DESCRIBING NON-INSTRUMENTAL SEISMOLOGICAL DATA IN QUAKEML: THE NEED FOR A MACROSEISMIC EXTENSION

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QuakeML offers a standard format for exchanging event parameters using a hierarchic structure based on XML. Since the early proposal (Schorlemmer et al., 2004), the QuakeML documentation mentions the possibility of extending the schema in order to describe macroseismic data. Until now, however, QuakeML does not offer any method to describe macroseismic intensity data, and consequently it is not possible to describe how earthquake parameters are derived from these data.

According to the source of information, macroseismic data can be subdivided into three groups: 1) derived from historical, descriptive sources, 2) collected from field surveys lead by expert seismologists right after a damaging earthquake occurs, and 3) based on questionnaires compiled by non-seismologists such as 3a) public officers or 3b) the general public through online forms.

The different methods of data collection express earthquake effects by means of the same unit, the so-called Macroseismic Data Point (MDP) and it is constituted by at least three elements: a) an origin time, b) an intensity value, and b) the locality (place name and coordinates) to which the assessed intensity is referred. Each earthquake is then described by a set of MDPs, all with the same origin time. A series of descriptive information can also be included: the reference to the used sources of data, such as a published paper or an online database, the quality/reliability of the assessed intensity, the reference to a Gazetteer identifier, and so on.

An extension to QuakeML has been specifically devised for sharing MDPs and set of MDPs in the framework of the European Archive of Historical Earthquake Data (AHEAD), a platform aimed at preserving and making available seismological data of past earthquakes. As AHEAD is made of existing regional macroseismic databases and a central hub, it is of fundamental importance to adopt a standardised way of publishing, sharing, and possibly storing data using a common format. QuakeML was identified as the most suitable starting point, and the missing elements were added following a coherent scheme. A tool called Macroseismic Intensity Data Online Publisher (MIDOP; Locati and Cassera, 2006; http://www.emidius.eu/MIDOP/) was developed in order to promote the adoption of common procedures and to support the growth of newly established regional archives. At the same time, the web portal of the AHEAD central hub was developed to make the gathered data available to the community (Locati et al., 2014; http://www.emidius.eu/AHEAD/).

The presentation will illustrate the proposed QuakeML extension for macroseismic data, its current implementation and use for sharing historical earthquakes data.

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