

PERSONAL INFORMATION
Roberto Sabadini
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 Phone: 0039-331-3042932

ACTUAL POSITION He is Full Professor, at the Faculty of Sciences, University of Milan, since 11/1/1994.

WORK EXPERIENCE He is Full Professor, at the Faculty of Sciences, University of Milan, since 11/1/1994.
 He has been Associate Professor at the Faculty of Sciences, University of Bologna, from 4/11/1994 to 10/31/1994.
 From 8/1/1980 Roberto Sabadini has been enrolled as a researcher in Geophysics at the Faculty of Physical, Mathematical and Natural Sciences of the University of Bologna.
 From 6/1/1978 he has been a C.N.R. (National Research Council) fellowship holder, at the Institute of Geophysics of the University of Bologna, ranking at the first position, for a fellowship within the field of Mathematical Physics (proposal no. 201.1.85, 8/3/1977).

EDUCATION AND TRAINING He got the Degree in Physics at the University of Bologna, Italy, on June 30th, 1977, scoring 110 over 110, cum laude.

PERSONAL SKILLS

Mother tongue Italian

Other Language	UNDERSTANDING		LISTENING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1/C2	C1/C2	C1/C2	C1/C2	C1/C2

Communication skills He has been the **President of the Solid Earth Section of the European Geophysical Society and Secretary of the IASPEI. Tectonophysics Section**

Organisational / managerial skills **Academic activities within the frame of the Italian Ministry of Instruction, University and Research**
 He has been the **President of the Scientific Habilitation Commission, M.I.U.R, ASN2016**, lasting two years, 2016-2017, 2017-2018, for the selection procedure SC 04/A4 - Geophysics, to upgrade Associate and Full Professors in Italy

 He has served as **Department Director** from 2004 to 2007, Department of Earth Sciences “A. Desio”, University of Milano.

Editorial activity

He has been **Editor in Chief of the Geophysical Journal International**, of the Royal Astronomical Society (RAS), European Geophysical Society (EGS) and German Geophysical Society (DGG) from 1992 to 1999, after having served as Associate Editor since 1988. He has been a member of the Advisory Board of Earth and Planetary Science Letters.

GOCE (Gravity and steady state Ocean Circulation Explorer) Mission Advisory Group

He has been a member of the Mission Advisory Group of the European Space Agency GOCE (Gravity and steady state Ocean Circulation Explorer) space mission.

Job-related skills

Summary of the research activities

The research field of Prof. Roberto Sabadini is in Solid Earth Geophysics at various wavelengths, from the modelling of the geophysical processes responsible for the Italian seismicity, to the estimate of mantle viscosity, obtained from a series of geophysical observables related to Post Glacial Rebound and post-seismic deformation. His research deals also with the modelling of gravity changes and Earth surface deformation linked to geophysical processes related to global-change, such as glacial mass instabilities over the planet.

He contributed to the normal mode relaxation theory for stratified, viscoelastic Earth within the frame of an analytical approach, which has been applied to a variety of geophysical phenomena, ranging from post-seismic deformation, to those related to internal density anomalies, or post-glacial rebound. Such a theory and approach, based on an incompressible scheme of fully analytical Green functions for a stratified Earth, is now widely applied by several researches in different fields of geophysics and planetology, and is detailed in the **book Global Dynamics of the Earth (Springer, second edition)**, which now includes the effects of compressibility and novel methods for treating viscoelasticity within the frame of fully realistic Earth's models.

The mathematical models resulting from this normal mode viscoelastic theory have been used to simulate the geophysical processes contributing to the Mediterranean and Italian seismicity. Within a series of PRIN projects and within the SISMA (Seismic Information System for Monitoring and Alert) project of the Italian Space Agency (ASI), the methodology allows us to make use of observational data from modern space geodetic techniques, such as GPS and SAR, with the aim of modelling the stress accumulation within the major seismogenic regions, in such a way to overcome the difficulties encountered by purely probabilistic approaches in seismic hazard mitigation.

The novelty of such an approach is made evident in the chapter entitled "Plate Deformation", within the Treatise of Geophysics, by Elsevier.

At long wavelengths, the research by Prof. Roberto Sabadini deals with the geophysical phenomena which modify the gravity field, recovered by means of satellite data, targeted towards the evaluation of the mass balance in the glaciated regions of the Earth. Such an approach allows us to monitor the changes of the planet due to climatological variations and, in the meanwhile, to constrain the physical properties of the Earth's interior.

Ice mass imbalance in Antarctica and Greenland is considered, for example, a major climatological signal. The scientific community is thus interested to quantify, as accurately as possible, within the available methodology and instrumentation, the amount of present-day melting in the polar regions of the Earth. The group of Solid Earth Geophysics at the University of Milan, led by Roberto Sabadini, has implemented a methodology, based on satellite data and geophysical modelling and on the concept that ice mass melting and water redistribution changes the gravity field, to measure the mass balance and to constrain mantle viscosity. The first technology used is called SLR (Satellite Laser Ranging) and is based on LAGEOS-1 and LAGEOS-2 data. The other space mission used within our methodology is called GRACE (Gravity Recovery And Climate Experiment) from NASA. In the near future, the data from the mission GOCE (Gravity and steady state Ocean Circulation Explorer) from ESA (European Space Agency) will be used. Roberto Sabadini has been a member of the Mission Advisory Group of the GOCE space mission. These new space data will allow us to detail the anomalous gravity pattern of the Earth, including the ice mass changes, in order to constrain the ongoing sea-level changes, worldwide and in the Mediterranean.

His latest research is in the field of Gravitational Seismology, based on the concept that in order to fully understand the genesis and the physics of earthquakes we have to include information from *mass rearrangements*, which means time dependent gravity changes, not remaining limited to *displacements* at the Earth's surface from seismometers (classical seismology from wave propagation) and GNSS (Global Navigation Satellite System), since any physical process within our Planet implies both displacements and mass movements.

He is working on the various phases of the earthquake cycle within the frame of a novel scheme where the inter-seismic phase and the possibility to account for the contribution from previous earthquakes are included, as required for a correct treatment of gravity data and for a full

understanding of the time-dependent, gravitational effects from earthquakes.

Digital Skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Excellent	Excellent	Excellent	Medium	Good

Other skills Sailing

Driving licence B

Additional Information

Publications
Projects
Honours and awards
Memberships
References
Citations
Courses

Bibliometric Indicators (March 1st, 2018)
 SCOPUS
 H-index:30
 Total number of citations: 3369
 WoS
 H-index:29
 Total number of citations: 2867
 GoogleScholar
 H-index=39
 I10-index=111
 Total number of citations: 4940

ISI Publications

- (143) Xin Zhou, Gabriele Cambiotti, WenKe Sun, Roberto Sabadini (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, vol. 2, p. 120-138, ISSN: 2096-3955, doi: 10.26464/epp2018013
- (142) Cambiotti, G., Sabadini, R., Yuen, D. A. (2018). Time-dependent geoid anomalies at subduction zones due to the seismic cycle. GEOPHYSICAL JOURNAL INTERNATIONAL, vol. 212, p. 139-150, ISSN: 0956-540X, doi: 10.1093/gji/ggx421
- (141) G. Cambiotti, X. Zhou, F. Sparracino, R. Sabadini, W. Sun (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, vol. 209, p. 992-1003, ISSN: 0956-540X, doi: 10.1093/gji/ggx060
- (140) G. Cambiotti, X. Wang, R. Sabadini, D.A. Yuen (2016). Residual polar motion caused by coseismic and interseismic deformations from 1900 to present. GEOPHYSICAL JOURNAL INTERNATIONAL, vol. 205, p. 1165-1179, ISSN: 0956-540X, doi: 10.1093/gji/ggw07
- (139) G. Cambiotti, R. Sabadini (2015). On the response of the Earth to a fault system : its evaluation beyond the epicentral reference frame. GEOPHYSICAL JOURNAL INTERNATIONAL, vol. 203, p. 943-959, ISSN: 0956-540X, doi: 10.1093/gji/ggv344
- (138) G. Cambiotti, S. Rigamonti, R. Splendore, A.M. Marotta, R. Sabadini (2014). Power-law Maxwell rheologies and the interaction between tectonic and seismic deformations. GEOPHYSICAL JOURNAL INTERNATIONAL, vol. 198, p. 1293-1306, ISSN: 0956-540X, doi: 10.1093/gji/ggu163
- (137) X. Zhou, G. Cambiotti, W. Sun, R. Sabadini (2014). The coseismic slip distribution of a shallow subduction fault constrained by prior information : the example of 2011 Tohoku (Mw 9.0) megathrust

- earthquake. *GEOPHYSICAL JOURNAL INTERNATIONAL*, vol. 199, p. 981-995, ISSN: 0956-540X, doi: 10.1093/gji/ggu310
- (136) G. Cambiotti, V. Klemann, R. Sabadini (2013). Compressible viscoelastodynamics of a spherical body at long timescales and its isostatic equilibrium. *GEOPHYSICAL JOURNAL INTERNATIONAL*, vol. 193, p. 1072-1082, ISSN: 0956-540X, doi: 10.1093/gji/ggt026
- (135) G. Cambiotti, R. Sabadini (2013). Gravitational seismology retrieving Centroid-Moment-Tensor solution of the 2011 Tohoku earthquake. *JOURNAL OF GEOPHYSICAL RESEARCH. SOLID EARTH*, vol. 118, p. 183-194, ISSN: 2169-9356, doi: 10.1029/2012JB009555
- (134) G. Cambiotti, R. Sabadini (2013). The 2011 Tohoku-Oki earthquake GCMT solution from the GOCE model of the Earth's crust. *BOLLETTINO DI GEOFISICA TEORICA E APPLICATA*, vol. 54, p. 335-346, ISSN: 0006-6729, doi: 10.4430/bgta0110335
- (133) G.F. Panza, A. Peresan, A. Magrin, F. Vaccari, R. Sabadini, B. Crippa, A.M. Marotta, R. Splendore, R. Barzaghi, A. Borghi, L. Cannizzaro, A. Amodio, S. Zoffoli (2013). The SISMA prototype system: integrating Geophysical Modeling and Earth Observation for time-dependent seismic hazard assessment. *NATURAL HAZARDS*, vol. 69, p. 1179-1198, ISSN: 0921-030X, doi: 10.1007/s11069-011-9981-7
- (132) G. Cambiotti, R. Sabadini (2012). A source model for the great 2011 Tohoku earthquake (Mw=9.1) from inversion of GRACE gravity data. *EARTH AND PLANETARY SCIENCE LETTERS*, vol. 335-336, p. 72-79, ISSN: 0012-821X, doi: 10.1016/j.epsl.2012.05.002
- (131) V. Barletta, A. Bordoni, A. Aoudia, R. Sabadini (2012). Squeezing more information out of time variable gravity data with a temporal decomposition approach. *GLOBAL AND PLANETARY CHANGE*, vol. 82-83, p. 51-64, ISSN: 0921-8181, doi: 10.1016/j.gloplacha.2011.11.010
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- (129) G. Cambiotti, Y. Ricard, R. Sabadini (2011). New insights into mantle convection true polar wander and rotational bulge readjustment. *EARTH AND PLANETARY SCIENCE LETTERS*, vol. 310, p. 538-543, ISSN: 0012-821X, doi: 10.1016/j.epsl.2011.08.009
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- (126) G. Cambiotti, V. R. Barletta, A. Bordoni, R. Sabadini (2009). A comparative analysis of the solutions for a Maxwell Earth: the role of the advection and buoyancy force. *GEOPHYSICAL JOURNAL INTERNATIONAL*, vol. 176, p. 995-1006, ISSN: 0956-540X, doi: 10.1111/j.1365-246X.2008.04034.x
- (125) R. Sabadini, A. Aoudia, R. Barzaghi, B. Crippa, A.M. Marotta, A. Borghi, L. Cannizzaro, L. Calcagni, G. Dalla Via, G. Rossi, R. Splendore, M. Crosetto (2009). First Evidences of Fast Creeping on a Long Lasting Quiescent Earthquake Normal-Fault in the Mediterranean. *GEOPHYSICAL JOURNAL INTERNATIONAL*, vol. 179, p. 720-732, ISSN: 0956-540X, doi: 10.1111/j.1365-246X.2009.04312.x
- (124) A.M. Marotta, R. Sabadini (2008). Africa-Eurasia kinematics control of long wavelength tectonic deformation in the central Mediterranean. *GEOPHYSICAL JOURNAL INTERNATIONAL*, ISSN: 0956-540X, doi: 10.1111/j.1365-246X.2008.03906.x
- (123) F. Migliaccio, M. Reguzzoni, F. Sanso, G. Dalla Via, R. Sabadini (2008). Detecting geophysical signals in gravity satellite missions. *GEOPHYSICAL JOURNAL INTERNATIONAL*, vol. 172, p. 56-66, ISSN: 0956-540X, doi: 10.1111/j.1365-246X.2007.03600.x
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- (119) R.E.M. Riva, A. Borghi, A. Aoudia, R. Barzaghi, R. Sabadini, G.F. Panza (2007). Viscoelastic relaxation and long-lasting after-slip following the 1997 Umbria-Marche (Central Italy) earthquakes. *GEOPHYSICAL JOURNAL INTERNATIONAL*, vol. 169, p. 534-546, ISSN: 0956-540X, doi: 10.1111/j.1365-246X.2007.03315.x
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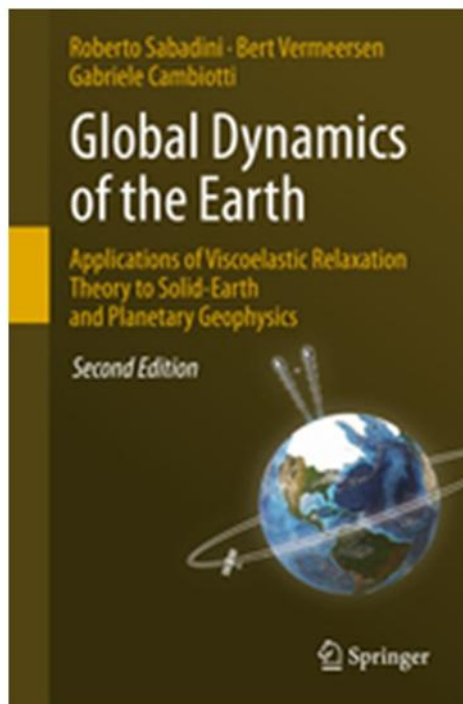
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- (2) R. Sabadini, M. Bonafede, E. Boschi (1978). A thermomagnetoelastic model of the earthquake source mechanism. NUOVO CIMENTO DELLA SOCIETÀ ITALIANA DI FISICA. C, vol. 1, p. 523-538, ISSN: 0390-5551, doi: 10.1007/BF02510111
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Books

- (2) Roberto Sabadini, Bert Vermeersen and Gabriele Cambiotti, (2016). Global Dynamics of the Earth - Applications of Viscoelastic Relaxation Theory to Solid-Earth and Planetary Geophysics, Springer, ISBN: 978-94-017-7552-6 (second Edition), as hereinafter



(1) Roberto Sabadini and Bert Vermeersen (2004). Global Dynamics of the Earth - Applications of Normal Mode Relaxation Theory to Solid-Earth Geophysics . p. 1-344, Springer, ISBN: 978-1-4020-1267 (first edition)

Treatise on Geophysics (Chapter to Enciclopedia)

2) R. Sabadini (2015). Plate deformation. In: Crustal and lithosphere dynamics. p. 153-215, Elsevier, ISBN: 0-444-51928-9, in *Treatise of Geophysics, Second Edition*

1) R. Sabadini (2007). Plate deformation. In: Crustal and lithosphere dynamics. p. 153-215, Elsevier, ISBN: 0-444-51928-9, in *Treatise of Geophysics, First Edition*

Chapters to volumes

1) Vermeersen LLA, Sabadini R (1998). Effects of compressibility and stratification on viscoelastic relaxation: the analytical perspective. In: Lliboutry L, Peltier WR, Wolf D et al.. Dynamics of the Ice Age Earth. p. 123-133, Zurich:Trans Tech Publications, ISBN: 0-87849-810-9

2) Sabadini R, Vermeersen LLA (1998). Mantle layering and long-term rotational responses of the Earth to Glacial cycles. In: Lliboutry L, Peltier WR, Wolf D et al.. Dynamics of the Ice Age Earth. p. 489-496, Zurich:Trans Tech Publications, ISBN: 0-87849-810-9

3) Sabadini R, Yuen DA, Gasperini P (1989). Viscoelastic deformations and tempèoral variatiopns in the geopotential. In: Han D, Wahr J, Tonn R et al.. Slow deformation and transmission of stress in the Earth, Geophysical Monograph 49 IUGG Volume 4. vol. 49, p. 115-123, WASHINGTON:American Geophysical Union, ISBN: 0-87590-453-X

National and international grants (as Principal Investigator)

From 1995

PRIN

1995 - Responsabile U.R., Struttura, dinamica ed evoluzione della litosfera, Prot. 9504037570_023, Cofinanziamento MIUR: 5165 Euro.

1996 - Responsabile U.R., Modelli numerici per la simulazione di processi tettonici nell'area mediterranea, Prot.: 9504037570_023, Cofinanziamento MIUR: 6197 Euro.

-1998 DINAMICA DELLA LITOSFERA: SISMICITA' E DEFORMAZIONE IN AREE ATTIVE DELL'ITALIA CENTRALE

- 2000 DEFORMAZIONI ATTIVE AL MARGINE SETTENTRIONALE DELL'ADRIA
 - 2001-2002 PI, MONITORAGGIO MULTIDISCIPLINARE E STUDIO MULTISCALE DELLA -DEFORMAZIONE ATTIVA NEL SETTORE SETTENTRIONALE DELLA PLACCA ADRIATICA, codice 2002047575_00104, 24 mesi MIUR (totale)
 - 2004 UTILIZZO INTEGRATO DELLA GEOFISICA, DI TECNICHE SPAZIALI, DELLA GEOCHIMICA E DELLA PETROLOGIA PER UN MODELLO GEODINAMICO DI RIFERIMENTO DELLA REGIONE ITALIANA
 - 2006 DINAMICA DEL SISTEMA COSTITUITO DAGLI APPENNINI SETTENTRIONALI, DALLA PIANURA PADANA E DALLE ALPI
- P.U.R, Università degli Studi di Milano, 11.000 euro

Italian Space Agency

- SISMA (Seismic Information System for Monitoring and Alert), funded by the Italian Space Agency, 2007-2012, 429.377 euro
- GOCE (Gravity and steady state Ocean Circulation Explorer), funded by the Italian Space Agency, European Space Agency endorsement, 2008-2009. 173.769 euro

European projects

- Project CEE HCM Human Capital and Mobility Geodynamic Modelling of the Western Mediterranean n. CHRX-CT94-0607

European Space Agency projects

- European Space Agency n. 12056/96/NL/CN, Study of the benefits of high resolution Earth gravity and ice sheet elevation model for sea level changes
- European Space Agency - Alenia Space Contract "Laser Doppler Interferometry Mission for Determination of the Earth Gravity Field"
- European Space Agency ITT AO/1-9101/17/I-NB, Title: Gravitational Seismology, Principal Investigator: Roberto Sabadini, Teams: University of Milano, Stuttgart University, Thales Alenia Space-Italy, Kick off: April 5 2018, 150.000 euro

Awards, Fellowships

In 1997, he has been awarded with the **Golden EGS (European Geophysical Society) Badge Award medal**, "*This testimonial is given in recognition of his generous services as EGS Editor of the journal Geophysical Journal International*"

He is member of **Accademia Europea**, in the section of Earth and Cosmic Sciences.

He has been elected **Fellow of the American Geophysical Union (2009)** "*In recognition of Eminence in Geophysics*", with the motivation "*for his immense contributions to our understanding of the Earth and its subsystems*", AGU Honors Ceremony, Tuesday 26 May 2009, Toronto, as shown hereinafter



Official teaching at International highly qualified Institutions

-Graduate University of the Chinese Academy of Sciences (UCAS)

Title of the PhD Course: Normal Mode relaxation Theory in Solid Earth and Planetary Geophysics
(6/2011 - 7/2011, UCAS in Beijing)

-Graduate University of the Chinese Academy of Sciences

Title of the PhD Course: Viscoelasticity and Earth's Dynamics
(6/2012 - 7/2012, UCAS in Beijing)

Personal information

I authorize the handling of personal information in this curriculum, according to D.Lgs n. 196/03 and following modifications and Regulations EU 679/2016 (General Regulations concerning Data Protection or GRDP) and art. 7 of University Regulations concerning protection of personal information.

I authorize, according to D.lgs 14/03/2013 n. 33 concerning transparency, in case of conferment of the position and of the fellowship, the publication of this curriculum in the web site of Università degli Studi di Milano in the section "Amministrazione trasparente", "Consulenti e collaboratori".

Date, November 12, 2018

Signature

Prof. Roberto Sabadini