

ESF Conference in Partnership with LFUI

Continuing Challenges in Earthquake Dynamics: New Methods for Observing and Modelling a Multi-Scale System

24-29 September 2011
Universitätszentrum Obergurgl, Austria



In Partnership with:



Chaired by:

Prof. Sandy Steacy, *University of Ulster, Northern Ireland, UK*

Co-chaired by:

Dr. Annemarie Christophersen, *GNS Science, NZ;*

Dr. Sebastian Hainzl, *GFZ German Research Centre for Geosciences, DE;*

Dr. David Marsan, *Université de Savoie, FR*

Saturday 24 September

17:00 – 19:00 Registration at ESF desk

19:00 – 19:30 Welcome drink

19:30 Dinner

Sunday 25 September

09:00 – 09:20 Conference Opening and Welcome Message from the Chair

Session I - Constraints on earthquake physics from geological/laboratory measurements

Chair: Sandy Steacy, *University of Ulster, Northern Ireland, UK*

09:20-10:00 **Phil Meredith**, *University College London, UK*
Spatio-temporal evolution of fracture and flow driven seismicity: laboratory simulations

10:00-10:40 **Thomas Fischer**, *Charles University Prague, CZ*
Triggering and driving forces of earthquake swarms and injection-induced seismicity

10:40-11:10	Coffee break and Posters
11:10-11:50	Francois Cornet , <i>Institut de Physique du Globe Strasbourg, FR</i> On the relationships between seismic and aseismic motions
11:50-12:30	Masao Nakatani , <i>University of Tokyo, JP</i> Growing Dc in conservative slow laboratory friction
12:30-13:00	Discussion
13:00-15:00	Lunch and break
Session II – Observations and modelling of multi-scale earthquake dynamics Chair: David Marsan , <i>Université de Savoie, FR</i>	
15:00-15:40	Caroline Francois-Holden , <i>GNS Science, NZ</i> Understanding the ongoing (2010-2011) sequence of recent large earthquakes in New Zealand
15:40-16:20	Giulio Di Toro , <i>Istituto Nazionale di Geofisica e Vulcanologia Rome, IT</i> Fault weakening during earthquakes
16:20-16:50	Coffee break and Posters
16:50-17:10	Luisa Valoroso , <i>Istituto Nazionale di Geofisica e Vulcanologia, IT</i> The complex architecture of the 2009 MW 6.1 L'Aquila normal fault system (Central Italy) imaged by high-resolution earthquake locations of a large dataset
17:10-17:30	Julian Lozos , <i>University of California, Riverside, US</i> Rupture propagation and ground motion of strike-slip stepovers with intermediate fault segments
17:30-17:50	Anthony Sladen , <i>Université de Nice – Sophia Antipolis, FR</i> The 2011 Magnitude 9.0 Tohoku-Oki Earthquake: Mosaicking The Megathrust From Seconds To Centuries
17:50-18:20	Discussion
19:00	Dinner
Monday 26 September	
Session II (cont.): Observations and modelling of multi-scale earthquake dynamics Chair: Joan Gomberg , <i>US Geological Survey Seattle, US</i>	
09:00-09:40	Poster pitches
09:40-10:20	Jean Schmittbuhl , <i>CNRS University of Strasbourg, FR</i> Micro-Seismicity and Large Earthquake interactions in Marmara Sea Region
10:20-10:50	Coffee Break and Group Photo
10:50-11:10	Markos Avlonitis , <i>Ionian University, GR</i> Multi-scale modeling of earthquake sources via stochastic differential constitutive equations
11:10-11:30	Alice-Agnes Gabriel , <i>ETH Zurich, CH</i> Transition and Macroscopic Source Properties of Dynamic Rupture Styles

11:30-11:50	Chung-Han Chan , <i>Department of Geosciences National Taiwan University, TW</i> Possible stress states before and after the 1999 Chi-Chi, Taiwan, earthquake
11:50-12:10	Delphine Fitzenz , <i>University of Evora, PT</i> A Bayesian Framework to Rank and Combine Candidate Recurrence Models for Specific Faults
12:10-13:00	Discussion
13:00-15:00	Lunch and break
Session III: Mechanisms for earthquake triggering Chair: John McCloskey , <i>University of Ulster, UK</i>	
15:00-15:40	Jeff McGuire , <i>Woods Hole Oceanographic Institute, US</i> Controls on Intermediate Term Predictability of Transform Fault Earthquakes
15:40-16:20	David Shelly , <i>US Geological Survey, US</i> Impact of static and dynamic stress changes on tremor and creep along the lower-crustal San Andreas fault
16:20-16:50	Coffee and posters
16:50-17:30	Joan Gomberg , <i>US Geological Survey Seattle, US</i> From creep to super-shear slip in laboratory to plate-scale systems
17:30-18:10	Sylvain Barbot , <i>California Institute of Technology, US</i> An Integrated View of the Mw 6 Earthquake Sequence at Parkfield
18:10-18:40	Discussion
19:00	Dinner
20:30-22:00	Poster session
Tuesday 27 September	
Session III (cont.): Mechanisms for earthquake triggering Chair: Sebastian Hainzl , <i>GFZ German Research Centre for Geosciences, DE</i>	
09:00-09:40	David Marsan , <i>Université de Savoie, FR</i> Modelling of the foreshock sequence prior to the 2011, MW9.0 Tohoku, Japan, earthquake
09:40-10:20	Ana Ferreira , <i>University of East Anglia, UK</i> Kinematic earthquake source models: uncertainties and prospects
10:20- 10:50	Coffee and posters
10:50 – 11:30	John McCloskey , <i>University of Ulster, UK</i> Long-term modelling of stress on subduction zones
11:30-11:50	Flaminia Catalli , <i>ETHZ-Zuerich, CH</i> Stress triggering at geothermal sites: a preliminary study at Basel
11:50 – 12:30	Shinji Toda , <i>Disaster Prevention Research Institute Kyoto, JP</i> Widespread seismicity excitation and static stress shadow following the 2011 M=9.0 great Tohoku, Japan, earthquake
12:30-13:00	Discussion

12:45	Lunch and break
14:30	Free afternoon
19:00	Dinner
Wednesday 28 September	
Session IV: Statistical seismology Chair: Caroline Francois-Holden, GNS Science, NZ	
09:00-09:40	Sebastian Hainzl , <i>GFZ German Research Centre for Geosciences, DE</i> Earthquake modeling based on physics and statistics
09:40-10:20	Matt Gerstenberger , <i>Institute of Geological and Nuclear Sciences, NZ</i> A time-dependent update of the New Zealand seismic hazard model considering the Canterbury sequence
10:20-10:40	Sandy Steacy , <i>University of Ulster, Northern Ireland, UK</i> Application of Coulomb and hybrid Coulomb/statistical models to the Canterbury, New Zealand, earthquake sequence
10:40-11:10	Coffee and posters
11:10-11:50	Jiancang Zhuang , <i>Institute of Statistical Mathematics, JP</i> Foreshocks and the Bath law explained by earthquake clustering models
11:50-12:30	Max Werner , <i>Princeton University, US</i> Spatial Distributions of Foreshocks and Aftershocks: Static or Dynamic Triggering?
12:30-13:00	Discussion
13:00-15:00	Lunch and break
15:00-15:40	Mark Naylor , <i>University of Edinburgh, UK</i> Exploring aspects of earthquake predictability: When our intuition lets us down
15:40 – 16:20	Rapporteur overview and introduction to the discussion Shane Murphy , <i>University of Ulster, UK</i>
16:20-16:50	Coffee and posters
16:50-18:20	Sandy Steacy , <i>University of Ulster, Northern Ireland, UK</i> Forward look and final discussion
19:00	Get together Drink and Conference Dinner
Thursday 29 September	
Breakfast and departure at 7:00 and 9:00	