

# THE BUILDING UP PROCESS OF A MACROSEISMIC INTENSITY DATABASE

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## INTRODUCTION

Since the late nineties Italy has a well-established tradition of making available on the Internet a national macroseismic intensity database. The last updated version called DBMI11 was released in December 2011.

By using this public database everyone can obtain information about the effects caused in a populated place by an earthquake of the past. A huge quantity of well organised historical information can be effortlessly retrieved and used as the background information of the seismic hazard assessment.

Other similar activities are carried out by the same DBMI working group: the creation of a trans-national European database called AHEAD (Archive of historical Earthquake Data) and the related effort of supporting the growth of other European intensity databases (Catalonia, Spain, Portugal, Greece and UK) and, at world-wide scale, the support for the "Global Earthquake History", the GEM (Global Earthquake Model) global component.

This presentation will describe how these databases are built, how they are structured and which tools are used both for managing data and for the Internet publication.

## MIDOP, THE MACROSEISMIC INTENSITY DATA ONLINE PUBLISHER

One of the fundamental tools used by the working team while building up an intensity archive is MIDOP, a web application which allows users to publish their macroseismic intensity data-points following a standardised format. The process of publishing an interactive website only requires two tables in order to start: the list of events and the corresponding list of MDPs (Macroseismic Data-Points). The output website can be easily customized using a friendly control panel.

The tool was initially developed in the frame of the NA4 module "Distributed Archive of Historical Earthquake Data" of the EU NERIES Project (2006-2010), and it is now supported by the EU Project SHARE task 3.1 "European Earthquake Catalogue".

The underlying standard format for describing

historical macroseismic intensity data is described in the NERIES NA4 Deliverable 4 and 7, dealing with the "European Macroseismic Database".

## THE ITALIAN EFFORT, DBMI11

Thanks to the hard work of seismologists who have published many historical studies during these years, the newly released DBMI11, the 2011 edition of the *DataBase Macrosismico Italiano*, has greatly increased the number of archived earthquakes in the time-window from year 1000 to year 2006. From the last public release called DBMI04, the number of earthquakes has increased by 60% (now 1684) and the corresponding number of MDPs has increased by 50% (now 86,071).

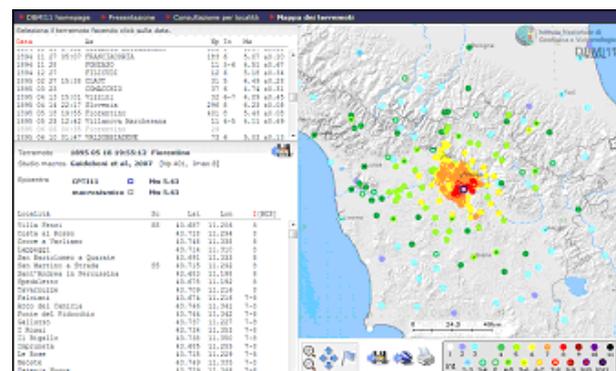


Figure 1 – A screenshot from the DBMI11, a query by earthquake example.

The database can be accessed through its website at <http://emidius.mi.ingv.it/DBMI11>. It can be queried by earthquake, selecting the event from both a list and using an interactive map, or queried by place, in order to retrieve the corresponding seismic history. Tables, maps and diagrams are all freely downloadable.

## THE TRANS-NATIONAL EUROPEAN EFFORT, AHEAD

AHEAD is the European Archive of Historical Earthquake Data, through which researchers can easily: 1) trace back the information supporting each earthquake in order to reappraise and improve the knowledge of it; 2) compare the different studies on

each earthquake and select a preferred one; 3) help keeping the archive as much up-to-date as possible, commenting studies, data, and parameters and feeding it with fresh studies. AHEAD can be found at the address <http://www.emidius.eu/AHEAD/> or by accessing the historical module of the European Earthquake Data Portal <http://www.seismicportal.eu/>.

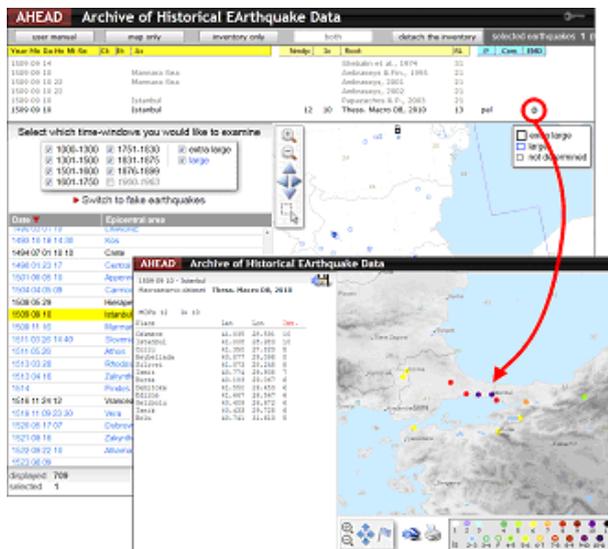


Figure 2 – The web interface of AHEAD, the Archive of European Historical Earthquake Data.

Among the activities of AHEAD, some energy is spent in order to keep some level of coordination among the European Institutions dealing with intensity data. Collaborations are on-going with Catalonia (IGC), Spain (IGN), Portugal (IM), Greece (University of Athens and Thessaloniki) and UK (BGS).

## THE WORLD-WIDE EFFORT, GEM GLOBAL EARTHQUAKE HISTORY

One of the scopes of the GEM “Global Earthquake History” global component is to establish a distributed, online resource, called “Global Archive of Historical Earthquake Studies”, where both reports and macroseismic data points can be uploaded, organized and made available to public. This resource will provide a framework for future development, so that the Global Earthquake History can be updated as new results become available. The task will mainly consider earthquakes with  $M \geq 7.0$  at minimum, in the time-window up to 1903; events with lower  $M$  will be included on a case by case, or region by region, basis.

## ACKNOWLEDGEMENTS

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