

Simona Colombelli – personal C.V.



PERSONAL INFORMATION

Name: Simona Colombelli

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Nationality: Italian

Date and Place of Birth: 30/05/1986 - Torre del Greco (Naples), Italy

CURRENT POSITION

- 01/10/2014: Post-Doc position at the University of Naples, Federico II on the topic: Physical processes of nucleation of seismic fractures and implications for Earthquake Early Warning.

EDUCATION AND TRAINING

- 07/05/2014: PhD. In Geophysics, University of Bologna “Alma Mater Studiorum”. Title of the thesis: “Early Warning for large earthquakes: observations, models and real-time data analysis”. Tutor: Prof. Aldo Zollo.
- 20/10/2010: Master Degree in Physics, University of Naples “Federico II”. Mark: 110/110 with honor. Title of the thesis: “*A Threshold-Based Earthquake Early Warning System*”. Tutor: Prof. Aldo Zollo.
- 17/07/2008: Degree in Physics, University of Naples “Federico II”. Mark: 109/110. Title of the thesis: “*Un metodo automatico per la determinazione della magnitudo di un evento sismico*”. Tutor: Prof. Aldo Zollo. (English title: “*An automatic method for the earthquake duration magnitude determination*”)
- 06/07/2004: Language High School Qualification, Language High School of Portici (Naples) “Quinto Orazio Flacco”. Mark: 100/100.

WORK EXPERIENCE

- From 01/02/2014 to 31/07/2014: Collaboration contract with AMRA S.c.a.r.l. within the framework of NERA (Network of European Research Infrastructures for earthquake Risk assessment and Mitigation) project. The contract is on the topic: “Implementation, validation and testing of automatic procedures for the determination of earthquake location, magnitude, focal mechanism and shake maps. Application to ISNet Network, for the near real-time automatic production of alert messages and bulletin”.

- May, 2011 – August 2011: collaboration contract with the Italian Institute of Geophysics and Volcanology (INGV) on order of “ENI” Society on the topic: *Formatting and analysis of seismic data through the software SAC; analysis of 250 earthquakes registered by a 3-component, 6 station network; calibration and definition of a local magnitude scale for the seismic area of Crotona (southern Italy).*

HONORS AND AWARDS

19/05/2014: Honor mention to the Phd Thesis "Early Warning for Large Earthquakes: observations, models and real-time data analysis". The mention has been assigned by the Lions Club of Bologna, within the framework of the annual award "Claudio Bonivento"

TECHNICAL SKILLS AND COMPETENCES

My experience on seismology started during the first level degree in Physics, with training activities within the RISSCLab research group at the Department of Physics of University of Naples (Italy) “Federico II”, under the supervision of Prof. Aldo Zollo. These activities were aimed at the calibration of a Duration Magnitude scale for the Irpinia Seismic Network in Southern Italy. Thanks to these activities, I acquired experience with seismic data and with the most common tools for earthquake waveform analysis (such as SAC, Seisgram, PQL).

During the Master Degree in Physics I acquired experience with seismic instruments and seismic stations. I have investigated the possibility of using *MEMS* as acceleration sensor for the registration of the ground motion. For my Master Degree Thesis I developed and implemented an automatic procedure which simulates a Threshold-Based Earthquake Early Warning System.

During the PhD course in Geophysics the research activity was aimed at understanding the relation between the first seconds of recorded signal of an earthquake and the time evolution of the seismic event. The work has been focused on study of nucleation process of seismic fractures and Early Warning applications.

From March to October 2012 I have been working with prof. Richard Allen at the Berkeley Seismological Laboratory (University of California at Berkeley). The work has been focused on the application of high-rate GPS data to Earthquake Early Warning.

LANGUAGE SKILLS

- **English**: excellent reading, writing and verbal skills.
Certifications:
Course of English Language - intermediate level (3-17/07/2003) – Morehampton, Language Institute of Dublin.
Spoken English for Speakers of Other Languages Grade 8 (May 2003) – Trinity. Passed with Distinction.
- **French**: good reading, writing and verbal skills.
Certifications:
Delf scolaire niveau 1 (unités A1-A2) (May 2002) – Institute Français de Naples. Mark: 13,33/20.
Stage de Français intensif (28/07-11/08 2001) – Campus Sainte-Thérèse.

- **Spanish:** good reading, writing and verbal skills.
Certifications:
Diploma de Español nivel Intermedio I (28/06/2002) – Instituto Español de Granada.

COMPUTER SKILLS

Excellent knowledge of Linux operating system, excellent programming ability with Bash-shell, C-shell; good programming skills with Fortran 77 and MatLab. Excellence knowledge of the softwares SAC (Seismic Analysis Code) GMT (Generic Mapping Tool) and GNUPLOT. Excellent knowledge of different operating systems such as Windows XP/Vista/7/ MAC and of application like Microsoft Office, Excel, Word and Power Point. Good knowledge of HMTL language and of basic elements of web-developing.

PUBLICATIONS

2015

Fast determination of earthquake magnitude and fault extent from real-time P-wave recordings

S. Colombelli and A. Zollo,

Geophysical Journal International, in press, doi: 10.1093/gji/ggv217.

Automatic earthquake confirmation for early warning system

S. Kuyuk, S. Colombelli, A. Zollo, R.M. Allen and M. Erdik,

Geophys. Res. Lett., accepted for publication and in press.

A P wave-based, on-site method for earthquake early warning

S. Colombelli, A. Caruso, A. Zollo, G. Festa and H. Kanamori,

Geophys. Res. Lett., 42, doi:10.1002/2014GL063002.

2014

Evidence for a difference in rupture initiation between small and large earthquakes

S. Colombelli, A. Zollo, G. Festa and M. Picozzi, Nature Communication, 5, 2014, doi:10.1038/ncomms4958.

A Duration-magnitude scale for the Irpinia Seismic Network, Southern Italy,

Seismological Research Letters, Vol. 85, 2014, doi:10.1785/0220130055,

S. Colombelli, A. Emolo, A. Zollo

An integrated regional and on-site Earthquake Early Warning System for Southern Italy: concepts, methodologies and performances

A. Zollo, S. Colombelli, L. Elia, A. Emolo, G. Festa, G. Iannaccone, C. Martino and P. Gasparini (2012) Springer

2013

Earthquake early warning for southern Iberia: A P wave threshold-based approach,

Geophys. Res. Lett., 40, doi:10.1002/grl.50903.
Carranza, M., E. Buforn, S. Colombelli, and A. Zollo (2013)

Application of real-time GPS to earthquake early warning in subduction and strike-slip environments,

J. Geophys. Res. Solid Earth, 118, 3448–3461, doi:10.1002/jgrb.50242.
Colombelli, S., R. M. Allen, and A. Zollo (2013)

2012

Early magnitude and potential damage zone estimates for the great Mw 9 Tohoku-Oki earthquake

GEOPHYSICAL RESEARCH LETTERS, VOL. 39, L22306, doi:10.1029/2012GL053923
S. Colombelli, Gaetano Festa, A. Zollo and H. Kanamori, (2012).

Twin ruptures grew to build up the giant 2011 Tohoku, Japan, earthquake, Scientific Reports 2, Article number: 709 doi:10.1038/srep00709
Nils Maercklin, Gaetano Festa, Simona Colombelli and Ado Zollo.

Test of a threshold-based Earthquake Early Warning method using Japanese data, *Bulletin of the Seismological Society of America, 102 (3). pp. 1266-1275. ISSN 0037-1106*
S. Colombelli, O. Amoroso, A. Zollo and H. Kanamori, 2012.

POSTERS & ORAL PRESENTATIONS

2015

A P-WAVE BASED METHODOLOGY FOR RAPID, REAL TIME DETERMINATION OF SEISMIC MOMENT, FAULT EXTENT AND STRESS DROP

Simona Colombelli and Aldo Zollo
26th IUGG International Conference, Prague 2015

2014

PRESToPlus: An integrated on-site and regional early warning system for Italy

Picozzi M., Brondi P., Colombelli S., Elia L., Martino C., Marcucci S., and Zollo A.
3rd International Conference on Earthquake Early Warning: Implementing Earthquake Alerts
Berkeley | California | 3rd – 5th September 2014

Small and large earthquakes: Evidence for a difference in rupture initiation

Simona Colombelli, Aldo Zollo, Gaetano Festa and Matteo Picozzi
3rd International Conference on Earthquake Early Warning: Implementing Earthquake Alerts
Berkeley | California | 3rd – 5th September 2014

Small and large earthquakes: evidence for a different rupture beginning

Simona Colombelli, Aldo Zollo, Gaetano Festa and Matteo Picozzi
April 27- May 2 2014, EGU meeting, Vienna 2014.

Short Course on Earthquake Early Warning: Approaches, Methodologies and Case Studies, EGU meeting, Vienna 2014, SM3.3/SC4 .

Convener: Aldo Zollo

Co-Conveners: Simona Colombelli, Matteo Picozzi

Small and large earthquakes: evidence for a different rupture beginning

Simona Colombelli, Aldo Zollo, Gaetano Festa and Matteo Picozzi

Workshop on Earthquake Early Warning System: Applications to the Ibero-Maghrebian Region – Madrid, Spain 4-5 February, 2014

EEWS parameters in southern Iberia

M. Carranza, E. Buforn, A. Pazos, A. Zollo, S. Colombelli, C. Pro, L. Lozano and F. Carrilho

Workshop on Earthquake Early Warning System: Applications to the Ibero-Maghrebian Region – Madrid, Spain 4-5 February, 2014

Earthquake Early Warning System for Southern Iberia: Time window stability for parameter estimation

Marta Carranza, Elisa Buforn, Antonio Pazos, Aldo Zollo, Simona Colombelli, Carmen Pro, Lucía Lozano, and Fernando Carrilho

EGU General Assembly 2014 - Vienna | Austria | 27 April – 02 May 2014

Small and large earthquakes: evidence for a different rupture beginning

Simona Colombelli, Aldo Zollo, Gaetano Festa, and Matteo Picozzi

EGU General Assembly 2014 - Vienna | Austria | 27 April – 02 May 2014

Feasibility study of a nation-wide Early Warning System: the application of the EEW software PRESTo on the Italian Strong Motion Network (RAN)

Aldo Zollo, Matteo Picozzi, Luca Elia, Claudio Martino, Piero Brondi, Simona Colombelli, Antonio Emolo, Gaetano Festa, and Sandro Marcucci

EGU General Assembly 2014 - Vienna | Austria | 27 April – 02 May 2014

Feasibility Study On Earthquake Early Warning For Schools in Southern Italy

Antonio Emolo, Matteo Picozzi, Aldo Zollo, Gerardo Verderame, Claudio Martino, Luca Elia, Simona Colombelli, Ortensia Amoroso, Maria Teresa De Risi, Dino Bindi, Stefano Parolai, Tobias Boxberg, Nicola Miranda, Lilly Buonaiuto, Angelo Amelia

ESC GENERAL ASSEMBLY, ISTANBUL, 24-29 August 2014

Feasibility study of a nation-wide early warning system: the application of the eew software presto on the italian strong motion network (RAN)

Matteo Picozzi, Aldo Zollo, Piero Brondi, Simona Colombelli, Luca Elia, Claudio Martino and Sandro Marcucci

ESC GENERAL ASSEMBLY, ISTANBUL, 24-29 August 2014

New directions in real-time earthquake characterization and early warning damage prediction at different scales

Matteo Picozzi, Aldo Zollo, Stefano Parolai, Dino Bindi, Massimiliano Pittore, Simona Colombelli, Antonio Emolo, Gaetano Festa, Luca Elia, Ortensia Amoroso and Claudio Martino.

ESC GENERAL ASSEMBLY, ISTANBUL, 24-29 August 2014

PRESTo - probabilistic and evolutionary early warning system: concepts, performances, and case studies

Aldo Zollo, Antonio Emolo, Simona Colombelli, Luca Elia, Gaetano Festa, Claudio Martino, and Matteo Picozzi.

ESC GENERAL ASSEMBLY, ISTANBUL, 24-29 August 2014

Earthquake parameters determination from single Station record

Sara Riccardi, Antonio Emolo, Simona Colombelli, Ortensia Amoroso, Aldo Zollo

ESC GENERAL ASSEMBLY, ISTANBUL, 24-29 August 2014

www.sismoscholar.it: web platform for sharing and management of seismic data acquired in schools and dissemination activities

Ortensia Amoroso, Simona Colombelli, Grazia De Landro, Vincenzo Serlenga, Marcello Serra, Guido Maria Adinolfi, Antonella Bobbio, Piero Brondi, Sergio Del Gaudio, Antonio Scala and Aldo Zollo

ESC GENERAL ASSEMBLY, ISTANBUL, 24-29 August 2014

Small and large earthquakes: Evidence for a difference in rupture initiation

Simona Colombelli, Aldo Zollo, Gaetano Festa, and Matteo Picozzi

3rd International Conference on Earthquake Early Warning, Berkeley, California (USA) 03–05 September 2014

Presto2.0: an integrated on-site and regional early warning system for Italy

Matteo Picozzi, Piero Brondi, Simona Colombelli, Luca Elia, Claudio Martino, Sandro Marcucci and Aldo Zollo

3rd International Conference on Earthquake Early Warning, Berkeley, California (USA) 03–05 September 2014

A P-wave, threshold-based method for Earthquake Early-Warning

Aldo Zollo, Alessandro Caruso, Simona Colombelli, Gaetano Festa and Hiroo Kanamori

3rd International Conference on Earthquake Early Warning, Berkeley, California (USA) 03–05 September 2014

2013

Operating and improving earthquake early warning for Northern California and the US West coast

SSA 2013 annual meeting 17-19 april, Salt Lake City, Utah, USA

Hellweg, M., Allen, R. M., Colombelli, S., Grapenthin, R., Henson, I., Johanson, I., Kuyuk, H. S., Neuhauser, D.

Presto earthquake early warning system: feasibility study for a nation-wide deployment using an integrated regional and on-site approach

Joint Assembly IAHS / IAPSO / IASPEI – Gothenburg, Sweden, 22-26 July 2013 – poster presentation

Aldo Zollo, Simona Colombelli, Luca Elia, Antonio Emolo, Gaetano Festa, Claudio Martino, Sandro Marcucci

Expanding the P-wave Time Window: insights from observations and implications for Earthquake Early Warning

Joint Assembly IAHS / IAPSO / IASPEI – Gothenburg, Sweden, 22-26 July 2013 – oral presentation

Aldo Zollo, Simona Colombelli, Gaetano Festa, Hiroo Kanamori

New directions in real-time earthquake characterization, loss and structural damage assessment

European center for geodynamics and seismology, october 2-4, 2013 – oral presentation

M. Picozzi, A. Zollo, S. Colombelli, A. Emolo, G. Festa, L. Elia, and C. Martino

Early Warning for Large Earthquakes: observations and insights on the rupture initiation process

REAKT 2nd annual meeting, Zurich, Switzerland, 22-25 October 2013 - oral presentation

Simona Colombelli, Aldo Zollo, Gaetano Festa and Matteo Picozzi

Early Warning for Large Earthquakes: observations, models and real-time data analysis

Simona Colombelli, invited speaker for a Seminar at ETH Zurich, November 08 2013 - oral presentation

New directions in real-time earthquake characterization, loss and structural damage assessment

M. Picozzi, A. Zollo, S. Colombelli, A. Emolo, G. Festa, L. Elia, and C. Martino.

97th Journées Luxembourgeoises de Géodynamique, 2–4 October 2013, Luxembourg

2012

Rupture evolution and slip of the 2011 Tohoku earthquake from back-projection of local seismic data. - AGU Fall Meeting, American Geophysical Union, San Francisco, California, December 3-7 2012, abstract S31A-2482.

N. Maercklin, G. Festa, S. Colombelli, and A. Zollo

Real-time magnitude estimation and rapid fault characterization with GPS data for Earthquake Early Warning applications - AGU Fall Meeting, American Geophysical Union, San Francisco, California, December 3-7, 2012

S. Colombelli, R.M. Allen and A. Zollo

PRESTo Earthquake Early Warning System: Feasibility Study For A Nation-Wide Deployment Using An Integrated Regional and On-site Approach - AGU Fall Meeting, American Geophysical Union, San Francisco, California, December 3-7, 2012 – oral presentation

Aldo Zollo, Simona Colombelli, Luca Elia, Antonio Emolo, Gaetano Festa, Claudio Martino, Sandro Marcucci

Towards an Integrated Regional Early Warning System For Romania - Vrancea Earthquakes: Test and Performances - AGU Fall Meeting, American Geophysical Union, San Francisco, California, December 3-7, 2012 – oral presentation
Alexandru Marmureanu, Constantin Ionescu, Carmen Cioflan, Luca Elia, Aldo Zollo, Simona Colombelli, Claudio Martino

2011

Peak-Duration magnitude for the Irpinia Seismic Network, Southern Italy

EGU General Assembly, Vienna, Austria, 3 - 8 April, 2011 – poster session
S. Colombelli, A. Emolo, A. Zollo

Test of a threshold-based Earthquake Early Warning method using Japanese data

IUGG meeting, Melbourne, Australia, 28 June – 07 July, 2011 – poster session
S. Colombelli, O. Amoroso, A. Zollo and H. Kanamori

Early Warning for Large Magnitude Earthquakes: Is it feasible? - AGU Fall Meeting, San Francisco, California, USA, 5 - 9 December, 2011 – oral presentation

A. Zollo, S. Colombelli and H. Kanamori

Toward an integrated regional and on-site Earthquake Early Warning System for Southern Italy: test and performances. - AGU Fall Meeting, San Francisco, California, USA, 5 - 9 December, 2011 – poster session

A.Emolo, A.Zollo, L.Elia, C.Martino, S. Colombelli, G.Festa, G.Iannaccone

Test of a threshold-based Earthquake Early Warning method using Japanese data, in pubblicazione sulla rivista BSSA.

S. Colombelli, O. Amoroso, A. Zollo and H. Kanamori, 2011.

PARTECIPATION TO INTERNATIONAL MEETINGS

26-th International IUGG Conference – Prague, June-July 2015

3rd International Conference on Earthquake Early Warning – Berkeley (Ca, USA), 03-05 September 2014

EGU General Assembly – Vienna (Austria), 27 April - 02 May 2014

Partecipazione as Co-Convener for the following Session of the EGU General Assembly 2014:
SM3.3/SC4 - Short Course on Earthquake Early Warning: Approaches, Methodologies and Case Studies

Workshop on Earthquake Early Warning System: Applications to the Ibero-Maghrebian Region – Madrid, Spain 4-5 February, 2014

Reakt – Second Annual Meeting in ZURICH (Switzerland) - 2013, 22-25 OCTOBER

AGU General Assembly – San Francisco (CA, USA), December 3-7, 2012

Reakt – First Annual Meeting in POTSDAM (Germany) - 2012, OCTOBER

IUGG - International Meeting in Melbourne (Australia), “Earth on the Edge: Science for a Sustainable Planet“ - 28 June-7 July 2011

Reakt - Kick Off Meeting in NAPLES (Italy) - 2011, 20-22 SEPTEMBER

ADDITIONAL INFORMATION AND HOBBIES

- Classic Ballet: I have been dancing for 20 years, since the age of five. After the regular courses I got a diploma, which is valid for teaching classical ballet in private dance companies.
- Sport: I like all sports and follow with special interest basket and football and I am currently practicing Figure Skating.
- Driving licence, type B