

Giorgio Cassiani

Curriculum Vitae



Personal details

Place of birth: Trieste, Italy
Marital status: married, two children
Nationality: Italian

Business address

Dipartimento di Geoscienze
Università degli Studi di Padova
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Current position

Full Professor in Applied Geophysics

Department of Geosciences
University of Padua, Padua, Italy

Responsible for teaching and research in applied geophysics, with focus on environmental, hydrological and engineering geology applications.

Education

- **Ph.D. in Civil and Environmental Engineering, 1997, Duke University, U.S.A.**
Dissertation: "Aquifer Characterization and Well Tests": analytical and semi-analytical models for well tests and application in heterogeneous aquifers.
- **Ph.D. in Applied Geophysics, 1996, University of Trieste, Italy.**

Dissertation: “Integration of geophysical data in environmental engineering”. Geophysical data used as auxiliary information for the characterization of heterogeneous aquifers for environmental problems.

- **Master of Science in Civil and Environmental Engineering, 1995, Duke University, USA.**

Thesis: “Groundwater Pollution Remediation and Control - a Stochastic Framework for Utilization of Available Data”. Geostatistical integration of data of different nature, hydrogeological and geophysical, for an accurate hydraulic characterization of heterogeneous aquifers.

- **Diploma in Mining Engineering, 1991, University of Trieste, Italy. Summa cum Laude.**

Thesis: “Vibrations in industrial environment: safety and interventions”. Acquisition and processing of vibrometric data. And finite element modeling of the source-soil-structure system.

Employment

2006-2015 Associate Professor in Applied Geophysics

Department of Geosciences
University of Padua, Padua, Italy

Responsible for teaching and research in applied geophysics within the courses of study in Earth Science and Environmental Science, with focus on environmental, hydrogeological and engineering geology applications. In this period he has been principal or co-principal investigator in 18 funded grants and consultancy contracts, including 4 EU FP7 Collaborative Projects, all of them as a work package leader.

2001-2006 Researcher in Applied Geophysics

Department of Earth Sciences and Geotechnology
University of Milan – Bicocca, Milan, Italy

Responsible for teaching and research in applied geophysics within the course of study in Earth Science, with focus on environmental, hydrogeological and engineering geology applications.

During this period, he has been principal or co-principal investigator in 14 funded grants and contracts.

1999-2001 Lecturer (B) in Contaminant Hydrogeology,

Department of Environmental Science, Lancaster University, Lancaster, UK.

Permanent position involving teaching and research in hydrogeology, with focus on contamination issues in soil and groundwater. Co-director of the Environmental Management degree course.

In the 1999-2001 period he has been coordinator of 3 research projects funded at the national (UK) level (NERC)

1997-1999 Environmental Specialist, Geodynamics and Environment Unit (GEDA), ENI S.p.A., Agip Division, Milan, Italy

Permanent position involving internal consulting on environmental issues for the Italian major oil company: environmental restoration, hydrogeology, geotechnics, and environmental management systems.

1996-1997 Responsible for Research and Development, A.S.P., Pistoia, Italy.

Permanent position as assistant to the head of technical services for development and management of projects in the areas of (i) production and distribution of drinking water; (ii) collection and treatment of wastewater; (iii) collection and treatment of solid waste; (iv) planning of water resources; and (v) distribution of natural gas.

1993-1996 Research Assistant, Department of Civil and Environmental Engineering, Duke University, USA.

Assistant to the principal investigator of the “Duke Forest Gate 11 site” project. Site characterization via hydrogeological and geophysical methods, design and optimization of restoration plan. International consulting funded by the World Health Organization.

1992-1993 Research Associate at Osservatorio Geofisico Sperimentale (OGS), Trieste, Italy.

Development of seismic interpretation software within the EC project “Joule”, sub-project: “Artificial Intelligence Techniques for Seismic Data Interpretation”.

1991-1992 Research Associate at the Department of Mines and Applied Geophysics, University of Trieste, Trieste, Italy.

Development of water well database, seismic data interpretation and geothermal modeling for the regional government.

Areas of scientific interest

- Geophysical methods for environmental applications, with particular regard to the characterization of hydrological systems and contaminated sites from the geological, hydrological and contamination viewpoints. Methods of choice are Electrical Resistivity Tomography (ERT) and Ground Penetrating Radar (GPR), especially in borehole and cross-borehole configuration. Novel Spectral Induced Polarization (SIP) and micro-gravimetric time-lapse methods are currently under development.
- Geophysical methods for the characterization of mountain slope sites, both from the geotechnical and hydrological viewpoints, with special focus on landslide prediction. Methods of choice are seismic methods – especially Surface Wave methods (MASW, MOPA) - ERT and GPR.
- Seismological micro-scale zoning and other soil dynamics uses of exploration geophysics, with particular reference to surface wave methods (MASW, MOPA).
- Integration of hydrological modeling with evidence from geophysical methods and from classical hydrological measurements, both in the vadose zone and in the saturated zone, with the aim of calibrating the hydraulic and hydrological parameters of relevant geological formations.
- Integration of invasive and non-invasive techniques for site characterization, with particular reference to geostatistical techniques.
- Geomechanical issues related to the control of subsidence caused by the extraction of fluids from the subsurface, with particular regard to petrophysical and modeling aspects, including the geomechanical effects on 4D seismics.

Teaching activity**2017-2018**

Contract Professor in Applied Geophysics, University of Trieste, Italy.

- Hydrogeology and exploitation of underground fluids (9 credits) for the Master's course in Civil and Environmental Engineering.

since 2012

Professor in Applied Geophysics, responsible for the following courses

- Environmental Applied Geophysics (6 credits) for the Master course in Technical Geology.
- Applied Geophysics (8 credits) for the Master course in Environmental Science.

Advisor to 7 Master's students and 2 Bachelor students. Supervisor to 5 PhD Theses.

2008-2011

Associate Professor in Applied Geophysics, responsible for the following courses

- Applied Geophysics II (5 credits) for the Master course in Technical Geology.
- Environmental Geophysics (4 credits) for the Master course in Technical Geology.
- Applied Geophysics (8 credits) for the Master course in Environmental Science.
- Environmental Geophysics (6 credits) for the Master course in Environmental Engineering.

Advisor to 4 Master's level theses and 8 Bachelor's level theses. Advisor of 3 PhD dissertations.

2006-2008

Associate Professor in Applied Geophysics responsible for the following courses for the degree in Technical Geology, Dipartimento di Geologia Paleontologia e Geofisica, Università di Padova:

- Applied Geophysics II (4 credits)
- Laboratory of Applied Geophysics I (3 credits)
- Laboratory of Applied Geophysics II (3 credits)

Contract Professor (2006-2007) at the University of Milano Bicocca, Milan, for the course of Environmental Geophysics (5 credits).

2001-2006Responsible for lecturing the entire set of courses offered in Applied Geophysics within the degree course in Earth Science and Geotechnology, **Università di Milano Bicocca**, both at the first degree and MSc level. The courses were:

- ***Geophysical Prospecting***: 1 module – optional for III year bachelor students and mandatory for I year MSc students.
- ***Environmental Geophysics***: 1 module (since 2004) – optional for I and II year MSc students).
- ***Applied Seismics***: 1 module (since 2004) – optional for II year MSc students.

The feed-back forms compiled by students indicate a 100% satisfaction rate (data: 2003). Note: 1 module = 40 hours

Thesis advisor to 3 Laurea students (5-year course of study), 12 Master's level students and 7 bachelor students. Co-advisor to 5 Laurea students, two of which from other institutions.

1999-2001

Lecturer within the bachelor courses of study in Environmental Science and Environmental Management, and within the Master of Science course in Environmental Science, **Lancaster University**.

- **ENV 221 – Hydrogeology:** 1 module – mandatory for II year bachelor students.
- **ENV 351 - Project Appraisal for Environmental Management** - optional for III year bachelor students.
- **ENV 434 - Contaminated Land and Remediation:** mandatory for MSc students.

Note: 1 module = 30 hours

Dissertation advisor to 8 Bachelor students. Advisor to 1 Ph.D. student.

Grants and contracts

1992-93

Artificial Intelligence Techniques for Seismic Data Interpretation, O.G.S. Trieste, funded by the European Community within the project “Joule”. Principal Investigator: Claudio Chiaruttini.

1994-95

Duke Forest Gate 11 site: site investigation and remediation planning, Duke University, USA, funded by Duke Medical Center, Principal Investigator: Miguel A. Medina.

1996

Groundwater Contamination by Organic Carcinogens: Health Risk Assessment and Remedial Measures, Duke University, USA, funded by the World Health Organization: Principal Investigator: Miguel A. Medina.

1997-99

Effects of non-linearities in the elasto-plastic soil behavior, spatial variabilities and property uncertainties on subsidence modeling, and interpretation of in-situ compressibility measurements, Duke University, USA ed ISMES, Bergamo, Italy, funded by ENI-Agip Principal Investigators: Tomasz Hueckel and Zbigniew J. Kabala.

2001-2002

Advanced Space and Time Random Field Analysis of Natural and Enhanced Bioattenuation in Contaminated Soil and Groundwater, Lancaster University, UK, funded by Natural Environment Research Council (NERC) UK, GBP 25,000. Principal Investigators: **Giorgio Cassiani**, Peter Diggle.

2001-2003

In-situ tests for biodegradation of petroleum hydrocarbons in groundwater, Lancaster University, UK, funded by Natural Environment Research Council (NERC) UK, GBP 24,000. Principal Investigators: **Giorgio Cassiani**, Kirk T. Semple.

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- 2002-2004 **Hydrological characterisation of partially saturated soils with the support of spectral induced polarisation measurements**, Lancaster University, UK, in collaboration with Rutgers University (Lee Slater), NJ, USA, funded by Natural Environment Research Council (NERC) UK, GBP 97,300. Principal Investigator: Andrew M. Binley.
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- 2002 **“Benchmarking subsidence” for the identification of advanced research areas in the fields of subsidence forecasting, monitoring and prevention**, Università di Milano Bicocca, funded by ENI-Agip, Milan, Italy, € 15,000. Principal Investigator: **Giorgio Cassiani**.
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- 2003 **Uniaxial compressibility tests with aging on deep sand specimens**, Università di Milano Bicocca, funded by ENI-Divisione E&P, Milan, Italy, € 25,000. Principal Investigators: **Giorgio Cassiani** e Giovanni B. Crosta.
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- 2003 **Characterization of a landslide in Bormio, Italy, using geological and geophysical techniques**, funded by Comune di Bormio, Italy. Principal Investigator: Giovanni B. Crosta.
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- 2003 **Use of Electrical Resistivity Tomography to monitor the migration of a saline tracer in order to determine the hydraulic connection between two shallow aquifers**, Università di Milano Bicocca, funded by Tribunale di Ferrara, Italy, € 21,600. Principal Investigator: **Giorgio Cassiani**.
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- 2004-2006 **A multidisciplinary approach for the risk evaluation of large gravitational landslides**, Università di Milano Bicocca, Politecnico di Milano and Università di Trieste, funded by the Italian Ministry for Research (programme MIUR-FIRB). Principal Investigator: Giovanni B. Crosta.
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- 2004 **Environmental effects of a proposed deepening of a large sand quarry, and evaluation of restoration alternatives**, Università di Milano-Bicocca, funded by Comune di Cassano d’Adda, Italy, € 13,300. Principal Investigators: **Giorgio Cassiani** e Giovanni B. Crosta.
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- 2004 **Non invasive assessment of the state of the impermeable liner at the contaminated site**, funded by Bresciani Costruzioni, Lodi, Italy, € 8,000. Principal Investigator: **Giorgio Cassiani**.
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- 2004-2006 **Spectral induced polarization for the identification of organic contaminants in the subsoil**, Università di Milano Bicocca and Università di Torino, funded by the Italian Ministry for Research (programme MIUR-FIRB) € 100,000. Principal investigator and National Coordinator: **Giorgio Cassiani**.
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- 2004-2006 **Study of flow and compaction in stress-sensitive reservoirs**, Università di Milano Bicocca, funded by ENI-Divisione E&P, Milan, Italy € 96,000. Principal investigator: **Giorgio Cassiani**.
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- 2004-2007 **Evaluation of unconfined aquifer vulnerability via non-invasive cross-hole geophysical methods**, funded by Consorzio Industriale Gorgonzola/Pessano con Bornago, Milan, Italy, € 68,000. Principal investigator: **Giorgio Cassiani**.
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- 2005 **GPR and hydraulic measurements on a landfill in Marghera (Venice)**, funded by ENSR Italia s.r.l., € 15,500, Principal investigator: **Giorgio Cassiani**.
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- 2005 **Cross-borehole ERT monitoring of in-situ remediation activity at a former chemical plant in Trento**, funded by Provincia Autonoma di Trento, € 7,000, Principal investigator: **Giorgio Cassiani**
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- 2005-2008 **Reconstruction of archaeological landscapes in mediterranean coastal environment via innovated non-invasive technologies**, Università di Cagliari, Politecnico di Torino, Università di Palermo, CONISMA (consorzio nazionale inter-universitario delle scienze del mare), funded by the Italian Ministry for Research (programme MIUR-FIRB) € 650,000. Principal investigator: Gaetano Ranieri (University of Cagliari).
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- 2006-2007 **Study, definition and analysis of constitutive models linking the DC and induced polarization electrical response to the physical and chemical microstructure of multiphase porous media**, Università di Milano Bicocca and Università di Trieste funded by the Italian Ministry for Research (programme MIUR-COFIN) € 30,000. Principal investigator: **Giorgio Cassiani**.
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- 2008-2009 **Integration of surface wave inversion and P wave tomography for the computation of static corrections in reflection seismics**, University of Padova and O.G.S. Trieste (A.Vesnaver, G. Rossi and G. Boehm), Italy. Funding from the University of Padova € 37,334. Principal investigator: **Giorgio Cassiani**.
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- 2008-2011 **EU Framework Programme 7 Collaborative Project “ModelPROBE - Model driven Soil Probing, Site Assessment and Evaluation”** for Theme 6.3 Environmental Technologies, Call: ENV 2007, 3.1.2.2: Development of technologies and tools for soil contamination assessment and site characterisation, towards sustainable remediation. Co-Coordinator: **Giorgio Cassiani** (Coordinator Prof. Matthias Kaestner, UFZ Leipzig, Germany). Total funding from the European Commission € 3,397,609, of which € 290,981 for the Department of Geoscience, University of Padova (P.I. **Giorgio Cassiani**)
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- 2008-2011 **EU Framework Programme 7 Collaborative Project “iSOIL - Interactions between soil related sciences – Linking geophysics, soil science and digital soil mapping”** for Theme 6.3 Environmental Technologies, Call ENV.2007.3.1.2.1. Development and improvement of technologies for data collection in (digital) soil mapping, coordinator Dr. Peter Dietrich, UFZ Leipzig, Germany. Total funding from the European Commission € 3,420,623, of which € 210,183 for the Department of Geoscience, University of Padova (P.I. **Giorgio Cassiani**)
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- 2008-2009 **Advanced Analysis of Radioactive Marker Log Measurements for In Situ Compaction Evaluation**, Università di Padova, funded by ENI-Divisione E&P, Milan, Italy € 69,820. Principal investigator: **Giorgio Cassiani**.
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- 2008-2009 **Non invasive hydrogeophysical techniques for the hydrological characterization of slopes and mountain catchments**, University of Padova, Funding from the University of Padova € 57,000. Principal investigator: **Giorgio Cassiani**.
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- 2008-2011 **Hydrogeophysical methods for the characterization of hydrological systems**. University of Padova, funded by Fondazione Cariparo, Padova, for a 3-year PhD full grant, Principal Investigator: **Giorgio Cassiani**.
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- 2008-2011 **Transport phenomena in hydrological catchments: hydrological and geophysical experiments and modelling**, University of Padova, in collaboration with the DMMMSA Department (Mario Putti), the IMAGE Department (Marco Marani) and OGS Trieste (Francesco Palmieri), funded by Fondazione Cariparo, Padova, € 360,000; Principal Investigator: **Giorgio Cassiani**.
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- 2008-2010 **Experimental measurement of the soil-vegetation-atmosphere interaction processes and numerical modeling of their response to climate change**, Università of Turin, CNR, University of Padova e University of Palermo, funded by MIUR-PRIN, € 31,429 to the University of Padova, local coordinator: **Giorgio Cassiani**.
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- 2009-2010 **Quality analysis of monitoring well marker data and revision of compressibility coefficient estimates**, University of Padova, in collaboration with DMMMSA University of Padova (G. Gambolati) and Duke University (Tomasz Hueckel) funded by Eni S.p.A.-Divisione E&P, Milano. € 109,630 for the Department of Geoscience, Università di Padova. Principal Investigator: **Giorgio Cassiani**.
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- 2010-2013** **EU Framework Programme 7 Collaborative Project “CLIMB: Climate Induced Changes on the Hydrology of Mediterranean Basins: Reducing Uncertainty and Quantifying Risk through an Integrated Monitoring and Modeling System”** for Theme 6.3 Environmental Technologies, Call ENV.2009.1.1.5.2. Hydro-geophysical techniques for catchment characterization aimed at the prediction of hydrological effects of climate changes in the Mediterranean area. Coordinator Prof. Ralf Ludwig, LMU Muenich, Germany. Total funding from the European Commission € 3,149,641, of which € 176,775 for the Department of Geoscience, University of Padova (P.I. **Giorgio Cassiani**), in collaboration with the DMMMSA Department (Mario Putti), the IMAGE Department (Marco Marani).
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- 2009** Geo-electrical prospection in the Settolo well field (Treviso), Università di Padova, funded Alto Trevigiano Servizi S.r.l., € 15000. Principal Investigator: Rita Deiana.
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- 2009** Geophysical data acquisition on the contaminated site along the coast between Punta Sottile and Punta Ronco, Muggia (Trieste), Università di Padova, funded by CIGRA (Centro Interdipartimentale per la Gestione e il Recupero Ambientale, Università degli Studi di Trieste, € 14500. Principal Investigator: **Giorgio Cassiani**.
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- 2009-2012** Geological and hydrological processes: monitoring, modelling and impact in the North-Eastern Italy, strategic project funded by the University of Padova for € 1,500,000. Principal Investigator: Rinaldo Genevois.
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- 2010** Geophysical investigations of the landfill in Corigliano d'Otranto (Lecce, Puglia), funding from the IRSA-CNR, Bari, € 10000, Principal Investigator: Rita Deiana.
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- 2010-2011** Geophysical investigations of the Scala Erre landfill in Sassari (Sardinia), funding from the Sassari City Council, € 27000, Principal Investigator: **Giorgio Cassiani**.
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- 2013-2016** **Innovative methods for water resources management under hydro-climatic uncertainty scenarios**, University of Trento, University of Padova, University of Naples, University of Modena-Reggio, Polytechnic of Milan, University of Roma “Roma Tre”, CNR-ISAC Turin, funded by MIUR-PRIN for € 735000 - €106810 at the University of Padova, local coordinator: **Giorgio Cassiani**.
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- 2013-2018** **EU Framework Programme 7 Collaborative Project GLOBAQUA** “Managing the effects of multiple stressors on aquatic ecosystems under water scarcity”. Work programme topics addressed: ENV.2013.6.2-1 Water resource management under complex, multi stressor conditions. Coordinator Prof. Damià Barceló, Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), Spain. Total funding from the European Commission € 7,590,588 of which € 195,281 for the Department of Geoscience, University of Padova (P.I. **Giorgio Cassiani**).
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- 2015-2017** **Hydro-geophysical monitoring and modelling for the Earth's Critical Zone**, funded by the University of Padua, € 33,000. Principal investigator: **Giorgio Cassiani**.
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- 2016-2019 WASA: Water Saving in Agriculture: technological developments for the sustainable management of limited water resources in the Mediterranean area.** Project funded in the **EU FP7 ERANET-MED** scheme, consortium composed of 8 partners from 6 countries (Italy, Portugal, Morocco, Tunisia, Egypt and Turkey). Project Coordinator: **Giorgio Cassiani**. Total funding € 450,000 (€40,000 to the University of Padua).
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- 2017-2019 GEOCONS: Geophysical methods for the characterization of contaminated sites.** Project funded by Italy-Israel Scientific and Technological Cooperation Programme (Scientific Track 2017). Cooperation between University of Padua and Technion, Haifa. Project Coordinator: Matteo Camporese. Total funding € 200,000 (€100,000 to the University of Padua).
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- 2018 Non-invasive investigations for remediation planning at the In.F.A. SpA contaminated site, Aviano (PN), Italy,** funded by IN.F.A. SpA, € 70.000. PI: **Giorgio Cassiani**.

Other activities

SERVICE TO THE PROFESSION

- **Member of the Board of Directors of OGS** – National Institute of Oceanography and Experimental Geophysics – 2015-2019.
- **Associated member of CNR-IMAA (Istituto di Metodologie per l'Analisi Ambientale)**, 2015-2017, Tito Scalo, Potenza, Italy.
- **Associated member of CNR-IRSA (Istituto di Ricerca Sulle Acque)**, 2018-2020, Bari, Italy.
- **Member of the Hard Science Team** of the TESI (Trieste Encounters on Science and Innovation) PRE-ESOF and *ESOF (EuroScience Open Forum) Organizing committee*, 2018-2020.
- **Member of the American Geophysical Union (AGU) Hydrogeophysics Technical Committee** (<http://www.hydrogeophysics.org>), 2005-2013.
- **Associate Editor of Near Surface Geophysics** (European Association of Geoscientists and Engineers).
- **Associate Editor of the journal Bollettino di Geofisica Teorica e Applicata** (OGS, Trieste, Italy).
- **Associate Editor** of the journal **SERRA** (Stochastic Environmental Research & Risk Assessment), Springer-Verlag (from 2001 to 2011).

- **Member of the scientific committee** of the journal “**Acque Sotterranee**”, Italy.
- **Member of the organizing committee**, NATO-Advanced Research Workshop “Soils and groundwater contamination: Improved risk assessment based on integrated hydrogeological and geophysical methods”, St Petersburg, Russia, 25-31 July 2004.
- **Member of the Scientific Committee**, 21st European Meeting of Environmental and Engineering Geophysics Near Surface Geoscience 2015, Turin.
- **Co-convener** of the Hydrogeophysics session (with David Hyndman and Andreas Kemna) – American Geophysical Union AGU Fall Meeting – San Francisco, December 2005.
- **Co-convener** of the Hydrogeophysics session (with Alberto Bellin and Klaus Holliger) – American Geophysical Union AGU Fall Meeting – San Francisco, December 2007.
- **Co-convener** of session “Hydrogeophysics: From non-invasive site characterization to improved process understanding” (with J.A. Huisman P. Dietrich ed H. K. French) – European Geoscience Union (EGU) General Assembly 2012, Vienna 22-27 April 2012.
- **Co-convener** of session SSS9.9 “Instrumented Catchments and Demonstration Areas: the scientific and social impact of research through experiments and modelling about water and soil”– European Geoscience Union (EGU) General Assembly 2015, Vienna 12-17 April 2015.
- **Co-convener**, Geophysics for the Critical Zone, Workshop at the 21st European Meeting of Environmental and Engineering Geophysics Near Surface Geoscience 2015, Turin.
- **Convener** of session: Hydrogeophysics, remote sensing, and radar technologies: innovative tools and recent development, *42nd International IAH Congress “Aqua2015”*, Rome, September 13-18, 2015.
- **Chair** of the Civil Engineering session of the EAGE Near Surface 2008 Conference in Kraków, Poland, September 15-17, 2008.
- **Co-organizer** of the Special session 9 (SpS 9) at the CONSOIL 2008 conference, Milan, June 3-6 2008: “From low to non-invasive site assessment and characterization: Model Driven Soil Probing, Site Assessment and Evaluation (EU project ModelPROBE)” M. Kästner (UFZ, Germany), G. Cassiani (University of Padua, Italy), M. Petrangeli Papini (University of Rome, Italy).
- **Member of the scientific organizing committee**, EAGE/SEG Research Workshop 2011, Towards a Full Integration from Geosciences to Reservoir Simulation, 1-2 September 2011, Trieste, Italy.
- **External examiner** for PhD defenses: Michela Giustiniani (Università di Trieste, 2005), Giulio Vignoli (Università di Ferrara, 2006), Umberta Tinivella (Università di Trieste, 2006),

Alessandro Brovelli (Università di Milano Bicocca, 2006), Majken Looms (University of Copenhagen, 2007), Marta Castagna (Università di Trento, 2008), Michael Van Schoor (Lancaster University, 2009), Ilaria Coscia (ETH Zurich, 2011), Lajam Mejus (Lancaster University, 2015).

- **Scientific reviewer for:**

- Geophysics
- Journal of Applied Geophysics
- Geophysical Research Letters
- Mathematical Geology
- Water Resources Research
- Advances in Water Resources
- Journal of Hydrology
- Hydrological Processes
- Surveys in Geophysics
- Bulletin of Volcanology
- Engineering Geology
- Near Surface Geophysics
- Vadose Zone Journal
- Journal of Geophysical Research
- Journal of Environmental and Engineering Geophysics
- Hydrological Processes
- Computers and Geoscience
- Environmental Science and Technology
- Hydrogeology Journal
- Rendiconti Lincei
- Fresenius Environmental Bulletin
- Hydrology and Earth System Sciences (HESS)
- Geophysical Journal International
- Geoderma
- EAGE Near Surface Meetings 2007, 2008, 2009, 2010, 2011

- **Peer review for research project for:**

- NSF (National Science Foundation – USA)
- DFG (German Science Foundation)
- NERC (Natural Environment Research Council), UK
- ISF (Israel Science Foundation)
- FNR (Fonds National de la Recherche, Luxembourg)
- FNRS (Fonds National de la Recherche Scientifique, Belgium)
- MIUR (Italian Ministry of Education)

- **Member of scientific societies**

- American Geophysical Union (since 1996)
- European Geoscience Union (since 1999)
- European Association of Geoscientists and Engineers (since 2005)

CONSULTING ACTIVITIES

- **Secretary** of the International Scientific Committee on Land Subsidence, composed by Prof. Enzo Boschi (INGV, IT), Prof. Khalid Aziz (Stanford University, USA), Prof. Jean Prevost (Princeton University, USA), Prof. Tomasz Hueckel (Duke University, USA), Prof. Frans Barends (Geodelft, NL) and Dr. Berend Scheffers (NITG-TNO, NL), promoted and funded by ENI-Divisione E&P, 2002-2006.

PUBLIC OUTREACH

- **Lecturer** at the short Training Course on "Groundwater Management in the Framework of Integrated Water Resources Management IWRM" organized by UNESCO at the The Regional Center for Training and Water Studies (RCTWS) in Cairo, Egypt, May 2006.
- **Lecturer** at the FIVA PhD course on Hydrogeophysics, 15-17 June 2006, University of Copenhagen, Denmark.
- **Lecturer** at the FIVA PhD course on Hydrogeophysics, 9-12 August 2010, University of Copenhagen, Denmark.
- **Lecturer** at the Seismic Microzonation course (II edition), University of Pavia, Italy, May 29-30 2007.
- **Lecturer** at the Master de l'Agua, Institut de Recerca de l'Agua, Universitat de Barcelona, June 2008, Sept 2009, June 2011 and June 2012.
- **Lecturer** at the course "Advanced methods of characterization and remediation of contaminated sites", Provincia di Milano and Università La Sapienza di Roma, May 2009.
- **Lecturer** at the Master "Characterization and Technologies for the Remediation of Contaminated Sites", Università La Sapienza di Roma, 2011, 2012, 2013, 2014.
- **Lecturer** at the Master "Characterization and Sustainable use of the Territory (CUS-RT)", Università di Trieste, Polo di Gorizia (2010 and 2011).
- **Lecturer** at the Rose School - Centre for Post-Graduate Training and Research in Earthquake Engineering and Engineering Seismology – Pavia, Italy - Course of Applied Geophysics.
- **Lecturer** at the Course on "Characterization of contaminated sites via geophysical and direct push methods", Ordine degli Ingegneri di Padova, July 2011.
- **Lecturer** at the workshop "Le indagini geofisiche – le linee guida dell'Associazione delle Società di Geofisica (ASG)", Centro di GeoTecnologie, San Giovanni Valdarno, May 18, 2012.

- **Lecturer** at the course titled “The remediation of contaminated sites in Lombardy”, December 10-12, 2012, FAST, Milan.
- **Lecturer** at the course titled “Waste in contaminated site remediation”, May 7-8, 2014, FAST, Milan.
- **Lecturer** at the INTERCORE (INnovative TEchnologies foR COntaminated soil and land REmediation) workshop: Tecnologie dirette ed indirette per la caratterizzazione ed il monitoraggio di siti contaminati – Determinazione dei parametri sito specifici propedeutici all’analisi di rischio, June 5-6, 2014, Policoro (Matera – Italy).

Invited seminars at:

- Master Environmental Management (MEDEA), Scuola Eni Enrico Mattei, ENI, Milan (1998);
- University of Trento (1998)
- University of Trieste (1998, 1999, 2002, 2004);
- International School of Applied Geophysics, 12th Course, Application of Geophysical Methods to Hydrogeological Problems, Centro Ettore Majorana, Erice: 12 - 18 April 2003;
- Post-graduate course on environment restoration and control: Contaminated site remediation, University of Trento and Autonomous Province of Trento, 9° and 10° editions (2001-2003);
- CRS4 Cagliari (2001);
- University of Ferrara, (2003)
- Jülich Forschungszentrum GmbH, Germany (2004);
- International School of Applied Geophysics, 13th Course, Application of Geophysical Methods to Hydrogeological Problems, Centro Ettore Majorana, Erice: Sep 29 – Oct 3, 2006;
- Institut des sciences et technologies de l’environnement, Station No. 2, Ecole Polytechnique Fédérale de Lausanne (EPFL) (2007),
- Departamento de Geoquímica, Petrología y Prospección Geológica, Facultad de Geología, Universidad de Barcelona (2008).

Invited talks at international conferences

1. B. Mary, L. Peruzzo, J. Boaga, M. Schmutz, Y. Wu, S.S. Hubbard, **G. Cassiani**, 2018, The use of hydro-geophysical monitoring for the identification of root-water-uptake patterns: ERT and MALM experiments in a vineyard, invited talk, EGU General Assembly 2018, Session 'Hydrogeophysics for the critical zone, Vienna, 8-13 April 2018.
2. **Cassiani G.**, J. Boaga, L. Busato, M.T. Perri, 2017, Characterization and monitoring of the riparian and hyporheic zones, *invited talk*, GELMON 2017, Fourth International Workshop on Geoelectrical Monitoring, Vienna, November 22-24, 2017.
3. **Cassiani G.**, 2017, Challenges of data integration in near surface geophysics applications, *invited talk*, SEG 4th International Conference on Engineering Geophysics (ICEG), Al Ain, UAE, October 10, 2017.

4. **Cassiani G.**, 2017, Hydrocarbon contamination geophysical signatures: field examples, *invited talk*, *EAGE Near Surface Geoscience 2017*, workshop on Geophysics for mapping and monitoring of contaminated ground and buried waste, September 3, 2017, Malmoe, Sweden.
5. **Cassiani G.**, M. Putti, J. Boaga, L. Busato, D. Vanella, S. Consoli, 2016, Non-invasive monitoring and modelling of the root active zones: progresses, caveats and outlook, *invited talk*, *AGU Fall Meeting*, San Francisco, 12-16 December 2016.
6. **Cassiani G.**, 2015, Geophysical techniques for hydrological and hydrogeological characterization, *keynote speech*, session Hydrogeophysics, remote sensing, and radar technologies: innovative tools and recent development, *42nd International IAH Congress "Aqua2015"*, Rome, September 13-18, 2015.
7. **Cassiani G.**, 2015, Hydro-geophysical monitoring of roots and hypohereic zone, *invited talk*, Workshop "Geophysics for the Characterization of the Critical Zone", *EAGE Near Surface Geoscience 2015*, September 6-10, 2015, Turin, Italy.
8. **Cassiani G.**, A. Binley, A. Kemna, M. Wehrer, A. Flores Orozco, R. Deiana, J. Boaga, M. Rossi, P. Dietrich, U. Werban, L. Zschornack, A. Godio, A. JafarGamdomi, G.P. Deidda, 2013, Non-invasive characterization of the Trecate (Italy) crude-oil contaminated site: links between contamination and geophysical signals, *invited talk*, *AGU Fall Meeting*, San Francisco, 9-13 December 2013.
9. Camporese M., A. Binley, **G. Cassiani**, R. Deiana and P. Salandin, 2013, Coupled vs. uncoupled hydrogeophysical inversion via ensemble Kalman filter assimilation of ERT-monitored tracer test data, *invited talk*, *AGU Fall Meeting*, San Francisco, 9-13 December 2013.
10. **G. Cassiani**, J. Boaga, M. Rossi, A. D'Alpaos, G. Fadda, M. Putti, M. Marani, 2013, Time-lapse ERT for the monitoring of soil-plant interactions in the root zone, *invited talk*, *AGU Fall Meeting*, San Francisco, 9-13 December 2013.
11. **Cassiani G.**, A. Brovelli, G. Vignoli, B. Plischke, U. Tinivella, 2012, Geo-mechanics contribution to time-lapse seismics: an integrated approach using full-waveform simulations, *invited talk*, *74th EAGE Conference and Exhibition*, Copenhagen, WP8: Fully Integrated Geomechanical Workflow: A Myth or a Fact?, 4 June 2012.
12. **Cassiani G.**, N. Ursino, R. Deiana, G. Vignoli, J. Boaga, M. Rossi, M.T. Perri, M. Blaschek, R. Duttmann, S. Meyer, R. Ludwig, A. Soddu, P. Dietrich and U. Werban, 2012, Geophysical mapping of soil static characteristics and monitoring of soil dynamic states: an example on agricultural land, *invited talk*, *EGU General Assembly 2012*, Session SSS5.15 Vienna, 22-27 April 2012.
13. **Cassiani G.**, R. Deiana, M. Camporese, P. Salandin, G. Vignoli, M. Rossi and M.T. Perri, 2011, Hydro-Geophysical techniques for groundwater characterization: the link between measurements and modeling, *invited talk*, *Geological Society of America, Annual Meeting*

in Minneapolis (9–12 October 2011).

14. **Cassiani G.**, R. Deiana, J. Boaga, G. Vignoli, M. Rossi, M.T. Perri, V. Bruno, 2011, Introduction to the concept of hydrogeophysics and case studies, *invited talk*, GEOITALIA 2011, Torino, Italy, September 19-24, 2011, Worskhop W11: Airborne EM for groundwater mapping.
15. **Cassiani G.**, A. Brovelli, R. Deiana, G. Vignoli, F. Morari, E. Scudiero, P. Teatini, M. Carizzoni, P. Dietrich and U. Werban, 2011, Static and dynamic aspects of non-invasive monitoring of soil characteristics and conditions: implications for precision agriculture, *invited talk*, AGRI-SENSING 2011: International Symposium on Sensing in Agriculture in Memory of Dahlia Greidinger, February 21-24, 2011, at the Technion – Israel Institute of Technology in Haifa, Israel.
16. **Cassiani G.**, A. Binley, A. Brovelli, R. Deiana, P. Dietrich, A. Flores, A. Kemna, E. Rizzo and U. Werban, 2010, Static and dynamic aspects of near surface characterization through physics-based integration of GPR, ERT, SIP and SP data in the time-lapse mode, *invited talk*, Workshop: Multidisciplinary, Integrated Approaches in Near-surface Geophysics–Novel Developments, Benefits and the Road Ahead, 72nd EAGE Conference & Exhibition incorporating SPE EUROPEC 2010, Barcelona, Spain, 14 - 17 June 2010.
17. **Cassiani G.**, R. Deiana, J. Boaga, G. Vignoli, M. Rossi, M. Marani, M. Putti, M. Altissimo, A. Bellin, O. Cainelli, 2010, Hydro-geophysics for hillslope hydrology, *invited*, EGU General Assembly 2010, Vienna, 2-7 May 2010.
18. **Cassiani, G., 2009**, Hydro-geophysics: the non invasive characterization of the shallow subsurface, *invited talk*, *NovCare 2009* International Conference (Novel Methods for Subsurface Characterization and Monitoring: From Theory to Practice), May 13-16, 2009, Leipzig, Germany.
19. Deiana R., **G. Cassiani**, A. Bellin, O. Cainelli, M. Rossi, P. Frattini, 2008, An example of hydrogeophysical characterization of hillslope hydrology, *invited talk*, *AGU Fall Meeting*, San Francisco, 15-19 December 2008.
20. Kemna A., **G. Cassiani**, T. Winchen, J.A. Huisman, and J. Vanderborght, 2008, On the characterization of soil structure and state from spectral IP responses”, *invited talk*, *EEGS NSGS Workshop on Induced Polarization: Research and Recent Advances in Near Surface Applications*, 14 Nov 2008 SEG Annual Meeting, Las Vegas, Nevada, USA
21. **Cassiani G.**, R. Deiana and A. Kemna, 2007, Mass balance and anisotropy issues in the geophysical monitoring of controlled water injection experiments in the vadose zone, *invited*, EGU General Assembly 2007, Vienna, 15-20 April 2007.
22. **Cassiani G.**, R. Deiana and A. Kemna, 2006, Non invasive monitoring of water flow in the vadose zone: the issue of mass balance in controlled tracer injection experiments, *invited talk*, *AGU Fall Meeting*, San Francisco, 11-15 December 2006.

LICENCES

Professional Engineer, Italy, since 1991.

HONORS AND AWARDS

- **Golden Medal "Armando Norinelli"** as “Best work in applied geophysics”, University of Padua and National Research Council-GNGTS, Italy, 1991.
- **Graduation Award "Antonio Chelleris"**, University of Trieste, Italy, 1992.
- **Certificate in Hydrology**, Center for Hydrological Studies, Duke University, 1997.
- **EAGE Mintrop Award** (as co-author) for 2007 best paper in Near Surface Geophysics for Deiana R., G. Cassiani, A. Kemna, A. Villa, V. Bruno and A. Bagliani, 2007, An experiment of non invasive characterization of the vadose zone via water injection and cross-hole time-lapse geophysical monitoring, *Near Surface Geophysics*, Vol 5, 3 June 2007, 183-194.
- **AGLC Award “Licio Cernobori” 2014** (as co-author) for the best paper presented by a young researcher at the 33rd GNGTS congress, for the paper L-shaped array refraction microtremors (LEMI) by J. Boaga, C. Strobbia e G. Cassiani
- **Geomechanics for Energy and the Environment (Elsevier), Certificate for Excellence in Reviewing**, 2018.

PATENTS

Boaga J. and **G. Cassiani**, 2013, patent “Single channel multi-directional geophone for the acquisition of vertical and horizontal soil motion”, University of Padua.

Boaga J., G. Censini and **G. Cassiani**, 2018, patent proposal “Boreholes for micro-scale 3D ERT applied to plant physiology, University of Padua.

Publications

Bibliometric indeces

ISI WoS: H Index = 23; Scopus: H Index = 26; Google Scholar: H index = 30

Papers in international refereed journals, proceedings and books

1. Boaga J., M. Ghinassi, A. D’Alpaos, G.P. Deidda, G. Rodriguez, **G. Cassiani**, 2018, Geophysical investigations unravel the vestiges of ancient meandering channels and their

- dynamics in tidal landscapes, *Scientific Reports*, Volume 8, Issue 1, Article number 20061, doi: 10.1038/s41598-018-20061-5.
2. Perri M.T., P. De Vita, R. Masciale, I. Portoghese, G.B. Chirico and **G. Cassiani**, 2018, Time-lapse Mise-à-la-Masse measurements and modelling for tracer test monitoring in a shallow aquifer, *Journal of Hydrology*, 561, 461-477, doi: 10.1016/j.jhydrol.2017.11.013
 3. Preti F., Guastini E., Penna D., Dani A., **Cassiani G.**, Boaga J., Deiana R., Romano N., Nasta P., Palladino M., Errico A., Giambastiani Y., Trucchi P., Tarolli P., 2018, Conceptualization Of Water Flow Pathways In Agricultural Terraced Landscapes, *Land Degradation & Development*, 29(3), 651-662, doi: 10.1002/ldr.2764.
 4. Vanella D., **G. Cassiani**, L. Busato, J. Boaga, S. Barbagallo, A. Binley, S. Consoli, 2018, Use of small scale electrical resistivity tomography to identify soil-root interactions during deficit irrigation, *Journal of Hydrology*, 556, 310-324, doi: 10.1016/j.jhydrol.2017.11.025.
 5. Raffelli G., M. Previati, D. Canone, D. Gisolo, I. Bevilacqua, G. Capello, M. Biddoccu, E. Cavallo, R. Deiana, **G. Cassiani**, S. Ferraris, 2017, Local and plot scale measurements of soil moisture: an overview of different techniques applied in plain, hill and mountain experimental sites, *Water*, 9(9), 706, doi: 10.3390/w9090706.
 6. **Cassiani G.**, A. Brovelli, T. Hueckel, 2017, A strain-rate-dependent Modified Cam-Clay Model for the simulation of soil/rock compaction, *Geomechanics for Energy and the Environment*, 11, 42-51, doi: 10.1016/j.gete.2017.07.001.
 7. Haaken K., G.P. Deidda, **G. Cassiani**, A. Kemna, R. Deiana, M. Putti and C. Paniconi, 2017, Flow dynamics in hyper-saline aquifers: hydro-geophysical monitoring and modelling, *Hydrol. Earth Syst. Sci.*, Volume: 21 Issue: 3 Pages: 1439-1454, doi: 10.5194/hess-21-1439-2017.
 8. Rossi M., A. Brovelli, **G. Cassiani**, S. Johansson, T. Dahlin, 2017, Contribution of Stern Layer and Membrane Polarization to the Spectral Induced Polarization of Porous Media, *EAGE Near Surface Geoscience 2017*, September 3, 2017, Malmoe, Sweden.
 9. Consoli S., F. Stagno, D. Vanella, J. Boaga, **G. Cassiani**, G. Rocuzzo, 2017, Partial root-drying irrigation in orange orchards: effects on water use and crop production characteristics, *European J. of Agronomy*, Volume 82, 190-202, doi: 10.1016/j.eja.2016.11.001.
 10. Rossi M., **G. Cassiani**, G. Vignoli, J. Irving, R. Deiana, A. Binley, 2017, Intricacies in the interpretation of Vertical Radar Profiling caused by borehole effects, *EAGE Near Surface Geoscience 2017*, September 3, 2017, Malmoe, Sweden.
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 12. Petronio L., J. Boaga, **G. Cassiani**, 2016, Characterization of the Vajont landslide (North-Eastern Italy) by means of reflection and surface wave seismics, *Journal of Applied Geophysics*, 128, May 01, 2016, Pages 58-67, doi: 10.1016/j.jappgeo.2016.03.012
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- Italy, *Science of the Total Environment*, Vol. 543, Issue Pt B, pp. 851-861, doi: 10.1016/j.scitotenv.2015.03.113.
14. **Cassiani G.**, J. Boaga, L. Busato, L. Peruzzo, M. Himi and A. Casas, 2016, Combined geophysical surveys for the characterization of a reconstructed river embankment, 22nd European Meeting of Environmental and Engineering Geophysics, Near Surface Geoscience 2016, Sept 4-8, 2016, Barcelona.
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 17. Strobbia C.L., J. Boaga and **G. Cassiani**, 2015, Double-array refraction microtremors, *Journal of Applied Geophysics*, Volume 121, October 01, 2015, Pages 31-41, doi: 10.1016/j.jappgeo.2015.07.007
 18. Piccolroaz S., B. Majone, F. Palmieri, **G. Cassiani** and A. Bellin, 2015, On the use of spatially distributed, time-lapse micro-gravity surveys to inform hydrological modeling, *Water Resources Research*, 51(9), 7270-7288, doi: 10.1002/2015WR016994.
 19. Rossi M., G. Manoli, D. Pasetto, R. Deiana, S. Ferraris, C. Strobbia, M. Putti and **G. Cassiani**, 2015, Coupled inverse modeling of a controlled irrigation experiment using multiple hydro-geophysical data, *Advances in Water Resources*, 82,150-165, doi: 10.1016/j.advwatres.2015.03.008.
 20. **Cassiani G.**, J. Boaga, D. Vanella, M. T. Perri, S. Consoli, 2015, Monitoring and modelling of soil-plant interactions: the joint use of ERT, sap flow and Eddy Covariance data to characterize the volume of an orange tree root zone, *Hydrol. Earth Syst. Sci.*, 19, 2213-2225, doi:10.5194/hess-19-2213-2015.
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 22. Manoli G., M. Rossi, D. Pasetto, R. Deiana, S. Ferraris, **G. Cassiani** and M. Putti, 2015, An iterative particle filter approach for coupled hydro-geophysical modeling and inversion of a controlled infiltration experiment, *Journal of Computational Physics*, pp 37-51, doi: 10.1016/j.jcp.2014.11.035
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24. Perri M.T., P. De Vita, **G. Cassiani**, R. Masciale, I. Portoghese, G.B. Chirico, 2015, Quantitative interpretation of time-lapse MALM measurements during a saline tracer injection in an alluvial aquifer, Near Surface Geoscience 2015 - 21st European Meeting of Environmental and Engineering Geophysics 2015, Pages 606-610, Turin, Sep 6-10, 2015.
 25. Perri M.T., J. Boaga, S. Bersan, **G. Cassiani**, S. Cola, R. Deiana, P. Simonini, S. Patti, 2014, River embankment characterization: the joint use of geophysical and geotechnical techniques, *Journal of Applied Geophysics*, Vol. 110, pp 5-22, doi: 10.1016/j.jappgeo.2014.08.012.
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 28. Boaga J., G. Vignoli, R. Deiana, **G. Cassiani**, 2014, The influence of subsoil structure and acquisition parameters on surface wave mode contamination, *Journal of Environmental and Engineering Geophysics*, v. 19, p. 87-99, doi:10.2113/JEEG19.2.87
 29. **Cassiani G.**, A. Binley, A. Kemna, M. Wehrer, A. Flores Orozco, R. Deiana, J. Boaga, M. Rossi, P. Dietrich, U. Werban, L. Zschornack, A. Godio, A. JafarGandomi, G.P. Deidda, 2014, Non-invasive characterization of the Trecate (Italy) crude-oil contaminated site: links between contamination and geophysical signals, *Environmental Science and Pollution Research*, Special Issue on "New approaches for low-invasive contaminated site characterization, monitoring and modelling", vol. 21, issue 15, 8914-8931, doi: 10.1007/s11356-014-2494-7.
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 31. De Carlo L., M.T. Perri, M.C. Caputo, R. Deiana, M. Vurro and **G. Cassiani**, 2013, Characterization of the confinement of a dismissed landfill via electrical resistivity tomography and mise-à-la-masse, *Journal of Applied Geophysics*, 98 (2013) 1–10, doi: 10.1016/j.jappgeo.2013.07.010.
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 41. Boaga J., S. Renzi, G. Vignoli, R. Deiana and **G. Cassiani**, 2012, From surface wave inversion to seismic site response prediction: beyond the 1D approach, *Soil Dynamics and Earthquake Engineering*, doi:10.1016/j.soildyn.2012.01.001.
 42. Vignoli, G., **G. Cassiani**, M. Rossi, R. Deiana, J. Boaga and P. Fabbri, 2012, Geophysical characterization of a small pre-alpine catchment, *Journal of Applied Geophysics*, 80, 32-42, doi:10.1016/j.jappgeo.2012.01.007.
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