

ESC SESSIONS

| No | Session Title & Contact | Conveners | Summary | Type | Mode |
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| | | | ESC SESSIONS | | |
| 1. | <p>Improving seismic networks performances: from site selection to data integration</p> <p>Damiano Pesaresi dpesaresi@inogs.it</p> | <p>Damiano Pesaresi (OGS), Tobias Christian Diehl (ETHZ)</p> | <p>The number and quality of seismic stations and networks in Europe continually improves, nevertheless there is always scope to optimize their performance. In this session we welcome contributions from all aspects of seismic network installation, operation and management. This includes site selection; equipment testing and installation; planning and implementing communication paths; policies for redundancy in data acquisition, processing and archiving; and integration of different datasets including GPS and OBS</p> | oral and poster | ESC |
| 2 | <p>Multi-scale passive seismic imaging and monitoring</p> <p>Valerio Poggi poggi@sed.ethz.ch</p> | <p>Valerio Poggi (ETHZ), Jan Burjanek (ETHZ), Marco Pilz (GFZ)</p> | <p>The use of ambient vibrations and passive seismic monitoring has become increasingly attractive in a broad range of seismological disciplines at different scales. Aim of this session is to promote both knowledge and expertise exchange between all members of this broad community. Contributions from wide variety of fields of applications are encouraged covering regional tomography, seismic site characterization, slope stability, fault zone and seismic monitoring studies, to cite some. A particular focus is on the identification of those issues of common interest. In particular, we would like to highlight the physical understanding of the wave-field composition at different scales, its variability over space and time and its statistical treatment. Theoretical advancements are often associated with the introduction of innovative experimental tools. Therefore, contributions related to development of new instrumentation for passive acquisition are also encouraged.</p> | oral and poster | ESC |
| 3 | <p>Internet, smartphones and social networks: How do they change seismology?</p> <p>Rémy Bossu bossu@emsc-csem.org</p> | <p>Rémy Bossu (EMSC), Paul Earle (USGS), Matthew R. Agius (Univ. Malta) and Bernd Weber (Gempa)</p> | <p>Recent advances in Internet and smartphone technologies as well as social media are transforming the way the seismological community interfaces with the public and authorities. The diversification of media sources beyond radio, television, and webpages creates challenges and opportunities for distributing authoritative educational and public safety information. Additionally, seismologists have moved beyond one-way public communication. Citizens now assist in a wide range of seismological data collection ranging from crowdsourcing observations of earthquake effects to citizen-operated seismometers. This session invites papers on, the use of social networks and/or smartphones for broadcasting earthquake information, approaches merging science and education, and general advances in citizen seismology.</p> | oral and poster | ESC |

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| 4 | <p>Palaeoseismology</p> <p>Andrey Korzhenkov korzhenkov@ifz.ru,</p> | <p>Andrey Korzhenkov (Inst. Phys. of the Earth, RAS, Moscow) korzhenkov@ifz.ru, Daniela Pantosti (Nat. I. of Geoph/Volc., Roma</p> | <p>Knowledge on long-term seismicity is the key-point for reliable seismic hazard assessment. Lack of it cannot be truly compensated by any sophisticated methods of instrumental data analysis. Experience accumulated demonstrates that catastrophic seismic events may have very long return periods, much longer than it can be deduced from not only instrumental but also historical data. Especially, if one bear in mind that in many regions the time window covered by the catalogue of historical earthquakes is short, actually no more than few centuries. There is another point calling for attention to be paid to paleoseismological studies. The recent catastrophic earthquakes clearly demonstrated once more that the vibratory ground motion, although a serious source of direct damage, it is by no means the only parameter that should be considered, being most damages caused by the coseismic geological effects, either directly linked to the earthquake source or provoked by the ground shaking ("Earthquake Environmental Effects"). Surface faulting, regional uplift and subsidence, tsunamis, liquefaction, ground resonance, landslides, ground failure, are indeed controlled or induced by the local geological setting. Presentations describing new data, approaches, and methods used to identify evidence of palaeoseismology (for instance surface ruptures, liquefaction, tsunami deposits), to date it, and to retrieve source parameters are welcome.</p> | oral and poster | ESC |
| 5 | <p>Geodynamics of Eurasia: GPS/InSAR-constraints and relation to seismicity</p> <p>Athanassios Ganas aganas@noa.gr,</p> | <p>Dr. Athanassios Ganas (NOA), Dr Pierre Briole (ENS)</p> | <p>The relation of present-day geodynamics and earthquake occurrence is very important in many aspects. Seismology and Space Geodesy are the principal techniques to study Geodynamics on the Earth. The space-based geodetic techniques of interferometric synthetic aperture radar (InSAR) and Global Positioning System (GPS) are used widely to map crustal movements related to global and regional earthquakes. The distribution and properties of seismicity in relation to geodynamic features (arc geometry, faulting) are studied with the aims of understanding earthquake source dynamics and active tectonics. Simulations of the local and plate-scale strain-stress fields are applied to model seismic hazard. We invite contributions devoted to GPS and INSAR mapping of tectonic strain in Eurasia, studies on recent great and moderate seismic events, new research on the correlation of surface deformation with seismicity distribution and spatio-temporal patterns of seismicity in a variety of geodynamic settings (island arcs, back-arc basins, transform plate boundaries, plate interiors etc). We also invite presentations on interseismic mapping of surface deformation and its release along active faults seismically as well in forms of slow earthquakes. We also want to address the questions: the interseismic stress-strain field is properly monitored? What kind of observational framework must be established for assessing the risks associated with earthquakes? How the forces generated by the dynamics of the Earth's interior have shaped landscapes and deformed the Earth's crust and what these observations tell us about the future? What is the role of satellite geodetic measurements on mapping of the present-day heterogeneity of Eurasia in terms of stress and strain?</p> | oral and poster | ESC |

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| 6 | <p>Interdisciplinary approach to Earthquake Forecast/Prediction: Advances in observations and operational testing.</p> <p>Dimitar Ouzounov Ouzounov@chapman.edu,</p> | <p>Dimitar Ouzounov (CEESMO), Vladimir Kossobokov (Rus.Acad.Sc.), Gerasimos Papadopoulos (NOA), Sergey Pulinets (Rus.Acad.Sc.)</p> | <p>The observed seismic dynamics prior to and after many major earthquakes demonstrates common features of predictability and diverse behavior. This session expands cross-disciplinary discussions on earthquake predictability by showing the latest progress in operational forecast/prediction and validation of physically observed phenomena as precursors to strong earthquakes.</p> <p>A holistic formal approach to the study of seismicity as a complex phenomenon has led already to reproducible earthquake prediction techniques that are tested in real-time applications over the last two decades. The operational earthquake forecast/prediction topic intends to facilitate better understanding the complexity of seismic process along with its non-stationary though self-organized behavior, which is confirmed by observations, and to provide reliable timely recommendations on mitigation of seismic hazard. We solicit presentations on earthquake forecast/prediction techniques ready for real-time testing experiments, as well as those related to improving operational time dependent seismic hazard assessment.</p> <p>New observations from space and ground have provided enough new evidence about possible coupling between our planet environment and its lithosphere, which may enhance better understanding tectonic activity. Presentations on the latest observational results associated with major earthquakes obtained by different methodologies are welcomed. The session anticipates talks that include but not limited to observations and analyses of seismic, electrical, electromagnetic, electro-chemical and thermodynamic processes related to stress changes in the lithosphere along with their statistical and physical validation.</p> | oral and poster | ESC |
| 7 | <p>Nonlinear Seismology and the implications on Engineering Seismology and Earthquake Engineering</p> <p>Gheorghe Marmureanu marmur@infp.ro</p> | <p>G. Marmureanu (INFP) Raul Madariaga Raul, madariag@geologie.ens.fr. Prof.Nina Frolova:frolova@esrc.ru. (Institute for Earth Physics,Moskow); Mircea Radulian, National Institute for Earth Physics,Bucharest (mircea@infp.ro)</p> | <p>Linear stress-strain theory is generally valid at the low strains typical of most seismic waves. However, there are some circumstances in which non-linear deformations are important. Strong ground accelerations from large earthquakes can produce a non-linear response in shallow soils. This can be studied by comparing surface and borehole seismic records for earthquakes of different sizes. When a non-linear site response is present, then the shaking from large earthquakes cannot be predicted by simple scaling of records from small earthquakes. This is an active area of research in strong motion and engineering seismology. Sands typically have low rheological properties and can be modeled with an acceptable linear elastic model. On the other hand, clays which frequently presents significant changes over time can be modeled by a nonlinear viscoelastic model</p> | oral and poster | ESC |

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| 8 | <p>Cross border harmonized seismic hazard and risk assessment: results, lessons learned and future challenges.</p> <p>J. Woessner jochen.woessner@sed.ethz.ch, parolai@gfz-potsdam.de,</p> | <p>Dr. J. Woessner (ETH Zurich), PD Dr. Stefano Parolai (GFZ), Dr. M. Pagani (GEM), Dr. C. Tüzün (Kandilli), D. Giardini (ETH Zurich)</p> | <p>Although it is well known that natural disasters may potentially directly or indirectly affect more than one country, the hazard and risk associated with such events are very often assessed separately by the individual states. This approach has led in the past to the inconsistent assessment of the hazard and risk in regions at the borders of different countries and, more seriously, to different levels of preparedness. The resulting lack of harmonization of hazard and risk at the borders therefore limits the efficiency of joint actions between different civil protection and emergency agencies, hence adversely the capability of such agencies to coordinate their response to any disaster in a prompt and effective manner. Regarding seismic hazard and risk, several initiatives at regional and global scales, such as SHARE for Europe (share-eu.org), EMME in the Middle East (emme-gem.org), EMCA in Central Asia (emca-gem.org), SENSUM, and the Global Earthquake Model (globalearthquakemodel.org), have worked and are still working on the development of integrated approaches to hazard and risk assessment. The challenges involved in such initiatives are manifold, ranging from the improvement of databases containing fundamental information such as seismic catalogues, to the creation of more integrated and comprehensive methodologies, as well as the communication of any results to end users and local authorities (all of whom are dealing with different national normatives and codes). This session aims to bring together a wide range of scientists, practitioners and stakeholders who are familiar with the topics necessary for PSHA and PSRA at the local, regional and global scales, and to present and discuss means of harmonizing the various components of these assessments to enable seamless cross-border (and cross scale) mitigation. Such harmonization effects will require discussions amongst experts, scientific and operational, in the areas of earthquake catalog analysis, the development and selection of ground motion prediction equations (GMPEs) and earthquake scaling, site amplification assessment, seismic hazard model building and validation, representation of uncertainties at all stages of the risk chain, consistent vulnerability and exposure analysis (in particular that based on remote sensing data), expert elicitation procedures as well as understanding end user perspectives.</p> | oral and poster | ESC |
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| 9 | Earthquake swarms and associated processes | Josef Horalek (Acad.Scie of Czech Rep.), Thomas Fischer (Prague), Torsten Dahm (GFZ) | <p>The origin of earthquake swarms, which are seismic sequences consisting of a large number of events with missing mainshock and clustered near the beginning of the activity, remains still an enigma. The swarms typically accompany volcanic activity at the plate margins but also occur in intracontinental areas where strain from tectonic-plate movement is small, but large heterogeneities of stress and fault strength may exist. The driving force of the intraplate swarms is most often attributed either to the migration of pressurized fluids or to aseismic creep of faults. Areas of repeated swarm activities are often characterized by geodynamic unrest and other phenomena like diffuse degassing, geothermal anomalies, chemical or dissolution anomalies etc. Additionally, earthquake swarms are observed in relation to human-induced stress and pressure perturbations. The role of these processes has not been well understood yet.</p> <p>We welcome all types of studies and observations of earthquake swarm activity, their triggering mechanisms and the theoretical understanding of the underlying processes. Also the studies of associated geodynamic phenomena will help to understand better the earthquake swarm activity. The session aims to bring together both the international experts and newcomers from different fields interested in the topic, and to present a wide overview of the current leading edge research in this field.</p> | oral and poster | ESC |
| 10 | Studying Seismic Sources: Theory, Methods and Applications | Sebastiano D'Amico (Uni Malta), Christos Evangelidis (NOA), Efthimios Sokos (Uni Patras) | <p>The destructive potential of an earthquake is largely dependent on the rupture dynamics. Understanding the physics of earthquake rupture plays a key role in the prediction of near-field ground motion and in the physical comprehension of earthquake initiation, propagation and healing. Hence, earthquake source dynamics provides key elements for assessing earthquake hazard.</p> <p>The goal of this session is to encourage contributions on several aspects of earthquake source studies ranging from the smallest-scale laboratory experiments to giant megathrust earthquake studies. Submissions focusing on moment tensor, source inversion, finite fault and backprojection techniques, their applications, resolution limits and related uncertainties are particularly welcomed as well as physics-based simulation methodologies. We aim to summarize the current state-of-the-art knowledge on the earthquake source process as well as provide guidelines for future research needs in order to find solutions to problems still encountered.</p> | oral and poster | ESC |

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| 11 | <p>Just In Time: Real-Time Risk for Early Warning, Operational Forecasting and Rapid Response</p> <p>Dino Bindi bindi@gfz-potsdam.de</p> | <p>Dino Bindi (GFZ), Massimiliano Pittore (GFZ), Iunio Iervolino (Uni Naples), Can Zulfikar (Bogaz. Uni.)</p> | <p>Over the few last decades, Operational Earthquake Forecasting, Early Warning, and Rapid Response Systems have been designed and implemented in several regions of the world with the aim of mitigating the consequences of destructive earthquakes in real-time or near-real-time. Different seismological approaches have been optimized and combined to develop event detection/forecasting procedures and to provide a characterization of the source which in turn may be used for predicting the ground shaking expected at the target site and hence the resulting damage potential. Alert protocols built around the expected ground shaking intensity can trigger different levels of actions, ranging from alerting the population to managing the shut-down of important infrastructure. Besides these kinds of actions, the output of these systems has also been connected to engines for real-time or short-term risk assessment that can support the Search and Rescue functions of the civil protection units. The aim of this session is to gather the international experiences gained by the engineering seismology community about the coupling between strong-motion monitoring systems and approaches for the timely assessment of damage and other seismic-induced losses. Methodologies and applications where the seismological input provided by either on-site or regional monitoring systems are used for assessing the (expected) damage distribution at different spatial (from a single structure to a regional map) and time (within swarms and aftershock sequences or during strong earthquakes) scales are of particular interest to this session.</p> | oral and poster | ESC |
| 12 | <p>Seismological and Structural Studies in the Polar Regions</p> <p>Johannes Schweitzer Johannes.schweitzer@norsar.no</p> | <p>Johannes Schweitzer (NORSAR), Elena Kozlovskaya (Uni Oulu), Elena Kremenetskaya (Kola, Reg. Seim. Center), Myrto Pirlı (Norway)</p> | <p>Lately, and under the rapid changes taking place on the planet Earth, the Polar Regions have attracted increased attention and gained special significance as some of the regions strained the most by the consequences of climate change. Thus, it is not unexpected that both the Arctic and the Antarctic are or have been recently the central features of several international research frameworks. Among a great variety of scientific foci, all such activities also include a strong geophysical component. Some of the seismological challenges met in the Polar Regions are the study of intraplate seismicity, the study of glaciogenic events, the mechanisms behind ultra-slow spreading ridges, the role of glacial rebound in seismicity triggering and the exploration for oil and gas. In the light of the above, we invite to a session focusing on seismology and Earth structure in the Arctic and the Antarctic. All seismological topics are welcome, from monitoring of seismicity (tectonic and glaciogenic), studies of recent larger seismic events and seismotectonics to active seismic studies for the retrieval of structural information. We anticipate contributions presenting research results and their interpretation, as well as descriptions of experiments under the special conditions of the polar environment.</p> | oral and poster | ESC |

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| 13 | <p>Regional hazard and risk assessment. New Insights on Vrancea Intermediate-Depth Seismic Source</p> <p>Radu Văcăreanu radu.vacareanu@utcb.ro</p> | <p>Mircea Radulian (INFP), Alik Ismail-Zadeh (KIT), Radu Văcăreanu (Techn. Uni Bucharest), Alex H. Barbat (Polytech. Uni Catalonia)</p> | <p>The Vrancea region of the south-eastern Carpathians is a remarkable case of intra-continental intermediate-depth seismicity. A large set of geological, geophysical and geodetic data has been accumulated in the last few decades providing new insights in the complex crustal and mantle dynamics beneath Vrancea. Moreover, a wealth of strong ground motion and engineering data obtained in the past 40 years enables comprehensive studies on ground motion prediction models, on soil conditions and probabilistic analyses of seismic hazard and risk. Meanwhile, state-of-the-art mathematical and numerical simulation tools are available to better assess the expected levels of seismic hazard. However, intriguing critical aspects are still raising challenges for seismologists and engineers. The knowledge of regional tectonics, geodynamics, seismicity, lithospheric deformation, stress regime and the rate of attenuation of seismic waves are fundamental elements towards the development of a proper strategy for seismic risk mitigation in Romania and neighboring countries. The lessons learnt in the past 40 years of Vrancea earthquakes and the wisdom acquired by academia in national and international projects allows the analysis of fragility and vulnerability of buildings and structures on a more realistic and reliable basis and paves the way towards further implementation of the performance based earthquake engineering. The session encourages contributions focused on this particular seismic region, ranging from various aspects of earthquake physics, engineering seismology and earthquake engineering to seismic risk mitigation strategies and policies.</p> | oral and poster | ESC |
| 14 | <p>Induced Seismicity</p> <p>Thomas Braun thomas.braun@ingv.it</p> | <p>Thomas Braun (INGV), Simone Cesca (GFZ) Dr. Daniela Kühn (NORSAR)</p> | <p>Human operations such as CO2-sequestration, waste-water injection, underground mining, hydrocarbon exploration, geothermal exploitation, as well as water impoundment in artificial reservoirs play an important role of triggering seismic events. Nowadays, the relationships between fluid withdrawal or injection and the observed seismicity are still poorly understood. As revealed by recent damaging earthquakes the discrimination between natural, triggered or induced earthquakes is a difficult task, particularly in seismo-tectonically active areas. New processing methods for data analysis and quantitative models are necessary to better understand the causal relationship between anthropogenic activity and triggered seismicity. Contributions are welcome, presenting recently performed studies concerning induced seismicity, both on theoretical aspects as well as on observations. We invite papers on all forms of induced seismicity but particularly those addressing studies on:</p> <ul style="list-style-type: none"> • factors that cause or influence fluid-injection induced earthquakes; • methods to distinguish natural from induced seismicity; • strategies how fluid-injection induced earthquakes may be controlled; • how to estimate the hazard associated with fluid injection. <p>Presentations are supposed to treat temporal variations of physical parameters in reservoirs as e.g. pressure changes, observations of spatial-temporal seismicity patterns, or source mechanisms of triggered or induced seismicity in order to derive information on stress, pore pressure, fluid migration or strain in the subsurface. Contributions may come from the fields of hydrocarbon exploration, hydro-fracturing, geothermal exploitation, underground mining, CO2-sequestration/extraction, construction of barrier lakes and any related field where induced seismicity is observed. Papers from industry are particularly welcome to better inform the research community on the state of knowledge and practices within the community.</p> | oral and poster | ESC |

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| 15 | <p>Earthquakes of the past: present knowledge and future perspectives</p> <p>Andrea Rovida andrea.rovida@mi.ingv.it</p> | <p>Päivi Mäntyniemi (Uni Helsinki), Andrea Rovida (INGV), Karin Sesetyan (Kandilli)</p> | <p>The primary importance of the study of the seismicity of the past is largely recognized, and its results are constantly used by seismologists and engineers in a wide range of applications. Generally, end-users intend the historical earthquake data as the numbers listed in parametric earthquake catalogues. On the other hand, each entry of an earthquake catalogue follows from different successive steps, such as the retrieval and critical analysis of historical sources, their interpretation in terms of earthquake effects and macroseismic intensities, the assessment of earthquake parameters, involving and gathering different disciplines and expertise. Each of these steps provides scientific results that represent the knowledge on a particular historical earthquake. The preservation, exploitation and harmonization of the results of the mentioned investigations at the European-Mediterranean scale are the main scopes of the ESC Working Group 01-12 "Archive of historical earthquake data for the European-Mediterranean area". This session is aimed at covering the wide range of topics involved in historical earthquake research. Contributions related to methodological aspects, results, case-histories, lessons learned, applications and multidisciplinary approaches are encouraged.</p> | oral and poster | ESC |
| 16 | <p>Complexity of earthquake physics, rupture processes, and the scientific prediction</p> <p>George Purcaru - purcaru@geophysik.uni-frankfurt.de;</p> | <p>Purcaru George (Uni Frankfurt), Zavyalov Alexey (Inst. of Physics of the Earth, Moscow), Papadopoulos Gerassimos (NOA), Karakostas Vassilis (Uni Thessaloniki)</p> | <p>The scientific prediction, deterministic and probabilistic, is a complicated physical system with a limited knowledge and incomplete insights of rupture processes. These latter prevent a reliable prediction of the place, magnitude and time of occurrence of an individual earthquake, thus leading to skepticism among seismologists. In these view, we invite scientists to present their researches aiming to a better understanding and advancing of the earthquake prediction, scale dependence of rupture complexity, seismic cycle, seismic gaps, seismicity patterns, prediction algorithms, causal factors influencing on the predictability of an earthquake, complexity of earthquake recurrences, comparisons of predictions and tests of basic empirical observations, triggering, possible true precursors, etc.</p> | oral and poster | ESC |

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| 17 | <p>Share your data with the community: Data models, metadata and services in seismology.</p> <p>Philipp Kästli, kaestli@sed.ethz.ch</p> | <p>Dr. Fabian Euchner (ETHZ), Reinoud Sleeman (ORFEUS), Alessandro Spinuso (ORFEUS) Philipp Kästli (ETHZ), Tim Ahern (IRIS)</p> | <p>Recent computer technologies promote data access from anywhere to anywhere, allowing new approaches to data analysis and research which stretch far beyond looking at your own local data in your own local file. However, making these technologies useful for seismological practice requires compatible data models, standardized exchange formats, service interfaces, and metadata frameworks allowing users to discover and understand the data offered to him. Technical capabilities are not enough: data standards and service user experience must be close enough to the pre-existing experience of domain scientists in order to be picked up, while yet generic enough to allow bridging between content domains for more interdisciplinary research. Community-driven standardisation processes can help to strengthen the link between scientific and technical enthusiasts. There are many ongoing projects, all on continental, national, and institute level in this domain. Standards like QuakeML or OGC services gained broad acceptance, others like NRML are still on the way. European infrastructure projects like EPOS investigate in adopting metadata standards and infrastructures, and discovery services for the geophysical community. However, small, single institution projects are often the fastest to test-implement new concepts, contributing very valuable insight to hotly debated fields of crowdsourcing and social-networking type services. This session tries to give an overview of this very dynamic field of seismological data exchange, and to network protagonists in order to profit from each other's developments, experience, and ideas.</p> <p>We solicit contributions that deal with one or more of the following topics:</p> <ul style="list-style-type: none"> - data modelling in general - particular data models and data exchange formats in seismology - advances in metadata formats and applications - thesauri and ontologies, metadata languages and other semantic web - related technologies, - web service technology and application. - use cases of the application of these techniques in seismological research or observatory practice. <p>In particular we welcome contributions that focus on community aspects of data model development and standardization.</p> | oral and poster | ESC |
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| 18 | <p>Communication and education: making seismology accessible to society</p> <p>Stefano Solarino stefano.solarino@ingv.it,</p> | <p>Stefano Solarino (INGV), H. Wenzel (VCE), A. Sauron, P. Denton (BGS), M. Ergin (Tubitak), Florian Haslinger (SED/ETH),</p> | <p>The session deals with all aspects of interaction, in terms of education and communication, between the world of seismological research and the society. Educating people about natural disasters like earthquakes may have an enormous impact on the society and can contribute to decrease humanitarian and economic losses. In the last decade efforts have increased to bridge the gap between research and society and to improve the efficiency of communication. In this period researchers refined the pedagogical and educational approach to society by several means and projects, in part benefitting from the great number of natural disasters occurred in the time frame.</p> <p>The projects or single initiatives apply different concepts and address various audiences, but all aim at raising the awareness and educate to preparedness. The seismology@school program, for example, uses a "hands on" approach by installing semi-professional seismic instruments in schools combined with suitable didactic materials to increase both the scientific knowledge and the consciousness about seismic hazard and risk.</p> <p>Since many other educational projects are currently active in both the seismological and engineering fields, the session aims to describe these attempts, and in particular the difficulties encountered in their realization. The main goal is to discuss on the future of education and communication in light of the progressive importance of the internet and the increased attention of the media towards the seismological community after the l'Aquila sentence.</p> | oral and poster | ESC |
| 19 | <p>Incorporating Synthetic Ground Motion Data into Empirical GMPEs</p> <p>Luis A. Dalguer dalguer@sed.ethz.ch</p> | <p>Luis A. Dalguer (ETH), Sinan Akkar (KOERI), Aysegul Askan (METU), Gaetano Festa (UNINA), Mathieu Causse (ISTerre), Alessio Piatanesi (INGV), Eser Cakti (KOERI)</p> | <p>The available dataset used to build empirical GMPEs is limited since it does not cover the whole magnitude range and observed data near the source are sparse. Therefore, potential effects of source complexity, such as those from hanging-wall, footwall, buried faults, surface-rupturing, kink faults, step-over faults, directivities, focal mechanism, permanent displacement, and other source-dominated ground motion phenomena are not observationally well constrained. On the other hand, recent development of numerical simulations of earthquakes based on physics of the causative source rupture and wave propagation have contributed to substantial advances to predict the variability of near source ground motion dominated by the source and/or wave propagation effects. Therefore GMPEs must rely on synthetic earthquake ground motion data for meaningful extrapolation in areas where there are not sufficient observations. We welcome novel studies addressing the above aspects in the study of ground motion that can contribute to the development of new GMPE models.</p> | oral and poster | ESC |

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| 20 | <p>Methods and data for the study of earthquakes recorded on pre-WWSSN historical seismograms</p> <p>Graziano Ferrari graziano.ferrari@bo.ingv.it</p> | <p>Graziano Ferrari (INGV), Nurcan Meral Ozel (KOERI)</p> | <p>The aim of the session is to investigate earthquakes in the Euro-Mediterranean area, using instrumental recordings of the pre-WWSSN era and other instrumental and non-instrumental data. In recent years, European institutions, national and international projects made available a large amount of the pre-WWSSN instrumental data. However, the analysis and processing of such data still presents many problems not present in modern recordings. The session is devoted to the discussion and dissemination of know-how of the different methodologies developed to make usable such recordings. Contributions and initiatives to enhance the seismic heritage of the pre-WWSSN data in the Euro-Mediterranean area, are welcome. The session also aims to improve multidisciplinary approaches to deriving the parameters of the earthquakes of the last century, to better characterizing the seismotectonics of the affected areas and for validating the techniques developed about the processing of the instrumental data. The analysis and the processing of non-instrumental data (macroseismic and geological data, geological-structural and morphotectonic analysis) through original methodologies in order to compare or improve the pre-WWSSN instrumental studies are also welcome.</p> | oral and poster | ESC |
| 21 | <p>EMS-98 in macroseismic field surveys</p> <p>Ina Cević ina.cecic@gov.si</p> | <p>Ina Cević, ARSO, Ljubljana, Slovenia, ina.cecic@gov.si; Roger MW Musson, BGS, Edinburgh, UK, rmwm@bgs.ac.uk; Christophe Sira, University of Strasbourg, Strasbourg, France, sira@unistra.fr; Andrea Tertulliani, INGV, Rome, Italy, tertulliani@ingv.it</p> | <p>After sixteen years from the start up EMS-98 revealed to be the most modern, powerful tool for estimating the earthquake intensity especially during field surveys, and at the same time a demanding one. However some issues about the use and the real application in the field are still under debate. We would like to discuss this and other issues in the light of the recent EMS-98 experiences. The goals of this session are:</p> <ul style="list-style-type: none"> - to gather the experience different national and international teams have collected during the last years, - to present the preliminary guidelines for macroseismic field teams - and to discuss the future of the scale. | oral and poster | ESC |
| 22 | <p>Rapid source and ground shaking estimation for seismic surveillance purposes</p> <p>Alberto Michelini alberto.michelini@ingv.it</p> | <p>Alberto Michelini and Nikolaos S. Melis</p> | <p>This session addresses the rapid and accurate determination of both the earthquake source (e.g. size, mechanism, activated faults) and the resulting strong ground motion affecting populations and infrastructures (i.e. maps of strong ground motion). These issues are of foremost importance to seismologists when assessing large earthquakes and their associated aftershock sequences and to engineers, intervention teams and civil protection authorities, which rely on the rapid seismological characterizations to design intervention and recovery plans. This session explores current research in the rapid determination of source location, mechanism, finite fault and tsunami discrimination, and the information that these methodologies can provide towards faster and more accurate determination of shakemaps. Emphasis is on those tools that can be (or have been) prototyped within an operative seismic surveillance environment with the final goal of inserting them - once appraised - in a real-time seismic monitoring system currently operated at national, regional and global seismic centers.</p> | oral and poster | ESC |

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| 23 | <p>Research, Development, Applications, and Operations Related to Generating Rapid Shaking Maps.</p> <p>Bruce Worden cbworden@usgs.gov</p> | <p>Bruce Worden (USGS), David Wald (USGS), Licia Faenza (INGV)</p> | <p>Rapid ground motion maps have become an important tool for post-earthquake response and recovery efforts, loss estimation, public information, and for mitigation through planning exercises. Such mapping systems – including the well-known ShakeMap system from the USGS – have been widely adopted in earthquake prone countries around the world and in varied tectonic regimes. This session explores current research in the modeling and validation of ground motion prediction and macroseismic intensity relations as well as efforts to improve ground motion interpolation, site correction, and geospatial analyses (along with uncertainties) pertinent to such maps. We also encourage presentations on related research, operations, and applications. Such applications include scenarios, risk assessment, loss estimation, response tools, and engineering analyses that utilize rapidly-generated ground motion estimates and associated uncertainty information.</p> | oral and poster | ESC-SSA |
| | | | ESC-EAEE SESSION | | |
| 24 | <p>“Working together” Enhancing engagement between researchers and practitioners for risk mitigation</p> <p>Kevin Fleming kevin@gfz-potsdam.de</p> | <p>Kevin Fleming (GFZ), Nadejda Kommendantova (IIASA), Anna Scolobig (ETH)</p> | <p>Although the need for interaction between disaster response and mitigation researchers and practitioners should be obvious, there is nonetheless often a strong disengagement between these groups in terms of the perceived and actual goals, knowledge of available products and the differences in each group’s understanding, and execution, of the decision-making process. This partly arises from the complex nature of the communication and interaction between these groups, where the question “What do you (i.e., the practitioners) need?” is often met with another question “What can you (i.e., the scientists) give us?” Coupled with this is the need to bridge the gap between new scientific/technical solutions and the institutional contexts in which these are to be used, to better understand and create more effective risk mitigation. Therefore, it is necessary to bring these parties together and to define (1) what are the needs of practitioners, and how would they vary with respect to the stage of the disaster cycle being considered, (2) can researchers realistically deliver such needs, (3) if possible, how can such requirements be met in a timely manner, or (4) alternatively, what options can be formulated by researchers that will still meet the needs of practitioners, and (5) if and how this research can guarantee advances in both practice and science. This session therefore calls for presentations dealing with the issues of how scientific advice is used to make decisions, and how researchers and practitioners can better collaborate in formulating improved mitigation actions. Examples of where such interactions have been successful (and otherwise) from a range of natural hazards and disciplinary are welcome.</p> | oral and poster | Special Session |