

Earthquakes in Nicaragua 2014

History of earthquakes in Nicaragua

After the destructive 1972 earthquake in Managua seven relevant seismic crises have occurred in the volcanic arc.

This seismicity is very limited in space and time, with hundreds of small earthquakes in a few weeks; some of these earthquakes exceeding magnitude 5.

We can mention the following seismic crisis in this area of the volcanic arc, measured in Richter Magnitude

-1972: Sequence with a destructive event by 6.2 magnitude earthquake in Managua.

-1985: Seismic Swarm in the vicinity of Rivas. Greater magnitude 5.5 event.

-1998: Seismic Swarm in Ticuantepe; main shock below 5 of magnitude.

-1999: Extensive seismicity started in Cerro Black then spread to the Rota and Momotombo volcanos. There was an eruption of Cerro Black and earthquakes magnitude 5 that damaged houses with a poor construction.

-2000: In July, we had two major earthquakes; one of 5.4 in the Laguna de Apoyo and another earthquake of 5.2 in Masaya. At both events there were 05 dead people. Destruction of houses in Masaya and other cities near the Laguna de Apoyo.

-2001: Seismic Sequence in Chiltepe Peninsula and volcanic complex Apoyeque; minor structural damage in Ciudad Sandino.

-2005: Seismic Sequence on Ometepe Island with large area of earthquakes at Lake Cocibolca.

-2014: Seismic sequence with a destructive event of 6.2 magnitude, earthquake in Nagarote Mateare (near Managua).

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Date: April 10th, 2014. At: 17:27 UTC-6

Magnitude 6.2 Richter magnitude.

Depth: 10 kilometers (6 mi)

Length: 45 seconds

Affected areas: León and Managua.

The 2014 Nicaragua earthquake was an earthquake of 6.2 on the seismic magnitude scale, which shook Nicaragua at 17:27 local time (23:27 UTC) on Thursday, April 10th 2014. According to the Nicaraguan Institute of Territorial Studies (INETER), it was centered southwest of lake Managua, specifically within 5 kilometers east of Nagarote, and at a hypocentral depth of 10 km.

The earthquake lasted about 45 seconds and was felt in Nicaragua, Honduras, El Salvador, Guatemala and Costa Rica. Mateare and Nagarote were the municipalities that most concentrated damage.

It is one of the strongest earthquakes recorded in Nicaragua after the devastating 1972 earthquake.

The next day, at 14:29 local time on April 11th, another major quake originated with 6.6 magnitude, 18 kilometers south of Nandaime and 135 kilometers deep. It was felt on the Pacific coast of Nicaragua, Costa Rica and El Salvador, but the possibility of a tsunami was discarded.

Until 22 April, more than 466 aftershocks were recorded in the vicinity of Lake Managua and Chiltepe Peninsula, plus thousands of micro earthquakes throughout the epicentral area. The most important was a 5.6 magnitude earthquake occurred at 23:07 local time on April 14, one mile south of the volcano Apoyeque and 5.4 kilometers deep.

One of the aftershocks, of magnitude 2.2 occurred on April 13 at 16:38 local time, south of Lake Managua and 9 kilometers deep, caused concern among experts, as it may enable the fault that caused the earthquake in 1972.

Effects

After the earthquake, the National System for Prevention, Mitigation and Attention to Disasters (SINAPRED) decreed "yellow alert" for the departments of León and Managua, which then increased to "red alert" for the other departments in the Pacific of Nicaragua (Carazo, Chinandega, Granada, Masaya and Rivas), and subsequently declared "maximum red alert" throughout the national territory.

Preventively, the whole country was without electricity supply, then the service was restored at night of April 10 without difficulty, except for some problems in equipment and substations El Periodista and Nagarote.

Schools of primary, secondary and university departments in Managua and León were suspended immediately. Work activities were suspended in government institutions whose buildings date back to before the 1972 earthquake.

A total of 2,354 houses were totally or partially damaged product to the main earthquake and its aftershocks in the departments of Managua, Leon, Granada, Carazo, Madriz and Boaco.

Damage was also reported in churches, schools, health centers and temples in Quezalguaque and Telica in León. One fatality was reported, a 36-year-old woman because of heart attack and 37 injured in varying degrees.

Ruins of León Viejo, declared World Heritage Site by UNESCO on December 2, 2000, also suffered substantial damage.

On April 14th, residents of the area Xiloá-Apoyeque observed a regression of 16 meters of Lake Managua in a length of 500 meters on the beach that caused a decrease in the lake level of about 40 centimeters, also changes in the temperature of both air and water. However, there is no scientific evidence of a possible volcanic eruption in Momotombo and Apoyeque under these circumstances.

Thanks to the field work of emergency agencies, a failure was identified that is born in the epicenter of the earthquake and extends along 20 kilometers north-east, in Xolotlán lake, across the island Momotombito.

Furthermore three other smaller parallel faults were detected in the bottom of the lake going from west to northwest: one close to Momotombo volcano and two

more to the south, one of them going through the volcano Apoyeque. Using GPS logs, it was determined land displacements of up to 4 centimeters to the southeast.

Recommendations

The following recommendations were summarized by the Working Team of the Government on April, 18th, 2014 in Managua, Nicaragua:

1. Keep all measures of prevention and monitoring established by our Government as part of the Red Alert, whose main objective is the preservation of life.
2. Establish a monitoring station with all the necessary equipment for monitoring Apoyeque Volcano and other volcanoes.
3. The Nicaraguan Institute of Territorial Studies (INETER) has done an excellent job on the Registration and Monitoring of geophysical events in the country, however, it is necessary to significantly increase the research to generate more knowledge about our seismic risk.
4. Maintain and develop the communication and exchange, and Fraternal Solidarity with governments, agencies, and experts from other countries, to advance on the analysis and incorporation of significant technical and technological capabilities to expand the Preventive Security, Climate, Earthquake and Volcanic consistent with a country of high vulnerability and risk, such as Nicaragua.

Information from: El Nuevo Diario, Hoy Newspaper, <http://nuevaya.com.ni>, INETER website.

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*Chinandega, Nicaragua.
22 of April 2014.*