

# Seismology Division Meeting at EGU General Assembly 2013



Charlotte Krawczyk  
[sm@egu.eu](mailto:sm@egu.eu)

Vienna/Austria, Wed 10 April 2013, room B5



## Agenda / Topics

- Welcome
- Awards in the Seismology Division
  - Beno Gutenberg Medal 2013
  - Outstanding Student Poster 2012
  - Young Scientist Award
- Call for nominations 2014
- Scientific Programme
  - GAs 2013 & 2014
- SM division inside
  - structure, officers, open possibilities, etc.
- SM division outside
  - statement L'Aquila verdict, what next ?
- Call for Topical Meetings and Conference Series
- EGU-journal *Solid Earth*
- any other points of interest





## Jeroen Tromp - Beno Gutenberg Medalist 2013



The 2013 EGU Beno Gutenberg medal is awarded to Jeroen Tromp for his fundamental contributions in seismology and in geophysics.

He has exercised vision and drive in ensuring that fully numerical wave field calculations and adjoint calculations are available to all.

***Prof. Jeroen Tromp***

Director 'Princeton Institute for  
Computational Science & Engineering'  
Princeton University  
Department of Geosciences  
Princeton NJ 08544 / USA





## Outstanding Student Poster (OSP) award

applicable to first authors that personally present the poster at the conference

criteria:

- current undergraduate (e.g., BSc) or postgraduate (e.g., MSc, PhD) student, or
- recent undergraduate or postgraduate student (conferral of degree after 1 January of the year preceding the conference) presenting her/his thesis work.





## Outstanding Student Poster (OSP) award

procedure:

- 1) authors are invited for OSP registration in 'Letter of Schedule'
- 2) send out to every author with an accepted poster !
- 3) division OSP-coordinator + judges evaluate posters during assembly week
- 4) award is presented in the next year.

(2013: 1100 applications in 23 divisions)



## SM 'Outstanding Student Poster' in 2012



our winner is **Galina Kulikova**

The 1911 Chon-Kemin (Mw 8.1) earthquake in the Tien-Shan region: preliminary investigation results by means of historical data. (G. Kulikova + F. Krüger / Potsdam University)

### The 1911 Chon-Kemin (Mw 8.1) earthquake in the Tien-Shan region: preliminary investigation results by means of historical data

Galina Kulikova<sup>1</sup>, Frank Krüger<sup>1</sup>  
<sup>1</sup> Institute of Earth and Planetary Sciences, University of Potsdam  
 Contact: Galina.Kulikova@post.potsdam.edu

---

#### Why Chon-Kemin earthquake?

- The M<sub>0</sub> 1911 Chon-Kemin earthquake occurred on the 3<sup>rd</sup> January 1911 and it has considerably damaged Verny (Almaty city which was just recovered after a previous strong earthquake (1857) and 1893)
- From historical records were observed in Verny

#### Working with historical data

- The most serious difficulty is the curvature correction of historical recording
- The curvature correction may bias the amplitude and period of some parts of the record
- Geometrical instrument parameters such as damping and period are missing
- The exact picking of a real event is difficult due to the lack of universal clock
- However digitized data remain a reliable source of information

#### Introduction

Several strong destructive earthquakes occurred in the Tien-Shan region at the turn of the XIX to the XX centuries with magnitudes which in two cases exceeded M<sub>0</sub> 8. Very strong intracontinental earthquakes with thrust mechanisms are rare in the history of seismology. Therefore geoscientists are strongly interested in the Tien-Shan region. This study is focused on the investigation of the fault processes of strong historical earthquakes. Here the preliminary results for the 1911 Chon-Kemin earthquake are presented.

#### Data

- The data for Chon-Kemin earthquake were collected from 20 seismic stations around the world
- The historical seismograms were taken from the different archives scanned and then digitized manually
- While working with historical seismic records one has to take into account all the aspects and uncertainties of manual digitizing and the lack of instrument characteristics

#### Earthquake relocation

- The earthquake was relocated using the program HYPOSAT based on the arrival time differences of P and S wave onsets
- The relocated hypocenter is 42958'N and 77.33207'E. The solution is most stable for a depth between 20 and 25 km
- The moment magnitudes and the body wave magnitude (Boman et al.) were calculated as Mw=8.1 and mb<sub>B</sub>7.2, respectively

#### Chon-Kemin earthquake epicenter location and fault map

Other locations available for Chon-Kemin. The location determined in this study is marked by star. The ellipse shows the ellipse of standard deviation of the epicentral location.

#### Seismic Moment determination

- Full waveform synthetic seismograms were calculated and rotated into 2HC coordinate system
- Based on the values for damping and free period of the respective instrument the response was calculated and then applied to the synthetic seismograms
- The amplitude ratios between real seismograms and simulated ones were calculated
- The real moment is the one based from the moment used for calculating synthetic seismograms by comparing the amplitudes

Station	Moment (dynes/cm)	Ratio	Mw
BBN	1.75E+028	=0.008	8.08
CTT	1.45E+028	=0.026	8.05
CHN	2.00E+028	=0.021	8.04
UM	1.46E+032	=0.001	8.04
NRN	1.63E+028	=0.187	8.08
Average	1.47E+028	=0.029	8.07

The value of seismic moment for different seismic stations seems to be consistent except for the HNC station (excluded) which can be explained by uncertain instrument information

#### Mechanism determination

- Full waveform synthetic seismograms were calculated with the reflectivity method by different nodal planes
- The synthetic wave rotated into the local station 2HC coordinate system
- Historic seismogram recordings were simulated with different nodal planes and free period of the respective instrument
- For each data record synthetic ratio between amplitudes between 0.5 and 0.5 (downward) 0.55 and 0.5 (upward) were determined between 0.5 and 0.5
- In a grid search procedure the nodal planes were calculated with 30° spacing in strike, slip and take angle, and then compared to the data amplitude ratios (upper panel)

#### Discussion

The Chon-Kemin earthquake has thrust mechanism with a strike slip component (strike 80° dip 50° take 50°) in correspondence with the overall compressive tectonic stress observations. The dominant slip likely occurred in the East-West direction. The crustal thickness is about 50 km. The geological data from the area do not show strong vertical surface displacement on the fault surface. The fault and a total length of about 200 km which corresponds to the length of the West-East propagation of rupture, due to the regional higher frequency compressive stress (not shown) in European tectonics. However the data from this station can be affected by regional tectonics of the island and Taiwan area (D&F (2011) discussion). No one-to-one correspondence between geological surface data and seismological data is observed.

#### Conclusion

- The epicenter of Chon-Kemin earthquake was relocated based on the arrival time differences of P and S wave onsets
- The mechanism of the earthquake was determined based on the focal mechanism solutions
- The seismic moment of the earthquake was determined
- Additional data which were recently obtained are expected to give more information and Chon-Kemin earthquake results to be compared with later records from this region

see EGU 2012 webpage for a full download



## Outstanding Young Scientist Awards

- 1) candidates are suggested for the 'Division OYSA' (June 15)
- 2) the division awardee is selected
- 3) from all winners of all divisions, four awardees are then selected for the EGU-wide 'Arne Richter Award for OYS' (end of the year)  
selection within four groups -> SM belongs to group I (Solid Earth)  
[group II (Soft Earth), group III (Planetary and Space Sciences), group IV (Interdisciplinary)]

**!! June 15: always deadline for all nominations**

**!! send all nominations to [awards.medals@egu.eu](mailto:awards.medals@egu.eu)**





## Outstanding Young Scientist Awards 2013

SM did not receive any proposals !?

criteria (by 1 January of the year when the award is presented):

- be in age 35\* or younger, and
- be an undergraduate or postgraduate student or have received her/his highest degree (e.g., BSc, MSc, PhD) within the last seven years\*

\* up to one year of parental leave time may be added per child

### **Arne-Richter awardees in 2013:**

Simon M. Mudd (modelling erosion processes)

Xavier Fettweis (surface mass balance of Greenland ice sheet)

Hang Su (soil-atmosphere exchange, aerosol-cloud interactions)

Alexis P. Rouillard (innovative studies of the solar atmosphere)





## GA 2013 in numbers

### General Assembly in total

13,343 Papers in Programme | ( - 1.4% compared to 2012)

4,684 Orals | 8,207 Posters | 452 PICOs (35 / 62 / 3 %)

448 unique scientific sessions

**SM in 2011: 472 abstracts**

**SM in 2012: 490 abstracts**

**SM in 2013: 505 abstracts**

where SM leads

**974 incl. co-organization (+ 469)**

20 withdrawn





## GA 2013 regarding SM

### Rooms

moved to blue level  
posters re-grouped  
closer to TS, EMPV, GD, SSS, etc.

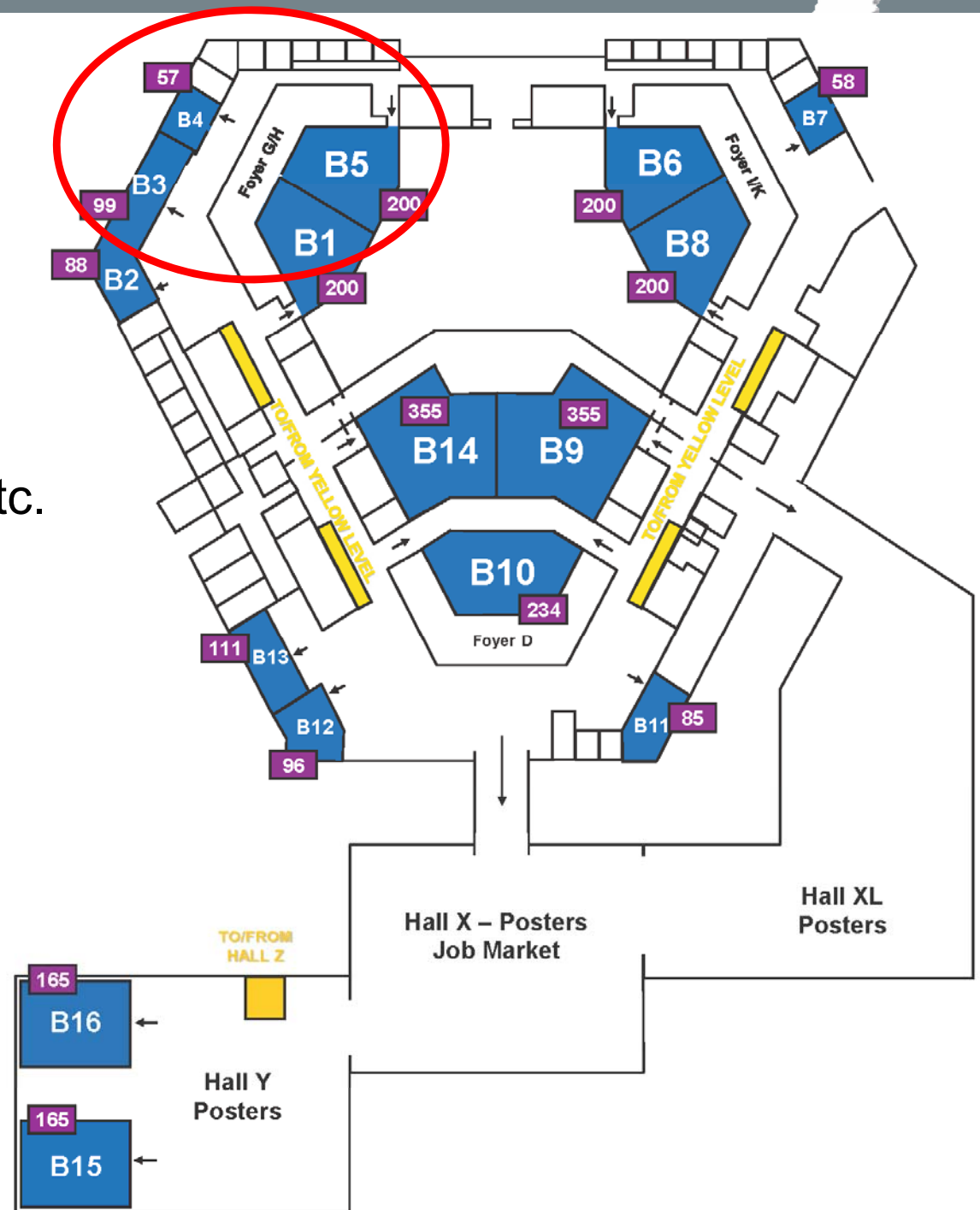
### Presentations

request: 55% orals  
realized: 36% orals

### Travel grants

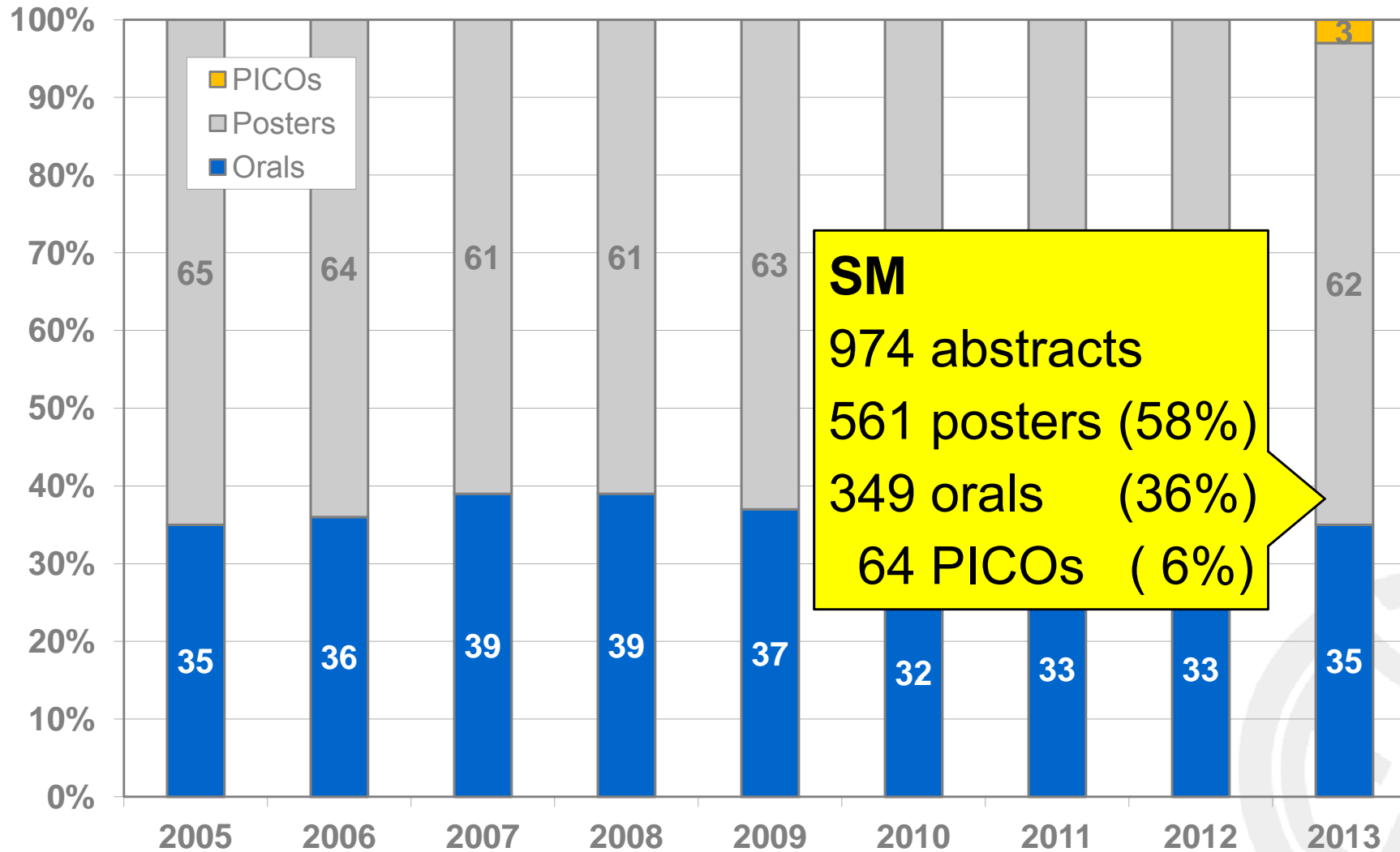
SM: 6 (1.2%)

EGU total: 274 (1.8%)





## Oral-Poster ratio has improved !





## New presentation type: PICO sessions



first test in 2013 in one session per division

electronic poster session (paper posters as back-up)

experience from session SM4.2, yesterday afternoon ???



## Scientific Programme GA 2013

### EGU-wide

Great Debate 1: 'Shale gas: To frac or not to frac ?'

Wednesday, 15:30, room Y9

### Session Groups

SM1 – General Topics

SM2 – Earthquakes & Earthquake Engineering

SM3 – Hazard & Prediction

SM4 – Geophysical Imaging of the Earth's Interior

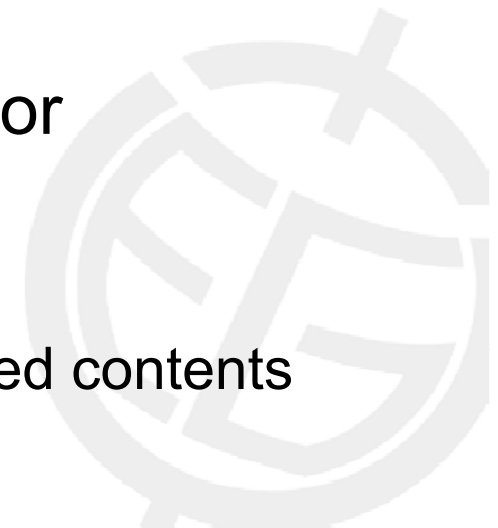
SM5 – Seismotectonics

SM6 – The Lithosphere & the Earth's deep Interior

SM7 – Co-listed Sessions

co-organized = strong connection between divisions, shared contents

co-listed = loose connection, just listed for information





## Skeleton Programme GA 2014

General Assembly: Vienna, 27. April - 2. May 2014

Skeleton: set up until September 2013 !

- rotation of topics and conveners
- diversity amongst conveners
- take care duplication/overlap among sessions
- encourage poster only sessions (also PICO only sessions?)
- try to cover emerging topics
- encourage interdisciplinarity
- sessions  $\leq 20$  papers: merged/poster only
- suggestions for Union Symposia/Great Debates/etc.





## Scientific Programme for 2014

### Session Groups

SM1 – General Topics

SM2 – Earthquakes & Earthquake Engineering

SM3 – Hazard & Prediction

**SM4 – Geophysical Imaging of the Earth's Interior**

SM5 – Seismotectonics

**SM6 – The Lithosphere of the Earth's deep Interior**

SM7 – Co-listed Sessions

### **SM4**

SM4.1 – Methodical developments

controlled source seismology

tomography (FWI, surface waves, ambient noise, ....)

receiver functions

non-seismic methods

SM4.2 – Case studies and applications

near-surface/shallow geophysics

lithosphere processes





## Communication Activities at the Assembly

### EGU Today

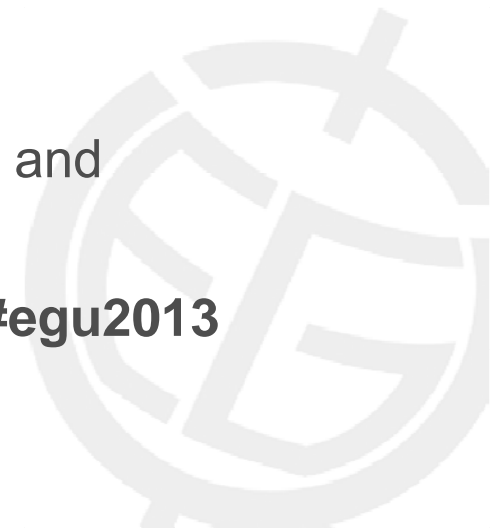
- EGU Today is a daily newsletter highlighting interesting workshops, lectures and films at GeoCinema, amongst activities at the Assembly
- Paper copies will be distributed daily and available to download

### Blogs

- GeoLog & the EGU Blog Network will be sharing great sessions, research, interviews and more throughout the Assembly
- Follow them here: [geolog.egu.eu](http://geolog.egu.eu) and [blogs.egu.eu](http://blogs.egu.eu)

### Social Media

- Sessions will be advertised on Twitter ([@EuroGeosciences](https://twitter.com/EuroGeosciences)) and Facebook (**European Geosciences Union**)
- Participants can ask questions & keep updated by following **#egu2013**





## SM division organization

### President

Charlotte Krawczyk

### Vice-President

Massimo Cocco

approved  
in DM

### Science Officers

Infrastructures, data and facilities

Theoretical Seismology

Earthquake Characteristics and Processes

Induced and Anthropogenic Seismicity

Surface Waves and Interferometry

Seismic Tomography

Controlled Source Seismology

Shallow subsurface

Non-seismic geophysical imaging

Anisotropy

Receiver Functions and Upper Mantle

Mantle and Converted Waves

Massimo Cocco

Heiner Igel

Mourad Bezzeghoud

Philippe Jousset

Fabio Romanelli

Eduard Kissling

Christopher Juhlin

Lars Nielsen

Alan Jones

Jaroslava Plomerova

Rainer Kind

Lev Vinnik



## SM division organization

### Awards & Medals

Chair for BGM – Jean-Paul Montagner

OSP Coordinator – Valenti Sallares

### PC Programme Group Chair

Charlotte Krawczyk

### Publication Committee

Ramon Carbonell

### Webmaster

is done now at EGU office in Munich

### Member in Outreach Committee

**!!! volunteer needed !!!**





## Rules 'Benno Gutenberg Medal' committee

### Members

last 5 past medalists

1 member must be replaced every year

committee is chaired by the 4<sup>th</sup> last medalist

*ex-officio*: Division President, chair of Union Award Committee

### Committee for 2014

Jeroen Tromp (2013 medalist)

Michel Campillo

Guy Masters

Jean-Paul Montagner (chair)

John Woodhouse

*ex-officio*: Charlotte Krawczyk, Alberto Montanari

approved  
in DM





## Statement on L'Aquila verdict

L'Aquila verdict on Oct. 22, 2012

Interviews across Europe the next two days

Statement posted on division website

Informal survey in Febr. 2013

to ask for consequences arising from the verdict  
(ca. 70 replies)





# European Geosciences Union

Division on  
**Seismology**



[General Assembly 2013](#) | [Divisions](#) | [Membership](#) | [Contact](#) | [Login](#)

Division Pages ▾

## Menu

[Home](#)

[SM Structure](#)

[Meetings](#)

[Publications](#)

[Awards & Medals](#)

[Jobs](#)

[Reports](#)

[◀ Back to EGU Website](#)

## Find us on



## Division on Seismology (SM)

**President:** Charlotte Krawczyk, [sm@egu.eu](mailto:sm@egu.eu)

**Vice-President:** Massimo Cocco, [massimo.cocco@ingv.it](mailto:massimo.cocco@ingv.it)

### About SM

The EGU offers a well recognized forum where a large variety of scientific questions and results are discussed. Since the impact of geosciences to the society has probably never been as high as it is today, we can foster this development by broadening our research topics and open our fields to wide, interdisciplinary collaborations within EGU. Here, seismology as a discipline is significant, since it contributes to a large variety of both basic and applied thematic fields and urgent questions. The seismology (SM) division at EGU therefore wants to strengthen its value by enhancing the development from static to dynamic models, from acquisition parameter to petrophysical property, and from geomodel to geotechnical application. Thereby, also the ability to make relevant predictions for the future is growing.

### News

1. [Scientists alarmed by verdict of Italian court](#)
2. [Can we predict earthquakes?](#)







## Scientists alarmed by verdict of Italian court

The seismological community is deeply concerned about the L'Aquila verdict by an Italian court on 22 October 2012. The manslaughter conviction of six earthquake experts in Italy for failing to give adequate warning of the 2009 earthquake in the city of L'Aquila that killed over 300 people, has occupied the thoughts of large parts of our community.

The consequences of this verdict for science in general, and for the exchange of information between scientists and policy-makers in particular, could be drastic. If scientists stop actively engaging with the public to demonstrate the importance of their work, if they refuse to work in hazard-evaluation panels, or if they are afraid of offering scientific advice to the best of their ability, the prime foundations of science – sharing and openly discussing research and increasing knowledge – are no longer met.

There are many subtleties to the L'Aquila case, so that the case itself cannot be judged by most of us. Thus, to rather provide a constructive input on the discussion, the [current status of earthquake prediction is summarised](#) by scientists of the Seismology Division of EGU.

*Hannover, 23 October 2012, Charlotte Krawczyk*







## How to proceed ?

L'Aquila discussion is very sensible/emotional/delicate....

legislation varies a lot across Europe / ww

set up of a forum on EGU-website to discuss and explore possibilities for further actions, accompanied by a steering-group that takes care about the issue

draft some guidelines or text if appropriate





## New committee structure approved in Sunday Council

Outreach Committee has split the duties:

Outreach and Education (chair: Niels Hovius)

Committee for Scientific Meetings (chair: Fabrizio Storti)

members: 1 person/pillar

solid earth (Nicholas Arndt)

soft earth (Charlotte Harsager)

space+planets (Ozgur Karatekin)

interdisciplinary (Stefano Tinti)

ex- officio: executive secretary (Philippe Courtial)

treasurer (Roland Schlich)





## EGU Meetings Programme

Scientific Meetings Committee provides funding for meetings

available formats to apply for co-funding at EGU

conference series

topical meetings

workshops

training schools

for the benefit of all scientists and with special attention to the needs of young scientists !





## EGU Meetings Programme

### Who can apply ?

individual scientists, working groups and committees

### What is important ?

decisions for or against support are based on scientific merit, timeliness, relevance and feasibility of the proposal

submit via the 'Support Request form'  
check format and obligations on website

### deadlines: now twice a year !


end of January and (in summer ?)





## EGU Publication Series

open access as basic principle  
interactive discussion papers



The screenshot shows the homepage of the Solid Earth journal website. At the top left is a thumbnail of the journal cover, which features a landscape with mountains and a lake. The title 'Solid Earth' is prominently displayed in the center. Below the title, it states 'An Interactive Open Access Journal of the European Geosciences Union'. A navigation menu on the left side includes links for Home, Online Library SE, Online Library SED, Alerts & RSS Feeds, General Information, Submission, Review, Production, Subscription, and Comment on a Paper. The main content area on the right includes the journal title, executive editors' names (Darren R. Gröcke, Ramon Carbonell & Paolo Papale), a description of the journal's open access and peer-review process, a list of indexing services (Scopus, ADS, Directory of Open Access Library, Deutsche Digitale Bibliothek, Library of Congress), and a section for 'Aims and Scope' which describes the journal's focus on Earth's composition, structure, and dynamics.

**Solid Earth**  
An Interactive Open Access Journal of the European Geosciences Union

| EGU.eu |

Home  
Online Library SE  
Online Library SED  
Alerts & RSS Feeds  
General Information  
Submission  
Review  
Production  
Subscription  
Comment on a Paper

**Solid Earth (SE)**  
**Executive Editors: Darren R. Gröcke, Ramon Carbonell & Paolo Papale**

Open Access – Public Peer-Review & Interactive Public Discussion – Personal Moderate Service Charges

Indexed in [Scopus](#) and [ADS](#). Included in the [Directory of Open Access Library \(UK\)](#), [Deutsche Digitale Bibliothek \(D\)](#) and [Library of Congress](#)

**Aims and Scope**

Solid Earth (SE) is an international scientific journal dedicated to the publication of research on the composition, structure and dynamics of the Earth from the surface to the deep interior.

The journal invites short communications, research articles, review articles and discussion papers comprising of observational, experimental and theoretical investigations (for



## Advertise your meeting in the EGU meetings calendar

General Assembly 2013 | Divisions | Membership | Contact | Login | Division Pages

### Menu

- Home
- About EGU
- EGU Structure
- Meetings
  - Calendar
  - General Assembly
  - Co-Sponsored Meetings
- Publications
- Outreach & Education
- News & Press
- Awards & Medals
- Membership
- Elections
- Collaborations
- Jobs

### Meetings Calendar

Show only EGU meetings

The following is a list of meetings, workshops, and conferences that may be of general interest. You may export the list of all upcoming events as an iCalendar file or subscribe to our meeting RSS feed . You can also export individual events by clicking the respective icon.

If you are interested adding a workshop, meeting, or conference to this list please use the [Meeting Submission Form](#).

General Assemblies and EGU Co-Sponsored Meetings are listed under [EGU meetings](#).

### Meetings 2013

#### April

- EGU General Assembly 2013  
Vienna, Austria  
 07–12 April 2013
- 45th International Liege Colloquium on Ocean Dynamics   
Liège, Belgium  
 13–17 April 2013
- Basalt 2013 – Cenozoic Magmatism in Central Europe   
Görlitz, Germany  
 24–28 April 2013





## Other news for 2013

### Günther Blöschl is new EGU President



Philippe Courtial

Roland Schlich

Günther Blöschl

Don Dingwell

Mioara Mandea







## Other news for 2013

Günther Blöschl is new EGU President

GA stays the next 5 years in Vienna

give feedback on EGU General Assembly 2013  
available already during the assembly this week  
[www.egu2013.eu/feedback](http://www.egu2013.eu/feedback)

PICOs

New committee on scientific meetings





Any other points of interest



contact to discuss division matters

Charlotte Krawczyk | [sm@egu.eu](mailto:sm@egu.eu)

**! the division lives from y/our initiatives !**

