

Thomas Gusmeo, PhD

Curriculum Vitae et Studiorum



Personal Data and Contacts

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

Biosketch

I am a structural geologist with a strong background in detailed and autonomous fieldwork combined with multidisciplinary and multiscale analytical techniques such as optic and electronic microscopy, low-temperature thermochronology, thermal maturity analyses of sedimentary rocks, geothermobarometry and thermal modelling of wells data. I applied such combination of fieldwork and labwork to the study of tectonically complex areas, either in deeply structured orogenic belts, in structurally inverted sedimentary basins, and in belt-basin junction systems. At present, I am the manager of the Deep Carbon Lab at the University of Bologna, hosting several high-precision analytical facilities for qualitative and quantitative analyses of rock samples.

Current positions

01/02/2023 - Present **Deep Carbon Lab Manager.** Laboratory technician, Cat. D, manager of the Deep Carbon Lab at the Department of Biological, Geological and Environmental Sciences (BiGeA), Alma Mater Studiorum University of Bologna (UniBo), Via Selmi 3, 40126 Bologna (BO), Italy. Scientific referee: Prof. Alberto Vitale Brovarone. Integrated optic and electronic microscopy, isotopic analysis on CO₂, CH₄ and H₂ from fluid inclusions.

01/09/2022-Present **Tutor** for the Geological Sciences section of the Piano Lauree Scientifiche project at BiGeA Department Alma Mater Studiorum University of Bologna (UniBo). Referee: Prof. Roberto Braga.

Education

- 01/11/2018 - 17/06/2022 **Ph.D. in Earth Sciences** (Stratigraphy and Basin Analysis, GEO/02). XXXIV Cycle, Alma Mater Studiorum University of Bologna. Thesis defended on June 17th 2022, final mark: Excellent *cum Laude*. Title: “*Subsidence history, thermal maturity, and structural inversion of the Greater Caucasus-Kura-Adjara-Trialeti basin system of central-eastern Georgia*”. Supervisor: Prof. William Cavazza (UniBo); co-supervisors: Prof. Massimiliano Zattin (Univ. Padua), Prof. Sveva Corrado (Univ. Roma Tre), Dr. Andrea Schito (Univ. Aberdeen).
- 01/10/2015 - 24/04/2018 **M.Sc. in Earth Sciences** (LM-74 class) at the “A. Desio” Department of Earth Sciences, University of Milan. Title: “*Multiscale Structural Analysis of the Riffelberg-Garten Unit in the Upper Valtournenche, Zermatt-Saas, Western Alps*”. Supervisor: Prof. Maria Iole Spalla (UniMi); co-supervisor: Dr. Davide Zanoni (UniMi). Final mark: 110/110 *cum laude*.
- 20/09/2012 - 14/10/2015 **B.Sc. in Geological Sciences** (L-34 class) at the “A. Desio” Department of Earth Sciences, University of Milan. Title: “*Meso- and Microstructural analysis of the contact zone between the Piemonte Nappe and the Sesia-Lanzo Zone (Lanzo Valley, Western Alps)*”. Supervisor: Prof. Maria Iole Spalla (UniMi); co-supervisors: Prof. Michele Zucali (UniMi) and Dr. Davide Zanoni (UniMi). Final mark: 110/110 *cum laude*.
- 10/09/2007 - 07/07/2012 High School degree at Liceo Scientifico “G. Galilei”, Erba (CO, Italy). Thesis title: “*The Grigne geology*”. Final mark 96/100.

Other academic roles

- 01/08/2022 - Present Reviewer for the scientific journal “Italian Journal of Geosciences”.
- 01/09/2021-15/12/2022 Co-supervisor of Giuseppe Lo Mauro’s MSc thesis, titled “Low-temperature thermochronological evolution of the Alanya Massif (Turkey)”, defended on 12th December 2022.

Work experience

- 01/03/2022 - 31/01/2023 **Research associate** at the Department of Biological, Geological and Environmental Sciences (BiGeA), Alma Mater Studiorum University of Bologna (UniBo), Italy. Supervisors: Prof. Giulio Viola, Prof. Gianluca Vignaroli. Project title: “Local seismic risk associated to active and capable faults along the Emilian Padan-Appenninic margin”.
- 01/11/2022-15/12/2022 **Didactic tutor** for laboratory exercises within the Stone Materials Characterization module of the Characterization of natural stones course, held by Prof. Giorgio Gasparotto. B.Sc. in Science for the Conservation – Restoration of Cultural Heritage at “G. Ciamician” Department of Chemistry, Alma Mater Studiorum University of Bologna (tot 12h).
- 01/04/2021 - 30/06/2022 **Tutor** for the Geological Sciences section of Piano Lauree Scientifiche project at BiGeA Department Alma Mater Studiorum University of Bologna (UniBo). Referee: Prof. Roberto Braga.
- 21/02/2022 - 12/05/2022 **Didactic tutor** for laboratory exercises within the Mineralogy course, held by Prof. Giorgio Gasparotto. B.Sc. in Geological Sciences at BiGeA Department Alma Mater Studiorum University of Bologna (tot 24h).
- 01/04/2018 - 31/08/2018 **Research Assistant** at the “A. Desio” Department of Earth Sciences, University of Milan. Project devoted to the structuring of the dataset acquired during the master’s degree thesis. One of the outputs was a geological map at the 1:10.000 scale of the Breuil Dell. Such map was presented as a poster at the SGI – SIMP Congress in Catania (12-14 September 2018).
- 25/04/2018 - 31/10/2018 **Teacher** at ABC Study (Chiasso, Switzerland). I helped secondary and high school students in their studies, home delivery in the Ticino region of Switzerland.
- 01/10/2017 - 31/03/2018 **Tutor** for the PLS project at the “A. Desio” Department of Earth Sciences, University of Milan (tot 150h). I offered didactic support activities during the practical lessons of the first year’s courses of the B.Sc. in Geological Sciences. Furthermore, I organised study activities in the afternoon, in preparation to the exams, which were also devoted to contrast the abandonment of students between the first and second year of the B.Sc.
- 01/06/2017 - 25/08/2017 **Trainee** at Schlumberger Italiana S.p.A., Lambrate (MI), Italy (tot 150h). I did the interpretation of a 2D array of seismic sections in the Danish Central Graben (North Sea), creating a 3D model of a

salt diapir and of the surrounding deformed and faulted sedimentary successions. Referee: Ivan Guerra.

01/02/2015 - 20/06/2015 **Trainee** at “Studio Geologico Paolo Dal Negro” (tot 150h), Villaguardia (CO), Italy. I took part in a number of studies, including assistance in geognostic and penetrometric studies, fieldwork, topographic and GPS surveys, GPR surveys, excavations for foundation building.

10/06/2011 - 31/07/2011 **Trainee** at Lechler S.p.A., Como (CO), Italia. I worked as assistant at the Foreign Customer Service, keeping telephonic and telematic contacts with worldwide clients, both in English and French languages.

Teaching and Dissemination

22/11/2022 **Invited Lesson** titled “Topography and preparation/handling of tours in the mountains during winter time” for the attendees of the “Safety in the mountains during winter” course 2022 at the National Skitouring School “P. & L. Gilardoni” of Como (CO, Italy) (1h).

19/11/2022 **Invited Lesson** titled “Geology e Glaciology” for CAI instructors attending the courses for Regional Instructors of Mountaineering and of Free Climbing, Bergamo (BG, Italy) (2h).

18/11/2022 Support and assistance during a daily didactic fieldtrip in the Northern Apennines, focused on the Epiligurian Units (near Veggio, BO), within the “Geologic Fieldwork” course (B.Sc.), held by Prof. Gianluca Vignaroli at Alma Mater Studiorum University of Bologna.

30/05/2022 **Invited Talk** for the students of the “Structural Geology and Tectonics” course of the B.Sc. in Geological Sciences at the University of Milan “La Statale”, held by Prof. Maria Iole Spalla and Dr. Manuel Roda (30th May 2022, 2h).

16/05/2022 **Invited Talk** for the students of the “Geology” course of the M.Sc. in Earth Sciences at the University of Milan “La Statale”, held by Proff. Michele Zucali and Fabrizio Felletti (16th May 2022, 2h).

March-April 2022 Support and assistance during two daily didactic fieldtrips in the Northern Apennines, focused on the Epiligurian Units (18th March, near Veggio, BO) and on the condensed upper Tuscan Succession (8th April, near Monsummano Terme, PT), within the “Geologic Fieldwork” course (B.Sc.), held by Prof. Gianluca Vignaroli at Alma Mater Studiorum University of Bologna.

- Nov 2018 - Jun 2022 Support and assistance during the exams of the courses “Geology of Italy” (B.Sc.) and “Basin Analysis” (M.Sc.), held by Prof. William Cavazza at Alma Mater Studiorum University of Bologna.
- 04/02/2022 **Invited Lesson** titled “Topography and online platforms consulting” for the attendees of the Base Skitouring course 2022 at the National School of Skitouring “P. Gilardoni” of Como (CO, Italy) (1h).
- 07/12/2021 **Invited Talk** for the students of the “Basin Analysis” course of the M.Sc. in Geological Sciences at the University of Pavia, held by Dr. Chiara Amadori (7th December 2021, 1h).
- 13/11/2021 **Invited Lesson** titled “Geology e Glaciology” for CAI instructors attending the courses for Regional Instructors of Mountaineering and of Free Climbing, Bergamo (BG, Italy) (2h).
- Nov 2018 - Oct 2021 Support and assistance during the didactic fieldtrips (Calabria, 1-4 November 2018; Liguria, 1-3 November 2019; Piacenza-Parma-Reggio Emilia Epiligurian Units, 22-23 October 2021) within the “Basin Analysis” course (M.Sc.), held by Prof. William Cavazza at Alma Mater Studiorum University of Bologna.
- Nov 2020 Virtual field-trip and teaching (6h) within the course of “Basin Analysis” (M.Sc.), held by Prof. William Cavazza at Alma Mater Studiorum University of Bologna, regarding the case study of the Adjara-Trialeti Basin structural inversion (Georgia, Caucasus).
- Nov 2019 Teaching of didactic module “Basins linked to flexural subsidence” (6h) within the “Basin Analysis” course (M.Sc.), held by Prof. William Cavazza at Alma Mater Studiorum University of Bologna.

Awards and Bursaries

- 2022 Early Career Scientist’s Travel Support grant to attend the European Geosciences Union General Assembly (EGU GA), Vienna (Austria), 23-28 May 2022.
- 2012 Study grant (500€) for study merit from Lechler S.p.A. (Como, Italy), after passing the maturity exam with a mark higher than 90/100.
- 2011 Study grant (250€) for study merit from Lechler S.p.A. (Como, Italy), after passing the fourth year of high school with an average mark higher than 8/10.
- 2010 Study grant (250€) for study merit from Lechler S.p.A. (Como, Italy), after passing the third year of high school with an average mark higher than 8/10.

- 2009 Study grant (250€) for study merit from Lechler S.p.A. (Como, Italy), after passing the second year of high school with an average mark higher than 8/10.
- 2008 Study grant (250€) for study merit from Lechler S.p.A. (Como, Italy), after passing the first year of high school with an average mark higher than 8/10.

Publications

- 2022 **Gusmeo T.**, Schito A., Corrado S., Alania V., Enukidze O., Zattin M., Pace P., Cavazza W., 2022. *Tectono-thermal evolution of central Transcaucasia: Thermal modelling, seismic interpretation, and low-temperature thermochronology of the eastern Adjara-Trialeti and western Kura sedimentary basins (Georgia)*. *Journal of Asian Earth Sciences* 237
<https://doi.org/10.1016/j.jseaes.2022.105355>
- 2021 **Gusmeo T.**, Cavazza W., Alania V., Enukidze O., Zattin M., Corrado S., 2021. *Structural inversion of back-arc basins – The Neogene Adjara-Trialeti fold-and-thrust belt (SW Georgia) as a far-field effect of the Arabia-Eurasia collision*. *Tectonophysics* 803
<https://doi.org/10.1016/j.tecto.2020.228702>
- 2021 Corrado S., **Gusmeo T.**, Schito A., Alania V., Enukidze O., Conventi E., Cavazza W., 2021. *Validating intraplate deformation styles from the Adjara-Trialeti fold-and-thrust belt to the Greater Caucasus (Georgia) through multi-proxy thermal maturity datasets*. *Marine and Petroleum Geology* 130
<https://doi.org/10.1016/j.marpetgeo.2021.105141>
- 2021 Alania V., Pace P., Corrado S., **Gusmeo T.**, Beridze T., Sadradze N., Tevzadze, N., 2021. *Preliminary structural interpretation of a seismic profile across the frontal sector of the eastern Achara-Trialeti fold-and-thrust belt*. *Bulletin of the Georgian National Academy of Sciences* 15, 4, pp. 74-79

Certificates and Qualifications

Certificate of acquisition of the 24 CFUs (University Formative Credits) for teaching at High School, obtained on September 26th 2022.

Conferences Abstracts and Communications

- 2023 **Gusmeo, T.**, Carloni, G., Vignaroli, G., Martelli, L., and Viola, G.: *Seismic Hazard Assessment along the Northern Apennines front (Italy): Deterministic inputs from the mapping of active and capable faults*, EGU General Assembly 2023, Vienna, Austria, 24–28 Apr 2023, EGU23-5012, <https://doi.org/10.5194/egusphere-egu23-5012>, 2023.
- 2022 **Gusmeo T.**, Schito A., Cavazza W., Corrado S., Zattin M., Alania V., E nukidze O., and Pace P.: *Contrasting subsidence-exhumation patterns in the hinterland of the Africa-Eurasia collision zone: the eastern Adjara-Trialeti, western Kura and central Greater Caucasus inverted sedimentary basins (Georgia)*. 91° SGI-SIMP (Italian Geological Society and Italian Society of Mineralogy and Petrography) joint Congress “Geosciences for a sustainable future”, Torino (IT), 19-21 Sep 2022. Oral. <https://doi.org/10.3301/ABSGI.2022.02>
- 2022 Cavazza W., **Gusmeo T.**, Zattin M., Corrado S., Alania V., E nukidze O., Schito A., and Pace P.: *The Adjara-Trialeti fold-and-thrust belt (Georgia): Neogene structural inversion of a Paleogene back-arc basin in the hinterland of the Arabia-Eurasia collision zone*. AAPG Europe Geoscience Workshop, Trabzon (TR), 6-7 September 2022. Oral.
- 2022 **Gusmeo T.**, Cavazza W., Zattin M., Corrado S., Schito A., Alania V., and E nukidze O.: *Burial and exhumation history of the Georgian sector of the central Greater Caucasus*. EGU General Assembly 2022, Vienna (AT), 23-27 Apr 2022, EGU22-110. <https://doi.org/10.5194/egusphere-egu22-110>. Oral.
- 2021 **Gusmeo T.**, Cavazza W., Alania V., E nukidze O., Zattin M., Corrado S., and Schito A.: *Miocene structural inversion of the Paleogene Adjara-Trialeti back-arc basin (SW Georgia, Caucasus) in the context of the Arabia-Eurasia collision zone*. AGU Fall Meeting 2021, New Orleans (LA) and Online Everywhere, 13-17 December 2021. Oral.
- 2021 **Gusmeo, T.**, Cavazza, W., Alania, V., E nukidze, O., Zattin, M., and Corrado, S.: *Miocene structural inversion of the Adjara-Trialeti back-arc basin as a far-field effect of the Arabia-Eurasia collision*. EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-179, <https://doi.org/10.5194/egusphere-egu21-179>, 2020. Oral.

- 2021 **Gusmeo T.**, Corrado S., Schito A., Alania V., Ehlukidze O., Conventi E., and Cavazza W.: *Using multi-proxy thermal maturity datasets to validate deformation styles from the Adjara-Trialeti fold-and-thrust belt to the Greater Caucasus (Georgia)*. BeGeoscientists 2021 “A Young Network”, 1^o young geoscientists Congress, Naples, 7-10 October 2021. <https://doi.org/10.3301/ABSGI.2021.04>. *Oral*.
- 2021 **Gusmeo T.**, Corrado S., Schito A., Alania V., Ehlukidze O., Conventi E., and Cavazza W.: *Using multi-proxy thermal maturity datasets to validate deformation styles from the Adjara-Trialeti fold-and-thrust belt to the Greater Caucasus (Georgia)*, SGI Congress 2021 “Geology Without Borders”, online, 14-16 September 2021. <https://doi.org/10.3301/ABSGI.2021.03>. *Oral*.
- 2018 **Gusmeo T.**, Spalla M. I., Tartarotti P., Zanoni D., Gosso G., 2018. *Structural-geological survey of an eclogitized chaotic complex: the Riffelberg-Garten Unit in the Breuil dell (Zermatt-Saas Zone, Italian Western Alps)*. SGI-SIMP Congress, Catania 12-14.09.2018. *Poster*.
- 2018 Spalla M. I., Gosso G., **Gusmeo T.**, Rebay G., Roda M., Zanoni D., Zucali M., 2018. *Tectonic mixing of continental and oceanic crustal slices at the boundary of southern Sesia-Lanzo Zone: a reinterpretation of tectonic units in the Piemonte Zone*. Crustaman International Conference, Trest', Czech Republic 31/08 – 02/09/2018. *Oral*.

Organisation of International Conferences

- 2022 **Lead Convener** of the session TS10.2: “Tectono-thermal evolution of fossil and active sedimentary basins”, European Geosciences Union General Assembly 2022, Vienna (Austria). 23-27 May 2022.
- 2014 Helper for organisation and logistics within the joint Congress SGI-SIMP 2014, Milan (MI), Italy. 12-14 September 2014.

Skills and Expertise

- Optic microscopy analysis of thin sections and polished grain mounts in transmitted light, and of single grains, including hand-picking, in reflected light.
- Electron microscopy analysis (>1000 spots and 10 maps for chemical analysis with the EPMA, >200 spots for chemical analysis with the SEM).
- Geothermobarometric analysis to reconstruct P-T-(d)t paths.

- Low-temperature thermochronology (AHe, AFT, ZHe, ZFT, trapped-charge).
- Geochronology on various minerals (Ar-Ar, K-Ar, U-Pb, U-Th, fluid inclusions).
- Multiscale, detailed geologic-structural fieldwork.
- Statistic structural analysis both in fragile and ductile settings.
- Thermal maturity analyses on organic matter (Pyrolysis, Vitrinite reflectance, Raman spectroscopy) and clay minerals (XRD, XRF, KI, I% in I-S mixed layers).
- 1D thermal modelling of wells data.
- Seismic sections interpretation.
- Softwares: ArcGIS, QGIS, Stereonet, FaultKin, Wintensor, TrackKey, Radial Plot, BinomFit, HeFTy, BasinMod 2D, Petrel E&P, SigmaPlot, Perplex, Illustrator, Office package, R, Autocad.

Languages

- Italian Native language.
- English Excellent written and oral skills. FIRST Certificate (Level B2) by Cambridge University.
- French Good written and oral skills. DELF-B2 Certificate (Level B2) by Institute Français.

Professional Memberships

Italian Geological Society (SGI), Italian Group of Structural Geology (GIGS), European Geosciences Union (EGU), American Geophysical Union (AGU).

Driving licenses

A (car) and B (motorbike) licenses.

Other memberships and skills

- 2013 - Present Ski Touring instructor at Scuola Nazionale di Scialpinismo "P. Gilardoni" of Como (CO, Italy). Since January 2019 Regional Instructor of Ski Touring for Lombardia.
- 2015 - Present Alpinism and climbing instructor at Scuola di Alpinismo "Noseda - Muschialli" of Como (CO, Italy).
- 2018 - Present Mountain Running athlete for team G.S.A. Cometa (Pusiano, CO, Italy). Good results gained in international skyrunning, trail running and vertical running races around the Alps and Apennines.

- 2020 - Present Ski Mountaneering athlete for team A.S. Premana (Premana, LC, Italy). Good results in international Ski Mountaineering races in the Alps and Apennines.
- 1993 – Present Member of CAI (Italian Alpine Federation).
- 2016 - 2020 Ski Mountaneering athlete for team A.S. Premana (Premana, LC, Italy). Good results in international Ski Mountaineering races in the Alps and Apennines.
- 2016-2018 Member of the Italian Delegation within the Erasmus + Project “Climbing for Everybody”, involving Italy, Croatia, Slovenia, Slovakia, Czech Republic and Hungary.
- 2011 - Present Blood donor at AVIS (Italian Association of Blood Donors).
- 2012 - Present Volunteer and member of the board of the charitable association “Il Poeta Sognatore Simone” of Lipomo (CO, Italy).
- 2012 - 2015 Theatre Actor.
- 2009 - 2010 Basketball Coach.

Firma:



I hereby authorise to the treatment of my personal data in compliance with the D.Lgs. n. 196/2003, renewed by D.Lgs. n. 101/2018, and by the EU rules of GDPR n. 679/2016.