

**EAAE TASK GROUP PROPOSAL:  
TG2 STRONG-MOTION RECORDS FOR ENGINEERING APPLICATIONS**

***Introduction***

The proposed task group on strong-motion records for engineering applications is a direct continuation of the working/task group (WG2/TG2) headed by Prof. N. N. Ambraseys for almost two decades. Prof. Ambraseys' groups have been responsible for a series of initiatives, funded by the European Commission and the UK's Engineering and Physical Sciences Research Council, for the free dissemination of strong-motion data from European, Mediterranean and Middle Eastern earthquakes. These projects led on from pioneering strong-motion data collection and dissemination projects of the 1970s-1990s, coordinated by Prof. Ambraseys. In the period since the launch of the Internet Site for European Strong-motion Data (ISESD) more than 1500 users have registered and downloaded many tens of thousands of strong-motion records and their derivatives. Currently the ISESD is run successively by University of Iceland, <http://www.ISESD.hi.is>, which has provided the funds needed.

***Name of the working group***

**TG2 - STRONG-MOTION RECORDS FOR ENGINEERING APPLICATIONS**

***Coordinator***

Prof. Dr. Ragnar Sigbjörnsson, University of Iceland

***Co-Coordinator***

Dr. John Douglas, BRGM, France, and Adjunct Professor, University of Iceland (2009-10)

***Founding Coordinator***

N.N. Ambraseys, Professor, Imperial College of Science, Technology and Medicine, UK

***Objectives***

The objectives are to collect and process, analyse and disseminate reliable high quality strong-motion information needed for engineering design purposes as well as risk assessment and planning. Special emphasises are placed on the following issues:

- quality assurance and reliability of strong-motion recordings and their derivatives
- spatial structure of strong-motion action
- near source effects and finite seismic sources and their influences on strong-motion action
- inelastic effects and strong-motion action
- site effects and their influences on strong-motion action
- statistical assessment of modelling uncertainties
- presentation of data and visualisation

The main objective is assuring the continued free access to high quality strong-motion data from Europe, the Mediterranean and the Middle East by running and updating the ISESD.

***Specific goals, products***

The data collected will be stored in the ISESD databank, where it will be freely accessible through the Internet. The following data will be stored:

- raw data
- corrected time series
- derivatives

- seismological information
- station information

In addition downloadable computer programmes and user manuals are and will be included. Special reference will be made to practical applications like engineering design, planning and risk assessment.

### ***Plan of activities***

The plan of the main activities for the next four years is the following:

1. To organise Task Group meetings every two years, preferably at the ECEE and ESC meetings
2. To coordinate and edit a special issue in the Bulletin of Earthquake Engineering on “small aperture strong-motion arrays and their engineering applications” (2011/12)
3. To organise workshops on strong-motion engineering seismology and its applications, 2009 and yearly after that
4. To organise a speciality session on “small aperture strong-motion arrays” in the European Conference on Earthquake Engineering in 2010, furthermore, to prepare a state-of-the-art report to be published in the Bulletin of Earthquake Engineering (see also #2 above)
5. To inform the engineering community of the Task Group activities and disseminate knowledge in the field of engineering strong-motion seismology and its engineering applications, by running a special-purpose website, where different types of data and documents can be retrieved

### ***Financial support***

The basic financial support needed to carry out the above outlined Task Group activities is made available from national sources. Further support, if needed, will be sought in co-ordination with the EAEE Executive Committee.

### ***Expected durations***

The above outlined activities are for the period 2008 to 2012.

### ***Participants***

See the list of TG2 Participants. To preserve continuity Prof. Ambraseys will act as a co-coordinator, along with Dr. John Douglas and Prof. Ragnar Sigbjörnsson.

### ***Discussion and further information***

Members of the EAEE task groups on strong-motion data headed by Prof. N. N. Ambraseys have been responsible for a series of initiatives, funded by the European Commission and the UK’s Engineering and Physical Sciences Research Council, for the free dissemination of strong-motion data and associated parameters (e.g. uniformly calculated magnitudes and source-to-site distances) from European, Mediterranean and Middle Eastern earthquakes. These projects (Ambraseys et al., 2000; Ambraseys et al., 2002a,b; Ambraseys et al., 2004) led on from similar strong-motion data collection and dissemination projects of the 1970s-1990s, coordinated and initiated by Prof. Ambraseys.

In the period since the launch of the Internet Site for European Strong-motion Data (ISESD, <http://www.isesd.hi.is>) over 1500 users have registered and downloaded many tens of thousands of strong-motion records and their metadata. The site and associated articles: Ambraseys et al. (2002a, b; 2004) have been cited in about 30 articles. However, ISESD has officially been financially unsupported since the end of March 2002 (the official end of the EC Fifth Framework Programme project that created the site). In spite of this, the site has been operational almost non-stop for over five years and it has been significantly updated on five occasions: September 2002, January 2003, July 2003, March 2006, June 2008, when new data became available or associated parameters were

collected or modified. Currently, we have succeeded in securing the financial support needed to fund a technical coordinator of the site, which means that ISESD's future has been secured for the next four years. Therefore, the objective of the proposed working group (see above) to continue to support the operation of ISESD and its further developments, and to undertake the necessary steps to secure the free access to high quality strong-motion data from earthquakes in Europe and surrounding regions has been achieved.

### **References**

- Ambraseys N., P. Smit, R. Berardi, D. Rinaldis, F. Cotton, and C. Berge-Thierry (2000): Dissemination of European Strong-Motion Data. CD-ROM collection. European Commission, Directorate General XII, Science, Research and Development, Environment and Climate Programme, Bruxelles.
- Ambraseys, N. N., P. Smit, J. Douglas, B. Margaris, R. Sigbjörnsson, S. Olafsson, P. Suhadolc, and G. Costa. Internet site for European strong-motion data. *Bollettino di Geofisica Teorica ed Applicata*, 45(3):113–129, Sep 2004.
- Ambraseys, N. N., J. Douglas, B. Margaris, R. Sigbjörnsson, P. Smit, and P. Suhadolc. Internet Site for European Strong-Motion Data. In *Proceedings of Twelfth European Conference on Earthquake Engineering*, Sep 2002a. Paper number 837.
- Ambraseys, N. N., J. Douglas, B. Margaris, R. Sigbjörnsson, P. Smit, and P. Suhadolc. Internet Site for European Strong-Motion Data. In *Proceedings of the XXVIII General Assembly of the European Seismological Commission (ESC)*, Sep 2002b.
- Ambraseys, N. N., J. Douglas, R. Sigbjörnsson, C. Berge-Thierry, P. Suhadolc, G. Costa, and P. M. Smit. Dissemination of European Strong-Motion Data, vol. 2 using Strong-Motion Datascape Navigator. CD-ROM collection, Feb 2004. Engineering and Physical Sciences Research Council, United Kingdom.