PhD. GABRIELE CAMBIOTTI November 2019

Address: Department of Earth's Sciences, University of Milan, via L. Cicognara 7, 20133, Milan, Italy.

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Birth place: Fiesole (Firenze), Italy

Date of birth: 1980 April 21

EDUCATION AND TRAINING

October 2003	Diploma in Physics at the Scuola Normale Superiore of Pisa, Italy.
October 2003	Degree in Physics (110/110 with honours) at the University of Pisa, Italy.
July 2008	Master in Physics (110/110 with honours) at the University of Milan, Italy.
February 2012	PhD in Earth's Sciences at the University of Milan, Italy.

Since November 2011, I am assistant professor at the Department of Earth Sciences of the University of Milan, Italy.

RESEARCH FIELDS

My research focus on global dynamics of the Earth, the modelling of several geophysical processes as earthquakes, post-glacial rebound, mantle convection and true polar wander, and the analysis of space gravity data from GRACE (Gravity Recovery And Climate Experiment) and GOCE (Gravity and steady state Ocean Circulation Explorer) missions.

AWARDS

2009	Young Scientists Outstanding Poster Presentation (YSOPP) Award 2009 by the European Geosciences Union.

RESEARCH PROJECTS

2010-2012	Gravity and Ocean Circulation Experiment (GOCE) Italy project, ESA Endorsement, supported by Italian Space Agency (ASI). Principal Investigator: Prof. Roberto Sabadini
2014-2018	CAS/CAFEA international partnership program for creative research team (No. KZZDEWTZ-19). Principal Investigator: Prof. Wenke Sun.
2016-2020	Joint Study Group (JSG) 0.21 "Geophysical modelling of time variations in deformation and gravity" del Intercommission Committee on Theory (ICCT), International Association of Geodesy (IAG).
2018-2019	Gravitational Seismology, ESA Endorsement. Responsible for two work packages. Principal Investigator: Prof. Roberto Sabadini.

GRANTS

2010	Grant from COST (European Cooperation in Science and Technology) Action ES0701, "Improved Constraints on Models of Glacial Isostatic Adjustment", for cooperating with PhD Volker Klemann at GFZ (German Research Centre for Geosciences), Potsdam, Germany.

2011 Grant from University of California, Santa Cruz, USA, for attending the "International Symposium on Geophysical Imaging with Localized Waves", Sanya, Hainan Island, China.

ISI (INSTITUTE OF SCIENTIFIC INFORMATION) PUBLICATIONS WITH PEER-REVIEW

Cambiotti, G., Barletta, V. R., Bordoni, A. and Sabadini, R., 2009. A comparative analysis of the solutions for a Maxwell Earth: the role of the advection and the buoyancy force, *Geophysical Journal International*, 176, 995-1006, doi:10.1111/j.1365-246X.2008.04034.x

Cambiotti, G. and Sabadini, R., 2010. The compressional and compositional stratifications in Maxwell Earth models: the gravitational overturning and the long period tangential flux, *Geophysical Journal International*, 180, 475-500, doi: 10.1111/j.1365-246X.2009.04434.x

Cambiotti, G., Ricard, Y. and Sabadini, R., 2010. Ice age True Polar Wander in a compressible and non hydrostatic Earth, *Geophysical Journal International* 183, 1248-1264. doi: 10.1111/j.1365246X.2010.04791.x

Cambiotti, G., Bordoni A., Sabadini. R. and Colli, L., 2011. GRACE gravity data help constraining seismic source models of the 2004 Sumatran earthquake, *Journal of Geophysical Research,* 116, B10403, doi:10.1029/2010JB007848

Cambiotti, G., Ricard, Y. and Sabadini, R., 2011. New insights into mantle convection True Polar Wander and rotational bulge readjustment, *Earth and Planetary Sciences Letters,* 310, 538–543, doi: 10.1016/j.epsl.2011.08.009

Cambiotti, G. and Sabadini, R., 2012. A finite fault model of the great 2011 Tohoku earthquake (MW = 9.1) from inversion of GRACE gravity data, *Earth and Planetary Sciences Letter*, 335, 72-79, doi: 10.1016/j.epsl.2012.05.002

Cambiotti, G. and Sabadini, R., 2013. Gravitational seismology retrieving Centroid-Moment-Tensor solution of the 2011 Tohoku earthquake, *Journal of Geophysical Research*, 118, 183-194, doi: 10.1029/2012JB009555

Cambiotti, G., Klemann, V. and Sabadini, R., 2013. Compressible viscoelastodynamics of a spherical body at long time scales and its isostatic equilibrium, *Geophysical Journal International*, 193, 1071-1082, doi: 10.1093/gji/ggt026

Sabadini, R. and **Cambiotti, G.**, 2013. The 2011 Tohoku-Oki earthquake GCMT solution from the GOCE model of the Earth's crust, *Bollettino di Geofisica Teorica ed Applicata, 54, 335-346, doi: 10.4430/btga0110*

Cambiotti, G., Rigamonti, S., Splendore, R., Marotta, A.M. and Sabadini, R., 2014. Power-law Maxwell rheologies and the interaction between tectonic and seismic deformations, *Geophysical Journal International*, 198, 1293-1306, doi: 10.1093/gji/ggu163

Zhou, X., **Cambiotti, G.**, Sun, W. and Sabadini, R., 2014. The 2011 Tohoku (MW = 9.1) co-seismic slip pattern shaped by smoothing criteria and GPS, OB-GPS data, *Geophysical Journal International*, 199, 981995, doi: 10.1093/gji/ggu310

Cambiotti, G. and Sabadini, R., 2015. On the seismic perturbation due to a fault system: its evaluation beyond the epicentral reference frame, *Geophysical Journal International*, 203, 943-959, doi: 10.1093/gji/ggv344

Cambiotti, G., Wang, X., Sabadini, R. and Yuen, D.A.,2016. Residual polar motion caused by coseismic and interseismic deformations from 1900 to present, *Geophysical Journal International*, 205, 1165-1179, doi: 10.1093/gji/ggw077

Cambiotti, G., Zhou, X., Sparacino, F., Sabadini, R. and Sun, W., 2017. Joint estimate of the rupture area and slip distribution of the 2009 L'Aquila earthquake by a Bayesian inversion of GPS data, *Geophysical Journal International*, 209, 992-1003, doi: 10.1093/gji/ggx060

Cambiotti, G., Sabadini, R. and Yuen, D.A., 2018. Time dependent geoid anomalies at subduction zones due to the seismic cycle, *Geophysical Journal International*, 212, 139-150, doi: 10.1093/gji/ggx421

Sabadini, R. and **Cambiotti, G.**, 2018. The physics of earthquakes from space gravity missions, *Rivista del Nuovo Cimento*, 41, pp. 575-623, doi: 10.1393/ncr/i2018-10153-y

Zhou, X., **Cambiotti, G.**, Sun, W. and Sabadini, R., 2018. Co-seismic slip distribution of the 2011 Tohoku (Mw 9.0) earthquake inverted from GPS and space-borne gravimetric data, *Earth and Planetary Physics*, **2**, 120–138, doi: 10.26464/epp2018013

Gilberti, E., Antonelli, M. **Cambiotti, G.** and Pizzochero, P.M., 2019. Incompressible analytical models for spinning-down pulsars, *Publications of the Astronomical Society of Australia*, e036, doi: 10.1017/pasa.2019.28

Giliberti, E., **Cambiotti, G.**, Antonelli, M. and Pizzochero, P.M., 2019. Modelling strains and stresses in continuously stratified rotating neutron stars, *Monthly Notices of the Royal Astronomical Society, 491, 1064-1078*. doi: https://doi.org/10.1093/mnras/stz3099

Cambiotti G., 2019. Joint estimate of the co-seismic 2011 Tohoku earthquake fault slip and post-seismic viscoelastic relaxation by GRACE data inversion, *Geophysical Journal International*, doi: 10.1093/gji/ggz485

BOOKS

Sabadini, R., Vermeersen, L.L.A. and **Cambiotti, G.**, 2016. Global Dynamics of the Earth: Applications of Viscoelastic Relaxation Theory to Solid-Earth and Planetary Geophysics: Second Edition, *Springer*, doi:

10.1007/978-94-017-7552-6

ON-LINE PUBLICATIONS

Cambiotti, G., 2009. The homogeneous self-compressed compressible sphere: the gravitational overturning and the long period tangential flux, *official website of European Geosciences Union (EGU): http://www.egu.eu/awards-medals/award/ysopp/year/2009.html*

CONVENER AND CHAIR

2016 American Geoscience Union Fall Meeting, 2016, San Francisco, California, USA:

CONFERENCES, WORKSHOPS AND SEMINARIES

2009 EGU (European Geosciences Union) General Assembly 2009, Wien, Austria:

Cambiotti, G. (poster). Self-gravitating compressible Maxwell Earth models: the role of the self-compression and the compositional initial density gradient.

AGU (American Geosciences Union) 2009 Joint Assembly, Toronto, Ontario, Canada:

Sabadini, R., Barletta, V. R., Andrea, B., and **Cambiotti, G.** (invited talk by R. Sabadini). New Appraisals of GIA Modelling and Space Gravity (GRACE) Data Treatment.

2010 GRACE Science Team Meeting 2010, Potsdam, Germany:

Cambiotti G., Sabadini. R., Bordoni A., and Colli, L., (talk). GRACE gravity data help constraining seismic source models of the 2004 Sumatran earthquake.

EGU General Assembly 2010, Wien, Austria:

Cambiotti G., Sabadini R. and Klemann V. (poster). Compressible viscoelastodynamics: the Longman (1963) paradox and the long period tangential flux.

Sabadini R., **Cambiotti G.** and Ricard Y. (talk). Ice age True Polar Wander: raising debates and new analyses.

Cambiotti G., Sabadini R. and Bordoni A. (poster). The continuous relaxation spectrum of Maxwell Earth models: a new method.

2011 Workshop of SISMA (Seismic Information System for Monitoring and Alert) by ASI (Italian Space Agency), Rome, Italy.

International Symposium on Geophysical Imaging with Localized Waves, Sanya, Hainan Island, China.

EGU General Assembly 2011, Wien, Austria:

Cambiotti, G., Sabadini. R., Bordoni A., and Colli, L., (talk). GRACE gravity data help constraining seismic source models of the 2004 Sumatran earthquake.

Sabadini. R., **Cambiotti, G.**, and Ricard, Y., (talk by R. Sabadini). New insights into mantle convection True Polar Wander and rotational bulge readjustment.

Santolini, F., **Cambiotti, G.**, and Sabadini, R. (poster). Sea level feedback for the 2004 Sumatran and 2010 Maule earthquakes.

2012 International Workshop on Core Dynamics 2012, Wuhan, China:

Cambiotti, G., Sabadini. R. and Ricard Y. (talk). New insights into rotational bulge readjustment and True Polar Wander driven by mantle convection and ice ages.

Seminar at LCG (Key Laboratory of Computational Geodynamics, University of Chinese Academy of Sciences), Beijing, China:

Cambiotti, G., and Sabadini. R. (seminar). Two seismic solutions of the 2011 Tohoku earthquake based on space gravity data.

Chinese Geophysical Meeting 2012, Beijing, China:

Cambiotti, G., and Sabadini. R. (talk). Gravitational seismology retrieving Centroid-Moment-Tensor solution of the 2011 Tohoku earthquake.

Cambiotti, G., Sabadini, R., and Ricard Y. (poster). New insights into rotational bulge readjustment and True Polar Wander driven by mantle convection.

2013 VIII Hotine Marussi Symposium 2013, Rome, Italy:

Sabadini. R., and **Cambiotti, G.** (talk). Gravitational seismology retrieving Centroid-Moment-Tensor solution of the 2011 Tohoku earthquake.

Chinese Geophysical Meeting 2013, Kunming, China:

Cambiotti, G., Rigamonti, S., Splendore, R., Marotta, A.M., and Sabadini, R. (invited talk). Four-dimensional interplay between tectonic and seismic deformations: orthotropic anisotropy and two-modal relaxation.

Rigamonti, S., **Cambiotti, G.**, and Sabadini, R. (talk by S. Rigamonti). The role of the tectonic environment in post-seismic deformations revealed by analytical solutions and relaxation spectra of anisotropic linear Maxwell Earth models.

Sabadini, R. and **Cambiotti, G.** (talk by R. Sabadini). Applications of Viscoelastic Relaxation Theory to Solid-Earth and Planetary Geophysics.

Seminars at IGGCAS (Institute of Geology and Geophysics, Chinese Academy of Sciences), Beijing, China:

Cambiotti, G., Ricard, Y., and Sabadini. R. (seminar). True polar wander driven by mantle convection and rotational bulge readjustment.

Cambiotti, G., and Sabadini. R. (seminar). Gravitational seismology.

2014 American Geoscience Union Fall Meeting, 2014, San Francisco, California, USA:

Cambiotti, G., Wang. X, Sabadini, R., Yuen, D.A. (poster). The excitation of True Polar Wander by extreme earthquakes over time.

Congress of the Italian Geoscience Society, 2014, Milan, Italy:

Sabadini, R., Barzaghi, R., **Cambiotti, G.**, Martotta, A.M., Crippa, B., Peresan, A., and Panza, G. (talk by R. Sabadini). Merging geophysics and space geodesy for earthquakes.

Cambiotti, G., Rigamonti, S., Splendore, R., Marotta, A.M., and Sabadini, R. (talk). Power-law Maxwell rheologies and the interaction beween tectonic and seismic deformations.

Yuri Podladchikov's Symposium at the University of Lausanne, Lausanne, Swiss.

Chinese Geophysical Meeting, 2014, Beijing, China:

Cambiotti, G., Wang, X., Sabadini, R., Yuen, D.A. (poster). Erth's rotational axis excited by large earthquakes and the implications for flow mechanisms in the mantle.

Seminar at the University of Lafayette, Lafayette, Lousiana, USA:

Cambiotti, G., and Sabadini. R. (seminar). Gravitational seismology.

Cambiotti, G., Wang, X., Sabadini, R., and Yuen, D.A. (seminar). Earthquakes can drive true polar wander over geological times.

2015 Central Asian Tectonics and Western Pacific Geodynamics International Workshop, Wuhan, China:

Yuen, D.A., **Cambiotti, G.**, Sabadini, R., and Wang, X. (talk by D.A. Yuen). A bunch of earthquakes (tens of millions) of large earthquakes can drives polar wander from mesozoic: implications for geodynamics.

2016 International Workshop on the Frontiers of Computational Geodynamics, Beijing, China:

Cambiotti, G., Zhou, X., Sparacino, F., Sabadini, R. and Sun, W., (talk). Joint estimate of the rupture area and slip distribution of the 2009 L'Aquila earthquake by a Bayesian inversion of GPS data.

International Symposium on Geodesy and Geodynamics, Tianjin, China:

Cambiotti, G., Wang. X, Sabadini, R. and Yuen, D.A. (invited talk). Residual polar motion caused by coseismic and interseismic deformations from 1900 to present.

American Geoscience Union Fall Meeting, 2016, San Francisco, California, USA:

Cambiotti, G., Wang. X, Sabadini, R. and Yuen, D.A. (talk). Residual polar motion caused by coseismic and interseismic deformations from 1900 to present.

2017 American Geoscience Union Fall Meeting, 2017, San Francisco, California, USA:

Convener and chair at the oral and poster sessions “Interrelation between Seismicity and Gravity Field Anomalies: New Insights into Earthquake Rupture Processes”.

Cambiotti, G., Sabadini, R. and Yuen, D.A. (talk). Geoid anomalies at subduction zones due to the seismic cycle

Morra, G., Chiaraluce, L., Di Stefano, R. Michele, M., **Cambiotti, G.**, Yuen, D.A. and Brunsvik, B. (poster). Stress and Strain Rates from Faults Reconstructed by Earthquakes Relocalization.

Seminar at LCG (Key Laboratory of Computational Geodynamics, University of Chinese Academy of Sciences), Beijing, China:

Cambiotti, G., Sabadini, R. and Yuen, D.A. (talk). Geoid anomalies at subduction zones due to the seismic cycle

2018 American Geoscience Union Fall Meeting, 2018, San Francisco, California, USA:

Brunsvik, B., Morra, G., **Cambiotti, G.**, Chiaraluce, L., Di Stefano, R., Michele, M. and Yuen, D.A. (poster). Reconstruction of fault geometry through hypocenter clustering for Coulomb stress analysis during the L’Aquila earthquake swarm

International Symposium on Geodesy and Geodynamics (ISGG), Kunming, China:
Convener and chair at the oral sessions “Theme forum”

Cambiotti, G. (talk). Estimates of coseismic and aseismic slips and regional strain rates by geodetic data inversion

Cambiotti, G. (talk). What we can learn from geodetic and seismic strain-rate comparisons?

Geodynamics and Big Data International Conference at Palau, Sardinia, Italy:

Cambiotti, G. (talk). On non-linear Inversion of Geodetic Data for source Parameters from a Bunch of Earthquakes.

2019 Living Planet Symposium, Milan, Italy:

Cambiotti, G., Douch, K., Cesare, S., Sneeuw, N., Anselmi, A., Marotta, A.M., Sabadini, R. (talk). On the earthquake detectability by the Next Generation Gravity Mission (NGGM).

Marotta, A.M., Bollino, A., Restelli, F., **Cambiotti, G.**, Sabadini, R. and GravSeis Group (talk). Active Tectonics and the Next Generation Gravity Mission (NGGM).

Cambiotti, G. and Sabadini, R. (poster). Co- and post-seismic gravity anomalies, the expected amplitudes and their characteristic spatial scales during the operational period of space gravity missions.

Cambiotti, G. and Sabadini, R. (poster). Joint estimate of the slip distribution of the 2011 MW=9.1 Tohoku earthquake and the rheological stratification by inversion of unfiltered GRACE data time series.

Tools, data and models for 3D seismotectonics: the Italian over time laboratory, Perugia, Italy:

Marotta, A.M., **Cambiotti, G.** and Sabadini, R. (talk). Active Tectonics and Earthquakes from Space Gravity Missions, opening a New Route.

Internetional Union of Geodesy and Geophysics General Assembly 2019, Montreal, Canada:

Douch, K., **Cambiotti, G.**, Cesare, S. Sneeuw, N. Anselmi, A., Marotta, A.M. and Sabadini, R (talk). On the Possibility to Monitor the Co- and Post-seismic signal with the Next Generation Gravity Mission (NGGM)

Società Italiana di Fisica, L’Aquila, Italy:

Cambiotti, G. (talk). Viscoelastic gravitational seismology.

National Group of Solid Earth Geophysics (GNGTS) 2019, Roma, Italy:

Cambiotti, G. (talk). Joint estimate of the co-.seismic 2011 Tohoku earthquake fault slip and post-seismic viscoelastic relaxation by GRACE data inversion.

DIDACTIS

I hold the course "Seismology and Laboratory" from 2015 at the department of Earth's Sciences of the University of Milan.

I held the course "Mathematical Methods for Geophysics" from 2012 to 2017 at the department of Earth's Sciences of the University of Milan, and the course "Tectonophysics" in 2013 at the department of Physics of the University of Milan.

In the 2016, 2017 and 2018 I held the course "Global geodynamics" for undergraduate students at the Yanqui Campus, University of Chinese Academy of Sciences (UCAS), Beijing, China.

In the 2016 I held the course "Inverse problem and earthquakes" within the International Workshop on Big Data in Geosciences at the China University of Geosciences , Wuhan, China.

I have been the co-examiner of two degree thesis in Physics at the University of Milan

2009 Bianchi, M.C. e Casati, A.

and of five master thesis in Physics at the University of Milan

2009 Colli, L.

2010 Caronti, A., e Speroni, R.

2011 Santolini, F.

2013 Rigamonti, S.

and of four degree thesis in Geology at the University of Milan

2013 Sparraccino, F. e Moretti, S.

2015 Didonna, M. e Berselli, G.

I have been the examiner of two master thesis in Earth's Sciences at the University of Milan

2015 Ghio, M.

2016 Sparracino, F. and of one master thesis in Physics at the University of Milan

2017 Thiemme, E.

and of two degree thesis in Geology at the University of Milan

2018 Gasparini, F.G., Galimberti S.

RELATED PROFESSIONAL EXPERIENCES

I am the manager of the high performance computing laboratory at the Department of Earth's Sciences of the University of Milan. Currently, this laboratory offers 136 CPUSs with 256 GB of RAM to the professors and researchers of the department.

OTHER EXPERIENCES

From the 2004 to 2007 I worked in audiovisual productions as teacher, director, editor and director of photography for the professional institute "Piero Sraffa" in Crema, the digital entertainment company Neo Network in Milan and several Italian movie directors, as well as freelancing short movies for private companies and myself.