

6th INQUA | International Workshop on Active Tectonics Paleoseismology and Archaeoseismology

19-24 April 2015
Pescina, Fucino Basin, Italy



www.fucino2015.it

PROGRAMME

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Alessandro Maria Michetti (Univ. degli Studi dell'Insubria)
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Eutizio Vittori (ISPRA)
Marco De Nicola (Comune di Pescina)

Scientific Committee

Alfonsi L., Amit R., Audemard F., Baize S., Boncio P., Bosi C., Commerci V., Costa C., Doglioni C., Galli P., Grutzner C., Hinzen K., Karakhanian A., Kim Y.S., Livio F., Masana E., Mc Calpin J., Messina P., Okumura K., Papanikolaou I., Perez Lopez R., Piccardi L., Porfido S., Reicherter K., Roberts G., Rockwell T., Saroli M., Schwartz D., Scotti O., Serva L., Silva P.G., Smedile A., Szczucinski W., Tatevossian R. and Villani F.

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Organizing Secretary

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WELCOME
TO FUCINO 2015



6th INQUA
International Workshop
on Active Tectonics
Paleoseismology
and Archaeoseismology

*Dear Participants,
welcome to Fucino 2015!*

As mayor of Pescina, and also on behalf of the 1915-2015 Pescina Committee I am very honoured to host this international workshop in our small town.

We are in the epicentral area of the 1915 Fucino earthquake: this event was a catastrophe for Pescina and other surrounding villages that changed our history for ever with a remarkable social impact.

One hundreds years later we wish to keep the memory of such a tragic event. Thus, we are very glad to promote this workshop as an action for sharing and discussing the most recent scientific developments in the seismic hazard assessment.



*Antonio Iulianella
Mayor of Pescina Municipality*

Dear Participants,

The Fucino 2015 event will be the 6th INQUA international workshop in the last six years after those held in Baelo Claudia, Corinth, Morelia, Aachen and Busan. All these meetings have been supported by INQUA TERPRO Focus Group on Paleoseismology and Active Tectonics (PALACTE), and have seen fruitful and intense discussions among the participants.

During the Fucino 2015 event we will discuss the almost final results of the INQUA Project 1299 – EEE METRICS Parametrization of Earthquake Environmental Effects (2011-2015) that will end on July 2015 at the INQUA Congress in Nagoya (Japan). It will be also the occasion to further discuss future joint research projects for the 2015-2019 intercongress period.



*Pablo G. Silva
President of INQUA TERPRO PALACTE*

WELCOME TO FUCINO 2015



6th INQUA
International Workshop
on Active Tectonics
Paleoseismology
and Archaeoseismology

Dear Participant,

This event will be the 6th INQUA International Workshop on Active Tectonics Paleoseismology and Archaeoseismology, that follows the previous successful INQUA "PATA days" meetings.

A well-qualified community of scientists in the field of active tectonics, paleoseismology and archaeoseismology participates to this event: almost 200 participants from 25 different countries have registered and more than 150 extended abstracts have been accepted for publication in the Abstract Volume! During the workshop, organized by INGV, ISPRA and University of Insubria, we will remember the centenary of the 1915 M7 Fucino earthquake, that was one of the largest and devastating earthquakes ever occurred in Central Italy. The Scientific sessions will be attended in the unique historical and cultural atmosphere of Pescina's village, affected by extensive coseismic surface faulting in 1915. A 2 days field trip in the Fucino and L'Aquila areas will follow, retracing in the field the path of faults, landscapes, castles and ancient settlements. Moreover, the participants will have the opportunity to join a pre-congress archaeoseismic tour downtown Roma.

Although the scientific program is very intense, participants will have also the opportunity to discover the history, tradition and food of Abruzzi.

We wish to acknowledge all the people that supported this event, and in particular the Mayor of the Pescina municipality, the members of the Scientific Committee and the sponsors.

Finally we wish to thank all the participants for their contribution to Fucino 2015!



The Fucino 2015 Organizing Committee

*Anna Maria Blumetti
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Daniela Pantosti
Eutizio Vittori*

SUMMARY PROGRAM



6th INQUA
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Paleoseismology
and Archaeoseismology

SUNDAY 19

10.00 - 16.00	Pre-Congress Field Trip
16.30 - 18.30	Bus transfer Roma-Pescina
18.30 - 20.30	Ice-breaking party

MONDAY 20

9.00 - 10.00	Welcome, Opening Ceremony
10.00 - 11.00	Commemoration of the 1915 Fucino earthquake
11.00 - 11.30	Coffee Break + Poster Session

Quaternary geology

11.30 - 13.10	Oral Session Part 1
13.10 - 15.00	Lunch
15.00 - 16.30	Oral Session Part 2
16.30 - 17.30	Coffee Break + Poster Session

Archaeoseismology

17.30 - 18.35	Oral Session
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TUESDAY 21

Paleoseismology

9.00 - 10.20	Oral Session Part 1
10.20 - 11.20	Coffee Break + Poster Session
11.20 - 13.05	Oral Session Part 2
13.05 - 15.00	Lunch
15.00 - 16.35	Oral Session Part 3
16.35 - 17.00	Coffee Break + Poster Session
17.00 - 18.30	EPOS-EuroGeoSurveys Workshop

WEDNESDAY 22

Seismic and Tsunami Hazard

9.00 - 10.30	Oral Session Part 1
10.30 - 11.30	Coffee Break + Poster Session
11.30 - 13.05	Oral Session Part 2
13.05 - 15.00	Lunch
15.00 - 16.40	Oral Session Part 3
16.40 - 17.15	Coffee Break + Poster Session
17.15 - 18.00	INQUA Business meeting

THURSDAY 23

9.00 - 18.00	Post-Congress Field Trip: Fucino basin
18.00 - 18.30	Bus transfer to Ovindoli

FRIDAY 24

8.30 - 17.30	Post-Congress Field Trip: L'Aquila basin
17.30 - 19.30	Bus transfer to Roma

DAILY SCIENTIFIC PROGRAMME

The Fucino 2015 Abstracts Volume is published on the on-line journal Miscellanea INGV
<http://istituto.ingv.it/l-ingv/produzione-scientifica/miscellanea-ingv/view>
The Abstracts Volume and the Field-Trip Guide are included in the Fucino 2015 pen-drive.

The 1915 Fucino earthquake

- 10.00 - 10.20 The 1915 earthquake in central Italy: macroseismic effects and long-term traces in the urban landscapes - **Galadini F.** (Solicited)
- 10.20 - 10.40 Magnitude characterisation and aftershocks of the 1915 Fucino earthquake **Margottini C.** (Solicited)
- 10.40-11.00 Surface faulting of the 1915 Fucino earthquake - **Michetti A.M.** (Solicited)
- Coffee Break + Poster Session •

QUATERNARY GEOLOGY

- 11.30 - 11.50 Overview of combining regional strain-rate, slip-rate variability and stress transfer during fault interaction for seismic hazard assessment and understanding of continental deformation
Roberts G. P., Cowie P. A., McCaffrey K., Gregory L. C., Phillips R. J., Faure Walker J., Wedmore L., Watson Z., Sammonds P., Papanikolaou I., Zijerveld L. J. J., Dunai T. J., Binnie S. A., Freeman S., Wilcke K., Shank, R., Vittori E., Michetti, A.M. (Invited)
- 11.50 - 12.10 Detailed fault slip-histories based on cosmogenic ³⁶Cl analyses from Abruzzo, Italy, reveal fault behaviour over multiple earthquake cycles
Gregory L. C., Phillips R. J., Roberts G. P., Cowie P. A., Shanks R. P., McCaffrey K., Wedmore L. N. J., Papanikolaou I., Faure Walker J. P., Watson Z. K.
- 12.10 - 12.25 The Dinaric Faults System: large-scale structure and rates of slip of the transpressive northeastern boundary of the Adria microplate
Moulin A., Benedetti L., Rizza, M., Jamsek-Rupnik P., Gosar A., Bourlès D., Ritz J-F
- 12.25 - 12.40 Active tectonics at the frontal Potwar Plateau, NW Himalaya of Pakistan: Insights from 10Be ages in fluvial terraces at the Mahesian Anticline and seismic hazard implications
Cortés-Aranda J., Mugnier J-L., Vassallo R., Jouanne F., Carcaillet J., Adnan,
- 12.40 - 12.55 In sequence/out-of sequence Late-Quaternary deformation in Northwestern Himalaya
Vassallo R., Mugnier J. L., Vignon V., Malik M. A., Jouanne F., Jayangondaperumal R., Buoncristiani J. F., Carcaillet J., Jomard H.
- 12.55 - 13.10 Pleistocene-Holocene catastrophic events in the lakes of central Mexico recorded from diatomites and detritic sediments
Israde-Alcántara I., Garduño-Monroy V. H., Rodríguez-Pascua M. A.
- Lunch •

- 15.00 - 15.15 Characterizing Active Faults in the Urban Area of Vienna
Decker K., Grupe S., Hintersberger E.
- 15.15 - 15.30 Frequent earthquakes recorded in a section with twelve seismites at Rakuti (SE Latvia)
Van Loon A. J., Pisarska-Jamroz M., Nartišs M., Krievāns M., Soms J.
- 15.30 - 15.45 Study of the links between slip at depth and at the surface for the 1997 Colfiorito earthquakes using detailed structural mapping: the role of fault orientations
Watson Z. K., Roberts G. P., Faure Walker J. P., Wedmore L. N. J.
- 15.45 - 16.00 The Mw=5, 2013 Matese earthquake epicentral area (southern Italy): new data on the earthquake ground effects and active tectonics framework
Valente E., Ascione A., Bigi S., Buscher J., Ciotoli G., Porfido S.
- 16.00 - 16.15 Preliminary imaging of active faults in the Montello-Collalto area (Southeastern Alps, Italy) by a high-sensitivity seismometric network
Romano M. A., Peruzza L., Priolo, E., Garbin M., Picotti V., Guido F. L., Ponza A.
- 16.15 - 16.30 Radon distribution as shallow evidence of buried fault geometry in the Fucino plain (Central Italy)
Ciotoli G., Bigi S., Cavinato G. P.
- Coffee Break + Poster Session •

ARCHAEOSEISMOLOGY

- 17.30 - 17.50 Analysis of potential earthquake damage in the Via dei Pilastri, Alba Fucens, Central Italy
Hinzen K., G., Galadini F., Kehmeier H., Schwellenbach I., Reamer S. K.
- 17.50 - 18.05 ArMedEa project: archaeology of medieval earthquakes in Europe (1000-1550 AD). First research activities
Forlin P., Gerrard C., Petley D.
- 18.05 - 18.20 New insights on the occurrence of ancient earthquakes in Central Spain: archaeoseismology of the Computum Area (4th century AD, Madrid)
Rodríguez-Pascua M. A., Heras C., Bastida A. B., Giner-Robles J. L., Silva P. G., Perucha M. A., Roquero E., Carrasco P., Pérez-López R., Lario J., Bardaji T.
- 18.20 - 18.35 Archaeoseismological investigation of earthquake induced ground liquefaction events at the Early Christian Basilica, Ancient Lechaion harbour, Corinth, Greece
Minos-Minopoulos D., Pavlopoulos K., Apostolopoulos G., Lekkas E., Dominey-Howes D.

PALEOSEISMOLOGY

- 9.00 - 9.20 *Surface Faulting from the August 24, 2014 Mw 6.0 South Napa, CA, Earthquake*
Schwartz D.P., Ponti D.J., Dawson T.E., Brooks B.A., DeLong S.B., Hecker S., Hudnut K.W., Kelson K.I., Lienkaemper J.J., Prentice C.S., Rosa C.M., Rubin R.S., Seitz G.G., Sickler R.R., Wesling J.R. (Invited)
- 9.20 - 9.35 *First lateral slip-rates along the left-lateral strike-slip Alhama de Murcia fault obtained with 3D trenching (SE Iberian Peninsula)*
Ferrater M., Ortuño M., Masana E., Perea H., Baize S., Pallàs R., García-Meléndez E., Echeverría A., Martínez-Díaz J.J., Rockwell T.
- 9.35 - 9.50 *Holocene activity of the Mariánské Lázně Fault (Cheb basin, Bohemian Massif): youngest proved surface faulting in central Europe?*
Štěpančíková P., Tábořík P., Fischer T., Hartvich F., Karousová M., Stemberk J., Nováková L.
- 9.50 - 10.05 *A fault slip-rate on the northern front of the High Tien Shan, Kazakhstan*
Mackenzie D., Walker R.T., Abdrakhmatov K., Campbell G., Grützner C., Moldobaev A., Mukambayev A.
- 10.05 - 10.20 *Paleoseismicity on the northern part of the Yangsan Fault, S-E Korea*
Rezaei S., Lee J.-H., Hong Y., Gwon S.-H., Kim Y.-S., Rockwell T.K.
• Coffee Break + Poster Session •
- 11.20 - 11.40 *Morphogenic paleoearthquakes in the Andean broken-foreland (Pampean Ranges, Argentina): How large? How often?*
Costa C. (Invited)
- 11.40 - 11.55 *Evidence of paleoseismicity within the West Quebec Seismic Zone, eastern Canada, from the age and morphology of sensitive clay landslides*
Brooks G., Gregory R.
- 11.55 - 12.10 *Estimating magnitudes of paleo-earthquakes from multiple observations*
Hintersberger E., Decker K.
- 12.10 - 12.25 *Paleoseismology of the North Panamá Deformed Belt from Uplifted Coral Platforms at Moin and Limón, Caribbean Coast of Costa Rica*
Gath E., Gonzalez T., Madugo C., Montero W.
- 12.25 - 12.40 *Recent advances in the comprehension of the central Apennine seismotectonics, by cross-checking Quaternary geology, paleoseismological and seismological data.*
Gori S., Falcucci E., Moro M., Saroli M., Fubelli G., Chiarabba C., Galadini F.
- 12.40 - 13.05 *Historic and Prehistoric earthquake ruptures of central Asia*
Walker R.T., Abdrakhmatov K., Campbell G., Gruetzner C., Mackenzie D., Mukambayev A.
• Lunch •
- 15.00 - 15.20 *Paleoseismology of normal faults in the Mediterranean using in-situ Chlorine-36 cosmogenic nuclide*
Benedetti L., Tesson J. (Invited)

- 15.20 - 15.35 *Speleoseismology in Northern Calabria: a tool for unravelling the paleoseismic history*
Kagan E., Cinti F.R., Alfonsi L., Civico R., Bar-Matthews M.
- 15.35 - 15.50 *Evaluation of the seismogenic potential in key areas of the central and southern Apennines through analysis of speleothem vulnerability*
Ferranti L., Pace B., Vasta M., Colella A., Ramondini M., Calcaterra D., Di Bianco S., Valentini A., De Massis J., Teodoro P., Berardi D., La Rocca N.
- 15.50 - 16.05 *Paleoseismicity data on the San Demetrio ne' Vestini fault (L'Aquila Basin, Central Italy)*
Blumetti A.M., Di Manna P., Vittori E., Comerchi V. & Guerrieri L.
- 16.05 - 16.20 *Looking for seismites in the Fucino basin: preliminary results from an combined geological geophysical approach*
Smedile A., Civico R., Del Carlo P., Sapia V., De Martini P.M., Pantosti D., Brunori C., Orefice S., Pinzi S., Pucci S.
- 16.20 - 16.35 *Implications of slip rate variability along extensional faults in the central Apennines for geodynamic interpretations and earthquake hazard assessment*
Cowie P.A., Roberts G.P., Phillips R.J., McCaffrey K., Gregory L.C., Faure Walker J., Zijerveld L.J.J., Dunai T.J., Binnie S.A., Freeman S., Wilcken K., Wedmore L., Watson Z., Papanikolaou I.
• Coffee Break + Poster Session •
- 17.00 - 18.30 *Workshop EPOS - EuroGeoSurveys*

WORKSHOP EPOS - EUROGEOSURVEYS - TUESDAY 21 APRIL, 17.00 - 18.30



The European Plate Observing System (EPOS) is an integrated solid Earth Sciences research infrastructure aimed at promoting innovative approaches for a better understanding of the physical processes such as earthquakes, volcanic eruptions, tsunamis etc.



The Geological Surveys of Europe

EuroGeoSurveys (EGS) is a not-for-profit organisation representing 33 National Geological Surveys and some regional Surveys in Europe. It provides the EU Institutions with expert, neutral, balanced and practical pan-European advice and information on several geological areas including the identification of geohazard, the use of georesources, the development of interoperable and harmonised geoscientific data at the European scale, etc. The workshop is aimed at showing to the Fucino 2015 participants the activities carried out in the frame of both these initiatives. In this context, EPOS and EuroGeoSurveys will sign a Memorandum of Understanding for future joint collaboration.

SEISMIC AND TSUNAMI HAZARD

- 9.00 - 9.20 *Active Tectonics and Seismic Hazard in Skyros Basin, North Aegean Sea, Greece*
Papanikolaou D., Nomikou P., Rousakis G., Livanos I., Papanikolaou I. (Invited)
- 9.20 - 9.40 *Challenges facing Fault-Based PSHA for $6 \leq M \leq 7$ earthquakes: An example from the west Corinth rift, Greece*
Scotti O., Ford M., Lambotte S., Boiselet A., Matrullo E., Lyon-Caen H., Albini P., Rovida A., Bernard P., Satriano C., Briole C., ANR-SISCOR Team (Invited)
- 9.40 - 10.00 *ESI-07 ShakeMaps for Instrumental and historical events in the Betic Cordillera (SE Spain): a preliminary approach applied to seismic hazard based on geological data*
Elez J., Silva P.G., Giner-Robles J.L., Rodríguez-Pascua M.A., Pérez-López R., Roquero E., Bardaji, Huerta P., Martínez-Graña A.
- 10.00 - 10.15 *Probabilistic Fault Displacement Hazard Analysis (PFDHA): database that needs to be considered*
Serva L., Livio F., Gurpinar A.
- 10.15 - 10.30 *Graviquakes*
Doglioni C., Carminati E., Petricca P., Riguzzi F.
• Coffee Break + Poster Session •
- 11.30 - 11.50 *Accommodation of Strike-Slip by Normal Faults and Block Rotations in the Transtensional Walker Lane of North America*
Wesnousky S., Bormann J., Kreemer C., Hammond W., Brune J. (Invited)
- 11.50 - 12.05 *Long-term strain rates as a tool for understanding the mechanics of continental extension and the importance of local 3D fault geometry for local throw-rates across faults*
Faure Walker J.P., Roberts G. P., Cowie P.A., McCaffrey K., Wedmore L., Watson Z., Gregory L. C.
- 12.05 - 12.20 *Interseismic ground velocities of the Central Apennines from GPS and SAR measurements and their contribution to seismic hazard modelling: preliminary results of the ESA CHARMING project*
Pezzo G., Merryman Boncori J.P., Visini F., Carafa M., Devoti R., Atzori S., Kastelic V., Berardino P., Fornaro G., Riguzzi F., Pietrantonio G., D'Amico V., Meletti C., Salvi S.
- 12.20 - 12.35 *Earthquake geology of shallow crustal faults and Seismic Hazard Assessment: Challenges ahead*
Baize S., McCalpin J., Scotti O., Costa C., Cinti F.R., Michetti A. M., Okumura K., Dawson T.
- 12.35 - 12.50 *Fault Specific Seismic Hazard Maps for the Attica Region*
Deligiannakis G., Papanikolaou I.D., Roberts G.
- 12.50 - 13.05 *The May 24, 2014 North Aegean Trough earthquake: stress change and displacement patterns*
Sboras S., Chatzipetros A., Pavlides S., Fotiou A., Pikridas C., Bitharis S.
• Lunch •

15.00 - 15.15

The Environmental Seismic Intensity Scale (ESI 2007) for the 1995 $M_s=6.6$ Kozani-Grevena Earthquake and the 1894 ($M=6.4$, $M=6.8$) Atalanti sequence in Greece; Preliminary relationships between Magnitude and the ESI 2007 for Greece and the Mediterranean area
Papanikolaou I., Melaki M.

15.15 - 15.30

Evaluation of the macroseismic intensities triggered by the February 3, 2014 Cephalonia, Greece earthquake based on ESI-07 scale
Papathanassiou G., Valkaniotis S., Ganas A., Papanikolaou M.

15.30 - 15.45

Assessing seismic efficiency from scalar Moment-rates: an application to Mt. Etna volcano (Italy)
Azzaro R., Barberi G., Cannavò F., Cocina O., Palano M., Scarfi L.

15.45 - 16.00

Earthquake-induced Geomorphology: A Neotectonic Study at the Front of the Alps (Lake Thun & Aare Valley, Switzerland)
Fabbri S. C., Anselmetti F. S., Herwegh M., Schlunegger F., Volken S., Möri A.

16.00 - 16.20

Tracing geological records of recent tsunamis from the tropics to the polar regions - insights into their regional variability and new research approaches
Szczuciński W. (Invited)

16.20 - 16.40

Reliability of first-hand accounts on the study of past tsunami events in northeastern Venezuela (southeastern Caribbean Sea), since 1530 AD
Audemard F.A., Leal Guzmán A.F. (Invited)

17.15 - 18.00

• Coffee Break + Poster Session •
INQUA Business Meeting

BUSINESS MEETING OF INQUA TERPRO PALACTE FOCUS GROUP - WEDNESDAY 22 APRIL, 17.15 - 18.00



The Focus Area on Paleoseismology, Active Tectonics of INQUA TERPRO will invite all the Fucino 2015 participants to join the Business Meeting that will discuss potential future scientific activities and collaborations in the frame of the Focus Area.

POSTER SESSIONS

Scientific posters will be displayed in "Palazzo Palladini" in front of the Silone Theater. Posters must be in portrait format (width 85 cm; height 120 cm). Each poster has an assigned space and can be shown for the entire period of scientific sessions. Thus, participants are kindly recommended to attach their own poster in the morning of Monday 20th and to remove it in the afternoon of Wednesday 22nd.

Specific material for sticking the poster directly to the wall will be available on site. Please note that Authors of posters will be kindly requested to shortly present their work in front of their Poster during the dedicated Poster Session. Below are reported titles, authors and ID of all posters listed by each scientific session.

QUATERNARY GEOLOGY_Monday 20

Pisarska-Jamroży M., Van Loon A.J., Nartišs M., Krievāns M. - Seismites recording glacio-isostatic rebound after melting of the Scandinavian Ice Sheet in Latvia. **QUA_01**

Alarcon E., Audemard F.A., Singer A. - Active tectonics in the Santa Ines basin (Venezuela): morphotectonic evidence related to blind thrusting with opposite vergences. **QUA_02**

Hoffmann A., Reicherter K. - Active tectonics and the link to evolutionary processes: The Lake Ohrid Basin **QUA_03**

Zaagane M., Refas S., Hamimed A. - Integration of geomorphologic, geotechnical, geophysical and seismic data for the construction of a morpho-structural 3D model: case of Bordj Bou Naama landslide (western Algeria) **QUA_05**

Villani F., Tulliani V., Sapia V., Fierro E., Civico R., Baccheschi P., Di Giulio G., Vassallo M., Pantosti D. - Shallow subsurface imaging of the Piano di Pezza active normal fault (central Italy) using high-resolution refraction and electrical resistivity tomography coupled with time-domain electromagnetic data. **QUA_08**

Bouhadad A. - Paleoseismology of active blind faults (active folds): contribution of earthquake induced secondary geological and geomorphological effects. **QUA_09**

Lo Sardo L., Pezzo G., Moro M., Saroli M., Fubelli G., Lancia M., Galadini F. - Ancient settlements in central Italy and capable faults: consequences for urban planning in the L'Aquila region. **QUA_24**

Öğretmen N., Cosentino D., Gliozzi E., Cipollari P., Yildirim C. - Holocene extensional faulting at the southeastern margin of the Central Anatolian Plateau: Implications for the kinematics of the Ececi Fault Zone (Mersin, southern Turkey). **QUA_10**

Civico R., Sapia V., Di Giulio G., Villani F., Pucci S., Vassallo M., Baccheschi P., De Martini P.M., Amoroso S., Cantore L., Di Naccio D., Smedile A., Orefice S., Pinzi S., Pantosti D., Marchetti M. - Imaging the three-dimensional architecture of the Middle Aterno basin (2009 L'Aquila earthquake, Central Italy) using ground TDEM and seismic noise surveys: preliminary results. **QUA_11**

Tertulliani A., Cucci L. - Coseismic hydrological changes in response to the 1915 Fucino (Central Italy) earthquake. **QUA_12**

Pousse L., Vassallo R., Jouanne F., Audemard F., Pathier E., Carcaillet J., Garambois S., Oropeza J. Aray J. - Geomorphological slip rate and preliminary paleoseismological study along the Boconó Fault, Venezuela. **QUA_13**

Michail M., Chatzipetros A. - Use of quantitative geomorphological methods in the segmentation of Sperchios active fault zone, central Greece. **QUA_14**

Pallikarakis A., Grützner C., Mason J., Schneiderwind S., Papanikolaou I., Triantaphyllou M., Migiro G. - Correlating magnetic susceptibility with facies changes within borehole cores on either sides of an active fault in Corinth Canal. **QUA_17**

Pallikarakis A., Papanikolaou I., Triantaphyllou M., Reicherter K., Migiro G. - Study of an active fault at the eastern tip of the Corinth Canal, through surface and borehole data. **QUA_17**

Spadi M., Cosentino D., Nocentini M., Gliozzi E. - Sedimentary and tectonic evolution of the San Nicandro lacustrine depositional system (Pliocene-Pleistocene, southern L'Aquila Basin, central Italy). **QUA_20**

Meschis M.; Roberts G.P., Houghton S., Underwood C., Briant R.M. - Deriving uplift and crustal deformation rates in the upper plate of subduction zones from tectonically deformed sequences of marine palaeoshorelines; tectonic and seismic hazard implications in Calabria (Southern Italy). **QUA_22**

Frigerio C., Zerbini A., Livio F., Bonadeo L., Michetti A. M., Brunamonte F. Fioraso G., Amit R., Porat N. - Geochronology, pedostratigraphy, and late Quaternary landscape evolution in the western Po Plain (northern Italy). **QUA_23**

Miccadei E., Piacentini T., Berti C. - Neogene-Quaternary evolution of the Eastern Marsica region (Central Italy). **QUA_25**

Buscher J., Ascione A., Valente E., Mazzoli S. - Inferring surface uplift from longitudinal stream profiles in the Mt. Alpi area, southern Apennines, Italy. **QUA_29**

De Caterini G., Blumetti A.M., Coen G., Della Ventura G., Eulilli V., Ferri F., Guerrieri L., Leoni G., Lucci F., Mariani M., Puzilli L., Santoponte A., Vittori E., Zaffiro P. - New preliminary data on the Late Quaternary evolution of Magliano dei Marsi area (Abruzzo, Central Italy). **QUA_30**

Pierantoni P.P., Centamore E., Costa M. - Comparison among some seismotectonic characteristics of the main historical earthquakes in the Central Apennines (Italy). **QUA_31**

Comerci V., Biddittu I., Di Manna P., Germani M., Piccardi L., Ventura G., Vittori E. - Tectonic evidence in the Palaeolithic site of Lademagne (San Giovanni Incarico – FR, Southern Latium, Italy). **QUA_36**

ARCHAEOSEISMOLOGY_Monday 20

Kázmér M., Kolaiti E. - Earthquake-induced deformations at the Lion Gate, Mycenae, Greece. **ARC_02**

Kazmer M. - Off-fault damages to masonry buildings – a classification. **ARC_03**

Ferrario M.F., Katz O., Livio F., Michetti A.M., Amit R. - Evaluation of earthquake hazard for the city of Tiberias (Israel): archaeoseismology and paleoseismology. **ARC_10**

Minos-Minopoulos D., Pavlopoulos K., Lekkas E., Dominey-Howes D. - Earthquake Archaeological Effects (EAEs) from the archaeological site of Ancient Corinth, Greece and their correlation to seismic events. **ARC_11**

Garduño-Monroy V.H. - A proposed scale of intensities of historical events, based on the symbolism of the codex Tellariano Remensis, Mexico. **ARC_06**

Brunori C.A., Alfonsi L., Cinti F.R. - Active faulting, earthquakes and geomorphological changes: effects on the urban evolution of the Roman town of Sybaris, Ionian sea (southern Italy). **ARC_07**

PALEOSEISMOLOGY_Tuesday 21

Guerrieri L., Vittori E., Blumetti, Michetti A.M., Reicherter K., Serva L., Silva P.G., Fukushima Y. - The Contribution of Paleoseismology to Seismic Hazard Assessment in Site Evaluation for Nuclear Installations. **PAL_49**

Silva P.G., Roquero E., Rodríguez-Pascua M.A., Bardají T., Carrasco-García P., Huerta P., Giner-Robles J.L., Zazo C., Goy J.L. - Analysis of faulted paleosol sequences in the Palomares Fault Zone (Betic Cordillera, SE Spain): Paleoseismological and Climatic implications. **PAL_46**

Tsodoulos I., Pavlides S., Caputo R., Chatzipetros A., Koukouvelas I., Stamoulis K., Ioannides K. - Palaeoseismological investigation across the Gyroni Fault, Tyrnavos Basin, Central Greece. **PAL_42**

Michael Weissl M., Hintersberger E., Lomax J., Decker K. - Geomorphological and paleoseismological investigations on the Gaenserndorf Terrace in the central Vienna Basin (Austria). **PAL_41**

Hürtgen J., Jomard H., Thomas J., Reicherter K., Baize S., Röth J., Cushing M., Cinti F. R. - The Southern Upper Rhine Graben - A paleoseismological pre-site survey in the Freiburg area. **PAL_39**

Velázquez-Bucio M.M., Benente L., Garduño-Monroy V.H., Michetti A.M., Gropelli G. - Evidence of seismic activity of Peralas fault in the Ixtlahuaca basin, Mexico. **PAL_38**

Pérez-López R., S. Martín-Velázquez J., López-Gutiérrez, J. Lario P.G. Silva, M.A. Rodríguez-Pascua J.L. Giner-Robles - Paleoseismology, Quaternary slip-rate and heat flow of the Benis Fault (SE of Spain). **PAL_37**

Schneiderwind S., Mason J., Wiatr T., Grützner C., Pallikarakis A., Reicherter K. - Innovative trenching investigations on active normal faults: a combination of experience, remote sensing applications and geophysics **PAL_05**

McCaffrey K., Roberts G., Wedmore L., Gregory L., Cowie P., Faure Walker J. Watson Z., Wilkinson M. Bandugula, V. - The importance of robust site characterisation for ³⁶Cl cosmogenic dating of active normal faults. **PAL_32**

Rizza M., Ourion B., Tesson J., Benedetti L., Hecquet C., Fleury J., Bellier O. - Terrestrial LiDAR scanning and close-range photogrammetry of active normal fault scarps in Italy and Greece. **PAL_31**

Špaček P., Ambrož V., Tábořík P., Štěpančíková P. - Digging for records of slow fault slip in the region with strong Pleistocene periglacial mass wasting: experience from the Bohemian Massif (Alpine-Carpathian foreland). **PAL_30**

Lamair L., Hage S., Hubert-Ferrari A., Avsar U., El Ouahabi M., Çağatay M.N., Boulvain F. - A 3000 yr history of earthquakes recorded in Hazar Lake potentially related to ruptures along the East Anatolian Fault (Turkey). **PAL_27**

Pérez-López R., Martín-González F., Silva P.G., Béjar-Pizarro M., Martínez-Díaz J.J., Rodríguez-Pascua M.A., Giner-Robles J.L. - Environmental effects, building collapse and S-wave ground-shaking during the Orihuela earthquake (1048 CE Muslim Period, SE of Spain). **PAL_26**

Kim Y.S., Choi J.H. - Identification of the Quaternary Geundeok Fault based on a sequence of Paleoseismological investigations in Samcheok, Korea. **PAL_25**

Kanari M., Ben-Avraham Z., Tibor G., Bookman R., Goodman-Tchernov B.N., Niemi T.M., Wechsler N., Ash A., Taha N., Marco S. - On-land & Offshore Evidence for Holocene Earthquakes in the Northern Gulf of Aqaba-Elat, Israel/Jordan. **PAL_02**

Beckers A., Mortier C., Beck C., Hubert-Ferrari A., Reyss J.-L., Albini P., Develle A.-L., Tripanas E., Sakellariou D., Crouzet C., Rovida A., Scotti O. - Sedimentary impacts of recent moderate earthquakes in different settings in the Western Gulf of Corinth, Greece. **PAL_06**

Carson E., Grützner C., Mackenzie D., Walker R., Mukambayev A., Moldobaev A., Abdrakhmatov K. - Large thrust faulting earthquakes in Eastern Kazakhstan – first results from paleoseismic trenching. **PAL_07**

Wechsler N., Rockwell T., Klinger Y. - Variable Slip Rate on a Plate-Boundary Fault The Problem of Assessing Long-Term Fault Behaviour. **PAL_08**

Hürtgen J., Spies T., Schlittenhardt J., Reicherter K. - PalSeisDB v1.0 Paleoseismic Database of Germany and Adjacent Regions. **PAL_09**

Jamšek Rupnik, P., Atanackov J., Skaberne D., Jež J., Milanič B., Novak M., Lowick S., Bavec M. - Paleoseismic evidence of the Vodice fault capability (Ljubljana Basin, Slovenia). **PAL_10**

Middleton T. A., Walker R., Parsons B., Lei Q., Zhou Y., Ren, Z. - A large-magnitude, continental, normal-faulting earthquake: the 1739 Yinchuan event in northern China. **PAL_11**

Middleton T. A., Walker R., Parsons B., Lei Q., Zhou Y., Ren Z., Rood D. H. - The history of faulting in the Yinchuan Graben, northern China. **PAL_12**

Mason J., Schneiderwind S., Pallikarakis A., Wiatr T., Mechernich S., Papanikolaou I., Reicherter K. - The Lastros-Sfaka Graben, Crete: preliminary results from a multi-method investigation. **PAL_14**

Barbano M.S., Pirrotta C., De Guidi G., Farina C. - Historical, archaeoseismic, paleoseismological and active tectonics markers in the Avola Vecchia area (southern Sicily). **PAL_15**

Mechernich S., Mason J., Papanikolaou I., A. Binnie S., Dunai T., Reicherter K. - The slip history of the Pisla fault, Gulf of Corinth, based on bedrock fault scarp analyses. **PAL_16**

Mackenzie D., Abdrakhmatov K., Campbell G., Grützner C., Carson E. (1), Moldobaev A., Mukambayev A., Walker R. T. - A transect of quaternary geological slip rates in the Kazakh Tien Shan. **PAL_18**

Eulilli V., Ferri F., Puzilli L. M. - Integrated geophysical surveys supporting shallow subsurface faults detection and characterization : two case studies in the Central Apennines. **PAL_19**

Lee J.H., Rezaei S., Kim Y.S. - Characteristic and timing of Quaternary faulting along the Yangsan fault. **PAL_20**

Elliott A. J., Oskin M. E., Liu-Zeng J. - Field characterization of the most recent great earthquake on the eastern Altyn Tagh fault: A rupture between two fault bends. **PAL_21**

Smeraglia L., Carminati E., Billi A., Doglioni C. - Architecture and deformation mechanisms within a carbonate-hosted fault zone (Fucino basin). **PAL_22**

Tesson J., Pace B., Benedetti L., Visini F., Delli Rocoli M., D. Bourlès, G. Aumaître, M. Arnold, K. Keddadouche - Seismic slip history of the Aterno-Sulmona fault system in central Apennines (Italy) using in situ ³⁶Cl cosmogenic exposure dating. **PAL_23**

Livio F., Reicherter K., Urai J. - From sandbox modeling to paleoseismology: preliminary results on bending-moment faults modeling. **PAL_24**

SEISMIC AND TSUNAMI HAZARD_Wednesday 22

- Soehaimi A., Setianegara R.** - Eastern Coast of Bali Island Active Fault Study In Indonesia. **SHA_01**
- Setiawan J.H., Sopian Y., Soehaimi A.** - Tectonic Deformation Study of The Great Sumatera Active Fault (Semangko Segment). **SHA_02**
- Venturati A.** - Historical sources and Geology: earthquakes documented in the memoirs of Giovanni Maria Mastai and Francesco Pesaresi (Senigallia, central Italy, AD 1727 – 1760). **SHA_06**
- Francescone M., Nardone M., Boncio P., Vessia G., Amoroso S.** - Reconstruction of the subsurface geology aimed at identifying areas susceptible to liquefaction in the epicentral area of the M7, 1915 earthquake (Fucino Basin, central Italy). **SHA_08**
- Giner-Robles J.L., Silva P.G., Elez J., Rodríguez-Pascua M.A., Pérez-López R., Rodríguez-Escudero E.** - Relationships between the ESI-07 scale and expected PGA values from the analysis of historical earthquakes ($\geq$ VIII EMS) in East Spain: Tavernes 1396 AD and Estubeny 1748 AD earthquakes. **SHA_13**
- Nappi R., Gaudiosi G., Alessio G., De Lucia M., Porfido S.** - A contribution to a new assessment of the Salento (Apulia, Southern Italy) seismic hazard. **SHA_18**
- Roncoroni M., Ripamonti L., Ventura G., Lombardo M., Rosati M., Chiaravalli F. and Michetti, A.M.** - Fault displacement hazard assessment: perspectives from the siting of the Italian National Repository of Low and Intermediate Level radioactive Waste Short Lived (LILW-SL). **SHA_19**
- Pérez-López R., Bañón E., López-Gutiérrez J., Lario J., Rodríguez-Pascua M.A., Martín-Velázquez S., Giner-Robles J.L., Silva P.G., del Moral B., Pueyo-Morer E.L.** - Positive correlation between CO₂ daily peaks and micro-earthquakes occurrence in deep fault-caves: an empirical model. **SHA_20**
- Azzaro R., D'Amico S., Pace B., Peruzza, L.** - Is a geometric-kinematic approach valid for estimating the expected seismicity rates in volcano-tectonic areas? Ideas and results from seismogenic sources at Mt. Etna (Italy). **SHA_24**
- Baize S.** - Earthquake geology and geophysical studies for assessing the seismic hazard: a synthesis for the Diablo Canyon Nuclear Power Plant (USA, California). **SHA_25**
- Boncio P., Milana G., Cara F., Di Giulio G., Di Naccio D., Famiani D., Galadini F., Rosatelli G., Vassallo M.** - Local seismic hazard from detailed geologic investigations: the Avezzano town in the epicentral area of the M7, 1915 earthquake (Fucino basin, central Italy). **SHA_27**
- Pizzi A., Di Domenica A., Di Federico P., Faure Walker J.P., Roberts G.** - Geological investigation along the Sulmona active normal fault (central Italy) and its effects on the seismic microzonation of the area. **SHA_28**
- Sobrero F. S., Brunetto E.** - Satellite geodetic data in the analysis of the seismic hazard on faults in an intracratonic setting of the SE South America. **SHA_43**
- Famiani D., Amoroso S., Boncio P., Bordonì P., Cantore L., Cara F., Di Giulio G., Di Naccio D., Hailemichael S., Mercuri A., Milana G., Vassallo M.** - Noise measurements along fault zones in central Apennines. **SHA_34**
- De La Taille C., Jouanne F., Crouzet C., Beck C., Jomard H.** - Neotectonic activity along the Culoz fault, southern Jura – Alps junction (France): Implications for seismic hazard analyses. **SHA_14**

- Caputo R., Pavlides S. and the GreDaSS Working Group** - The Greek Database of Seismogenic Sources (GreDaSS): A compilation of potential seismogenic sources (Mw>5.5) in the Aegean Region. **SHA_38**
- D'Agostino N.** - Earthquake recurrence in the central-southern Apennines: a comparison from geodesy and historical earthquake catalogue. **SHA_39**
- Guerrieri L., Baiocco F., Blumetti A.M., Brustia E., Comerci V., Lucarini M., Porfido S., Scaramella A. and Vittori E.** - The Italian Catalogue of Earthquake Environmental Effects: a contribute to seismic hazard assessment through the ESI intensity scale. **SHA_40**
- Piccardi L., Vittori E., Blumetti A.M., Comerci V., Di Manna, P., Guerrieri L.** - Mapping capable faulting hazard in a moderate-seismicity, high heat-flow environment: the Southern Tuscany-Tuscia province. **SHA_41**
- Heddar A., SiBachir R., Beldjoudi H. and Yelles K.** - Review of May 21, 2003 Boumerdes (Algeria) earthquake (Mw 6.8): Application of the ESI2007 Scale. **SHA_44**
- Salamon A., Netzer-Cohen C., Zilberman E., Amit R.** - Qualitative evaluation of earthquake hazards for archaeological and historical sites in Israel. **SHA_09**
- Durante F., Di Giulio G., Tallini M., Milana G., Del Monaco F.** - Seismic monitoring and ground motion amplification of Monteluco Hill and Roio Plain (L'Aquila). **SHA_45**
- Pantaloni M., Console F., Perini P.** - A contribution to environmental studies of the Fucino area from the historical archive of the Geological Survey of Italy. **SHA_46**
- Wedmore L. N. J., Faure Walker J. P., Roberts, G. P., Sammonds P. and McCaffrey K.** - Investigating the cause of earthquake clusters in the central Apennines, Italy by modelling co-seismic and interseismic Coulomb stress change from 1349-2009. **SHA_31**
- Marjiyono and Kamawan** - Seismic Microzonation using Microtremor in Denpasar City, Bali, Indonesia. **ENG_01**
- Amoroso S., Boncio P., Famiani D., Hailemichael S., Manuel M.S., Milana G., Monaco, P., Vassallo M., Vessia G.** - Liquefaction assessment by in situ testing in the Fucino plain (central Italy). **ENG_03**
- Braun Y. and Goodman-Tchamov N.B.** - Tsunami event identification using sediment cores offshore Caesarea Maritima, Israel- A uniquely comprehensive perspective. **TSU_01**
- Moggiano Aburto N.** - The 15th August 2007 Peru Tsunami: Numerical Modeling, observation and Validation. **TSU_02**
- Öğretmen N., Cosentino D., Gliozzi E., Cipollari P., Iadanza A., Yıldırım, C.** - Tsunami hazard in the Eastern Mediterranean: Geological evidence from the Anatolian coastal area (Silifke, southern Turkey). **TSU_03**
- Mason J., Schneiderwind S., Mathes-Schmidt M., Fischer P. Werner V., Vu T., Papanikolaou Vögt. A., Reicherter K.** - Planned palaeo-tsunami research in western Crete, Greece. **TSU_04**
- Röth J., Mathes-Schmidt M., Jiménez García I., Rojas Pichardo F.J., Grützner C., Silva P.G., Reicherter K.** - The Baelo Claudia tsunami hypothesis - results from a multi-method sediment analysis of late-Roman deposits (Gulf of Cádiz, Southern Spain). **TSU_05**
- Oropeza J., Audemard F.A., Beck C., Vallée M.** - New potential sedimentary evidences of paleotsunamis on coastal lagoons of Chacopata, State of Sucre, Venezuela. **TSU_06**

SOCIAL EVENTS



6th INQUA
International Workshop
on Active Tectonics
Paleoseismology
and Archaeoseismology

Traditional Dinner - Hotel Filippone

Monday 20th April, 8 p.m.

A traditional dinner is planned at Hotel Filippone (Gioia dei Marsi), with degustation of typical food and traditional music ("Zampognari") from Marsica region. Cost € 35,00.

Registrations and payments at the Fucino 2015 Information Desk will be possible up to Monday 20th not later than 2 p.m.

Social Dinner - Ristorante Mammarossa

Tuesday 21st April, 8 p.m.,

Social dinner is planned at Ristorante Mammarossa (Avezzano). The menu will include seafood and good wines. Cost € 40,00.

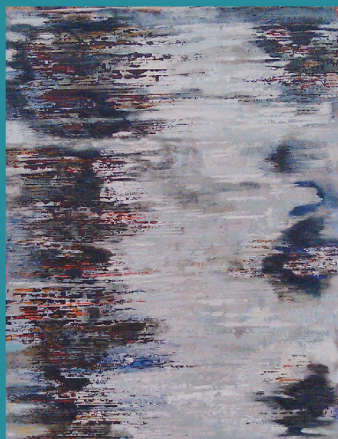
It is possible to register on-site to this event, at the Fucino 2015 Information Desk, up to Monday 20th not later than 2 p.m.

Family Program – 20th, 21st and 22nd April

Daily tours will be proposed to familiars of Fucino 2015 participants in the period of the workshop, in the most famous destinations of the Marsica and L'Aquila areas (e.g. Alba Fucens and Celano Castle, Pescasseroli and Abruzzo National Park, Sulmona).

More information, registration and payments at the Fucino 2015 Information Desk. Please note also that a minimum number of participants is needed for some tours.

EXHIBITION|DISLOCATIONS

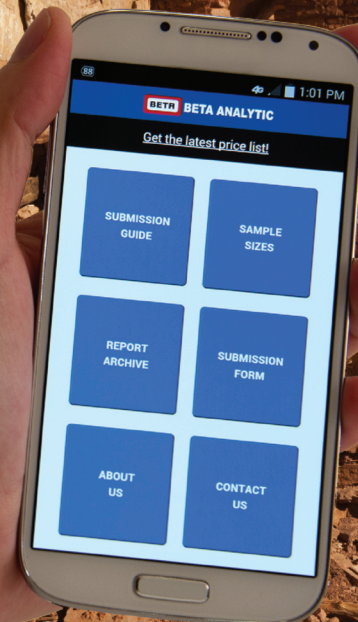


A group of artists in collaboration with Prof. Fabrizio dell'Arno of the Rome University of Fine Arts, present a catalogue of dislocations, as paths into the effects of earthquakes.

Some of the pictures have been inspired by historical photos of the destruction produced by the 1915 Avezzano earthquake.

Palazzo Palladini, Pescara (AQ), April 19-24, 2015.

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