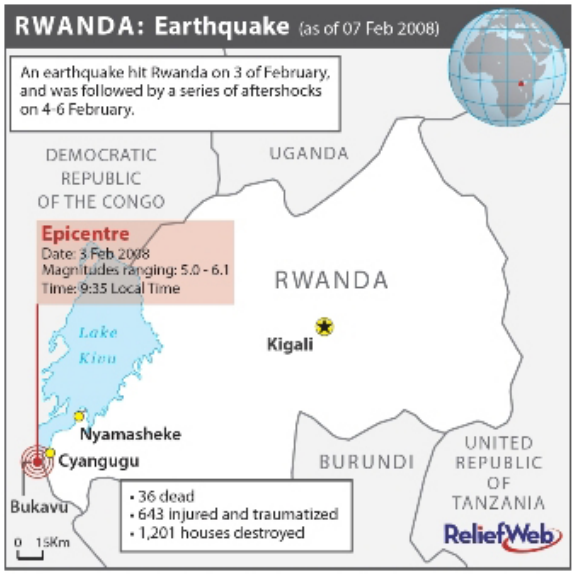
### Learning from Earthquakes

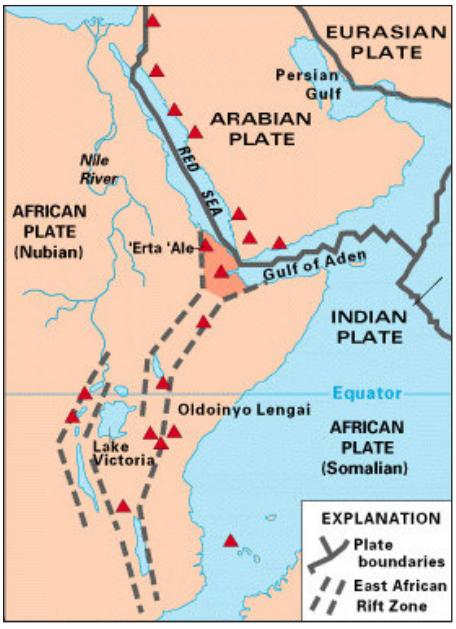
## February 3, 2008, Lake Kivu Earthquake

A magnitude 5.9 earthquake struck the south end of Lake Kivu (2.314°S 28.896°E) between Rwanda and the Democratic Republic of the Congo at 07:34:12 (UTC) on February 3, 2008.The earthquake occurred on the East African rift system, which is a 3000-km-long zone of crustal extension that passes through eastern Africa from Djibouti and Eritrea in the north to Malawi in the south. It is the boundary between the Africa plate on the west and the Somalia plate on the east. The Africa and Somalia plates are spreading apart at a rate of about four millimeters per year.




*Location of February 3 earthquake.*

The geologic basin containing Lake Kivu was created by normal faulting similar to that which produced this earthquake. The largest earthquake to have occurred in the rift system since 1900 had a magnitude of about 7.6. The epicenter of the February 3 earthquake is close to the epicenter of a magnitude 6.2 earthquake that killed two people in Goma in October 2002. Earthquakes within the East African rift system occur as the result of both normal faulting and strike-slip faulting.




*East African Rift Zone.*

Collapsed buildings caused many deaths and injuries in southern Rwanda. The earthquake killed at least 44 people and injured hundreds across the Great Lakes region. At least 25 people were confirmed dead in Rwanda, with a further 200 seriously injured. Ten people were killed when a church collapsed in the Rusizi District of West Province in Rwanda.

In the Democratic Republic of Congo, at least five people were killed and 149 seriously injured. The earthquake was felt in Burundi, (causing an electric power outage) and as far as the Kenyan capital of Nairobi.

## February 21, 2008, Wells, Nevada, EQ

A magnitude 6.0 earthquake occurred NE of Wells, Nevada (41.153°N, 114.867°W) at 7:16 AM PST on February 21, 2008. It occurred on an unidentified north-south normal fault with a dip of 30-60 degrees. The USGS revised the location to an area where geologically young faulting is poorly expressed. The USGS Quaternary Faults and Folds Database describes a network of widely distributed faults west of Wells Peak. Based on the revised location, the distribution of several aftershocks, and the depth of the mainshock, it is difficult to associate the earthquake with a specific fault.

One of the most significant sequences of earthquakes in the western U.S. occurred in Nevada during the first half of the 20th century. The sequence started in 1915, when a magnitude 7.1 earthquake occurred in Pleasant Valley south of Winnemucca. The sequence culminated with a series of four major earthquakes that ranged in magnitude between 6.6 to 7.1 in 1954 in the vicinity of the Carson Sink and Dixie Valley. This sequence of earthquakes defines the Central Nevada Seismic Belt.

The geologic expression of normal faults north of Wells indicate relatively low long-term rates of activity, but this event demonstrates that these faults remain active and have the potential to generate sizeable earthquakes. The geologic expression of normal faults northeast of Wells is similar to hundreds of other faults throughout the Basin and Range Province of the western United States.

At least three people were injured, over twenty buildings heavily damaged, and almost 700 buildings slightly damaged by the earthquake. Todd Stefonowicz of the Nevada DOT reports only one bridge with

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