

Haiti, Chile earthquakes registered in water well

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University of Nebraska-Lincoln scientists say that recent earthquakes in Haiti and Chile temporarily affected groundwater levels in Nebraska.

The hydroseismic activity—the effect that seismic waves have on groundwater—likely would have been missed if not for a decades-old instrument.

Jesse Korus checked the water well near Aurora March 2 and found a minor excursion, or spike, in the water levels chart corresponding to the Feb. 27 earthquake in Chile, and another corresponding to the Jan. 12 earthquake in Haiti. Korus is the groundwater resources coordinator in UNL's Conservation and Survey Division, part of the School of Natural Resources.

The Aurora well contains a strip chart recorder, technology dating to the 1930s that uses pen and ink connected to a floating bobber. When the surface of the water moves, the motion is translated from the bobber to a pen moving along a strip of paper. Groundwater level changes in response to earthquake activity are called hydroseisms. Most of the equipment measuring groundwater in Nebraska has been replaced with digital monitors which, because they are not set to continuously monitor levels, are less likely to record such hydroseisms, said Korus.

Major earthquakes in the past also have registered on the Aurora well equipment, such as the 2004 Indian Ocean earthquake and resulting tsunami. Connected to the sand and gravel layers of the High Plains Aquifer, the Aurora strip chart recorder has recorded deep and distant earthquakes, while missing local seismic events.

“The significance is that this is something that needs to be researched,” said Matt Joeckel, associate professor of geology in the School of Natural Resources and the Department of Geosciences.

“Here in Nebraska it affected water levels in some wells,” said Mark Burbach, associate geoscientist at SNR. “For others the connection could be more personal, affecting family members or business interests. It is a reminder that what happens around the world affects all of us.”

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