

Ettore Majorana Foundation and Centre for Scientific Culture (EMFCSC)

INTERNATIONAL SCHOOL OF GEOPHYSICS - Director: E. BOSCHI

26th Workshop:

**Earthquake and Shaking Probabilities:  
Helping Society to Make the Right Choice**

Erice (Sicily), Italy, 18-24 October 2006

Directors: D. Giardini, ETHZ, Zürich; K. Shimazaki, ERI, Tokyo;  
M. Stucchi, INGV, Milano; G. Valensise, INGV, Roma; R. Wesson, USGS,  
Denver.

*Sponsored by the Italian Department for Civil Defense*

**Final program**

## **19 October – Day 1, Section 1**

### **Observations of earthquake occurrence**

This session will discuss the raw ingredients of the elaboration of a comprehensive model of earthquake occurrence, including historical, geological and modern strain data; how to match them, their potential interactions and known limitations, and new constraints that can be obtained to reduce the lack of knowledge.

#### **Morning – Chair G. Valensise**

##### **9.10 – Gianluca Valensise and Massimiliano Stucchi**

*Introduction*

##### **9.30 - Roger Bilham**

*Scaling laws & recurrence intervals for the Himalaya (and other plate boundaries) and why forecasts can go terribly wrong*

##### **10.15 - Kelvin Berryman**

*Current themes in earthquake geology research in GNS Science, New Zealand, and implications for seismic hazard purposes*

##### **11.00 – coffee break**

#### **Chair K. Shimazaki**

##### **11.30 - Susan Hough**

*Intraplate Seismic Hazard: long earthquake cycles, short human histories*

##### **12.15 - Panel discussion on:**

*- Segmentation, grouping, and gigantic events (K. Shimazaki)*

#### **Afternoon – Chair D. Jackson**

##### **15.00 - Koji Okumura**

*Fault mapping, paleoseismology, and risk assessment of Japanese onshore faults since the 1995 Kobe earthquake*

##### **15.45 - Gianluca Valensise**

*Blind faulting, ambiguous geological evidence, source complexity and low strain rates: the hard task of deriving a seismogenic model in Italy (and elsewhere)*

##### **16.30 – coffee break**

##### **17.00 - Panel discussion on:**

*- Seismogenic sources: databases, current practice, unknown and uncertain sources, open issues (R. Basili, Italy; R. Langridge, New Zealand ; K. Okumura, Japan)*

## **20 October - Day 2, Section 2**

### **Models of earthquake occurrence and recurrence**

This session will be devoted to discussing a) current earthquake recurrence models and physical constraints on the seismic cycle; b) assessment of earthquake probabilities that may result from different models of earthquake recurrence, their reliability, their value for enforcing risk mitigation policies at local or regional scale.

#### **Morning – Chair S. Hough**

##### **9.00 - Kunihiko Shimazaki**

*Long-term earthquakes forecasts of Japanese earthquakes*

##### **9.45 - David Jackson**

*Constructing and testing recurrence relationships*

##### **10.30 – coffee break**

#### **Chair K. Okumura**

##### **11.00 - Ross Stein**

*Thinking the unthinkable: new approaches to assessing the earthquake threat to Tokyo*

##### **11.45 - Massimo Cocco**

*Predicting seismicity rates with physically-based models*

##### **12.30 - Short presentations (Chair G. Valensise)**

- A. M. Lombardi. *Clustering and nonstationarity of large earthquake occurrence: towards an "universal" statistical distribution.*
- V. Montaldo. *Slip rates uncertainty and its influence: an example from north-eastern Italy.*
- E. Varini. *Reconciling short and long-term hazard assessment.*

#### **Afternoon – Chair G. Suarez**

##### **15.00 - Laura Peruzza**

*Ideas and tests for earthquake probability estimates in Italy*

##### **15.45 - Steven Ward**

*All California Earthquake Simulator Models*

##### **16.30 – coffee break**

##### **17.00 - Panel discussion on:**

- *Balancing geologic, geodetic, and seismic data in estimating earthquake probabilities (D. Jackson, USA; S. Barba, Italy)*

## **21 October – Day 3**

### **Morning**

#### **Excursion to Segesta or Mozia**

### **Afternoon**

#### **15.00 - Panel discussion on:**

- *Wringing the most science out of historical earthquake catalogs (R. Stein, USA)*
- *Common sense vs. b-value; historical tomes vs. seismograms; strategies for moving beyond the simplistic approach (R. Bilham, USA; S. Hough, USA)*

#### **16.30 – coffee break**

#### **17.00 - Day 3, Section 3**

### **The SHA practice**

This session will review the present knowledge basis and discuss how all input data are arranged for use in SHA practice. The session will also discuss current approaches in probabilistic SHA at various scales and their mutual interactions.

#### **Chair J. Bommer**

#### **17.00 - Frank Scherbaum**

*Ground motion prediction for seismic hazard assessment*

#### **17.45 - Fabrice Cotton**

*Scaling and its effect on PSHA*

## **22 October – Day 4, Section 3**

### **The SHA practice** (*continuation*)

#### **Morning – Chair G. Gruenthal**

##### **9.15 - John Adams**

*National probabilistic seismic hazard assessment for Canada: basis for the 4th Generation (2005) and prognosis for the 5th generation (circa 2015)*

##### **10.00 - Saburoh Midorikawa**

*National seismic hazard maps for Japan (2005) and future prospects*

##### **10.45 – coffee break**

#### **Chair R. Wesson**

##### **11.15 - Massimiliano Stucchi**

*Seismic hazard assessment (2004-2006) for the italian building code*

##### **12.00 - Mark Petersen**

*Putting together the 2007 U.S. National Seismic Hazard Maps: methodology and issues*

##### **12.40 - Short presentations**

- C. Meletti. *On-line seismic data for the new italian seismic code.*
- G. Gruenthal. *New generation of probabilistic seismic hazard assessment of Germany.*

#### **Afternoon – Chair F. Scherbaum**

##### **15.00 - Domenico Giardini**

*Seismic hazard and risk assessment in the Alpine area: from regional to local scale*

##### **15.45 - Mario Ordaz Schroeder**

*On the inclusion of local site effects in probabilistic seismic hazard analysis*

##### **16.30 – coffee break**

#### **Chair J. Adams**

##### **17.00 - Edward Field**

*Building an infrastructure for putting physics-based SHA into practice (examples from California)*

##### **17.45 - Roger Musson**

*Challenges for the future development of PSHA*

##### **18.30 - Discussion**

## **23 October – Day 5, Section 4**

### **Future seismic hazard assessment: comparing needs and answers**

This session will focus on the comparison between the status of SHA in different countries in response to different requests from state authorities, the industry and the general public, and on on-going and future developments in SHA methodologies and approaches.

#### **Morning – Chair M. Petersen**

##### **9.15 - Dario Slejko**

*Level 1 or level 4? It depends on the ground*

##### **10.00 - Julian Bommer**

*Defining and selecting return periods for engineering design*

##### **10.45 – coffee break**

#### **Chair S. Midorikawa**

##### **11.00 - Short presentations**

- *C. Papaioannou. Seismic hazard in Greece at various scales*
- *G. Zonno. Stochastic constraints to local PHSA using individual seismogenic sources.*
- *C. Beauval. Impact of uniform seismicity distribution on PSH estimates.*

##### **11.30 – Panel discussion on:**

- *Do we really need another Global Seismic Hazard Assessment*
- Introduced by D. Giardini*

##### **12.15 - Gian Michele Calvi**

*Priorities, timescales, bank and insurance policies for seismic risk reduction*

#### **Afternoon – Chair A. Dziewonski**

##### **15.00 – Dirk Hollnack**

*From Hazard to Risk: the use of SHA in Risk Modelling for Insurance Industry*

##### **15.45 – Panel discussion on the needs of the users**

*Introduced by D. Hollnack and R. Musson*

*Includes a short presentation:*

- *C. Williams. The Role of Cat Risk Modelers*

##### **16.30 – coffee break**

##### **17.00 - Final Panel discussion on the Workshop's fundamental issues**

*(led by J. Bommer, G.M. Calvi, D. Giardini, K. Shimazaki and R. Wesson)*

##### **18.00 – Closing**