

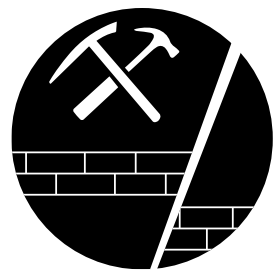
# The EARTHQUAKE HAZARD map of Europe

## WHAT IS EARTHQUAKE HAZARD?

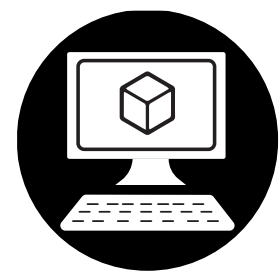
Earthquake hazard describes the potential ground shaking at the earth's surface due to future earthquakes. Seismic hazard assessment integrates in a probabilistic way the data and information of the history of earthquakes including damage reports, the geological and tectonic conditions as well as site response factors that may affect the strength of the ground shaking at any given location.



Historic and contemporary records



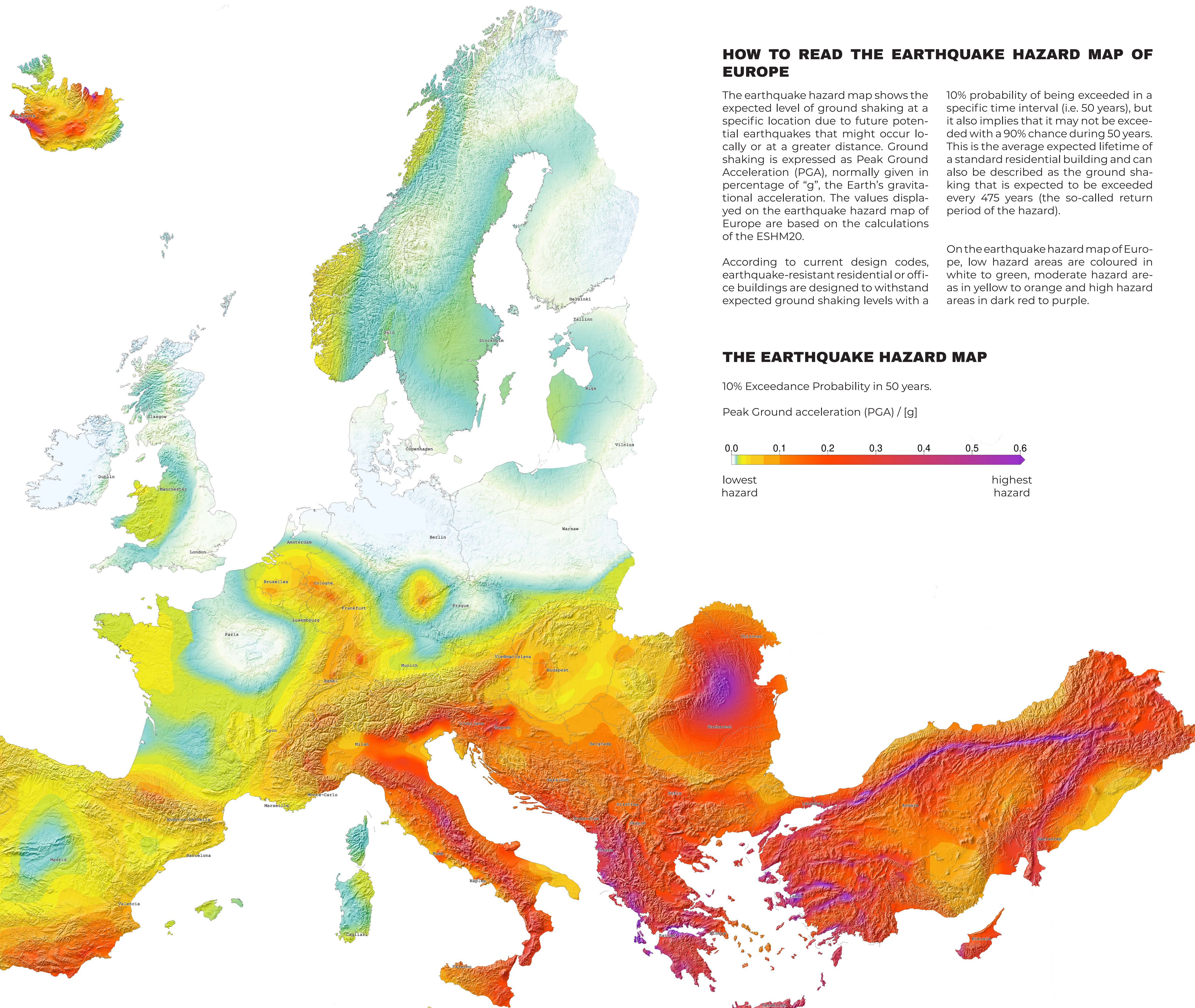
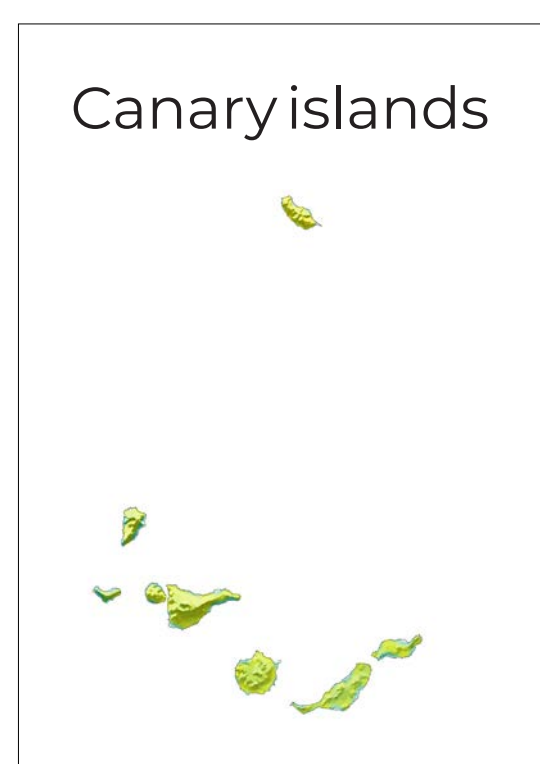
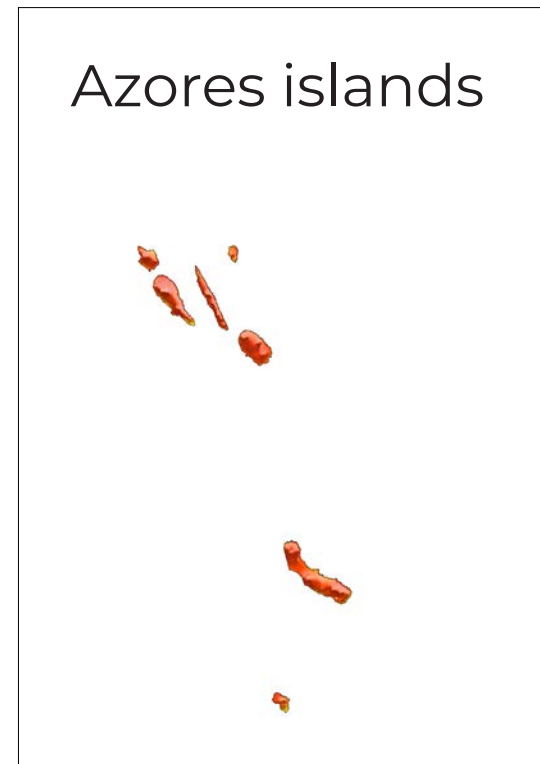
Geological and tectonic setting



Ground shaking models

Understanding earthquake hazard is at the basis of any mitigation decision aiming at reducing the potential effects of earthquakes and is, therefore, a prerequisite of defining seismic risk. To be relevant and valuable for transnational earthquake mitigation strategies, a seismic hazard model, such as the 2020 European Seismic Hazard Model (ESHM20), is fully harmonised across Europe without any country borders constraints.

Specific ground shaking maps from the ESHM20 serve as an informative annex for the next version of Eurocode 8 to support the definition of seismic actions. Integrating earthquake hazard models in seismic design codes helps ensure that buildings respond appropriately to earthquakes by limiting the catastrophic damage that ground shaking can cause in the area where they are built.



## HOW TO READ THE EARTHQUAKE HAZARD MAP OF EUROPE

The earthquake hazard map shows the expected level of ground shaking at a specific location due to future potential earthquakes that might occur locally or at a greater distance. Ground shaking is expressed as Peak Ground Acceleration (PGA), normally given in percentage of "g", the Earth's gravitational acceleration. The values displayed on the earthquake hazard map of Europe are based on the calculations of the ESHM20.

According to current design codes, earthquake-resistant residential or office buildings are designed to withstand expected ground shaking levels with a

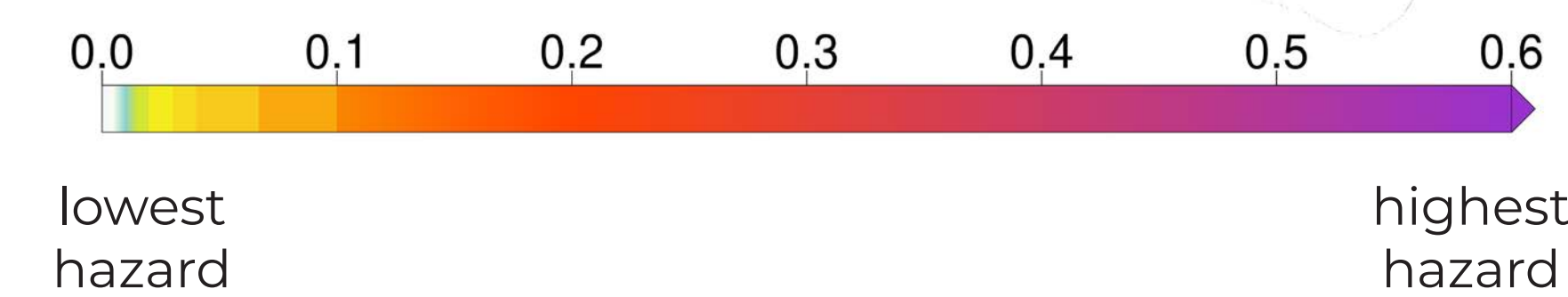
10% probability of being exceeded in a specific time interval (i.e. 50 years), but it also implies that it may not be exceeded with a 90% chance during 50 years. This is the average expected lifetime of a standard residential building and can also be described as the ground shaking that is expected to be exceeded every 475 years (the so-called return period of the hazard).

On the earthquake hazard map of Europe, low hazard areas are coloured in white to green, moderate hazard areas in yellow to orange and high hazard areas in dark red to purple.

## THE EARTHQUAKE HAZARD MAP

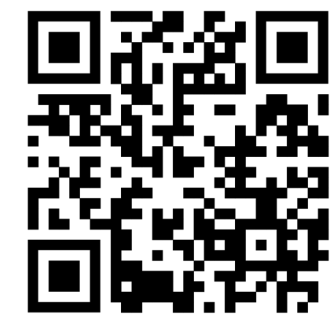
10% Exceedance Probability in 50 years.

Peak Ground acceleration (PGA) / [g]



## MORE INFORMATION

Discover more about earthquake hazard and risk across Europe at [www.efehr.org](http://www.efehr.org).



## ACKNOWLEDGEMENTS

A core team of researchers from different institutions across Europe worked collaboratively in the framework of various projects to develop the 2020 European Seismic Hazard Model (ESHM20).

Many more have contributed to the development of ESHM20 by different means including data compilation and curation, knowledge exchange or by providing feedback at meetings and webinars. This has all been undertaken in close collaboration with the GEM Foundation and the European Plate Observing System (EPOS).

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## CITATION

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