

Maria Di Rosa

Ph.D.

Dipartimento di Scienze della Terra, Università di Pisa

Via Santa Maria, 53 56126 Pisa, Italia

Phone

e-mail

PERSONAL DATA

Date and place of Birth:

Citizenship: Italian.

CF:

EDUCATION

Since 2019 Nomination as expert in structural geology ("cultore della materia")

2015-2018 Firenze University, Pisa (Italy).

Ph.D in Earth Sciences

Mark: excellent cum Laude

Project title: *Tectono-metamorphic evolution of the Continental Units at the boundary between the Alpine Corsica and the Variscan Corsica: Constraints for the exhumation models in the continental collision setting.*

Supervisors: Prof. M. Marroni

2015 (March-July) Ecole Normale Supérieure, Paris (France).

Post-degree internship in Applied Petrology

Thesis: *Mineralogical evolution of high-pressure metagranitoids: metastabilization and kinematic effect of jadeite*

Supervisor: Prof. C. Chopin

2012-2015 Pisa University, Pisa, (Italy).

Diplom (M.Sc.) in Geological Sciences and Technologies, February 2015

Mark: 110/110 cum Laude

Thesis: *Tectonic units of Corte area (Corsica): an example of tectono-metamorphic processes activated during the continental collision.*

Supervisors: Prof. M. Marroni, Dott. O. Vidal

2014 (April-july) IsTerre, Grenoble (France).

Internship (Erasmus placement project) in Applied Mineralogy

Thesis: *Thermodynamic methods applied to the Eocenic Metabreccias of Corte Units (Alpine Corsica, France).*

Supervisor: Dott. O. Vidal

2009-2012 Pisa University, (Italy).

Bachelor (laurea triennale) in Geology, December 2012

Mark: 105/110

Thesis: *Geological and structural survey of Monte Cecu area (Alpine Corsica).*

Supervisor: Prof. M. Marroni

2004-2009

High school (Liceo Scientifico sperimentale Leonardo) in Brescia (Italy).
Mark: 100/100

SCIENTIFIC AND LABORATORY SKILLS

- Seismic stratigraphy: balancing of seismic sections by binding the interpretation with the data acquired in the wells (resistivity, gamma ray, fossil contents,...) and using the inversion method.
- Geological field works: structural analysis of outcrops, with deep knowledge in metamorphic and sedimentary environments (data from deformed in brittle and ductile setting, facies analysis, layer thickness measures), collection of structural data, systematic sampling of rocks. Realization of geological maps.
- Microstructural analysis: study of all type of rocks at the mesoscale, with great experiences with metapelites, paragneisses and orthogneisses; interference phases analysis and kinematic indicators; analysis of the calcite twins (counting, estimation of temperatures).
- SEM analysis: wide experience with rocks of NMASH and KNMASH systems, study of the accessories phases (titanite, monazite, zircon) and study of the lepidoblastic layer of metapelites.
- Cathodoluminescence analysis (CL): wide experience with this techniques to distinguish mineral phases (zircons, apatites, titanites) on the base of zonation (single crystals settled in mounts).
- EPMA analysis: mapping of metapelites (focused on the chlorite and phengite end-members); identification of the compositions of metamorphic Na-rich amphiboles, Na-rich white mica (paragonite, preswerkite), nepheline and jadeite; acquisition of the chemical composition of metamorphic epidotes (e.g. allanite).
- Preparation of samples: cutting and crushing rocks, use of maguts, disc grinder, sieves machine, Wilfley table, Frantz magnetic separator, heavy liquids, setting of mounts, preparation of the epoxy resin.
- LA-ICP-MS: isotopic datation of allanites and zircons on separates (mounts) and in situ (thin sections).

TEACHING ACTIVITY

- Assistance to field activity related to the bachelor course of structural geology (Northern Apennines, Italy, academic year 2015-2016), course's lecturer: L. Pandolfi (Pisa University)
- Assistance to the field activity related to the advanced course of structural geology (Komani Lake, Albania, 29/8-4/9/2016), course's lecturer: K. Ustaszewski (Jena University, Germany)
- Assistance to the field activity related to the bachelor course of structural geology (Northern Apennines, Italy, academic year 2016-2017) course's lecturer: L. Pandolfi (Pisa University)
- Assistance to the field activity related to the advanced course of structural geology (Kungälv, Sweden, 11-19/3/2017), course's lecturer: T. Degen (Halle University, Germany)
- Assistance to the field activity related to the bachelor course of structural geology (Northern Apennines, Italy, academic year 2017-2018) course's lecturer: L. Pandolfi (Pisa University)
- Lecture "Rocce sedimentarie e principi di Stratigrafia" for the second level master "Gestione e controllo dell'ambiente: economia circolare e management efficiente delle risorse" year 2019/2020, Scuola Universitaria superiore Sant'Anna, Pisa

PUBLICATIONS

PUBLICATIONS ON INTERNATIONAL JOURNALS

- Di Rosa, M., Farina, F., Lanari, P., Marroni, M. Pre-Alpine thermal history recorded in the continental crust from Alpine Corsica (France) : evidence from zircon and allanite LA-ICP-MS dating. *Swiss Journal of Geosciences* 113 : 19 (<https://doi.org/10.1186/s00015-020-00374-2>).
- Di Rosa, M., Frassi, C., Malasoma, M., Marroni, M., Meneghini, F., Pandolfi, L. (2020). Syn-exhumation coupling of the oceanic and continental units along the western edge of the Alpine Corsica : a review. *Ophioliti* 45(2), 71-102.
- Malasoma, A., Morelli, G., Di Rosa, M., Marroni, M., Pandeli, E., Principi, G., Pandolfi, L. (2020). The stratigraphic and structural setting of metamorphic continental units from Alpine Corsica : clues from the area between Asco and Golo valleys (Central Corsica, France). *Journal of Maps* 16(2), 313-323 (<https://doi.org/10.1080/17445647.2020.1746421>)
- Di Rosa, M., Meneghini, F., Marroni, M., Frassi, C., Pandolfi, L. (2020). The coupling of high-pressure oceanic and continental units in Alpine Corsica: evidence for syn- exhumation tectonic erosion at the roof of the plate interface. *Lithos* (<https://doi.org/10.1016/j.lithos.2019.105328>)
- Di Rosa, M., Frassi, C., Marroni, M., Meneghini, F., Pandolfi, L. (2019). Did the "Autochthon" European foreland of Corsica island (France) experience Alpine subduction? *Terra Nova*, (<https://doi.org/10.1111/ter.12433>)
- Di Rosa, M., Frassi, C., Meneghini, F., Marroni, M., Pandolfi, L., De Giorgi, A. (2019). Tectono-metamorphic evolution in the European continental margin involved in the Alpine subduction: new insights from the Alpine Corsica, France. *Comptes Rendus of Geoscience*, vol. 351, n. 5, pp. 384-394 (<https://doi.org/10.1016/j.crte.2018.12.002>).
- Di Rosa, M., Meneghini, F., Marroni, M., Hobbs, N., Vidal, O. (2019). The exhumation of continental crust in collisional belts: insights from the deep structure of Alpine Corsica in the Cima Pedani area. *The Journal of Geology*, v. 127, n. 3, pp-263- 288 (<https://www.journals.uchicago.edu/doi/abs/10.1086/702552>)
- Di Rosa, M., Farina, F., Marroni, M., Pandolfi, L., Göncüoğlu, M.C., Ellero, A., Ottria, G. (2019). U-Pb zircon geochronology of intrusive rocks from an exotic block in the Late Cretaceous - Paleocene Tarakli flysch (Northern Turkey): constraints on the tectonics of the intrapontide suture zone. *Journal of Asian Earth Sciences*, vol.171, pp. 277-288 (<https://doi.org/10.1016/j.jseaes.2018.11.017>).
- Di Rosa, M., De Giorgi, A., Marroni, M., Pandolfi, L. (2017). Geology of the area between Golo and Tavignano Valleys (Central Corsica): a snapshot of the continental metamorphic units of the Alpine Corsica. *Journal of Maps*, vol. 13, n. 2, pp 644-653.
- Di Rosa, M., De Giorgi, A., Marroni, M., Vidal, O. (2017). **Syn-convergence** exhumation of continental crust: evidence from structural and metamorphic analysis of the Monte Cecu area, Alpine Corsica (Northern Corsica, France). *Geological Journal*, published on-line in Wiley Online Library (doi: 10.1002/gj.2857).
- Chopin, C., Guillot, F., Di Rosa, M. (2015). Jadeite in the Gran Paradiso massif: the high-pressure metamorphic evolution of upper continental crust. *Rend. Online Soc. Geol. It.*, vol. 37 20-23 (doi: 103301/ROL.2015.166)

Submitted:

- Dupuy M., Garel E., Huneau F. Di Rosa M., Santoni S. Geochemical, geothermometric and isotopic (^2H , ^{18}O , ^{34}S) combination to identify deep interactions occurring in a complex geo-structure: case study of thermo-mineral waters of the eastern Corsica (France). Applied geochemistry.

In prep.:

- Pandolfi L., Barbero E., Marroni M., Saccani E., Dolati A., Delavari M., Di Rosa M., Frassi C., Langone A., Farina F. The Bajgan complex revealed as Early Cretaceous subduction complex: structural, geochemical and geochronological evidence. Gondwana Research (in prep.)
- Di Rosa, M., Farina, F., Frassi, C., Marroni, M. Post-Variscan/syn-Alpine history of the Castiglione-Popolasca Unit (Corsica, France): timing, stratigraphic and metamorphic constraints. Geological Magazine (in prep.)

ABSTRACTS PUBLISHED

A1 - Guillot, F., Chopin, C., Desanois, L., Di Rosa, M., Lanari, P., Durand, C., Recourt, P., Bout-Roumanzeilles, V. (2015). First occurrence of nepheline in the Gran Paradiso Permian pluton, Internal Western Alps. 8th Hutton Symposium on Granites and Related Rocks, abstract n. PT.075, p 99. Florianopolis, 20-25 September 2015.

A2 - Chopin, C., Guillot F, Di Rosa, M. (2015). Jadeite in the Gran Paradiso Massif: the high-pressure metamorphic evolution of upper continental crust. Rendiconti Online della Società Geologica Italiana, Geologia delle Alpi. Venezia, 20st November 2015.

A3 - Di Rosa, M., Marroni, M. (2016). Exhumation path of continental crust in a collisional setting: the case history of the Corte Units (Alpine Corsica). 16th TSK Bonn, Symposium Tectonics - Structural Geology - Crystalline Geology, abstract volume, p.13. Bonn, 2-6 March 2016.

A4 - Di Rosa, M., Marroni, M. (2016). The blueschists-facies metapelites of the Corte Slices (Corsica, France): microtectonic and geothermobarometric constraints for the Alpine metamorphism. 88° Congresso della Società Geologica Italiana, 7-9 September 2016.

A5 - Di Rosa, M., Marroni, M. (2016). Mapping and structural interpretation of the Corte Slices (Alpine Corsica, France). 88° Congresso della Società Geologica Italiana, 7-9 September 2016.

A6 - Di Rosa, M., Marroni, M. (2016). Tertiary tectonics in Alpine Corsica (France): three-steps evolution for the exhumation of Corte Slices. GeoTiroi 2016, Annual Meeting DGGV. Innsbruck, 25-28 September 2016.

A7 - Di Rosa, M., Marroni, M. (2016). The evolution of the European paleomargin during the closure of the Alpine Tethys: evidence from the Alpine Corsica. GeoTiroi 2016, Annual Meeting DGGV. Innsbruck, 25-28 September 2016.

A8 - Di Rosa, M., Marroni, M., Pandolfi, L. (2017). Geological and structural map of the area between Golo and Tavignano Valleys (Central Corsica). FORM – From Orogens to Rifted Margins and Back: the formation and deformation of continental margins through Wilson Cycles, Saint Florent, 7-9 June 2017.

A9 - Di Rosa M., Marroni, M. (2017). The tectono-metamorphic history of the Corte Slices (Alpine Corsica): an example of continental subduction and polyphased exhumation. FORM – From Orogens to Rifted Margins and Back: the formation and deformation of continental margins through Wilson Cycles, Saint Florent, 7-9 June 2017.

A10 – Di Rosa, M., De Giorgi, A., Marroni M., Pandolfi L. (2017). 1:10000 structural map of the Corte Slices in the area between Golo and Tavignano Valleys (Central Corsica). Geosciences: a tool in a changing world, Pisa 3-6 Settembre 2017.

A11 – Di Rosa, M., Meneghini, F., Marroni M., Hobbs, N., Vidal, O. (2017). The Cima Pedani tectonic window (Alpine Corsica): insights in tectono-metamorphic evolution during the exhumation of continental crust. Geosciences: a tool in a changing world, Pisa 3-6 Settembre 2017.

A12 – Di Rosa, M., Marroni, M., Vidal, O. (2017). Three-steps exhumation for the Corte Slices (Alpine Corsica). Geosciences: a tool in a changing world, Pisa 3-6 Settembre 2017.

A13 – Di Rosa, M., Manatschal, G., Marroni, M., Pandolfi, L. (2018). The Oligocene switch from compression to extension in the Western Mediterranean: insights from drilling offshore Corsica. Workshop IODP-Italia, Lo stato delle proposte di perforazione nell'area mediterranea, Roma, 15-16 Gennaio 2018.

A14 - Di Rosa, M., Frassi C., Meneghini, F., Marroni M., Pandolfi, L. (2018). How the geo-boundary conditions control the continental crust's exhumation: three examples from the Lower Units (Alpine Corsica, France). TSK17th congress, Jena, 19-25 March 2018.

A15 – Sanità, E., Frassi, C., Di Rosa, M., Pandolfi, L. (2018). An example of a three-type interference pattern in the Tuscan Nappe, South-western sector of Apuan Alps (Northern Apennines, Italy). TSK17th congress, Jena, 19-25 March 2018.

A16 - Di Rosa, M., Meneghini, F., Marroni M., Pandolfi, L. (2018). The tectonic half-window of Cima Pedani (Alpine Corsica, France): an example of exhumed continental crust in collisional belt. TSK17th congress, Jena, 19-25 March 2018.

TALKS AND POSTERS (the speaker is underlined)

P1 - Guillot, F., Chopin, C., Desanois, L., Di Rosa, M., Lanari, P., Durand, C., Recourt, P., Bout-Roumazelles, V. (2015). First occurrence of nepheline in the Gran Paradiso Permian pluton, Internal Western Alps. The 8th Hutton Symposium on Granites and Related Rocks. Florianópolis, Brazil, September 20-25th 2015.

T1 - Chopin, C., Guillot F, Di Rosa, M. (2015). Jadeite in the Gran Paradiso Massif: the high-pressure metamorphic evolution of upper continental crust. Rendiconti Online della Società Geologica Italiana, Geologia delle Alpi. Venezia, 20st November 2015.

P2 - Di Rosa, M., Marroni, M. (2016). Exhumation path of continental crust in a collisional setting: the case history of the Corte Units (Alpine Corsica). 16th TSK Bonn, Symposium Tectonics - Structural Geology - Crystalline Geology, abstract volume, p.13. Bonn, 2-6 March 2016.

P3 - Di Rosa, M. "Why the Corsican mountains are so important?" PhD day 7, Firenze, 25 Maggio 2016.

T2 – Di Rosa, M. "The multidisciplinary approach of a structural geologist" PhD day 7, Firenze, 25 Maggio 2016.

P4 - Di Rosa, M., Marroni, M. (2016). The blueschists-facies metapelites of the Corte Slices (Corsica, France): microtectonic and geothermobarometric constraints for the Alpine metamorphism. 88° Congresso della Società Geologica Italiana, 7-9 September 2016.

P5 - Di Rosa, M., Marroni, M. (2016). Mapping and structural interpretation of the Corte Slices (Alpine Corsica, France). 88° Congresso della Società Geologica Italiana, 7-9 September 2016.

T3 - Di Rosa, M., Marroni, M. (2016). Tertiary tectonics in Alpine Corsica (France): three-steps evolution for

- the exhumation of Corte Slices. GeoTirol 2016, Annual Meeting DGGV. Innsbruck, 25-28 September 2016.
- P6 - Di Rosa, M., Marroni, M. (2016). The evolution of the European paleomargin during the closure of the Alpine Tethys: evidence from the Alpine Corsica. GeoTirol 2016, Annual Meeting DGGV. Innsbruck, 25-28 September 2016.
- P7 - Di Rosa, M., Marroni, M., Pandolfi, L. (2017). Geological and structural map of the area between Golo and Tavignano Valleys (Central Corsica). FORM – From Orogens to Rifted Margins and Back: the formation and deformation of continental margins through Wilson Cycles, Saint Florent, 7-9 June 2017.
- T4 - Di Rosa, M., Marroni, M. (2017). The tectono-metamorphic history of the Corte Slices (Alpine Corsica): an example of continental subduction and polyphased exhumation. FORM – From Orogens to Rifted Margins and Back: the formation and deformation of continental margins through Wilson Cycles, Saint Florent, 7-9 June 2017.
- P8 - Di Rosa, M., De Giorgi, A., Marroni, M., Pandolfi, L. (2017). 1:10000 structural map of the Corte Slices in the area between Golo and Tavignano Valleys (Central Corsica). Geosciences: a tool in a changing world, Pisa 3-6 Settembre 2017.
- P9 - Di Rosa, M., Meneghini, F., Marroni, M., Hobbs, N., Vidal, O. (2017). The Cima Pedani tectonic window (Alpine Corsica): insights in tectono-metamorphic evolution during the exhumation of continental crust. Geosciences: a tool in a changing world, Pisa 3-6 Settembre 2017.
- T5 - Di Rosa, M., Marroni, M., Vidal, O. (2017). Three-steps exhumation for the Corte Slices (Alpine Corsica). Geosciences: a tool in a changing world, Pisa 3-6 Settembre 2017.
- T6 - Di Rosa, M. "Tectono-metamorphic evolution of the continental units at the boundary between the Alpine and Variscan Corsica: constraints for the exhumation models in the continental subduction setting" Earth Sciences PhD days, Pisa, 7-8 Settembre 2017.
- T7 - Di Rosa, M., Manatschal, G., Marroni, M., Pandolfi, L. (2018). The Oligocene switch from compression to extension in the Western Mediterranean: insights from drilling offshore Corsica. Workshop IODP-Italia, Lo stato delle proposte di perforazione nell'area mediterranea, Roma, 15-16 Gennaio 2018.
- P10 - Di Rosa, M., Frassi, C., Meneghini, F., Marroni, M., Pandolfi, L. (2018). How the geo-boundary conditions control the continental crust's exhumation: three examples from the Lower Units (Alpine Corsica, France). TSK17th congress, Jena, 19-25 March 2018
- P11 - Sanità, E., Frassi, C., Di Rosa, M., Pandolfi, L. (2018). An example of a three-type interference pattern in the Tuscan Nappe, South-western sector of Apuan Alps (Northern Apennines, Italy). TSK17th congress, Jena, 19-25 March 2018
- T8 - Di Rosa, M., Meneghini, F., Marroni, M., Pandolfi, L. (2018). The tectonic half-window of Cima Pedani (Alpine Corsica, France): an example of exhumed continental crust in collisional belt. TSK17th congress, Jena, 19-25 March 2018

COLLABORATIONS

Since April, 2015 - Study of the jadeite-bearing meta-granites of the Gran Paradiso massif (Haute Marianne, France), in collaboration with Chopin, C. (ENS Paris, France) and Guillot, F. (Université de Lille, France).

Since April, 2016 - Relationships between tectonics and hydrogeology in the Ghisonaccia area (Corsica, France), in collaboration with Huneau, F. (Università di Corsica Pasquale Paoli, Corte, France).

Since August, 2016 - Geological mapping of the Komani area (Albania), in collaboration with prof. Kamil Ustaszewski (Universitat Jena, Germany).

Since March, 2017 – Geological mapping of the Tyorn area (Kungälv, Göteborg, Sweden), in collaboration with prof. Thomas Degen (Universitat Halle-Wittenberg, Germany).

Since October, 2017 – U-Pb zircon dating, in collaboration with Dott. Federico Farina (Université of Genève, Switzerland).

Since December, 2017 – U-Pb allanite dating, in collaboration with Dott. Pierre Lanari (Univeristat Bern, Switzerland)

Since January, 2018 – Dynamics of the switch from compression to extension in the Western Mediterranean, in collaboration with prf. Gianreto Manatschal (Université of Strasbourg, France)

Since February, 2018 – $^{40}\text{Ar}/^{39}\text{Ar}$ muscovite dating, in collaboration with dott. Richard Spikings (Université of Genève, Switzerland).

Since January, 2018 - U-Pb zircon dating, in collaboration with Prof. Cemal Göncüoğlu (University of Ankara, Turkey).

Since July, 2018 - U-Pb zircon dating, in collaboration with Dott. Asghar Dolati (University of Teheran, Iran).

SEMINARS

Seminars and short course:

2016 - University of Helsinki - Introduction to lithospheric geodynamic modeling (assistant professor D. Whipp)

2016 - Università degli studi Roma Tre - Introduction to Plate Tectonics Dynamics and numerical modelling (professor F. Capitano)

2016 - Università degli studi Roma Tre - Corso di introduzione a Matlab (researcher V. Magni)

2016 - University of Bonn - Thermodynamic modelling using THERIAK-DOMINO (professor T. Nagel)

2017 – Università di Firenze - Corso di formazione generale e specifica per lavoratori in materia di sicurezza e salute sul lavoro, con superamento della relativa prova in itinere

2017 – Università di Firenze - La modellizzazione tettonica sperimentale e le sue applicazioni geologiche (dott. M. Bonini)

2017 – Università di Pisa - Le carte geotematiche in ambiente GIS (dott. D. Nannini)

2017 – Università di Pisa - Elementi di calcolo numerico per la geofisica e le geoscienze (dott. A. Tognarelli)

2018 - Università di Pisa - Petrologia delle Rocce metamorfiche: modellizzazione Termodinamica utilizzando THERMOCALC (dott. G. Rebay)

2018 - Università di Pisa - Short course in isotopes paleoclimatology (prof. G. Zanchetta)

Invited lecture at geoscience departments:

"Tectono-metamorphic evolution of the continental units at the boundary between the Alpine and Variscan Corsica: constraints for the exhumation models in the continental subduction setting"
Universitat Bern, 15 December 2017.

OUTREACH ACTIVITIES and THESIS SUPERVISIONS

- **Outreach activity: 4° Settimana del Pianeta Terra:** 17 – 28 October 2016. Photo exhibition "Rocce sotto Stress".
- **Outreach activity, Bright 2017: La notte dei Ricercatori a Pisa:** 29 September 2017.
- **Outreach activity: Bright 2018, La notte dei Ricercatori a Pisa:** 28 September 2018.
- **Thesis supervision:** from July 2017 – Ms. thesis in structural geology: Biostratigraphic and tectonic study of the Marguareis area (Maritim Alps, Italy). Student: Edoardo Sanità.
- **Thesis examiner:** November-December 2018 – Ms. thesis in structural geology: Determinazione delle condizioni metamorfiche dell'Unità di Massa affiorante sul versante occidentale delle Alpi Apuane mediante forward modeling. Student: Silvia Lomonte.

GRANTS

Scholarships received:

- (2018) Award for the best Student Poster, TSK17th congress, Jena (100 euro).
- (2017) Scholarship "Il pianeta dinamico: sviluppi e prospettive a 100 anni da Wegener" from SIMP, SGI, SoGei and AIV associations (2500 euro).
- (2016) Scholarship for the 88° Congresso della Società Geologica Italiana (210 euro), Società Geologica Italiana.
- (2015) Post-degree scholarship (2172,80 euro), Ecole Normale Supérieure, Paris.
- (2014) Erasmus Placement scholarship (1500 euro), Pisa University, Pisa.

Awards:

- Awards for the Scholarship "Il pianeta dinamico: sviluppi e prospettive a 100 anni da Wegener"
- Best geological map: Maria Di Rosa & Alberto De Giorgi - Geological map of the area between Castirla, Francardo and Corte (Central Corsica). 3° classified. Napoli, 7-9 September 2016
- Best poster: Di Rosa, M., Marroni, M. The blueschists-facies metapelites of the Corte Slices (Corsica, France): microtectonic and geothermobarometric constraints for the Alpine metamorphism. Napoli, 7-9 September 2016
- Best poster: Di Rosa, M., Frassi, C., Meneghini, F., Marroni, M. & Pandolfi, L. How the geo-boundary conditions control the continental crust's exhumation: three examples from the Lower Units (Alpine Corsica, France). Jena, 19-25 March 2018

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Pisa, 16 December 2020

