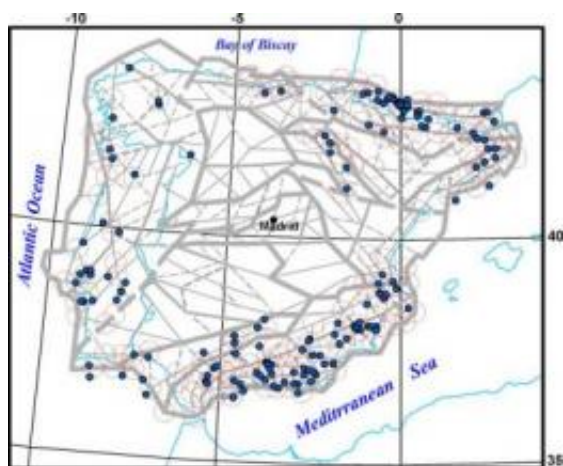# New areas prone to moderate earthquakes identified in Iberian Peninsula

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The map indicates the nodes (circles) with the potential to generate moderate earthquakes in the Iberian Peninsula and earthquakes historically (blue dots) of this magnitude. Credit: A. I. Gorshkov et al.

Some areas of the Iberian Peninsula, where earthquakes of moderate magnitude have never yet been recorded, such as certain parts of the Cordillera Cantábrica mountain range, the far west of the Cordilleras Béticas mountains and the north of Valencia, could have the potential to generate such quakes, according to a study produced by Spanish, Russian and Italian scientists and published this month in the journal *Rendiconti Lincei*.

"The methodology we have used confirms the most seismically

significant areas of the [Iberian Peninsula](#), but also identifies possible sources of earthquakes with magnitudes of over five in some areas where, to date, none have been recorded" Mariano García-Fernández, co-author of the study and a researcher at the Spanish National Museum of Natural Sciences (CSIC), tells SINC.

According to the study, which has been published in the latest issue of the journal *Rendiconti Lincei*, these areas are located in some parts of the Cordillera Cantábrica mountain range, the northern coast of Portugal, the far west of the Cordilleras Béticas mountains and the north of Valencia. The remaining areas with the potential for moderate seismic activity are the same as those shown on seismic maps - around the edges of the Peninsula, above all the south east and the Pyrenees.

"The important thing about this study is that it identifies zones prone to moderate earthquakes at regional level, although this does not mean they will ever happen", points out García-Fernández.

The researcher explains that the [magnitude](#) 5 was chosen as the threshold for potential earthquakes "since it is above this level that you start to see significant damage to structures".

In search of nodes

The research, which is the fruit of collaboration between scientists at the Russian Academy of Sciences, the International Centre for Theoretical Physics and the University of Trieste (Italy) and the CSIC, is based on the morphostructural zoning method. The technique uses topographic, geological and geophysical information, along with satellite imagery, to identify the nodes or intersection points of morphostructural lines.

These nodes are classified as likely to cause earthquakes of a specific threshold size by combining the seismicity data from seismic catalogues

with mathematical recognition methods, similar to those used in voice or fingerprint identification.

García-Fernández insists that the resulting classification does not necessarily mean that the potentially seismic nodes identified will produce earthquakes of this size, "but rather that their features make them more susceptible than those classified as having lower potential".

The authors of the study are confident that the results will make it possible to better identify the continental seismogenic sources affecting the Iberian Peninsula. This will allow progress to be made in studies into danger levels and seismic risk at regional scale and in specific places, such as metropolitan areas or special structures such as nuclear power plants and large dams.

More information: A. I. Gorshkov, A. A. Soloviev, M. J. Jiménez, M. García-Fernández y G. F. Panza. "Recognition of earthquake-prone areas (M ≥ 5.0) in the Iberian Peninsula. Rendiconti Lincei 21 (2): 2037-4631, June 2010.

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