

EARTHQUAKES: SHALLOW VS. DEEP

On August 24, this year, a powerful magnitude 6.0-6.2 earthquake devastated the small, north-central Italian towns of Amatrice, Accumoli, and Pescara del Tronto, located in north-central Italy, about 80 miles north of Rome. Some 250 people were killed, and at least 365 were hospitalized. There was no clear estimate of how many people might still be missing, since the rustic area was packed with summer tourists.

A day after the deadly quake hit, a 4.3 magnitude aftershock sent up plumes of thick, gray dust in the hard-hit town of Amatrice. The aftershock crumbled already cracked buildings, rattled residents, and closed already clogged roads. This was only one of 470 aftershocks that followed the main quake. Hundreds have been left homeless by the quakes, their homes and apartments being declared uninhabitable.

Even though the Italian quake was seismically weaker by measurements on the Richter Scale, it did far more damage to surface structures than a recent stronger quake in Myanmar [Burma] because of its shallow depth. Quakes can strike near the earth's surface or many miles deep. Most quakes occur at shallow depths, according to the U. S. Geological Survey.

Italy's quake was very shallow, between 2.5 and 4 miles deep, according to Italy's geological service, and the USGS. By contrast, the Myanmar quake was a 6.8 magnitude, but occurred at a depth of 52 miles, considered to be an intermediate depth.

Shallow quakes tend to do far greater damage because the energy waves are not dampened as much, and arrive at the surface with greater energy. The shaking becomes "like setting off a bomb underneath a city", said Susan Hough, a USGS seismologist. The Italian quake devastated three towns, home to medieval structures that were built long before any building codes. Most buildings were made of brick and stone, which easily fall apart during shaking. "They are very quaint, but do not withstand earthquakes very well", said Hough.

While deep quakes may be less damaging, they tend to be more widely felt. Most of the destruction from the Myanmar quake was centered in the tourist town of Bagan, where 100 brick pagodas dating back centuries were damaged.

[Taken from articles by the Associated Press, found in the *FW STAR-TELEGRAM*, dated Aug. 26, 2016]