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INTERVIEW

Morocco earthquake: 'It's rare to have such large earthquakes in this area'

On Friday evening, Morocco was hit by a magnitude 7 earthquake in the province of Al-Haouz, killing more than 2,000 people. While the seismic risk in this region was known, an earthquake of this magnitude was “unforeseeable”. FRANCE 24 talks with seismologist Florent Brenguier.

Issued on: 10/09/2023 - 15:59 ⌚ 3 min



Rescue workers search for survivors in a collapsed house in Moulay Brahim, Al Haouz province, on September 9, 2023. © Fadel Senna, AFP

By: Grégoire SAUVAGE

The most powerful earthquake ever recorded in [Morocco](#) struck on Friday, September 8, [killing more than two thousand people](#), destroying many buildings and forcing residents to flee their homes.

The Rabat-based National Center for Scientific and Technical Research (CNRST) reported the magnitude 7 earthquake's epicentre in the province of Al-Haouz, in the Atlas Mountains southwest of Marrakech.

FRANCE 24 spoke with Florent Brenguier, a seismologist at [Grenoble University's Institut des Sciences de la Terre](#), to understand the tragedy.

In Morocco, the risk of earthquakes is concentrated in the north of the country. How do you explain such a powerful earthquake in the centre?

Florent Brenguier: It's rare to have such large earthquakes in this area ... It's important to remember that the whole of Morocco, and the whole Mediterranean region in general, is susceptible to major earthquakes. However, the majority of earthquakes are concentrated where the African and European tectonic plates meet in the north of the country – particularly around the Strait of Gibraltar.

On the other hand, the entire mountainous Atlas region is still at risk. Even if earthquakes are rare, their magnitude can be significant. The most striking example is the Agadir earthquake in 1960, which killed 12,000 people and virtually destroyed the entire city.

There are significant faultlines in this area that have developed over thousands, tens, even hundreds of thousands of years. However, it is unusual to have such a large earthquake in an area that is not on a plate boundary.

For instance, the Turkey earthquake [in February] occurred at the boundary between the Anatolian and Arabian plates. The dangers of this zone were expected because it is located on the border of two major plates.

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The magnitude of the Moroccan earthquake was 7 on the Richter scale, compared with 7.8 in Turkey and Syria in February. Can you please break down the difference between the two?

The best way to think about it is to consider the length of the faultline: The Moroccan earthquake was around 30 kilometres long, whereas the [Turkey-Syria earthquake](#) was 300 kilometres long. That's ten times smaller. The energy sent underground is therefore much less significant, and the earthquake is more localised. If we'd had an equivalent earthquake in Morocco, a large part of Marrakech would have been destroyed.

Should Moroccans be worried about aftershocks?

The intensity of aftershocks diminishes with time. We've already had one 4.5 on the Richter scale, so we're less likely to have big aftershocks.

On the other hand, the initial shock of one earthquake can trigger another. In this case, it's no longer an aftershock. This is what happened in Turkey where a magnitude of 7.8 was followed by a 7.5. This phenomenon has also been observed in Japan and California.

For this reason, it's not impossible that we see another major earthquake, but not necessarily on this faultline. It could occur further north or south. This usually happens in the hours or days following an earthquake, but it can also happen weeks or even months later.

Why can't earthquakes be predicted?

For the time being, all we can do is identify seismic zones. This is the case in the Atlas region where magnitude 4 earthquakes have been recorded in recent years – we're able to map areas where there is a potential risk.

However, the real difficulty is knowing the maximum magnitude that these potential earthquakes can reach. Moreover, we can't predict when the next big quake will occur.

Scientists have yet to find reliable warning signs that would enable us to detect an earthquake. But this is an evolving field of research, and perhaps in the future, we'll be able to find signs that can be used to anticipate an earthquake.

This article was adapted from the original [in French](#).

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