

PRESS RELEASE**24 August 2016**

Crucial to improve competence in seismic design codes

On August 24, 2016, NORSAR's seismic stations on Svalbard, Jan Mayen, and on mainland Norway recorded from 01:40 GMT (03:40 Norwegian time) strong signals released by an earthquake in Central Italy. The first waves arrived approximately 3.5 minutes later at the NORSAR stations on mainland Norway.

Shallow earthquakes cause greater damage

The earthquake's focus was located at shallow depth and resulted in strong shaking and heavy damage to the epicentral region. The main event had a magnitude of 6.2 and has been followed by many aftershocks including a strong magnitude 5.5 event approximately 1 hour later. It is to be expected that a period of increased seismicity with many aftershocks will continue for some time.

"Even though the earthquake's magnitude is not all that high, the event was close to the surface which, in combination with vulnerable buildings, results in devastation," says Dominik Lang, Head of the Department for Earthquake Hazard and Risk.

Common building design code is crucial

The region is susceptible to heavy damage due to the old buildings made of brickstones and concrete, which were built in a time when there was no standard building code.

"The Italian authorities have had a great focus on mitigation of damage resulting from earthquakes and they train their engineers and researchers in the applicable Eurocode 8-standard. Norwegian research institutes, such as NORSAR, are also involved in training civil engineers in earthquake risk and adherence to building codes: not only in Norway but also in other parts of the world. New buildings therefore ought to be safer and better equipped to withstand earthquakes", explains Lang.

Anticipate secondary effects



It seems that the small town Armatrice was hit hardest with vast devastation, while large damage was also observed to the surrounding towns and villages. Shaking effects and damage in the more densely populated areas have been less.

“The affected area is a hilly region where secondary effects, such as earthquake-induced landslides, are to be expected. Thereof resulting blocked or destroyed roads and the inaccessibility of remote areas pose additional challenges for effective search and rescue operations”, Lang adds.

About NORSAR

Stiftelsen NORSAR is responsible for and operates one of the world’s largest earthquake observatories, and has a more than 35 year long experience in the development of methods for monitoring of nuclear explosions, advanced seismological data processing and earthquake instrumentation.

NORSAR is the appointed National Data Centre (NDC) of Norway for Comprehensive Nuclear-Test-Ban Treaty (CTBT)-related matters, and operates seismological stations in Hedmark, Karasjok, Adventdalen on Svalbard, and on Jan Mayen, as well as a radioactive nuclides recording station on Svalbard (Platåberget), and one infrasound recording station in Bardufoss. Globally, this network consists of 321 recording stations that are located in 89 countries.



Fact box:

The earthquake's epicenter is located in an approximately 50 km distance to a M6 earthquake that occurred in September 1997, which claimed the lives of 11 persons. In April 2009, the L'Aquila earthquake with a magnitude M6.3 caused the death of 295 people, which was located 50 km south of the current event.

Tekst til kart:**Seismic hazard map of Europe:**

The map illustrates the spatial distribution of the level of seismic ground motion accelerations with a 10 % or larger probability of being experienced within 50 years (i.e. corresponding to a 475 year return period).

This map was elaborated during the EC-funded research project SHARE (Seismic Hazard Harmonization in Europe) where NORSAR has been involved.

Tekst til figur /seismogram:

Recording of the event at one of NORSAR's stations in Hedmark. The waveform illustrates both the main shock and a number of aftershocks.

Tekst til foto:

Dr. Dominik Lang is Head of NORSAR's Department for Earthquake Hazard and Risk. He is both an earthquake engineer and an engineering seismologist.

