

**Personal info** **Luca Piroddi** ( M.Eng., Ph.D. )

Address

Mobile:

E-mail

Nationality

Italian

Date of birth



<http://orcid.org/0000-0002-6410-455X>

<https://scholar.google.com/citations?user=pPAwYQYAAAAJ&hl=it>

<http://people.unica.it/lucapiroddi/>

## CV summary and presentation letter

**Building Engineer** (2003), **Research Doctor in Land Engineering** (2011) with a thesis on remote sensing for monitoring and prevention of seismic risk. **Research fellow** (2012-2014) at the University of Cagliari in Applied Geophysics, working on non-invasive diagnosis and monitoring of the decay state of monuments and cultural heritage assets. External **lecturer** for “**Geoelectrical Methods**” at Università Enna “Kore” (2014, 8 hours). Inserted in the **short list for post-doc research fellow at EU JRC** on the topic “Agricultural, Environmental and Earth Sciences” (09/2013–09/2016). **Assistant Professor of Applied Geophysics** at the University of Cagliari (03/2017 – 03/2020). **Reviewer** (2012–ongoing) for topics related with seismic forecasting and prediction, applied geophysics, GPR, ERT, remote sensing (ISI journals). **Co-inventor of the patent**: Method and system for activating and controlling a water-repelling process in walls (EP 3 040 490 B1).

**Since 2003**, I've been working in building engineering, ICT education and technology transfer (mainly in the field of 3D visualization and computer graphics), and in education to environmental and architectonic interpretation activities.

**Since 2008**, I've been studying and working both at research and applicative levels, in the fields of remote sensing, applied geophysics, environmental monitoring, non-destructive testing. On these topics, I have experience and competence in designing of surveys, field and laboratory ones, data processing and interpretation, publication of results at scientific, professional and popular levels.

**In 2011**, I received the **Ph.D. degree** in Land Engineering, taking part to courses, workshops and conferences on topics of environmental and earth science and getting research experienced in applied geophysics and remote sensing (2008-2011). My final dissertation dealt with the application of thermal remote sensing (from meteorological satellites) data for monitoring environmental parameters and their variability in correspondence to the earthquake cycle phases. Here I proposed some innovative methods with which precursory thermal phenomena were (a posteriori) found before even low magnitude seismic events ( $M_I > 3$ ) and localised very close to the epicentres. An intense spectral anomaly was found before and after the main shock in surrounding areas. The first application (L'Aquila 2009 EQ) confirmed the effectiveness and reliability of the novel methodology compared with the existing literature analyses and produced a synthetic significant improvement of the radiometric resolution (a solicited article - single author- is currently in press for the journal *European Physical Journal - Special Topics*).

**As an early stage researcher** (PhD and first few years post-doc), I **designed and developed algorithms on temporal high-resolution thermal data**, applied to environmental monitoring, natural resources, seismic precursors (JSTARS 2012, GJI 2014, EPJ-ST in press), archaeological studies (Remote Sensing, 2014), architectural structure and decay evaluation (ICCSA 2020, in press), published in high rank international journals and meetings. **Since 2008**, I've had an intense activity in many fields of applied geophysics even with international publications in prominent journals and peer reviewed proceedings, awarded (co-author) as **best paper** of EAGE 14th European Meeting of Environmental and Engineering Geophysics in Krakow (2008) for the first work of our institute on ground based interferometry. **Best paper** (co-author) at EAGE Near Surface Geoscience 2015 (Turin) and **invited to Near Surface Geophysics** journal and **invited to SAGEEP 2016** meeting (both for 2015 EAGE work on Mont'e Prama site archaeological prospection). Co-authored paper at EAGE Near Surface Geoscience 2018 (Porto) **invited to Near Surface Geophysics** journal. **Invited presentation** (single author) at NASA Ames Research Center (IGRS 2014) and **invited (single) author** for the Encyclopedia of Natural Hazards, Taylor and Francis (accepted, 2014, published in 2018 in a book by CRC press) for topics on TIR precursors of earthquakes. **Invited (single) author** for *European Physical Journal – Special Topics* (“From high temporal resolution to synthetically enhanced radiometric resolution: insights from Night Thermal Gradient results”, accepted, 2020).

**Since 2008**, I've **collaborated at teaching and research activities** on traditional and novel geophysical techniques (i.e. ground-based interferometry, towed multichannel GPR, 3D ERT) including coordination of practical activities for students. In 2019 and 2020, I had the teaching responsibility of two laboratory courses for students in Environmental engineering (30 hours each one): Remote sensing and Applied geophysics. Involved (5) or advisor (2) for Ph.D., M.S. and B.Eng. **theses** (2008-2019). Participation to events and courses organized by IEEE, ESA, ASI, INGV, SSEC University of Wisconsin-Madison, EAGE, EARSeL, EMSEV, IGRS, GNGTS and others.

**Since 2008**, I collaborate to the **ideation and writing of national and international research projects** such as H2020, COST, SIR, PNR, PRIN, ROSES, private foundations and others. For the SIR proposal (2014), I was scientific coordinator of the proposal. For two H2020 proposals, I was local coordinator (2018). I established or got involved in **collaborations with research groups internal to the University of Cagliari and external**, (e.g. University of La Coruna, Univ. of Barcelona, L'Aquila University, NASA AMES laboratories, Chapman University, GeoCosmo Center, OGS, INGV, Bulgarian Academy of Sciences and others).

**As Assistant Professor in Applied Geophysics**, I detailed my PhD approach to geostationary satellite TIR processing (EPJ-ST, in press), worked on **interferometric radar, thermal and multispectral methods applications to Cultural Heritage** (ICCSA 2020 - Springer LNCS, in press, MetroArchaeo 2018, EAGE 2018). In addition, my research activity includes also: **ARP, ERT and GPR characterization of archaeological features** (Remote sensing, 2020, MetroArchaeo 2018), ground based GPR and ERT inspection of soil moisture.

Membership of scientific societies (EAGE, ISAP, IEEE GRSS, SEG). **Since 11/2019 Topic-Editor** for the journal *MDPI Remote Sensing*. **Convener** of the **Workshop on Advanced and Computational Methods for Earth Science applications** in the context of the 20th International Conference on Computational Science and its Applications *ICCSA 2020*, Springer and IEEE sponsored, Cagliari, 1-4 July 2020.

## Work experience: 2008-ongoing (research related)

### Main activities:

- **Assistant professor**, at University of Cagliari (03/2017-03/2020)
- **Postdoc research fellow**, at University of Cagliari (12/2012-12/2014)
- **Research scholarship**, at University of Cagliari (06/2020-ongoing)
- **PhD student**, at University of Cagliari (01/2008-02/2011)
- **Support for teaching and research** activities, at University of Cagliari (since 2008);
- **Reviewer** for international journals (since 2012);
- **Contract activities** for companies and universities.

### Research performances

(**Scopus**) compared to national median values of Associate/Full Professors in Applied Geophysics

	Assoc. Professors median	Scopus
# articles (5 yrs)	7	4
Cites (10 yrs)	47	141
H-index (10 yrs)	4	7

	Full Professors median	Scopus
# articles (10 yrs)	12	12
Cites (15 yrs)	162	145
H-index (15 yrs)	7	7

<https://www.scopus.com/authid/detail.uri?authorId=55049376200>

last access 04-March-2021

Dates	13-23/06/2020-ongoing
Occupation or position held	Research Scholarship & Subject Expert
Main activities and responsibilities	<b>Research Scholarship</b> (9 months contract, starting 18/06/2020) in <b>Photogrammetry</b> : <ul style="list-style-type: none"><li>• Drone-imagery based 3D modelling of trees for time-lapse monitoring of phytoremediation of an industrial landfill.</li></ul> <b>Subject Expert appointing</b> (Cultore della Materia) in <b>Applied Geophysics</b> (3 years role, starting 13/06/2020): <ul style="list-style-type: none"><li>• Participation to exams and thesis commissions.</li></ul>
Name and address of employer	Dipartimento di Ingegneria Civile, Ambientale e Architettura– Università degli Studi di Cagliari
Type of business or sector	Research

Dates	since 04/11/2019, <b>ongoing</b>
Occupation or position held	<b>Topic Editor</b> (on voluntary basis)
Main activities and responsibilities	<b>Topic Editor</b> for MDPI Remote Sensing on: Applied Geophysics; TIR remote sensing; proximal sensing; natural hazards; cultural heritage; archaeological prospection; buildings and civil structures monitoring;.
Name and address of employer	MDPI Remote Sensing;

Dates	since 23/10/2020, <b>ongoing</b>
Occupation or position held	Guest Editor
Main activities and responsibilities	<b>Guest Editor</b> for MDPI Remote Sensing of the following Special Issue: <ul style="list-style-type: none"> <li>“<i>Remote, Proximal Sensing and Geophysics for Cultural Heritage Knowledge and Conservation</i>”, (L. Piroddi, N. Abu-zeid, P. Capizzi, M. Cozzolino, S. D’Amico, S.V. Calcina, I. Catapano, R. Lasaponara guest editors).</li> </ul>
Name and address of employer	MDPI Remote Sensing;

Type of business or sector	Scientific review.
Dates	since 08/09/2012, <b>ongoing</b>
Occupation or position held	<b>Reviewer</b> (invited, on voluntary basis)
Main activities and responsibilities	<b>Reviewer</b> of submitted articles on earthquake topics, archaeological prospection, GPR, thermal and microwave remote sensing, Electric Resistivity Tomography.
Name and address of employer	<ul style="list-style-type: none"> <li>• MDPI Remote Sensing;</li> <li>• MDPI Sustainability;</li> <li>• MDPI Sensors;</li> <li>• MDPI .Journal of Marine Science and Engineering</li> <li>• MDPI Infrastructures</li> <li>• IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing;</li> <li>• IEEE Geoscience and Remote Sensing Letters;</li> <li>• IEEE Transactions on Geoscience and Remote Sensing</li> <li>• T&amp;F European Journal of Remote Sensing;</li> <li>• IOP Journal of Geophysics and Engineering;</li> <li>• EAGE Near Surface Geophysics;</li> <li>• WILEY-EAGE Geophysical Prospecting;</li> <li>• AGU Journal of Geophysical Research – Solid Earth;</li> <li>• Frontiers in Earth Science;</li> <li>• Elsevier Engineering Structures;</li> <li>• Elsevier Advances in Space Research;</li> <li>• Springer Applied Geomatics</li> </ul>
Type of business or sector	Scientific review.

Dates	07/03/2017-06/03/2020
Occupation or position held	Assistant Professor
Main activities and responsibilities	<p><b>Assistant professor (fixed term, RTDa) in Applied Geophysics</b>, teaching and doing research on various topics such as:</p> <ul style="list-style-type: none"> <li>• Non-destructive diagnosis of walls decay and historical layering;</li> <li>• Automatic evaluation of geophysical anomalies related to archaeological research/prospection;</li> <li>• Multispectral and hyperspectral surveys for cultural heritage assets, at various scales;</li> <li>• Simulations on real and numerical models;</li> <li>• Paleo-landscape reconstructions and analyses, with applications to low shallow waterbodies;</li> <li>• Applications for risks management and cascade effects on spot or diffused cultural heritage assets;</li> <li>• Development of data processing techniques and interpretation support systems, eventually with AI concepts implementation;</li> <li>• Interpretation and visualization of remote sensing and geophysical data;</li> <li>• Fruition and musealization of geophysical data applied to cultural heritage;</li> <li>• Studying archaeological and monumental areas in Sardinia, especially Mont'e Prama and Sinis;</li> <li>• Soil moisture estimation by means of geophysical and remote sensing methods;</li> <li>• Soils and buildings diagnostics.</li> </ul>
Name and address of employer	Dipartimento di Ingegneria Civile, Ambientale e Architettura– Università degli Studi di Cagliari
Type of business or sector	Education, Research, Consulting and contract services, Scientific information

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Dates	01/01/2008 – 03/12/2012; 04/12/2014-06/03/2017
Occupation or position held	Voluntary collaboration

Main activities and responsibilities **Support for teaching and research in geophysics, remote sensing and non-destructive measures** applied to **cultural heritage**, environmental resources, the detection and monitoring of risk in urban and rural context. Monitoring of land risks. Printed publications and participation in international conferences and scientific workshops. Assistance for design and drawing of research projects for funding calls from local university, regional, national and EU sources.

Name and address of employer Dipartimento di Ingegneria Civile, Ambientale e Architettura (2012, 2014-ongoing) Dipartimento di Ingegneria del Territorio (2008-2011) – Università degli Studi di Cagliari

Type of business or sector Education, Applied and base research, Consulting and contract services, Scientific information

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Dates 21/02/2016 – 07/06/2016

Occupation or position held Consulting

Main activities and responsibilities **Multichannel GPR acquisition and processing** for the **reconstruction of archaeological features** and underground utilities.

Name and address of employer Dipartimento di Ingegneria Civile, Ambientale e Architettura – Università degli Studi di Cagliari

Type of business or sector Consulting and contract services.

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Dates 15/03/2015 – 15/07/2015

Occupation or position held Teaching assistant

Main activities and responsibilities **Seminars, tutoring and support for teaching for the course of “Soils and buildings diagnostics”** at the master’s degree course in **“Architecture”** (20 hours)

Name and address of employer Università degli Studi di Cagliari

Type of business or sector Education, Applied and base research.

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Dates 03/12/2012 – 03/12/2014

Occupation or position held **Research fellow**

Main activities and responsibilities **“Methods of non-invasive diagnosis for the monitoring of the decay state of monuments”**. Research and support for teaching in applied geophysics, remote sensing and non destructive measures applied to cultural heritage, environmental resources, the detection and monitoring of risk in urban and rural context. Monitoring of land risks.

Name and address of employer Università degli Studi di Cagliari

Type of business or sector Education, Applied and base research.

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Dates 03/04/2014 – 04/04/2014

Occupation or position held **Lecturer/teacher**

Main activities and responsibilities 8 hours **lectures on geoelectrical methods** at the second Master in **“Diagnostics and Environmental Security”**.

Name and address of employer Università degli Studi di Enna “Kore”

Type of business or sector Education, applied geophysics

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Dates *December 2012*  
Occupation or position held Consulting  
Main activities and responsibilities **GPR survey** for the detection of buried fuel reservoirs.  
Name and address of employer Geotech s.r.l. (private company)  
Type of business or sector Consulting and contract services

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Dates *03/09/2012-03/11/2012*  
Occupation or position held Consulting  
Main activities and responsibilities **Geoelectrical and geotechnical survey** for the reconstruction of soil physical and hydrogeological features of a building site in Cagliari.  
Name and address of employer Dipartimento di Ingegneria Civile, Ambientale e Architettura – Università degli Studi di Cagliari  
Type of business or sector Consulting and contract services

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Dates *17/04/2012-21/06/2012*  
Occupation or position held Teaching assistant  
Main activities and responsibilities **Seminars, tutoring and support for teaching for the course of “Applied geophysics and non destructive controls for architecture”** at the master’s degree course in “**Conservation of architectural and environmental assets**” (35 hours)  
Name and address of employer Facoltà di Architettura – Università degli Studi di Cagliari  
Type of business or sector Education

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Dates *21/10/09-06/11/09*  
Occupation or position held Consulting  
Main activities and responsibilities **Advisor for the creation of an audit on renewable energy in Sardinia (geothermal)**, on behalf of Sardegna Ricerche preparatory to the activity of "design and services for start-up of Renewable Energy Technology Cluster."  
Name and address of employer Dipartimento di Ingegneria del Territorio – Università degli Studi di Cagliari  
Type of business or sector Consulting, Applied research

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Dates *09/01/2008-08/02/2011*  
Occupation or position held Ph.D. student  
Main activities and responsibilities Applied geophysics, remote sensing and NDT applied to **cultural heritage**, environmental resources, detection and monitoring of risks on urban or rural environments; Oral and written publications. Collaboration to the geophysical laboratory activities.  
Name and address of employer Dipartimento di Ingegneria del Territorio – Università degli Studi di Cagliari  
Type of business or sector Education, Applied research, Applied geophysics

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## (Work experience) 2003-ongoing (engineering related)

### Main activities:

- **Building engineer**, freelancer (since 2004)
- **Entrepreuer**, at Domos2020 (private company, 2012-2017)
- **Contract activities** for engineering/architectural firms, companies and high schools (2003-2008)
- **Employee** at TecnoLav Engineering (engineering firm, 2006)
- **Stages and voluntary collaborations**, within engineering firms (since 2003)
- **Computer graphics consultant and maker (since 2003)**

Dates	since 26/04/2004, ongoing
Occupation or position held	Building engineer, freelancer
Main activities and responsibilities	<b>Building design</b> and work management for private clients. <b>Consulting</b> and occasional collaboration with professional firms (informatics and buildings topics)
Name and address of employer	Freelance
Type of business or sector	Design, CAD and <b>3D visualization</b> , Project engineering, Technological consulting

Dates	26/04/2012-25/02/2017
Occupation or position held	Entrepreuer
Main activities and responsibilities	<b>Founder, building design</b> and <b>work management support</b> for a 9 apartments building.
Name and address of employer	Domos 2020 s.r.l. (private company)
Type of business or sector	Residential building firm

Dates	01/02/08-30/06/08
Occupation or position held	Consulting
Main activities and responsibilities	<b>"Teacher training"</b> , <b>"tutor"</b> , <b>"parents information and education"</b> as an expert in issues of <b>"3D Environments"</b> and <b>"Architecture, natural landscape and urban"</b> under the Regional Operative Program Sardegna 2000/2006 measuring 3.6 "Prevention of educational and school dispersion" line 3.6.1 "Reading, Communication and Environmental Design for the development of the territory of Sarrabus-Gerrei"
Name and address of employer	Istituto di Istruzione Superiore " L.Einaudi" di Muravera, and others
Type of business or sector	Education, Comunication

Dates	01/03/06-30/06/06; 25/10/05-28/02/06
Occupation or position held	Employee; stage
Main activities and responsibilities	<b>Building, architectonic and technological systems design</b> ; technical coordination of working groups; Processing CAD and <b>photorealistic views</b> .
Name and address of employer	TecnoLav Engineering Srl, engineering society
Type of business or sector	Design, CAD and 3D visualizations, Project engineering

Dates	23/10/03-22/10/05; 11/07/03 -21/10/03
Occupation or position held	Employee; Consulting
Main activities and responsibilities	<p><b>Computer expert for training, consulting and production</b> at the "Program of development and consolidation of entrepreneurship in Sardinia ", measuring 3.10 of POR Sardegna 2000-2006</p> <ul style="list-style-type: none"> <li>• general <b>planning of the teaching modules</b> related to the path of CAD 2D-3D delivering companies benefiting from the measure;</li> <li>• General <b>planning and preparation of teaching modules</b> related to paths of <b>three-dimensional graphics</b>;</li> <li>• Customization with the receiving companies and <b>delivery of educational content</b> related to <b>three-dimensional graphics, CAD, and two-dimensional graphics for the web</b> (modules 60 to 120 hours per company);</li> <li>• Research, technology advice and support for the company's internal preparation and production of prototypes for the three-dimensional web products.</li> </ul>
Name and address of employer	Sherwood Srl (Battelle21), in cooperation with Enaip Sardegna, inside Concorde Sardegna consortium
Type of business or sector	Education, Technical advising, CAD and 3D visualizations, Informatics, transfer technology

## Education and training

Dates 26/04/2013

Title of qualification awarded **Safety Responsible for building activities in phases of design and construction**, (40 hours, professional enabling course - updating/refresh course)

Principal subjects/occupational skills covered Interferences, spatial and temporal programming of buildings activities, regulations

Name and type of organisation providing education and training Ordine degli Ingegneri della Provincia di Cagliari

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Dates 08/02/2011

Title of qualification awarded **PhD in Land Engineering**, *Italian Scientific Sector (SSD) GEO-11* (Applied geophysics)

Principal subjects/occupational skills covered Applied geophysics, remote sensing, non-destructive measurements applied to cultural heritage, land resources, detection and monitoring of risk in urban and rural contest; Optical, thermal and microwave active and passive applications. Print publications and participation in international conferences and scientific workshops.  
Final dissertation: **"Sistemi di telerilevamento termico per il monitoraggio e la prevenzione dei rischi naturali: il caso sismico"** (Thermal remote sensing for monitoring and prevention of natural risks: the seismic case) <http://veprints.unica.it/550/>

Name and type of organisation providing education and training Università degli Studi di Cagliari

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Dates 03/06/2003

Title of qualification awarded **(Master's level) degree in Building Engineering (Ingegneria Edile V.O.)**, with final evaluation of **110/110 cum Laude**

Principal subjects/occupational skills covered Architectural and building design, restoration, urbanism, legislation and technical planning, structural design, technical physics.  
Final dissertation: **"Prospettive di fruizione delle aree demaniali di Capo Bellavista, Arbatax"** (Fruition perspectives of the State property areas of Capo Bellavista, Arbatax)

Name and type of organisation providing education and training Università degli Studi di Cagliari, Facoltà di Ingegneria

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Dates *Various*

Type of formation Participation to a wide number of **professional/post-degree, doctoral and postdoctoral courses, seminars, meetings, summer schools, workshops at National and International level.**

Principal subjects/occupational skills covered Main themes: **Remote sensing, geophysics, signal processing, inverse problems, geostatistics, GIS, hydrogeology, land risk management, seismology, restoration design, archaeological geophysics, architecture, landscape, buildings, group management and leadership.**

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## Personal skills and competences

Mother tongue(s)

**Italian**

### Other language(s)

Self-assessment

Understanding

Speaking

Writing

European level (\*)

Listening

Reading

Spoken  
interaction

Spoken  
production

**English \*\***

**B2**

**B2**

**B2**

**B2**

**B2**

\*\* level achieved with score **Merit**, as from written declaration n.63 of 10.10.2016 of the school English Communication First, in Dolianova, Cagliari (IT)

(\*) Common European Framework of Reference for Languages

## Computer skills and competences

### Operative systems:

DOS, Windows, Ubuntu;

### Applicatives (main knowledge) :

geophysical data:

IDS OneVision, GSSI Radan, IDS Gred HD (Gred3D), Reflexw, Prosys II, Electre II, Res2Dinv, Res3Dinv, ERTlab 3D, IPI2win, Grav3D, FLIR ThermaCAM, FLIR Quick Report, AEMR TEM-RES, Micromed Grilla, IDS IBIS Surveyor;

general data:

Matlab, Octave, Surfer, Voxler;

Remote sensing:

Matlab, ESA SNAP, Hydra (SSEC Madison, entry level);

Photogrammetry

Metashape, Pix4D, 3DF Zephyr;

CAD and 3D:

Autocad, 3Dstudio Max, Sketchup, Blender;

GIS:

ArcGIS (entry level), Quantum GIS;

VR& rendering engines:

VRML and proprietary technologies, Arnold, V-Ray, Mental Ray, Cycles, PRman;

office:

Word, Excel, Power Point, OpenOffice, LibreOffice;

2D graphics:

Photoshop, Paint Shop Pro, Paint.NET, Gimp, Inkscape;

Web graphics:

Dreamweaver, KompoZer.

## Geophysical and other skills and competences

- Teaching, tutoring, and dissemination (*graphical, oral and written*);
- Funding proposal writing, networking, multidisciplinary approach;
- Mentoring and group leadership;
  
- General survey design; field work; standard data processing; visualization and interpretation;
- Time lapse thermography (*satellite, aerial and ground based*);
- Multispectral remote sensing (*satellite, aerial and ground-based*);
- Ground based interferometry (*Real Aperture Radar*);
- Gravity method; electric (S.P., rho and I.P.), electromagnetic methods and GPR; HVSR; multi-parametric earthquake precursors;
  
- Matlab programming;
  
- Structure from Motion;
  
- Computer Graphics and 3D/4D representation;
  
- Radar polarimetry and InSAR; (basics);
- Inversion theory and signal processing (basics);
- Active seismic methods; magnetic methods; tectonics and seismology; heat flow and geothermal energy; (basics);
  
- Python programming (learning)

## Scientific products

### PATENTS:

HERITAGE TOPICS

RANIERI G; TROGU A.; NOLI L.M.; SITZIA A.M.; **PIRODDI L.**; LODDO F.; CALCINA S, 2015, "Method and system for activating and controlling a water-repelling process in walls", European Patent **(EP 3 040 490 B1)**

### THESIS:

**L. PIRODDI**, "Sistemi di telerilevamento termico per il monitoraggio e la prevenzione dei rischi naturali: il caso sismico", doctoral thesis in Land Engineering, Università degli Studi di Cagliari, February 2011; Italian disciplinary sector (SSD): GEO/11 Applied Geophysics; <http://veprints.unica.it/550/>;

### BOOKS CHAPTERS (PEER REVIEW):

HERITAGE TOPICS

**L. PIRODDI**, "TIR Anomaly as Earthquake Precursor", *Natural Hazards: Earthquakes, Volcanoes and Landslides*, edited by Ramesh Singh and Darius Bartlett, CRC Press, Taylor & Francis group, pages 139-150, (March 2018) **(INVITED, SINGLE AUTHOR)**; ISBN: 978-1-13-805443-1 (Hardback)

G. RANIERI, A. TROGU, F. LODDO, **L. PIRODDI**, "Vedere nel sottosuolo di Mont'e Prama", in Atti dei convegni Lincei # 303: "I riti della morte e del culto di Mont'e Prama", giornata di studio January 21, 2015, Accademia dei Lincei, Rome, Italy; pages 45-70, Bardi edizioni publisher, printed 02/2017).

### BOOKS CHAPTERS (WITHOUT PEER REVIEW):

HERITAGE TOPICS

F. LODDO, A. TROGU, S. CALCINA, **L. PIRODDI**, G. RANIERI, "Tomografie elettriche 2D e 3D", in G. Ranieri and R. Zucca editors, Mont'e Prama - I. Ricerche 2014, pp. 106-114, Carlo Delfino editore, September 2015; ISBN: 978-88-7138-889-2;

HERITAGE TOPICS

**L. PIRODDI**, F. LODDO, A. TROGU, C. PIGA, S. CALCINA, G. RANIERI, "Indagini Termografiche e Multispettrali da Pallone Aerostatico", in G. Ranieri and R. Zucca editors, Mont'e Prama - I. Ricerche 2014, pp. 123-130, Carlo Delfino editore, September 2015; ISBN: 978-88-7138-889-2; **(CORRESPONDING AUTHOR)**;

HERITAGE TOPICS

G. RANIERI, A. TROGU, F. LODDO, **L. PIRODDI**, S. CALCINA, C. PIGA, M. SITZIA, L. NOLI, "Integrazione dei metodi, Risultati e Feedback archeologici", in G. Ranieri and R. Zucca editors, Mont'e Prama - I. Ricerche 2014, pp. 142-146, Carlo Delfino editore, September 2015; ISBN: 978-88-7138-889-2;

HERITAGE TOPICS

G. RANIERI, **L. PIRODDI**, "Indagini georadar nella chiesa di San Leonardo", book chapter in "Templari, crociate, giudicati e ordini monastico-cavallereschi nella Sardegna medioevale", 2011; ISBN: 978 88 96412 541;

HERITAGE TOPICS

G. RANIERI, **L. PIRODDI**, "Indagini non distruttive nella chiesa di San Leonardo", book chapter in "Militia Christi e Templari in Sardegna", Selargius, April 2010; ISBN 978-88-8569-93-6;

## JOURNAL ARTICLES (PEER REVIEW):

A. WIEWEL, L.B. CONYERS, **L. PIRODDI**, N. PAPADOPOULOS, “*An Experimental Use of Ground-Penetrating Radar to Identify Human Footprints*”, *ArcheoSciences*, 2021, 45(1), pp. 143-146. (**SCOPUS INDEXED journal**) ISSN: 1960-1360 (Print Edition), 2104-3728 (Electronic Edition); <https://doi.org/10.4000/archeosciences.9144>

N. MONTALDO, R. CORONA, M. CURRELI, S. SIRIGU, **L. PIRODDI**, R. OREN, “*Rock water as a key resource for patchy ecosystems on shallow soils: Digging deep tree clumps subsidize surrounding surficial grasses*”, *Earth's Future*, 2021, 9(2), e2020EF001870, 24 pages (**IF 5.78**) ISSN: 2328-4277 (Electronic Edition); <https://doi.org/10.1029/2020EF001870>

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S.V. CALCINA, P. PARISI, **L. PIRODDI**, (2021) “*3D Electrical Resistivity Tomography: a diagnostic tool for the inspection of submerged foundations of civil infrastructures*” — 13-16 September 2021 – WACM4ES in press

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- HERITAGE TOPICS **L. PIRODDI**, S.V. CALCINA, (2020). “*Integrated vibration analysis for historical dome structures: a complementary approach based on conventional geophysical methods and remote sensing techniques*” in 20<sup>th</sup> International Conference on Computational Science and its Applications (ICCSA 2020), Cagliari, 1-4 July 2020, pages 928-943. (SCOPUS INDEXED) (ORAL PRESENTATION) (CORRESPONDING AUTHOR) [https://doi.org/10.1007/978-3-030-58820-5\\_67](https://doi.org/10.1007/978-3-030-58820-5_67) .
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G. RANIERI, F. LODDO, **L. PIRODDI**, P. COSENTINO, P. CAPIZZI, P. MESSINA, A. GODIO, S. STOCCO, V. BRUNO, A. SAVINI, "Ricostruzione e valorizzazione del paesaggio archeologico in ambiente costiero mediterraneo tramite tecnologie innovative non invasive", Napoli, secondo simposio "Il Monitoraggio Costiero Mediterraneo: problematiche e tecniche di misura", 4 - 6 giugno 2008; Editore CNR-IBIMET; ISBN 978-88-95597-08-9, pp 435-441;

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Independent review  
of architectural project  
activity

R. DIANA, E. MUSIO, F. OGGIANO, **L. PIRODDI**, F. SETZU, "Frattura e continuità", Cagliari, International workshop of Architectonic and Urban Restoration, 10-22 September 2007, "Antiche ferite e nuovi significati. Cagliari e la città storica", Gangemi publisher, February 2009; review of the team's project done by S. MOCCI; ISBN: 978-88-492-1612-7; pp86-90-91;

**OTHER PRESENTATIONS AT INTERNATIONAL CONFERENCES (without proceedings):**

**L. PIRODDI** (2021) "From high temporal resolution to synthetically enhanced radiometric resolution: Night Thermal Gradient results and applications to pre-earthquake TIR emissions" NSF Convergence Workshop: Bringing Land, Ocean, Atmosphere and Ionosphere Data to the Community for Hazard Alerts – 24-28, May 2021 – Ionospheric and Atmospheric Perturbation Associated with Earthquakes, Tsunami and Volcanoes **(ORAL PRESENTATION)**;

**L. PIRODDI**, " From high temporal resolution to enhanced radiometric resolution: Night Thermal Gradient results " International GeoHazard Research Society (IGRS) 2014 Symposium at NASA Ames Research Center, 10 Dicembre 2014, Moffett Field, California, USA **(INVITED, ORAL PRESENTATION)**;

**L. PIRODDI**, G. RANIERI, "Thermal remote sensing applications to short term seismic hazard evaluation.", 4<sup>th</sup> ESA Advanced Training Course in Land Remote Sensing, 2 July 2013, Athens, Greece **(POSTER PRESENTATION)**;



**L. PIRODDI, F. SUN**, “Applications of MODIS data using Hydra software: Investigations on land surface coverages by mean pseudo images of normalized vegetation index NDVI and natural color images”, final presentation at international summer school on remote sensing applications with meteorological satellites, SSEC Madison/EUMETSAT, 26/09/2008, Iglesias USA (**ORAL PRESENTATION**);

## Teaching activities

### ORAL / PRACTICAL PRESENTATIONS / LESSONS (WITH LANGUAGE OF ACTIVITIES):

- 2020  
*Teaching responsibility* **L. PIRODDI**, “Laboratory of geophysical techniques for the study of coastal areas subject to environmental risk”, “ERT&IP”, “Seismic refraction, MASW and HVSR techniques”, practice, in the master’s degree in Environmental Engineering, Università di Cagliari, January 2020 (30 hours), Cagliari - (IT)  
[*Laboratory of geophysical techniques for the study of coastal areas subject to environmental risk - Dr. L. Piroddi*]
- 2019  
*Teaching responsibility* **L. PIRODDI**, “Environmental remote sensing”, “Multispectral, thermal, radar remote sensing”, “Satellite and proximal remote sensing”, practice, in the master’s degree in Environmental Engineering, Università di Cagliari, September 2019 (30 hours), Cagliari - (IT)  
[*Laboratory of remote sensing - Dr. L. Piroddi*]
- 2019  
*Supplementary teaching* **L. PIRODDI**, “Gravimetric, VES and refraction seismics methods”, “End course survey”, practice, in the master’s degree in Environmental Engineering, Università di Cagliari, January 2019 (27 hours), Cagliari - (IT)  
[*Laboratory of geophysical techniques for the study of coastal areas subject to environmental risk - Prof. R. Balia*]
- 2018  
*Supplementary teaching* **L. PIRODDI**, “Gravimetric, TDEM & FDEM, VES, ERT & IP methods”, “GPR”, practice and lectures, in the master’s degree in Environmental Engineering, Università di Cagliari, October-December 2018 (19 hours), Cagliari - (IT)  
[*Applied Geophysics - Prof. R. Balia*]
- 2018  
*Supplementary teaching* **L. PIRODDI** “GPR, thermography and multispectral methods”, practice and lectures, in the master’s degree in Architecture, Università di Cagliari, April-June 2018 (20 hours), Cagliari - (IT)
- 2018  
*Supplementary teaching* **L. PIRODDI**, “Gravimetric, TDEM, ERT and VES methods”, practice, in the master’s degree in Environmental Engineering, Università di Cagliari, January 2018 (13 hours), Cagliari - (IT)  
[*Laboratory of geophysical techniques for the study of coastal areas subject to environmental risk - Prof. R. Balia*]
- 2017  
*Supplementary teaching* **L. PIRODDI**, “GPR”, lectures, in the master’s degree in Environmental Engineering, Università di Cagliari, December 2017 (3 hours), Cagliari - (IT)  
[*Applied Geophysics - Prof. R. Balia*]
- 2017  
*Supplementary teaching* **L. PIRODDI** “ERT & IP methods”, “Thermography and multispectral methods”, “GPR”, “End course survey”, lectures, in the master’s degree in Architecture, Università di Cagliari, October-December 2017 (31 hours), Cagliari - (IT)  
[*Materials and diagnostics for Architecture - Prof. G. Vignoli*]

- 2017  
Supplementary teaching
- L. PIRODDI** “Gravity method”, “ERT & IP methods”, “EM methods”, “Seismic methods”, “End course survey”, lectures and practice, in the master’s degree in Architecture, Università di Cagliari, March-May 2017 (25 hours), Cagliari - (IT)  
[Soils and buildings diagnostics – laboratory/in field practical activities module responsible - Prof. R. Balia]
- Until 2016 (before Assistant Professorship)
- L. PIRODDI**, “Thermal and multispectral remote sensing: principles, methods and applications”, “Time lapse thermography for cultural heritage, civil and environmental engineering: methods and applications”, “Spectral and temporal multidimensional prospection” seminar, in the master’s degree in Architecture, Università di Cagliari, 07 December 2016 (2 hours), Cagliari - (IT)
- L. PIRODDI**, “Georadar: introduction, potential applications and acquisition configurations, best practices for prospecting, data acquisition and interpretation”, “Processing common workflow for monostatic acquisition data”, “Case studies and environmental applications” seminar, in the master’s degree in Engineer for Land and Environment, Università di Cagliari, 02 December 2016 (2 hours), Cagliari - (IT)
- L. PIRODDI**, M. COGONI, “Thermal and multispectral remote sensing: principles, methods and applications”, “Time lapse TIR for civil engineering, environmental and cultural heritage: methods and applications”, “Temporal and spectral multidimensional survey”, practice, lessons and tutoring in the master’s degree course of Architecture, University of Cagliari, 28April 2016 (3 hours), Cagliari - (IT)
- L. PIRODDI**, “ERT and IP: design, fieldwork, processing, interpretation, case studies” “GPR: fieldwork, case studies” “Thermal and multispectral remote sensing: principles, methods and applications”, practice, lessons and tutoring in the master’s degree course of Architecture, University of Cagliari, October-November 2015 (about 15 hours), Cagliari - (IT)
- Official role,  
Teaching assistant – 20 Hours
- L. PIRODDI**, “ERT and IP: design, fieldwork, processing, interpretation” “FDEM method acquisition” “GPR: design, fieldwork, processing, interpretation” “Thermal remote sensing, time dependent earthquake hazard, thermal precursors”, practice, lessons and tutoring in the master’s degree course of Architecture, University of Cagliari, March-July 2015 (20 hours), Cagliari - (IT)
- Official role,  
External lecturer – 8 Hours
- L. PIRODDI**, “Geoelectric methods”, selected lessons at the second Master in “Diagnostics and Environmental Security”, Enna Kore University, 3-4 April 2014 (8 hours), Enna - (IT)
- L. PIRODDI**, “ERT, IP and VES soundings”; “Gravity method: design, fieldwork, processing, interpretation”, “GPR: design, fieldwork, processing, interpretation” practice, lessons and tutoring in the master’s degree course of Architecture, University of Cagliari, May-June 2013 (about 20 hours), Cagliari - (IT)
- Invited seminar (non-university course)
- G. RANIERI, L. PIRODDI**, “E’ possibile prevedere i Terremoti?”, Rotary interClub Iglesias-Carbonia- Sanluri – Senorbi, 3 May 2013 (3 hours), Iglesias - (IT)
- L. PIRODDI**, “GPR – misure georadar”, lesson in the master’s degree course of Architecture, University of Cagliari, , 22 April 2013 (2 hours), Cagliari - (IT)
- L. PIRODDI, H. BELGHAZAL, A. TROGU** “ERT and VES soundings”, practice in the master’s degree course of Architecture, University of Cagliari, , 22 April 2013 (2 hours), Cagliari - (IT)
- Invited seminar (non-university course)
- L. PIRODDI**, “Prove geofisiche non invasive applicate ai beni culturali – strumenti e casi di studio”, invited lesson (GPR and thermal IR methods) at “XIII corso di Lezioni di archeologia”, Archeo Arci Nuoro, 03 December 2012 (2 hours), Nuoro - (IT)
- Official role,  
Teaching assistant – 35 Hours
- L. PIRODDI**, “GPR survey and processing”, practice and tutoring in the master’s degree course of Conservation of architectural and environmental assets, University of Cagliari, , May-June 2012 (28 hours), Cagliari - (IT)

*Official role,  
Teaching assistant – 35  
Hours* **L. PIRODDI**, “ERT and VES soundings”, “ERT and VES processing and interpretation: inversion, forward modeling, tomography and maps” lesson and practice in the master’s degree course of Conservation of architectural and environmental assets, University of Cagliari, , April 2012 (5 hours), Cagliari - (IT)

*Official role,  
Teaching assistant – 35  
Hours* **L. PIRODDI**, “Gravity method: acquisition, processing, filtering, inversion, forward modeling” lesson in the master’s degree course of Conservation of architectural and environmental assets, University of Cagliari, , April 2012 (2 hours), Cagliari - (IT)

**L. PIRODDI**, “Lineamenti di telerilevamento termico, multispettrale, radar e lidar per i beni culturali e ambientali”, “Sistemi di Telerilevamento Termico per il Monitoraggio e la Prevenzione dei Rischi Naturali: il caso sismico”, lessons in the specialization course “Tecnologie strumentali nella diagnostica e restauro di beni culturali”, Faculty of Architecture and Faculty of Mathematics, Physics and Natural Sciences, University of Cagliari, 27 September 2011 (2+2 hours), Iglesias - (IT)

**L. PIRODDI**, “2D and 3D ERT and IP” “GPR survey and processing”, practice, lessons and tutoring (laboratory and field work, processing, post-processing, interpretation, applications) in the master’s degree course of Conservation of architectural and environmental assets, University of Cagliari, , March-June 2009 (about 30 hours), Cagliari - (IT)

(Teaching activities)

#### ASSISTANCE OR SUPERVISION FOR THESIS:

*Advisor, since 2017 (after  
Assistant Professorship*

- **E. LAI**, “Stima delle velocità di propagazione delle onde sismiche con il metodo della sismica a rifrazione”, **B.Eng. thesis** in Engineering for environment and land, University of Cagliari, academic year 2018-2019, supervisors prof. G.P. Deidda and dr. L. Piroddi

*Advisor, since 2017 (after  
Assistant Professorship*

- **A. USAI**, “Metodi di interpretazione dei dati sismici a rifrazione”, **B.Eng. thesis** in Engineering for environment and land, University of Cagliari, academic year 2017-2018, supervisors prof. G.P. Deidda and dr. L. Piroddi

- **S.V. CALCINA**, "Ambient vibration measurements for non-destructive evaluation of structures by means of seismic methods and ground-based microwave interferometry", **Ph.D. thesis** in Technologies for the conservation of architectural and environmental assets, University of Cagliari, academic year 2013-2014
- **P. CARA**, "Il Georadar: dalle indagini su vaste aree al riconoscimento dei materiali archeologici (applicazioni nell'area di San Salvatore di Sinis e di Mont'e Prama, Sardegna)", **M.Sc. thesis** in Exploration and applied geophysics, University of Pisa, academic year 2014-2015
- **M. COGONI**, "Nuove tecnologie non distruttive per lo studio e il restauro dei beni monumentali: applicazioni termografiche e multispettrali nell'ipogeo di San Salvatore di Sinis in Cabras", **M.Sc. thesis** in Conservation of architectural and environmental assets, University of Cagliari, academic year 2013-2014
- **M.I. BRODU**, "Interazioni tra correnti artificiali e specie arboree", **M.Sc. thesis** in Engineering for environment and land, University of Cagliari, academic year 2008-2009
- **R. MANCONI**, "Risorse geotermiche a bassa entalpia: analisi delle potenzialità di utilizzo in Sardegna", **B.Eng. thesis** in Engineering for environment and land, University of Cagliari, academic year 2006-2007

## Research projects:

### PARTICIPATION TO RESEARCH GROUPS IN SCIENTIFIC PROJECTS OR PROPOSALS

- **POR FESR Sardegna 2014-2020 (2018)**, "Tecnologie di CARatterizzazione, Monitoraggio e Analisi per il ripristino e la bonifica (CARMA)", Ecoserdiana s.r.l. and University of Cagliari proposers, (P.I. prof. G. Vacca) [**2020-ongoing**]
- **PRIMA (2018)**, "Strategies for increasing the WATER use efficiency of semi-arid Mediterranean watersheds and agrosilvopastoral systems under climate CHange (WATCH)", PI prof. Nicola Montaldo, University of Cagliari [**2019-ongoing**];
- **FBS (2018)**, "Modeling, monitoring and safety evaluation of existing structures: M2VS2E", (P.I. prof. A. Cazzani)
- **NASA ROSES (2018)**, "Stimulated Infrared Emission from the Earth's Surface as Indicator of Stresses in the Crust", PI Friedemann T. Freund, SETI Institute, CO-I / CO-PI Luca Piroddi.
- **PRIN 2017 (2018)**, "A Prototype for Scientific Computation in Inverse Problems (prokit-inverse)", PI prof Michele Piana, Università di Genova. [**accepted, not financed**]
- **HORIZON2020 (2018)**, "Exploration of earthquake precursors for enhancement of the early warning capacity and Seismic Risk Attenuation (ESRA)", PI Nataliya Kilifarska, National Institute Of Geophysics Geodesy And Geography - Bulgarian Academy of Science
- **HORIZON2020 (2018)**, "Multiparametric EArthquake FOrecast System (MEAFORS)", PI Raphael Koumeri, Planet AE
- **R.A.S. Fondo di Sviluppo e Coesione 2014 - 2020** - Interventi di sostegno alla ricerca (2018) - "Algoritmi e Modelli per l'Imaging Science (AMIS)", P.I. prof G. Rodriguez, Università di Cagliari [**2019-ongoing**]
- **PON 2014-2020 (2016)**, "Centro Diagnostico per i Beni Culturali di livello regionale in Abruzzo" project scientific coordinator Prof



Domenica Paoletti, University of L'Aquila, (expression of interest for preliminary internal call for ideas);

- **DASS Scarl (2015)**, “Sviluppo e ottimizzazione di tecnologie satellitari per il rischio sismico”, project scientific coordinator Prof Gaetano Ranieri, CINSA – University of Cagliari, (expression of interest for preliminary internal call for ideas);
- **NASA ROSES (2015)**, “Machine Learning to Correlate Ionospheric Total Electron Content (TEC) with Thermal Infrared (TIR) Anomalies and Regional Seismicity in Support of Earthquake Forecasting” project scientific coordinator Dr Nikunj Oza, NASA AMES;
- **NASA ROSES (2014)**, program “A.30: Remote Sensing Theory for Earth Science” “Towards a Global Earthquake Forecasting System Based on a Statistical Analysis of Historical TIR Data” project scientific coordinator Prof James R. Miller, University of Kansas Center for Research, Inc;
- **FBS (2014)** “Archeologia di Mont'e Prama - geofisica”, project scientific coordinator Prof Gaetano Ranieri, Università di Cagliari; **[2015-2020]**
- **HORIZON2020 (2014)**, “Integrated Operational Guidelines to increase Europe's resilience to volcanic, Tsunami and earthquake Risk (TOGETHER)”, project scientific coordinator Prof Gaetano Ranieri, Università di Cagliari;
- **SIR 2014**, “Earthquake anomaly recognition: development of physical models, integration of multi-parametric monitoring protocols and close to real time estimates for regional seismic hazard”, project scientific coordinator **Luca Piroddi**, Università di Cagliari;
- **LR7/2007 (2014)**, “IDROSAR”, project scientific coordinator Prof Giuseppe Mazzarella, Università di Cagliari; **[2016-2019]**
- **“Isthmos project” (2013)**, (recognition and digging fieldwork in the archaeological area of Nora), scientific direction of Professors Simonetta Angiolillo e Marco Giuman, Università di Cagliari, responsible of specialistic unit Prof. Gaetano Ranieri, Università di Cagliari **[2013-2014]**
- **COST 2013**, “Towards the integration of bio- and Geophysical/chemical earthquake precursors (TOGETHER)”, project scientific coordinator Prof Gaetano Ranieri, Università di Cagliari; **[accepted, not financed]**
- **LR7/2007 (2011)**, “Archeologia di Mont'e Prama”, project scientific coordinator Prof Raimondo Zucca, Università di Sassari; **[2013-2015]**
- **PRIN 2009**, “Sistemi diagnostico-valutativi e protocolli di intervento per la riqualificazione energetica e per la conservazione sostenibile del patrimonio costruito”, project scientific coordinator Prof Pietro Cosentino, Università di Palermo;
- **ex fondi 60% 2009 - Area 04 - Scienze della terra**, “Agricoltura di Precisione: metodi ecosostenibili per il miglioramento della produzione agricola”, project scientific coordinator Prof Gaetano Ranieri, Università di Cagliari; **[financed]**
- **PRIN 2007**, “Controllo, protezione e gestione delle risorse idriche sotterranee. Il contributo di metodi geofisici innovativi”, project scientific coordinator Prof Gaetano Ranieri, Università di Cagliari; **[financed]**
- **FIRB 2003**, “Ricostruzione e valorizzazione del paesaggio archeologico in ambiente costiero mediterraneo tramite tecnologie innovative non invasive”, project scientific coordinator Prof Gaetano Ranieri, Università di Cagliari; **[2008-2009]**

*P.I. of the proposal*

