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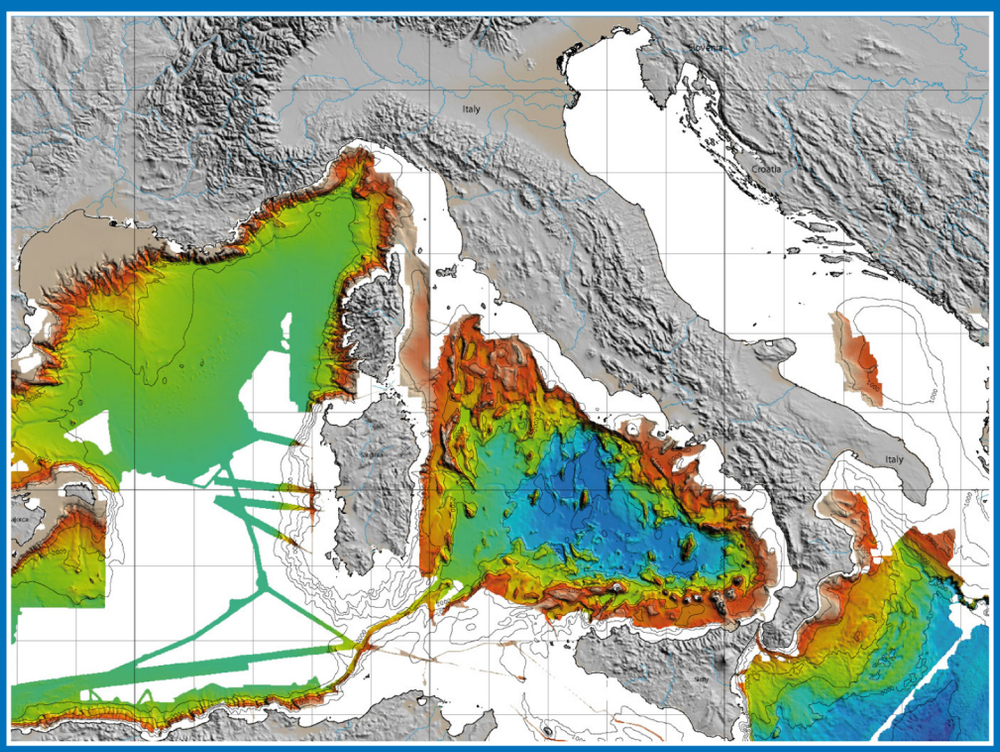

NOTE BREVI E RIASSUNTI

A cura di: Salvatore Critelli, Francesco Muto, Francesco Perri, Fabio Massimo Petti, Maurizio Sonnino, Alessandro Zuccari

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GS2 - HAZARD AND NATURAL RISKS

SESSIONE TS2.1

Seismic Hazard Modeling

CONVENERS

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Geologically-based seismic zonation of Greece

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Key words: *seismic hazard assessment; earthquake geology; seismogenic faults; capable faults.*

INTRODUZIONE

The recently released Greek Database of Seismogenic Sources (GreDaSS) aims at contributing to SHA in Greece. The database contains the crustal seismogenic sources of this area together with their seismotectonic parameters and other supplementary material (*e.g.* images, literature summaries, references list), which can provide the information needed for calculating SHA. The completeness of the database is high both in terms of the sources number and their principal seismotectonic parameters.

An important contribution of GreDaSS to SHA is the enhancement of the seismic zonation of the Aegean Region. Indeed, previous maps were based only on seismological data, ignoring the population, pattern and behavior of seismogenic sources. The homogeneity and the advanced level of completeness of the database allows to support a more realistic seismic zonation consisting of 51 zones of which however, 11 lack at present of completeness in terms of seismogenic sources.

Based on GreDaSS, we estimate the maximum expected magnitude, referred to as M_{geol}. For the same polygons, we also estimate a maximum expected magnitude but based on the recent seismicity following 'classical' approaches. For this purpose, we apply both maximum likelihood method and least squares technique. The historical part of the used catalogue contains only the strongest events, whereas the complete part can be divided into several sub-catalogues each one assumed to be complete above a specified threshold magnitude.

Uncertainty in the determination of magnitudes has also been taken into account. Among the several seismological parameters obtained with the statistical analyses, we focus on the maximum regional magnitude ($M_{reg} = M_{observed} + 1\sigma$). We then compare these seismologically based values with the ones determined from GreDaSS, based on geological information. This comparison shows that the 'classical' seismological approaches provide systematically lower values, which can be explained from the fact that the former methods cannot catch the seismic cycle for most seismogenic source and hence the corresponding zones. Few exceptions occur with the opposite sign, but in these cases, the M_{obs} and then M_{reg} is based on old events whose magnitude is still debated in the literature and possibly overestimated in the used catalog.

One of the added values of GreDaSS is the possibility to determine more likely worst-case scenarios (M_{max}) taking into account the real seismogenic potential of the active faults affecting the region. It should be a good practice in the future to fully exploit and include geological information when performing SHA analyses.

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