U.S. Geological Survey Highlights at 2017 AGU Fall Meeting

Monday, December 11, 2017

Undersea Methane Seeps on U.S. East Coast
OS11B-1133: Natural gas sources from methane seeps on the Northern U.S. Atlantic Margin
A comprehensive analysis of gas samples collected from near-seafloor methane seeps constrains natural gas origins on the U.S. Atlantic margin.
John Pohlman, 8:00 a.m. - 12:20 p.m., Convention Center Poster Hall D-F

Earthquake Cycles at Major Faults Defined
T11E-06: Segmentation and Supercycles: A Catalog of Earthquake Cycle Complexities from the Sumatran Sunda Megathrust and Other Well-Studied Faults Worldwide (Invited)
We divide earthquake cycle patterns into four major classes, each having different implications for seismic hazard and fault mechanics. The resulting catalog of seismic cycle observations provides a basis for exploring and modeling root causes of fault rupture segmentation and cycle behavior. Researchers should expect to see similar behavior styles on other major faults around the world.
Belle Philibosian, 9:15 - 9:30 a.m., CC Rooms 211-213

Micro-Earthquakes at Oroville Dam, California
S12A-06: Microseismic Events Associated with the Oroville Dam Spillway
On 14 February 2017, two small earthquakes occurred near Oroville Dam in the Sierra Nevada foothills, California. Scientists examined possible causal relationships between these events and reservoir operations, including the spillway failure starting prior to these events. More than 30,000 smaller-magnitude events that were similar in character to the February 14 events were identified. These events are located in proximity to the Oroville spillway and occurred closely in time that strongly correlate with the periods of spillway discharge. These events might have been induced by rapid changes in pore pressure along a fracture (or fractures) near the spillway. The inferred repetitive opening and closing of the fracture(s) occurred long before any damage to the spillway and is thus probably not directly associated with spillway failure in February 2017. These events were not related to the 1975 ML 5.7 earthquake sequence that may have been induced by the filling of the Oroville reservoir.
Robert Skoumal, 11:35 - 11:50 a.m., CC Rooms 220-221

Protecting the Power Grid during Magnetic Storms
SA12B-08: Calculating Realistic Voltages across the US Power Grid Utilizing Measured Impedances and Magnetic Fields
Space weather can induce significant electric fields in Earth’s subsurface that can adversely affect electric power grids. The voltages generated in the electric power grid for several historic geomagnetic storms, combined with other data, can help identify which power lines are most
vulnerable and assist power companies investigating where to install additional protections in their grid.

Greg Lucas, 12:06-12:20 p.m., CC Rooms 252-254

Interconnected Faults
S13E-01: Seismic Hazard Analysis on a Complex, Interconnected Fault Network (Invited)
Large earthquakes often break more than one fault. Not all of these faults may be identified or studied prior to the occurrence of the earthquake. Scientists discuss how to build models of earthquake occurrence that take into account both what we know and what we do not know about the fault network.

Morgan T Page, 1:40 - 1:55 p.m., CC Rooms 220-221

Induced Seismicity in Kansas
S13D-03: Foreshocks and Swarms of Induced Seismicity in Southern Kansas
Scientists analyze groups of manmade seismicity in southern Kansas, and focus on how the sequences change in time in order to determine whether these groups of earthquakes behave like natural earthquakes, which typically have the largest earthquake followed by a jump in earthquakes, declining with time after the biggest earthquake. Many induced earthquake sequences have been seen to behave differently than natural earthquakes. Scientists are also exploring how oil and gas operations affect the behavior of these sequences, specifically whether distance plays a role in the timing and size of these earthquakes.

Justin L Rubinstein, 2:10 - 2:25 p.m., CC Rooms 217-219

Berry Important Project to Understand Yukon-Kuskokwim Resources
C13H-05: Yukon-Kuskokwim Delta Berry Outlook: Co-Producing Knowledge to Better Understand Changing Resources
Berries are an important subsistence resource for Alaska Natives and the large migratory bird population in the Yukon Delta National Wildlife Refuge. Understanding berry resources is essential for human and bird populations and important to communities and land managers alike. This study used local observations and knowledge combined with ecological data to better understand changes in this valuable resource.

Nicole Herman-Mercer, 2:40-2:55 p.m., CC Rooms 275-277

California Seafloor Mapping
OS14B-05: The California Seafloor Mapping Program — Providing science and geospatial data for California’s State Waters
New geospatial datasets have been collected in California’s State Waters Comprehensive seafloor and coastal maps and data are publicly available New maps and data address a large range of environmental and geohazards issues Success achieved through partnerships and leveraging of resources.

Samuel Y. Johnson, 5:00 - 5:15 p.m., CC Rooms 275-277