The Seismic Hazard Harmonisation in Europe (SHARE) project aims to implement a comprehensive and up-to-date seismic hazard model for Europe. It offers an opportunity to appraise European seismic hazard output, and the extent to which it fulfills the current needs of the engineering community. Seismic hazard must be defined in terms that are compatible with the current Eurocode 1998 standard, and sufficiently flexible as to allow for modification of the definition of seismic input in accordance with Nationally Determined Parameters. Elements of the seismic hazard analysis that may need to accommodate modification include the return period, the strength of the ground motion, selection of the site, and the characterisation of the elastic design spectrum. Dissemination of the SHARE output should provide a means of defining the seismic input requirements of Eurocode 8 to the fullest extent. Whilst compatibility with current code requirements is an essential condition under which SHARE is undertaken, the project also allows the opportunity to anticipate future needs for the definition of seismic input within European seismic code design. A review of seismic design provisions for many countries around the globe offers an insight into the relative strengths and weaknesses of Eurocode when considered alongside other state-of-the-art design codes in current use. It also allows for appraisal of the seismic input provisions in the context of seismic hazard best practice. The expected output from SHARE should exceed the relatively limited requirements found in current European codes. This will provide a basis upon which future revisions can be formulated. Particular focus is placed upon the definition of the response spectrum in Eurocode and its relation to the uniform hazard spectrum defined from the hazard analysis. Other critical elements of the analysis include the identification of hazard-compatible scenario earthquakes, which are required in several parts of the code. Consideration should also be given to performance-based design requirements for special buildings and the extent to which these result in a homogenous margin of safety against damage and collapse. This may be achieved using techniques such as risk-targeted seismic hazard or via cost-benefit based approaches. It is expected that these topics will be explored further as the project progresses.

SH3/TH/09 - COMPILATION OF ACTIVE FAULT DATA IN IBERIA FOR USE IN REGIONAL-SCALE SEISMIC HAZARD ASSESSMENT

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Active fault databases provide essential input data for robust probabilistic seismic hazard analysis (PSHA) studies that integrate both seismicity and active fault data into the hazard calculations. In the context of project SHARE (Seismic Hazard Harmonization in Europe), an EC-funded initiative (FP7), we are compiling a fully-parameterized active fault database for Iberia and the nearby offshore region. This database incorporates a wide range of geological and geophysical observations on active seismogenic sources, and is being developed in parallel with IBERFAULT, another ongoing effort to develop a database of active faults in the Iberian region.

The principal goals of this initiative are for fault sources in the Iberian region to be represented in project SHARE and incorporated into a source model intended for seismic hazard maps at the European scale. This large effort relies heavily on input from many regional experts (the 2010 Working Group on Iberian Seismogenic Sources), who are contributing their data in a standardized format to facilitate the development of the database and the goal of utilizing the database for PSHA applications. In addition to the data contributed directly from researchers, the database also incorporates existing compilations, updated according to the most recent publications, and includes sources compiled from the literature. The Iberian seismogenic source model derived for SHARE will be the first regional-scale source model for Iberia that includes fault data and follows an internationally standardized approach. This model can be used to improve both seismic hazard and risk analyses and will be appropriate for use in Iberian- and European-scale assessments.

SH3/TH/010 - CAN THE 2009 L’AQUILA EARTHQUAKE BE USED TO VALIDATE ITALIAN SEISMIC HAZARD MAPS?

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As a part of the SHARE project a new European seismic source zone model (SSZM) for seismic hazard has been constructed. The model stretches from the Mid-Atlantic Ridge, the Azores and Iceland, in the west, to Romania and Turkey in the East. The model has been constructed from existing and new local models. The previous SESAME model are, the Azores, Iceland and intermediate seismicity in the Cyprian Arc. Homogenization of the SSZM has been made with focus on geological and seismological boundaries. The whole area has been defined with source zones. In total nine workshops all over Europe were held in order to build a consensus model. The presented model will together with a diffuse seismicity based model and a fault model be used for computing seismic hazard for the European area. It will also be the basis for the Eurocode GEM model.

SH3/TH/011 - CORRECTING A POTENTIAL BIAS IN PROBABILISTIC SEISMIC HAZARD ASSESSMENT: SEISMOTECTONIC ZONATION WITH FRAC TAL PROPERTIES

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A critical step in Probabilistic Seismic Hazard Assessment (PSHA) is the accurate definition and characterization of relevant seismic sources. This is particularly challenging in low-seismicity regions, because observation periods are relatively short, seismicity is often diffuse, and active faults are difficult to identify. For these reasons, large source zones are commonly used with spatially uniformly distributed seismicity inside. Observed seismicity, however, is generally not uniformly distributed, but reflects seismotectonic forces and tectonic structure. Rather, observed seismicity even in subregions defined as seismic sources is clustered in space: seismicity tends to aggregate on or close to...