

# Curriculum Vitae

---

## *Personal Data*

*Name and surname:* **Ivan Callegari**

*Work Address* Department of Physics and Earth Sciences  
University of Ferrara - INFN  
Polo Scientifico e Tecnologico  
Via Saragat 1 - I-44122  
Ferrara – Italy

*Phone* +39-0532974356

*E-mail:* [callegari@fe.infn.it](mailto:callegari@fe.infn.it)

*Mobile* +39-3393059306

*Mother tongue:* italian.

*Spoken languages:* English, French (very low level),

Arabic and Swahili (only fundamental words useful for the work).

*Account in* Researchgate and LinkedIn

*Skype account:* ivan.callegari@gmail.com

## **Education**

**University Degree** in Geological Sciences at the University of Ferrara, 1991 - 1996. Title of the thesis (translated from italian): Facies analysis of carbonate sequence in coralline facies of Upper Eocene, Vicenza (Italy) – Supervisor: Prof. Loriga Broglio. Furthermore, 30 km<sup>2</sup> of fieldwork with geological mapping of the Dolomiti Bellunesi (Southern sector of Dolomites).

**Ph.D.**, University of Siena, 2005, in Earth Sciences – Title of the PhD thesis (translated from italian): Multidisciplinary studies for stratigraphic and structural reconstruction of a Northern Apennines Sector, Southern Tuscany (post-collisional and neotectonics reconstruction), with field data and remote sensing analysis and use of GIS – Supervisor: Prof. Carmignani.

## **Relevant work experience**

**2000 - 2008 Field geologist** at the Department of Earth Sciences of the University of Siena. I have realized maps and specific thematic studies of: the Cenozoic flysch deposits and Mesozoic carbonate platform of the Central Apennines, the metamorphic basement of the northwestern and southeastern Dolomites sector, the crystalline basement in the western Alps, the high-grade metamorphic rocks of the Archaean Tanzanian Craton, the Precambrian rocks of the Arabian shield and the uppermost Paleozoic-Cenozoic cover.

**2008 - 2014 Person in charge of the Geological Survey Laboratory at Center for GeoTechnologies.** (CGT-University of Siena). The Laboratory was constituted of a team of five Geologists and four Applied Geologists able to operate combining traditional field techniques with advanced technology as GPS, photogrammetry and remote sensing. The Laboratory has produced geological maps covering more than 25.000 km<sup>2</sup> of land, and has created a high number of geothematic maps at different scales. These latter were utilized to support activities like: regional tectonics reconstruction, basin analysis, research of minerals, measurement the natural radioactivity of rocks and soils, for the extraction of high values rocks and materials, for the monitoring and management of water resources and for the construction of railways and underground infrastructures.

**2014 - now Senior Geologist** of the geophysical research group at the Department of Physics and Earth Sciences of the University of Ferrara and at the Italian National Institute for Nuclear Physics (INFN), Laboratory for Nuclear Technologies Applied to the Environment.

#### **Highlights of Qualifications and research interests**

- 18 years experience in geological **field work, mapping** and **exploration** geology with strong **stratigraphic** and **structural** knowledge with data collection and interpretation in various complex geological systems. I worked in several sector of the Alps, Apennines and overseas. From the Eastern to the Western Alps (Trentino Alto-Adige, Dolomiti, Valle d'Aosta and Veneto), Apennines (Marche, Abruzzo, Emilia Romagna, Tuscany, Liguria, Umbria, Campania, Sardinia and Sicily), North-Africa (Lybia, Al Jabal al Akhdar-Cirenaica, the northern part of the Libya desert), Tanzania (southeastern part of the Tanzanian Craton and the transition with the Eastern Branch of the East African Rift System), Saudi Arabia (Arabian-Nubian Shield and Phanerozoic cover, from Taïf to Rhyad) and Mexico (Southeastern coast, Coaltzalcoalcos).
- **Regional Tectonics reconstruction and basin analysis.**
- **Nuclear Geophysics** - Geological supports for the characterization of the natural radioactivity content, and in particular the abundances of U, Th and K in rocks. Achieved by in situ, laboratory and airborne gamma-ray spectrometry methods.
- **Structural geology for engineering geology** sector as a scientific consultant: planning of railway tunnel, highways and key infrastructures, geothermal reservoir investigation, hydrogeological analysis, scientific support for study in open-pit mines (marble, greenstone, serpentine rocks, granites, porphyry and leucitite volcanic rocks).
- **Remote sensing data analysis** for geology and engineering geology with the interpretation of brittle tectonics features with software (ERDAS®), multispectral and pancromatic images and stereoscopic view (Stereo analyst ERDAS® tools), DEM Integration.
- 15 years of experience with **GIS** (Esri) for development and analysis of geological and geomorphological data and for cartography.

#### **Current employment status**

After many years of fieldwork and geological mapping at the University of Siena, actually I'm the senior geologist of the geophysical research group at the Department of Physics and Earth Sciences of the University of Ferrara and at the Italian National Institute for Nuclear Physics (INFN), Laboratory for Nuclear Technologies Applied to the Environment (University of Ferrara - [http://fst.unife.it/ricerca/laboratori-1/laboratorio\\_radioattivita](http://fst.unife.it/ricerca/laboratori-1/laboratorio_radioattivita)). In the last two years I worked mainly for the ITALRAD Project (ITALian RADioactivity mapping project- <http://www.fe.infn.it/italrad> – Italian web site), based on the realization of the national geochemical map of radioisotope (<sup>238</sup>U, <sup>232</sup>Th and <sup>40</sup>K) content in rocks and soil. My work consist first of all on the planning of the rock and soil sampling, based on the geological, structural, lithostratigraphic and morphologic characteristics of the study area, consequently the research team decide the strategy of measurement (in situ, in laboratory and airborne) and I carries out the first part of the project: sampling and geological characterization of the samples with lithological and petrographical (with polarized light microscopy) analysis. Afterwards we realize the measurement in situ, with portable gamma-ray spectrometer, or the laboratory measurement with a double gamma-ray spectrometer system called MCA-Rad

([http://fst.unife.it/ricerca/laboratori-1/laboratorio\\_radioattivita](http://fst.unife.it/ricerca/laboratori-1/laboratorio_radioattivita)). For the wide plain areas me and my research team plans the realization of Airborne gamma ray measurements by employing large volume NaI(Tl) crystals mounted on aircrafts. After this first step of measurements, collected in a GIS database, we achieve the geostatistical processing of the data collected and the realization of thematic maps, in different scale and with different statistic elaboration. The last steps are the interpretation of the data acquired and elaborated, for a geological or geophysical interpretation. Furthermore, my current research work is focused on the geological and mineralogical characterization of NORM (Naturally-Occurring Radioactive Materials) and in the geological characterization of the accessible upper crust in geoneutrinos research, with the reconstruction of crustal models.

#### *Resume*

My research and work experience are based on an interdisciplinary approach (as it is possible to see from my publications) and it is mainly founded on my deep knowledge in **fieldwork geology**, this expertise has allowed me to work in various scientific and industrial fields including: exploration, analysis and models reconstruction of complex geological systems, basin research, tectonics with the interpretation and support of geophysics, remote sensing and petrographic data.

Since my degree, I have developed stratigraphic and structural fundamental knowledge, both in the field and for the theoretical aspects and both for the scientific research and for the engineering geology sector. My work is based on multidisciplinary approach (field data with the support of remote sensing data analysis, GIS database system, geophysical interpretation and use of GPS system) and are mainly funded by EU funds (Horizon2020), industry and government companies. I have about fifteen years of experience using ArcGIS software.

My academic research track started in 1998 at the University of Padova with Prof. G.V. Dal Piaz (Alpine Structural Geologist), where I used multidisciplinary analysis methods for brittle-tectonic model reconstruction, as Remote sensing data, with the collaboration of Prof. Pascal Allemand (Structural Geologist), University of Lyon. At the beginning of 2000, I started at the University of Siena a **long period of fieldwork** and I have produced many geological maps at scale 1:10,000 and 1: 50,000 of a wide area comprising: Tuscany, Marche, Abruzzo, minor sector of Emilia-Romagna and Umbria. In Tuscany region, I have realized 45 geological maps at scale 1:10,000 as the data base for the PhD thesis, in the Marche region I have realized 16 geological maps at scale of 1:10,000 and 2 at scale 1:50,000, linked with the Italian National Cartography Project (CARG). I have carried out, as academic consultant, other geological project all over the world: Libya (Cyrenaica al-Jabal al-Akhdar), Tanzania (Tanzania Craton and Usagaran Belt), Saudi Arabia (central-southern Arabian Shield and the western part of the Arabian Platform) and Mexico (Southern part of the Gul of Mexico, Veracruz- Coatzacoalcos).

- 2014-now: Post-doc position, Italian Institute for Nuclear Physics at the Department of Physics and Earth Sciences of the University of Ferrara.
- 2013-2014: Post-doc position, University of Siena. Person incharge of the Geological Survey Laboratory at Center for GeoTecnologies. (CGT).
- 2010\_2013: Leader of the Geological Survey Laboratory at Center for GeoTecnologies. (CGT).
- 2006-2009: Post-doc position, University of Siena. Leader of the Geological Survey Laboratory at Center for GeoTecnologies. (CGT).
- 2001-2005: PhD fellowship in Earth Sciences, University of Siena. Supervisor: Prof. Carmignani.

- 2000-2001: Post-graduated fellowship, University of Siena. Geological fieldwork in Marche region – Supervisor: Prof. Carmignani.
- 1999-2000: Post-graduated fellowship, University of Padova. Brittle tectonic models reconstruction. Supervisor: Prof. Dal Piaz.
- 1997-1998: Fellowship at the University of Padova. Geological fieldwork and remote sensing analysis. Supervisor: Prof. G.V. Dal Piaz.

*Reviewer for journal*

- Environmental Earth Sciences (Springer).
- International Journal of Earth Science and Geophysics (<http://vibgyorpublishers.org/journals/International-Journal-of-Earth-Science-and-Geophysics.php>).

*Referents*

- Prof. Fabio Mantovani, Physicist, Department of Physics and Earth Sciences, University of Ferrara, Polo Scientifico e Tecnologico, Via Saragat 1 - I-44122 Ferrara – Italy. Fax: +39-0532974210 - Phone +39 3200864636; [mantovani@fe.infn.it](mailto:mantovani@fe.infn.it).
- Prof. Paolo Conti, Structural Geologist, President of the Centre of Geotechnologies, University of Siena, office: +39 0559119443; [conti@unisi.it](mailto:conti@unisi.it).
- Prof. Gianluca Cornamusini, Stratigraphical and sedimentological geologist, Earth Sciences Dept., University of Siena, office: +39 0559119444; [cornamusini@unisi.it](mailto:cornamusini@unisi.it).
- Prof. Ivano Aiello, Sedimentology and paleoceanography geologist, Moss Landing Marine Laboratories 8272 Moss Landing Road, Moss Landing, California 95039-9647. (831) 771-4480 voice and (831) 632-4403 fax; [iaiello@mlml.calstate.edu](mailto:iaiello@mlml.calstate.edu).
- Prof. Pascal Allemand, Structural geologist, Laboratoire de Géologie de Lyon Université Lyon 1 et ENS-Lyon, France 2, office : 33 (0)4 72 44 84 41 ; [allemand@univ-lyon1.fr](mailto:allemand@univ-lyon1.fr).
- Prof. Luigi Carmignani, Structural geologist, Centre of Geotechnologies, University of Siena, Head of Department, office:+39 0559119402; [luigi.carmignani@unisi.it](mailto:luigi.carmignani@unisi.it).

*Responsabilités*

**2014-now** - Team's component for a national research project for the survey of natural radioactivity of Italy (ITALRAD project).

**Samples collection planning through geological studies, characterization of rock and soil samples** for the multidisciplinary analysis of U, K and Th content in rocks and soils. ItalRad project, INFN.

**2013** – Geologist team's component for the design “LandBridge” project, the Saudi Arabia's first west-to-east port-to-port rail link between the Red Sea and the Gulf, with the construction of a c. 950 km new line between Riyadh and Jeddah. CGT for Italferr for Saudi Railways Company (SAR). **Field work, supervision of drilling operations, lithostratigraphic description of core, assessment of geomorphologic condition of the itinerary project.**

**2013** - Geologist project leader in deep drilling project (1000 m) for hydrogeological analysis of reservoir in the Southern Apennines (Molise sector). **Geological survey for pre-drilling characterization, assessment of the lithologies provided for the drilling, supervision of drilling operations, lithostratigraphic description of core, daily report of drilling operations.**

**2013** - Geologist consultant for **geological and geomorphological inspection**, after the damage, caused by a hurricane, of fill slopes in Etileno XXI project (Coatzacoalcos, Mexico); SGI- Technip. <http://www.bnamericas.com/project-profile/en/etileno-xxi-petrochemical-complex-etileno-xxi>.

**2012** - Team leader for geological research project in Tanzania, a structural reconstruction of a Tanzania northern-central sector for water reservoir analysis (**fieldwork, structural geology and geophysical interpretation**). Funded by the Minister of Foreign Affairs of Italy.

**2011-2013** - Team component for a National research project for the survey of natural radioactivity of the Veneto region. **Samples collection planning through geological studies, characterization of rock and soil samples** for the multidisciplinary analysis of U, K and Th content in rocks. In collaboration with INFN (National Institute of Nuclear Physics).

**2011-2012** - Team leader for the structural reconstruction of the southeastern sector of Elba Island, **field work, geomechanics assessment and remote sensing data analysis for the brittle structure reconstruction for hydro-geological analysis of sub-superficial transportation.**

**2011-2012** - Team leader for a geological, geomorphological and geomechanical research project to support the construction of a 27 km railways tunnel in Northern Italy (Brixen); funded by Italferr (National Railways Engineering Society). **Geological survey, field work, mapping and drilling supports.**

**2010-2012** - Team leader of a Regional research project for the realization of the Tuscany soil map (scale 1:10000) and realization of a database (ArcGIS sw). **Sample collection, soils characterization and mapping.**

**2010-2011** - Team leader for the structural reconstruction of geothermal area of Saturnia (Grosseto, Tuscany); brittle structure reconstruction for deep hydro-geological transportation through **field geology, remote sensing analysis and mapping.**

**2010** - Geology team leader for the study of the subsidence in the Airport area of Fiumicino (Rome), relationship between natural subsidence and anthropic intervention with **stratigraphic, 3D reconstruction of geological structure and interferometric analysis (SAR imagery).**

**2010** - Team leader for the geological mapping of the Central Madonie Massif (Northern-central part of Sicily), realization of national railways high velocity system (scale 1:25000). **Remote sensing analysis and assessment of brittle structure for the quality of the rock masses.**

**2009-2011** - Team leader for **soil-landscape unit survey** of the Arno basin, Tuscany Region (scale 1:10000).

**2008-2011** - Team's component for a Regional research project for the realization of the Tuscany digital geological map (scale 1:10000) and realization of a geodatabase (ArcGIS sw). **Mapping geology.**

**2008-2009** - Team's component for a Regional research project for the realization of the landslide map (scale 1:10000) of the Southern Tuscany and realization of a geodatabase (GIS). **Remote sensing analysis for the landslide assessment.**

**2008** - Team leader for geological survey of Corvi's Ridge, Sestri Ponente (Genova)- , **field work for mapping the geological feature and reconstruction of structural model (scale 1:2000), petrographic analysis, creation of database.**

**2008** - Paleogeographic relationships between Tuscany, Corsica, Sardinia, Calabria and Eastern Sicily before the Alpine deformation. Kinematic evolution from the late Oligocene of the Central Mediterranean region between the Gulf of Lion and the Adriatic-Apulia-Ionian foreland. NIRP2007 (National Interest Research Project, approved). **Structural geology studies and tectonic reconstruction.**

**2008** - **Geologic survey and petrographical analysis** of Sestri-Voltaggio MORB and Peridotites, for the research of asbestos, Genova.

**2007-2010** - Team component for a National research project for the survey of natural radioactivity of the Tuscan region; multidisciplinary analysis (**samples planning and collection and geological characterization**) for the U, K and Th content in rocks. In collaboration with INFN (National Institute of Nuclear Physics).

**2007-2008** - Team leader research for asbestos **petrographic analysis** on the Metamorphic Complex of the Sestri-Voltaggio line (Genova, Liguria).

**2007** - **Remote Sensing data analysis for lithologic and quaternary cover survey**, highway Sassari-Olbia, Sardinia.

**2007** - Project Coordinator for Hydraulics **features survey with GPS and GIS support**, eastern Tuscany.

**2007** - Geotechnologies applied to the study of the relationships between sedimentation and tectonics in the neogene-quaternary basins of the inner part of the Northern Apennines: comparison between central and peripheral basins. University of Siena Research Project 2006 approved 2007. **Geological survey and mapping with creation of GeoDatabase.**

**2006** - Collaboration for realization **and enhancement of GeoDatabase** for the Geological Map of the Arno Basin (Tuscany).

**2006** - **Geological field work and mapping** of Sheet N.261 Lucca (Apuane Alps and surrounding areas).

**2006** - **Tectonic model reconstruction with aerialphotographic analysis**, Sheet N.443, Tempio Pausania, Sardinia.

**2005-2007** - Geological field work Project for the external part of the Apuane Alps Core-complex.

**2005 – 2006** - Project Coordinator for Hydraulic features survey with GPS and GIS support, central Tuscany area.

**2002-2005** - Geological Survey Project for the Tuscany Region (Inner part of Northern Apennines) and for the CARG Project (**Geological mapping at 1:50000 scale**) for the APAT (National Geological Office).

**2005** - Team component for the geological survey of A16 Highway Landslide in southern Italy (Candela, Puglia), **geological and geomorphological fieldwork and mapping, analysis of aerialphotography, DTM reconstruction.**

**2004** - **Geological and geomorphological Survey** Project of the Tuscany Region.

**2003** - Geologist of scientific team in Lybia, **field work and stratigraphic analysis** to support the archaeological excavation in Cyrene.

**2000-2002** - **Geological and geomorphological Survey Project** at 1:10000 scale of the Marche Region (outer part of the Northern Apennines Orogenic Stack).

**1996-2000** - **Structural model reconstruction with multidisciplinary analysis, field work and sat images interpretation** (Eastern Alps, Northern Apennines, Mt. Etna).

#### *Teaching*

**A.A. 2015-2016** - Assistant Professor – Course: Geology I - Bachelor in Geology degree (University of Ferrara).

**A.A. 2001-2009** - Assistant Professor – Course: Field Geology - Bachelor in Geo-technologies degree (University of Siena).

**A.A. 2001-2011** - Assistant Professor – Course: Geologic interpretation of Remote sensing data - Degree: Bachelor in Geo-technologies degree (University of Siena).

**A.A. 2009-2010** - Assistant Professor – Course: Structural Geology - Degree: Bachelor in Geo-technologies degree (University of Siena).

#### *Thesis supervisor*

**A.A. 2007-2008** - M.Sc of Applied Geology, (University of Siena).

Analisi multidisciplinare per la stima delle mineralizzazioni ad amianto negli ammassi rocciosi lungo il tracciato della galleria ferroviaria del progetto Italferr “Bretella di Voltri (Genova)”.

Student: Luca Grazzini

Supervisor: Luigi Carmignani

Assistant supervisor: Ivan Callegari

**A.A. 2007-2008** - B.Sc. of Geotechnologies (Center for GeoTecnologies, University of Siena).

Studio geologico della frana di Rocche Malummeri (Paceco - TP).

Student: Elio Occhipinti

Supervisor: Ivan Callegari

Assistant supervisor: Riccardo Salvini

**A.A. 2006-2007** – M.Sc of Applied Geology, (University of Siena).

Studio Idrogeologico del Comune di Monterotondo Marittimo (GR).

Student: Tatiana Vitelli

Supervisor: Massimo Salleolini

Assistant supervisor: Ivan Callegari

**A.A. 2006-2007** - B.Sc. of Geotechnologies (Center for GeoTecnologies, University of Siena).

Geologia, geomorfologia e analisi del rischio del territorio di Scansano (Toscana meridionale, Italia).

Student: Piero Poli

Supervisor: Gianluca Cornamusini

Assistant supervisor: Ivan Callegari

**A.A. 2005-2006** - B.Sc. of Geotechnologies (Center for GeoTecnologies, University of Siena).

Studio stratigrafico-strutturale e geomorfologico integrato (Rilevamento, GIS, 3D modelling) del Bacino di Santa Barbara –  
Monti del Chianti.

Student: Alessandro Ielpi

Supervisor: Gianluca Cornamusini

Assistant supervisor: Ivan Callegari

**A.A. 2004-2005** - B.Sc. of Geotechnologies (Center for GeoTecnologies, University of Siena).

Studio della fratturazione nell'area di Valle Buia (Monte Capanne, Isola d'Elba) mediante tecniche di fotogrammetria.

Student: Anna Romagnoli

Supervisor: Riccardo Salvini

Assistant supervisor: Ivan Callegari



*Invited speaker*

**2009** - Guest Lecturer at International Course in: Seismic Acquisition and Data Processing for Oil and Gas Exploration. From 13 July to 31 July 2009; Centre for Geotechnologies, San Giovanni Valdarno (AR).

**2009** - Convener at III National congress of AIGA (Italian Association of Applied Geology) – Session 11 – Geological and environmental problem solving for the realisation of big public infrastructures Centre for Geotechnologies, 25-27 February 2009, San Giovanni Valdarno (AR).

**Il sottoscritto acconsente, ai sensi del D. Lgs. 30/06/2003 n. 196, al trattamento dei propri dati personali e alla pubblicazione del presente curriculum vitae sul sito dell'Università di Ferrara.**

May 2016

Ivan Callegari  
