorizes and strengthens the tsunami detection, forecast, warning, research, and mitigation program of the National Oceanic and Atmospheric Administration (NOAA)." The bill expands the purposes of the Tsunami Warning and Education Act, passed in the wake of the 2004 Indian Ocean tsunami, to enhance and modernize the existing U.S. Tsunami Warning System to increase accuracy of forecasts and warnings, to improve and develop standards and guidelines for mapping and modelling, to improve research efforts for tsunami detection, and foster resilient communities.

The bill went to the Senate where S.B. 533 was introduced February 23, 2015 by U.S. Senator Maria Cantwell (D-WA). The Senate Commerce, Science, and Transportation Committee marked up the bill and it now heads to the full Senate for their consideration. Text of the bill is found at *www.congress.gov/bill/114th-congress/senate-bill/533/text*.

References:

http://community.geosociety.org/blogs/karen-paczkowski/2015/02/06/house-passes-bipartisan-windstorm-and-tsunami-bills

http://www.americangeosciences.org/policy/house-passes-tsunami-warning-education-and-research-act

http://www.gop.gov/bill/h-r-___-tsunami-warning-education-and-research-act-of-2015/

http://www.cantwell.senate.gov/public/index.cfm/2015/2/cantwell-bill-to-strengthen-tsunami-warning-systems-passes-committee

SAVE THE DATE!

May 5-8, 2015

The 2015 National Earthquake Program Managers annual meeting will be held May 5-8, 2015 in Charleston, South Carolina. The meeting is planned for 3 days with an optional field trip on Friday, May 8.

http://eqprogram.net/2015-nepm-meeting/

New California Long Term Earthquake Forecast

The California Geological Survey and partners have revised their scientific estimate for the chances of large earthquakes to happen over the next several decades in California. The Third Uniform California Earthquake Rupture Forecast (UCERF3) incorporates the latest data on California's active geological faults and using new methodology translates the data into the likelihood of an earthquake.

Although UCERF3 confirms many past findings, there are new results. The study suggests that California has an increased probability of occurrence of a magnitude 8 or larger in the next 30 years, up to 7% from previous estimates of 4.7%. According to U.S. Geological Survey scientist Ned Field, the new likelihoods are due to the inclusion of simultaneous multi-fault ruptures.

UCERF 3, in a re-evaluation of probabilities for magnitude 6.7, the size of the 1994 Northridge earthquake, has decreased the likelihood by about 30%. The annual frequency has dropped from an average of one per 4.8 years to about one every 6.3 years.

The organizations that partnered with the California Geological Survey to contribute to UCERF3 are the U.S. Geological Survey, Southern California Earthquake Center, and the California Earthquake Authority.

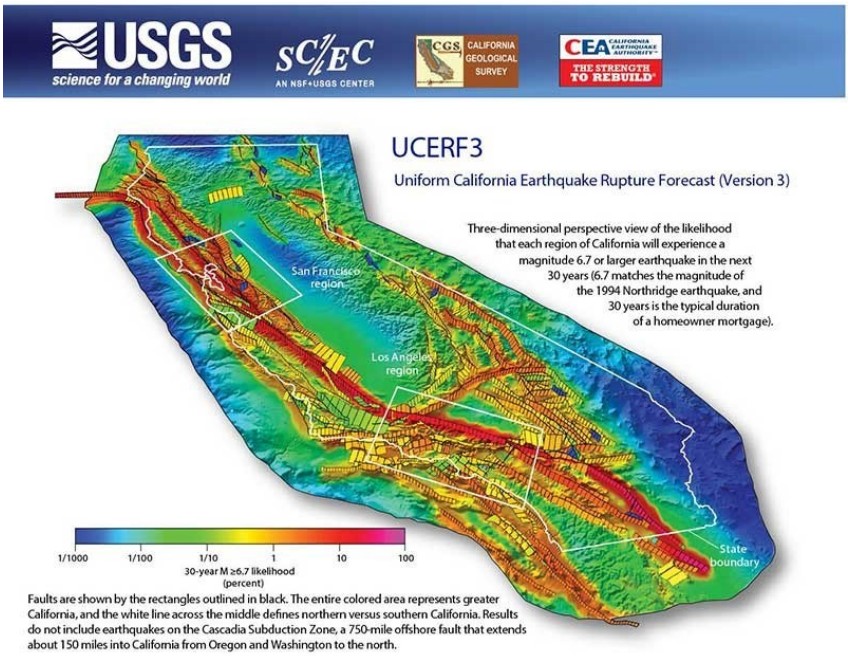

Image: Uniform California Earthquake Rupture Forecast (Version 3)
USGS

References:

http://www.usgs.gov/newsroom/article.asp?ID=4146&from=rss#.VQITDdLF98k

http://www.consrv.ca.gov/cgs/geologic_hazards/earthquakes/Pages/UCERF3.aspx

California Hospitals Not Ready for Earthquakes

Forty four years after the M 6.7 earthquake in San Fernando, California that damaged the Olive View Hospital and killed 4 people there, and prompted legislators to pass a law requiring that acute care hospitals be designed and constructed to withstand a major earthquake and remain operational afterwards, many hospitals in California have not made the required upgrades to their buildings.

Hospitals are rated for structural earthquake safety in 5 categories - SPC-1 through SPC-5. In the category of SPC-1 are buildings that have a significant risk of collapse, while SPC-5 buildings are deemed capable of providing service after an earthquake. All acute care facilities, those that provide emergency services and acute short-term care, are required to operate at SPC-2 level or higher by 2020. By 2030, all hospitals must meet the SPC-5 requirement of staying open and remaining operational.

A similar ranking system is used for non-structural hazards NPC-1 through NPC-5, based on anchorage and bracing of nonstructural components.

In the San Francisco Bay Area, one third of the acute care hospitals (29 out of 84) are rated collapse hazards during a strong earthquake and have not yet met the 2020 deadline. More than 50 percent have not met the 2030 deadline.

Image: Alta Bates Hospital in Oakland
Alta Bates Summit Medical Center

Reference:

http://www.nbcbayarea.com/investigations/Bay-Area-Hospitals-Earthquake-Preparedness-290796871.html

http://oshpd.ca.gov/FDD/seismic_compliance/SB1953/SeisPerfRatings-v3-2.html

Seismic Retrofit Grants offered in Three California Cities

Homeowners in Oakland, San Francisco and San Leandro were eligible to apply for up to $3,000 for seismic retrofitting by February 15, 2015. These three cities were chosen because they have many older homes and their building codes include a Standard Plan Set for residential seismic retrofitting. The California Earthquake Authority's Residential Mitigation Program's Earthquake Brace + Bolt program is designed for pre-1979 homes that aren't bolted to their foundations, are built atop a crawl space and have unbraced walls surrounding the crawl space. The $3,000 grants will be awarded to up to 575 qualifying homeowners. Single-family houses that have been retrofit are eligible for a 5% discount on their earthquake insurance.

References:

http://www.contracostatimes.com/breaking-news/ci_27328726/seismic-retrofit-grant-offered-oakland-san-leandro-san

http://www.earthquakeauthority.com/yourearthquakerisk/Pages/Strengthen-Your-Home.aspx

Oregon Schools Receive Seismic Retrofit Grants

Infrastructure Finance Authority, a division of Business Oregon, Oregon state's economic development agency, recently named 12 school districts and one community college in Oregon that will receive grants to seismically rehabilitate elementary schools, high schools, and gyms. Forty six applications were received in this round of funding requesting $45 million; the approved projects were awarded nearly $15 million.

Bandon School District, one of the successful applicants, will receive $824,496 to correct structural deficiencies in the high school. Parents in the school district had been vocal in expressing their concerns about safety of their children in the event of a Cascadia Subduction Zone earthquake. While the funds do not cover retrofitting all the buildings, Superintendent Diane Buche is confident that more funding will be granted because the state has made seismic retrofits of schools and other public buildings a priority.

Reference:

http://theworldlink.com/bandon/news/bandon-school-district-receives-k-seismic-retrofit-grant/article_79f7c76a-e295-5557-a5aa-8c075df3958b.html

California Coast Tsunami Cleanup Initiative

The California Coastal Commission is partnering with organizations in California coastal counties to mobilize volunteers to help clean up tsunami debris that continues to wash up on shore from the 2011 Japan tsunami. Starting in 2013, the Tsunami Debris Cleanup Project calls for cleanups to occur in each coastal county in each quarter. As the cleanup occurs, volunteers are asked to collect data on the types of debris expected to have come from Japan. The Commission hopes the data will provide trends on the debris location, amount and impact. A calendar of events is provided on their website.

Image: Urethane foam pictures taken August 27, 2012 near Beach River on Montague Island.
Alaska Department of Environmental Conservation

Image: Cleaning up Ocean Beach in San Francisco
California Coastal Commission

References:

http://www.sanluisobispo.com/2015/01/22/3454105/tsunami-cleanup-set-for-saturday.html

http://www.coastal.ca.gov/publiced/jtmd/calendar.html

Court Rules Driving School in Japan Responsible for Student Deaths

A Sendai, Japan driving school was found culpable in the deaths of 26 people, 25 of whom were students, who died in the 2011 tsunami. The district court ordered Joban-Yamamoto driving school to pay $16.2 million dollars in compensation to surviving family members. The magnitude-9.0 Tohoku Earthquake struck at 2:46 PM on March 11, 2011, and almost an hour later the driving school began driving students home. Twenty three students were overcome by the tsunami en route, 2 students who returned to the school after driving practice were swept away while walking home, and a part-time worker at the school also died.

Presiding Judge Kenji Takamiya and the rest of the court determined that most of the students were helpless in the situation. They were unable to evacuate on their own without using the vehicles of the driving school. The school had an obligation to ensure that the students had safely evacuated, even after their lessons were completed. The plaintiffs included 46 surviving family members of the 25 students and 2 next of kin to the part time worker. Students ranged between 18 -19 years old and the part time worker was 27 years old.

Reference:

http://ajw.asahi.com/article/0311disaster/quake_tsunami/AJ201501140038

Tsunami Buoy Found on Oregon Beach

On November 7, 2014, a tsunami warning buoy broke free of its mooring off the northern coast of California. On December 28, 2014, the buoy was found on Lincoln City Beach in Oregon, 800 miles away. This 2.6 meter buoy was part of a the DART II (Deep Ocean Assessment and Reporting of Tsunamis) tsunami warning network operated by the National Oceanic and Atmospheric Administration.

The loss of mooring is just one of the many problems plaguing the reliability of the DART buoy system. The 2010 National Research Council's Tsunami Warning and Preparedness report cited only 60% of the buoys deployed in 2008 were working within the year. The current operational status of the buoy system indicates that of the 1275 stations deployed, only 930 were reporting, a performance of 73%. Even with 100% reliability, the warning messages received for a locally generated tsunami would not provide enough warning time for coastal visitors to evacuate safely and in time.

Image: Tsunami early-warning buoy found on Lincoln City Beach
Shiana Weaver

References:

http://www.newportnewstimes.com/v2_news_articles.php?heading=0&story_id=46564&page=86

http://www.ndbc.noaa.gov/obs.shtml?lat=36.879621&lon=-180.000000&zoom=3&type=h&status=r&pgm=&op=&ls=false

http://www.technologyreview.com/view/423280/the-reliability-of-tsunami-detection-buoys/

Tohoku Tsunami Wave Heights Boosted by Landslide

During the Tohoku earthquake in 2011, one stretch of the Japanese coast at Sanriku saw tsunami waves up to 4 times higher than adjacent parts of the coast where waves averaged about 10 meters. To explain this, researchers theorize that the magnitude 9 earthquake may have triggered a submarine landslide contributing to the extreme height.

Reference:

http://www.earthmagazine.org/article/tohoku-tsunami-may-have-gotten-boost-submarine-slump

RESEARCH

Seismic Experiment at CenturyLink Field

Image: CenturyLink Field espn.go.com

Scientists from the Pacific Northwest Seismic Network (PNSN) once again monitored the Seahawks games to test their equipment in preparation for the development of an earthquake early warning system. In 2011, scientists first noticed their seismographs shaking during a playoff game when running back Marshawn Lynch broke eight tackles and ran 67 yards during a 13-second play. The reaction of the fans jumping, clapping, and stomping lead to a magnitude 1 or 2 earthquake called the "Beast Quake".

To get a better idea of what could be recorded if the instruments were right in the stadium, PNSN Network Director John Vidale and his team of scientists installed three instruments, two in the stands and one alongside the playing field. One of the new instruments called "QuickShake" was designed to provide a display of vibrations within three seconds. An annotated view of the game is shown below and much more analysis is found on Steve Malone's blog on the PNSN website *www.pnsn.org*.

References:

http://www.mercurynews.com/sports/ci_27288955/seahawk-fans-earthquake-be-used-seismic-experiment

http://mynorthwest.com/11/2686837/Seismologists-see-activity-for-Chancellors-touchdown-Shermans-interception

http://pnsn.org/blog/2015/01/19/packers-versus-seahawks-game-analysis-too-exciting

Slow Earthquakes Under Unalaska

While collecting data on neighboring Akutan Island, a geophysicist noticed the tell-tale tremor of a slow quake under Unalaska. Abhijit Ghosh, an assistant professor of geophysics at the University of California Riverside, worked with other scientists from the U.S. Geological Survey, University of Wisconsin Madison, and the Alaska Volcano Observatory and set up seismic arrays on Unalaska. Slow earthquakes are low frequency slow tremors that can last for weeks to months to years at a time. Studies are now being conducted underneath the Aleutians for these slow earthquakes. These slow earthquakes release the energy of large magnitude earthquakes over a long period of time which makes it so we don't feel them.

The idea of slow quakes only date back about a decade, so there is not a lot of evidence collected at this time. One of the cases where there was evidence of a slow quake occurring was in Japan just before the 2011 Tohoku earthquake in 2011. Ghosh will return to Unalaska this summer to retrieve the first year's seismic data.

Reference:

http://www.ktoo.org/2015/01/21/experiment-looks-slow-earthquakes-unalaska/

Washington Simulator Helps Authorities Manage EQ Aftermath

Image: example of the port simulator
Simudyne

A new simulator in Washington will help authorities decide how to manage the aftermath of an earthquake or tsunami on their ports.

The simulator, very similar to the Sim City computer game, is based 30 days after a quake hits. Authorities can see the damages that occurred and then make decisions on how to allocate resources. In addition, the simulator looks at how cash flow issues can affect the recovery taking into account how revenue and expenses of business will be affected, how long it will take insurance policies to arrive, and reconstruction costs. The program's overall goal is to find the quickest and most efficient way to recovery.

The program, funded by FEMA's Port Security Grant Program and Dynamis Inc. (a disaster planning firm), looks at ports in Seattle, Tacoma, Olympia, and Everett. Simudyne, the simulator creator, believes this program "gives policymakers an incredible environment to safely test their response strategies." Similar to the computer game the program has color maps, and pop up icons to signify key assets to the ports.

Reference:

http://www.citylab.com/tech/2014/10/heres-one-way-earthquake-prone-cities-are-thinking-ahead/381715/

Tide Levels Key to Tsunami Impacts in the Columbia River

According to scientists at Oregon State University, depending on the tide, communities inside the Columbia estuary could experience drastic impacts from an offshore Cascadia earthquake and tsunami. Scientists believe a magnitude 9 earthquake and tsunami that hit during the highest tides of the year would tend to do the most damage. The lowest runup of a tsunami wave generally occurs at high tide, but its overall flooding impact is the greatest because the tide is already high. At the mouth of the river, water could rise as much as 13 feet and almost 7 feet within a few miles of Astoria. Once the tsunami travels inland 50 miles near Longview, no effects are anticipated to be measureable.

The study looked at subsidence caused by the tsunami, the hydrodynamics and impacts generated by different scenarios. David Hill, as Associate Professor of Civil Engineering at Oregon State University, said they were surprised to learn that the volume of river flow did not matter that much.

Reference:

http://www.chinookobserver.com/co/local-news/20150224/osu-tide-level-key-to-tsunami-impacts-within-estuary

Fault Iridescence

In Utah's Wasatch Fault Zone, iridescence that appears on rock surfaces wasn't understood until recently. New research indicates that the iridescence is on fault surfaces that are subjected to flash heating from friction. These spots are able to provide clues to ancient seismic events.

Reference:

http://www.earthmagazine.org/article/seismic-friction-causes-fault-iridescence

There are so many ways to stay connected!

Online: wsspc.org

Twitter: @wsspc

Facebook: facebook.com/wsspc

HAZARD MITIGATION & PREPARDNESS

District of North Vancouver Creates Hazards App

The District of Vancouver built an app to help educate their community about the various natural hazards located around them. Users are able to zoom in on specific areas to see what hazards may be nearby. The website states that it is a broad overview of the hazardous areas; data collection and risk assessments are ongoing and new information gets updated periodically.

Reference:

http://www.geoweb.dnv.org/applications/hazardsapp/

RESILIENCE & RECOVERY

Stanford's Earthquake Resistant House

On the 25 year anniversary of the 1989 Loma Prieta earthquake last year, Stanford University unveiled an innovative house designed to withstand a comparable size earthquake. The house, tested on a shake table, had 2 unique features. First, it was built on 12 plastic and steel seismic isolators about 4.5 inches in diameter. As the shake table shook the building, the house withstood three times the intensity of the Loma Prieta earthquake and then settled back into its original position. Second, they constructed the house with a unibody design whereby every element of design and construction contributed to its strength. Everything remained intact, including the test furniture in the house.

Modifications to existing houses come at a very reasonable price, and for an additional $10,000-$15,000 and 4 extra days of labor, contractors can add seismic isolators and a unibody system to a new 1500-2000 square-foot house.

References:

http://www.newindianexpress.com/education/student/Stanfords-Bid-to-Save-its-Houses-from-Earthquakes/2014/10/20/article2486509.ece

http://nees.ucsd.edu/projects/2014-seismically-isolated-unibody/

Construction Begins on First Tsunami Vertical Evacuation Structure in North America

In Westport, Washington, construction for a school building that also serves as a vertical evacuation structure for tsunamis was started this past January. The Ocosta Elementary School and Tsunami Safe Haven structure is a 30-foot tall gymnasium that can hold 1,000 people on the rooftop platform that is about 55 feet above sea level. It is the first of its kind in North America and is the culmination of efforts spanning 18 years. The coast of Washington is so close to the Cascadia Subduction Zone that if an earthquake occurred, a tsunami would hit the shoreline in 20-30 minutes. Voters in the small school district approved the $14 million bond in 2013 to make the tsunami evacuation building possible, and completion is planned for the 2015-2016 academic year.

Image: Ocosta School Evacuation Building thedailyworld.com

References:

http://phys.org/print333112566.html

http://www.komonews.com/news/local/Coastal-community-breaks-ground-on-tsunami-proof-school-288772101.html

PEOPLE & TRANSITIONS

Dr. James Davis receives the Ian Campbell Medal

The American Geosciences Institute honored Dr. James "Jim" Davis with the Ian Campbell Medal for advancing earthquake hazards preparedness and mitigation in the U.S. His service and dedication to earth sciences and earthquake loss reduction policies has shaped communications to the public about the seismic environment. He served as the State Geologist of New York for 10 years and was the longest running State Geologist of California serving 25 years. Jim also served on the WSSPC Board before his retirement. Congratulations Jim!

Brad Richy, New WSSPC Board Member

Idaho Bureau of Homeland Security Director, William B. "Brad" Richy is our newest WSSPC Board Member. He has been in his position with Idaho since July 23, 2012. He also serves as Commander, 124th Fighter Wing, Gowen Field, Boise, Idaho, and in January Richy received a promotion to Brigadier General. Welcome to WSSPC!

McConnell appointed Executive Director of GSA

Oregon State Geologist Vicki McConnell has been appointed the Executive Director of the Geological Society of America. Her position is effective as of April 1, 2015. Along with being the State Geologist of Oregon and the Executive Director of the Department of Geology and Mineral Industries (DOGAMI), appointments by the Governor that she has held for the past decade, she served on the WSSPC Board from 2008-2014. Congratulations Vicki!

Berry named Colorado State Geologist

Karen Berry has been appointed Colorado State Geologist and Colorado Geological Survey Director. Prior to this, she served as interim director of the Colorado Geological Survey since 2013. We wish you well in your new position!

New Mexico Emergency Management has a New Director

M. Jay Mitchell, a fifth generation New Mexican, retired from the United States Air Force as a Colonel after more than 26 years of service and took the helm of the New Mexico Department of Homeland Security and Emergency Management as Cabinet Secretary-Designate. Welcome to WSSPC!

Karen McNally Dies at Age 74

Noted seismologist and geophysicist, Karen McNally passed away on December 20, 2014 at the age of 74. She was a leading authority on earthquake mechanisms and risk assessment. She was a professor emeritus of Earth Sciences at the University of California, Santa Cruz.

CONFERENCES, WORKSHOPS & EVENTS

APRIL IS:

2015 ACEHR (NEHRP Committee) Annual Meeting
April 9-10, 2015
Gaithersburg, Maryland
For additional information: *http://nehrp.gov/pdf/ACEHRFRNDec2014.pdf*

2015 Partners in Emergency Preparedness Conference
April 14-16, 2015
Tacoma, Washington
For additional information: *www.cm.wsu.edu/ehome/index.php?eventid=25597&*

2015 Preparedness Summit
April 14-17, 2015
Atlanta, Georgia
For additional information: *http://preparednesssummit.org/2015-preparedness-summit/*

2015 Seismological Society of America Annual Meeting
April 21-23, 2015
Pasadena, California
For additional information: *www.seismosoc.org/*

2015 WSSPC Annual Meeting & Awards Banquet
April 24, 2015
Pasadena, California
For additional information: *www.wsspc.org/*

National Earthquake Program Managers Meeting
May 5-8, 2015
Charleston, South Carolina
For additional information: *http://eqprogram.net/2015-nepm-meeting/*

Spring AGI Member Society Council Meeting
June 1, 2015
Denver, Colorado
For additional information: *www.americangeosciences.org/events/*

2015 AASG Annual Meeting
June 13-18, 2015
Flagstaff, Arizona
For additional information: *www.stategeologists.org/upcoming_meetings.php?id=241*

2015 Annual Natural Hazards Center Meeting
July 19-22, 2015
Broomfield, Colorado
For additional information: *www.colorado.edu/hazards/workshop*

2015 AEG Annual Meeting
September 19-26, 2015
Pittsburgh, Pennsylvania
For additional information: *www.aegweb.org*

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If you have a newsworthy item for our e-Newsletter, please forward it to Michelle Bates, Program Manager at: *mbates@wsspc.org*