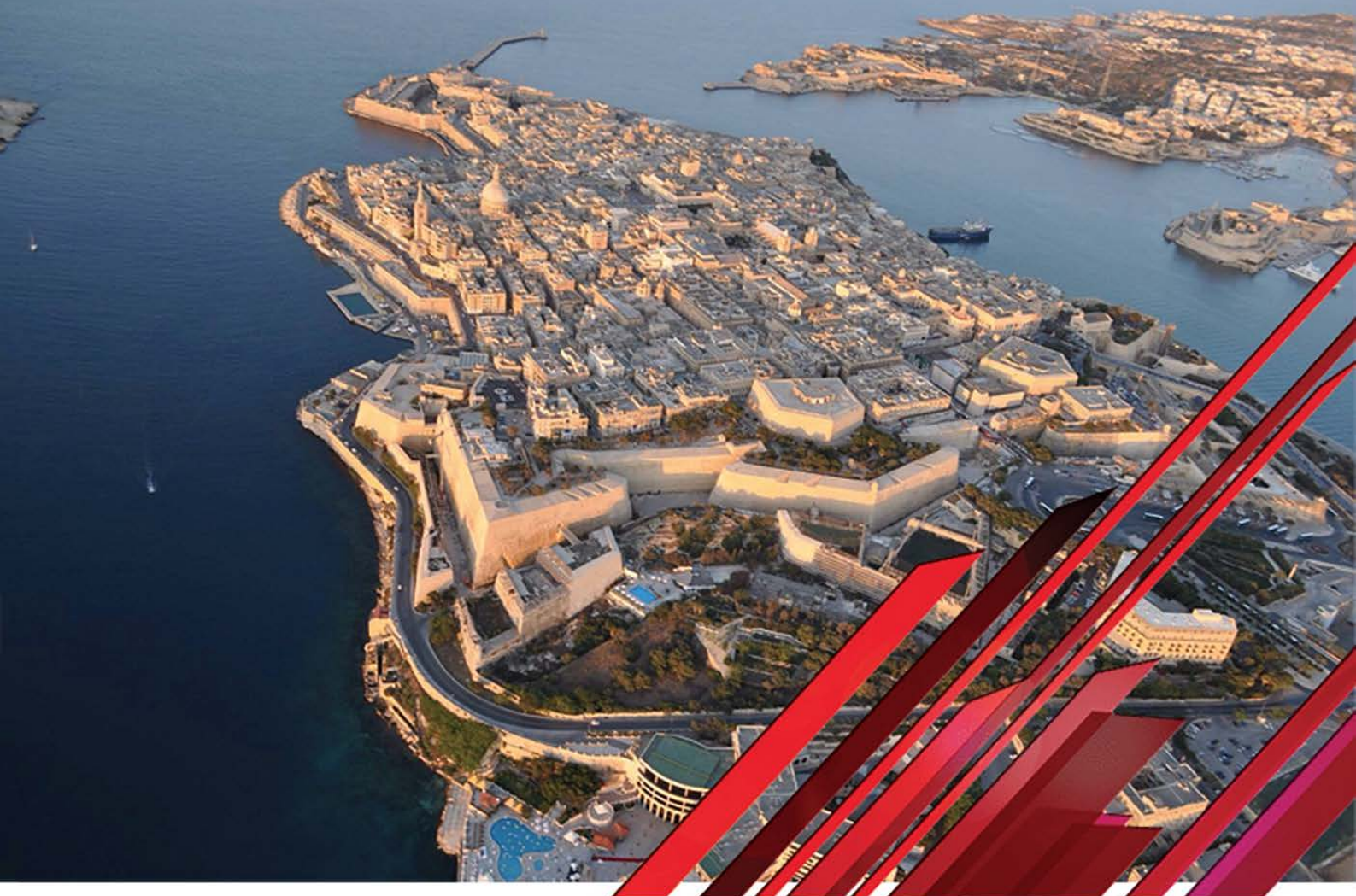




BOOK OF ABSTRACTS



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THE NEW VERSION OF THE CATALOGUE OF STRONG EARTHQUAKES IN ITALY AND IN THE EXTENDED MEDITERRANEAN AREA (CFTI5MED): A MODERN TOOL FOR PREDICTING FUTURE GROUND SHAKING BASED ON HISTORICAL SEISMOLOGY OBSERVATIONS

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A decade after publication of CFTI4Med (Guidoboni et al., 2007) we are proud to present a new, largely revised and updated version of the Catalogue of Strong Earthquakes in Italy and in the extended Mediterranean area, termed CFTI5Med (Guidoboni et al., 2018: <http://storing.ingv.it/cfti/cfti5/>). The Catalogue collects the results of research conducted on the historical seismicity of Italy and of the extended Mediterranean area since 1983. It comprises a reference study for several significant earthquakes listed in the Archivio Storico Macrosismico Italiano (Italian historical macroseismic archive, ASMI), which is part of the European Archive of Historical Earthquake Data portal (AHEAD), the node for the collection and distribution of historical earthquake data in the framework of EPOS. While the historical earthquake record is an outstanding source of information, particularly for Italy, it also carries the inherent danger - and perhaps the paradox - of generating a distorted picture of the seismogenic potential, usually resulting in an underestimation of the earthquake potential, but also often an overestimation. Until recently, the results of historical research have been summed up in traditional parametric catalogues, a form of presentation that indeed provides the basic information required by the elaboration of

conventional seismic hazard models, but inevitably impoverishes the available information, potentially introducing biases and misrepresentations of the earthquake activity. Basic principles of earthquake source physics and actual observations show that two crustal earthquakes of a magnitude 6.0 and 7.0 may cause the same peak acceleration and the same maximum macroseismic effects, but the area of strongest ground shaking will be much smaller for the 6.0 magnitude quake with respect to the 7.0 event. In the absence of instrumental data, the relative importance of the two earthquakes can be understood only by compiling a complete picture of their dynamic effects: something that traditional earthquake catalogues, focusing only on epicentral intensity, failed to supply. The Catalogue reversed this trend, allowing for a more complete appreciation of the total energy released by any given earthquake and of the finest characteristics of its territorial impact. It is hence an analytical catalogue, supplying all the information available for any given earthquake in a pre-defined and easily accessible format, and includes data and observations that may not be immediately relevant to seismic hazard applications. These additional data but may be of interest for broader seismic risk analyses and for a number of other applications such as the historical investigation of complex earthquake sequences in time and space, studies of the linguistic, social and economic history and of the evolution of local building, and the planning of interventions on the historical heritage. The Catalogue is hence the vault that preserves for the present and for future generations the wealth of information gathered through old and new research strategies over 35 years of research. In particular the new CFTI5Med (2018) features:

- 1,259 earthquakes that occurred in the Italian area between 461 B.C. and 1997, including 42,663 intensity datapoints obtained by analyzing and rating the effects on the built environment (macroseismic observations) and 2,338 datapoints obtained by analyzing and rating the effects on the natural environment (earthquake-induced environmental effects);
- 475 earthquakes that occurred between the years 760 B.C and 1500 in Italy and the Mediterranean area. For 223 earthquakes that occurred up to the end of the 10th century we provide only the epicentral location, whereas for those that occurred between the 11th and 15th

century we provide 635 original intensity datapoints obtained by analyzing and rating the effects on the built environment (macroseismic observations), based on sources in the original historical languages (Greek, Latin, Arabic, Syriac, Armenian, Coptic, carefully translated into English) and 68 datapoints obtained by analyzing and rating the effects on the natural environment;

- the retrieval and formatting of over 23,000 original bibliographic documents - transcribed or printed – nearly 50% of all those utilized in the CFTI5Med. These documents are now available on-line as fully searchable pdf files;
- a full geological reinterpretation, georeferencing and reprocessing of over 2,300 descriptions of earthquake-induced environmental effects, which are now all available and searchable in a user-friendly web-GIS environment;
- the elaboration of a number of texts and commentaries that were missing from the CFTI4Med version of the catalogue;
- a totally re-designed and more efficient web- and web-GIS interface, that allows the Catalogue contents to be consulted along with relevant topographic, geological and seismotectonic information (see presentation by Sgattoni e al., 2018: this meeting).