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Alessandro Regorda

Nationality: Italian **Date of birth:** 21/10/1982 **Gender:** Male **Phone number:** (+39) 3285634106

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WORK EXPERIENCE

Science and mathematics teacher lower secondary school

State school 'Alda Merini' [03/10/2022 – Current]

City: Milan

Country: Italy

Independent contractor

Università degli Studi di Milano [04/08/2022 – 23/08/2022]

City: Milan

Worked as an independent contractor at the Department of Earth Science 'Ardito Desio' for the construction of a database of rheological parameters of different rocks and for the calibration of an algorithm for the implementation of a non-linear rheology in the numerical code *SubMar* (PI Prof. Roberto Sabadini and Prof. Anna Maria Marotta).

Post-Doc in Earth Science

Università degli Studi di Milano [01/07/2018 – 30/06/2022]

City: Milan

Country: Italy

'Numerical modelling of subduction systems and analysis of the corresponding gravimetric signatures' (supervisor Prof. Anna Maria Marotta), focusing on:

- Analysis of metamorphic facies and deformation fabrics within subduction complexes;
- Comparison between prediction of the models in terms of signatures on the gravity field and P-T(-t) conditions with natural data from recent data of gravity anomalies and P-T estimates of Variscan metamorphism;
- Teaching assistance of the course 'Numerical modelling of geodynamic processes'.

During the Post-Doc I developed a brand new 2D FEM code coined *FALCON* (Finite element ALgorithm for COmputational aNalysis) characterised by a non-linear visco-plastic behaviour. The code has been thoroughly benchmarked with community benchmarks and analytical solutions:

- benchmarks performed at https://github.com/aleregorda/Benchmarks;
- code description at https://github.com/aleregorda/Code_description/blob/main/main.pdf.

Science and mathematics teacher lower secondary school

State school 'Manzoni' [27/09/2017 – 30/06/2018]

City: Parabiago

Country: Italy

Independent contractor

Università degli Studi di Milano [27/09/2013 – 27/10/2013]

City: Milan

Country: Italy

Worked as an independent contractor at the Department of Earth Science 'Ardito Desio' for the construction of a database of natural P-T data of Variscan metamorphism in the Alps and comparison with data predicted by a thermo-mechanical model (PI Prof. Roberto Sabadini and Prof. Anna Maria Marotta).

EDUCATION AND TRAINING

Ph.D.

Università degli Studi di Milano (Italy) - Université de Nice-Sophia Antipolis (France) [01/2014 – 12/2016]

Field(s) of study: Earth Sciences

Level in EQF: EQF level 8

Thesis: The thermo-mechanical evolution of the subduction-collision systems

Ph.D. in co-tutorship between Università degli Studi di Milano and Université de Nice-Sophia Antipolis (tutors Prof. Anna Maria Marotta, Prof. Maria Iole Spalla and Prof. Jean-Marc Lardeaux), focused on:

- the implementation of Fortran code *SubMar* verifying the impact of various mechanisms on the thermo-dynamics of the subduction zones;
- the analysis of the distribution in time and space of P-T and metamorphic facies predicted by the models;
- the comparison with natural data of the Variscan metamorphism preserved in the Alps and in the French Central Massif.

M.Sc. in Earth Sciences

Università degli Studi di Milano [10/2010 – 04/2013]

Final grade: 110/110 cum laude – **Level in EQF:** EQF level 7

Thesis: Numerical model of oceanic and continental subduction and comparison with natural data of the Variscan orogenesis

- Thesis: The original Fortran code *SubMar* has been implemented with the introduction of new mechanisms taking place in the subduction systems during an ocean-continent active convergence (supervisors Prof. Anna Maria Marotta and Prof. Maria Iole Spalla).
- Internship: Georeferencing and digitalising of geological maps using *ArcGis*.
- Courses: English, Seismology, Fluid dynamics, Physics of the solid Earth, Geodynamics, Numerical modelling of geodynamics processes, Structural analysis, Microstructures of crystalline rocks.

B.Sc. in Geology

Università degli Studi di Milano [09/2007 – 10/2010]

Final grade: 108/110 – **Level in EQF:** EQF level 6

Thesis: Analysis and 3D modelling of a garnet pyroxene amphibolite sample of the Valpelline series (Western Alps, Italy)

- Thesis: A garnet pyroxene amphibolite sample has been studied by means of micro and mesostructural analysis, with focus on the relationship between mineral growth and deformation. A 3D model of the sample has been built using software *Move2010.1* (supervisor Prof. Michele Zucali).
- Internship: Geoelectrical exploration (SEV and ERGI) of the hydrostratigraphy of an area in the Po plain (Northern Italy).
- Courses: Mathematics, Physics, Chemistry, Geochemistry, Geophysics exploration, Physics of the Earth, Petrology, Mineralogy. Field school (Dent Blanche nappe, Western Alps, Italy) focus on geological and structural maps.

TEACHING AND TUTORING ACTIVITIES

Co-tutor of Arcangela Bollino, Ph.D. student, Università degli Studi di Milano - 'Quasi static gravity signatures in slow tectonic zones: assimilation of novel aerospace data and geophysical modeling'

[01/10/2019 – 30/09/2022]

Co-supervisor of Federica Restelli, M.Sc. student, Università degli Studi di Milano - 'Effetti statici e dinamici della subduzione sul campo gravitazionale terrestre'
[2019]

Teaching assistance of the M.Sc. course 'Numerical modelling of geodynamic processes' (Prof. Anna Maria Marotta) - Università degli Studi di Milano.
[10/2019 – 12/2019]

PARTICIPATION IN FUNDED PROJECTS

Unit member in 'Gravitational Seismology', ESA Endorsement (Principal Investigator Prof. Roberto Sabadini)
[2018 – 2019]

Unit member in MIUR-PRIN 2011 project 'Birth and death of oceanic basins: geodynamic processes from rifting to continental collision in Mediterranean and Circum-Mediterranean orogens' (Principal Investigator Prof. Maria Iole Spalla)
[2013 – 2016]

Unit member in 'SISMA' (Seismic Information System for Monitoring and Alert), funded by the Italian Space Agency (Principal Investigator Prof. Roberto Sabadini)
[2007 – 2012]

DEPARTMENTAL DUTIES

Representative for the Department of Earth Science and Board member in the Council of Research Fellows of the Università degli Studi di Milano
[2020 – 06/2022]

Research fellows representative at the Department of Earth Science 'Ardito Desio', Università degli Studi di Milano
[2018 – 06/2022]

PhD students representative at the Department of Earth Science 'Ardito Desio', Università degli Studi di Milano
[2014 – 2016]

LANGUAGE SKILLS

Mother tongue(s): **Italian**

Other language(s):

English

LISTENING C1 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION C1 **SPOKEN INTERACTION** B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

Operating System
Proficient user of Linux (Debian, Ubuntu) and Windows / Independent user of Linux (Fedora)

Programming languages
Proficient user of Fortran / Basic user of Matlab/GNU Octave

Software

Independent user of Microsoft Office package, LaTeX Editor, ParaView, Gnuplot and GMT / Basic user of ArcGis/ QGis

PUBLICATIONS

Anna Maria Marotta, Riccardo Barzaghi, Arcangela Bollino, Alessandro Regorda, Roberto Sabadini (2023). The gravitational signature of the dynamics of oceanization in the Gulf of Aden. Tectonophysics, 869, 230110, doi: 10.1016/j.tecto.2023.230110

[2023]

Manuel Roda, Maria Iole Spalla, Marco Filippi, Jean-Marc Lardeaux, Gisella Rebay, Alessandro Regorda, Davide Zanoni, Michele Zucali, Guido Gosso (2023). Metamorphic Remnants of the Variscan Orogeny across the Alps and Their Tectonic Significance. Geosciences 13, 300, doi: 10.3390/geosciences13100300

[2023]

Davide Zanoni, Marco Filippi, Manuel Roda, Alessandro Regorda, Maria Iole Spalla (2023). Alpine convergence record in the Carboniferous Badstub Formation, Upper Austroalpine basement nappes, Austria. International Geology Review, doi:10.1080/00206814.2023.2206443

[2023]

Alessandro Regorda, Cedric Thieulot, Iris van Zelst, Zoltan Erdos, Julia Maia, Susanne Buiter (2023). Rifting Venus: Insights from Numerical Modeling. JGR Planets, 128(3), doi: 10.1029/2022JE007588

[2023]

Marco Filippi, Davide Zanoni, Gisella Rebay, Manuel Roda, Alessandro Regorda, Jean-Marc Lardeaux Maria Iole Spalla (2022). Quantification of Alpine Metamorphism in the Edolo Diabase, Central Southern Alps. Geosciences, 12(8), 312, doi:10.3390/geosciences12080312

[2022]

Arcangela Bollino, Alessandro Regorda, Roberto Sabadini, Anna Maria Marotta (2022). From rifting to oceanization in the Gulf of Aden: Insights from 2D numerical models. Tectonophysics, 838, 229483, doi:10.1016/j.tecto.2022.229483

[2022]

Alessandro Regorda, Maria Iole Spalla, Manuel Roda, Jean-Marc Lardeaux, Anna Maria Marotta (2021). Metamorphic Facies and Deformation Fabrics Diagnostic of Subduction: Insights From 2D Numerical Models. Geochemistry, Geophysics, Geosystems, 2021, 22(10), doi: 10.1029/2021GC009899

[2021]

Anna Maria Marotta, Federica Restelli, Arcangela Bollino, Alessandro Regorda, Roberto Sabadini (2020). The static and time-dependent signature of ocean-continent and ocean-ocean subduction: the case studies of Sumatra and Mariana complexes. Geophysical Journal International, 221(2), 788–825, doi:10.1093/gji/ggaa029

[2020]

Manuel Roda, Michele Zucali, Alessandro Regorda, Iole Spalla (2020). Formation and evolution of a subduction-related mélange: The example of the Rocca Canavese Thrust Sheets (Western Alps). GSA Bulletin, doi:10.1130/B35213.1

[2020]

Alessandro Regorda, Jean-Marc Lardeaux, Manuel Roda, Anna Maria Marotta, Maria Iole Spalla (2020). How many subductions in the Variscan orogeny? Insights from numerical models. Geoscience Frontiers, doi:10.1016/j.gsf.2019.10.005

[2020]

Manuel Roda, Alessandro Regorda, Maria Iole Spalla, Anna Maria Marotta (2019). What drives Alpine Tethys opening: clues from the review of geological data and model predictions. Geological Journal, doi:10.1002/gj.3316

[2019]

Alessandro Regorda, Manuel Roda, Anna Maria Marotta, Maria Iole Spalla (2017). 2-D numerical study of hydrated wedge dynamics from subduction to post-collisional phases. Geophysical Journal International, 211, 974-1000, doi:10.1093/gji/ggx336

[2017]

Alessandro Regorda, Anna Maria Marotta, Maria Iole Spalla (2013). Numerical model of an ocean/continent subduction and comparison with Variscan orogeny natural data. Rendiconti Online Societa Geologica Italiana, 29,142-145

[2013]

CONFERENCES AND SEMINARS

Geomod

[Paris, 26/09/2023 – 28/09/2023]

Poster: "2D numerical simulations of micro-continents collision in ocean-continent subduction systems" - Regorda A. & Roda M.

NASA Venus Seminar

[Online, 05/04/2023]

Invited oral presentation "The Rifting process on Venus: Insights from Numerical Modeling" - Regorda A., Thieulot C., van Zelst I., Erdos Z., Maia J. & Buiter S.

GNGTS Annual congress

[Trieste, 27/06/2022 – 29/06/2022]

Poster, "Parametric study of the effects of micro-continents collision in a oceanic subduction systems by 2D numerical simulations" - Regorda A., Roda M. & Thieulot C.

Réunion des Sciences de la Terre Annual congress

[Lyon, 01/11/2021 – 05/11/2021]

Oral presentation, "How many subductions in the Variscan orogeny? Insights from numerical models" - Regorda A., Lardeaux J.-M., Roda M., Marotta A.M. & Spalla M.I.

SGI Annual congress

[Online, 14/09/2021 – 16/09/2021]

Oral presentation, "Metamorphic P-T conditions characteristic of subduction/collision systems: insights from 2D numerical models" - Regorda A., Spalla M.I., Roda M., Lardeaux J.-M. & Marotta A.M.

GNGTS Annual congress

[Online, 22/06/2021 – 24/06/2021]

Poster, "Metamorphic and deformation patterns produced during an oceanic subduction: insights from 2D numerical models" - Regorda A., Spalla M.I., Roda M., Lardeaux J.-M. & Marotta A.M.

GNGTS Annual congress

[Rome, 12/11/2019 – 14/11/2019]

Oral presentation, "How many subductions in the Variscan orogeny? Insights from numerical models" - Regorda A., Lardeaux J.-M., Roda M., Marotta A.M. & Spalla M.I.

SGI-SIMP-SOGEI Annual congress

[Parma, 16/09/2019 – 19/09/2019]

Poster, "How many subductions in the Variscan orogeny? Insights from numerical models" - Regorda A., Lardeaux J.-M., Roda M., Marotta A.M. & Spalla M.I.

AGU Fall Meeting

[San Francisco, 14/12/2015 – 18/12/2015]

Oral presentation, "New insights into the dynamics of wedge areas from a 2D numerical study of the effects of shear heating and mantle hydration on an ocean-continent subduction system" - Roda M., Regorda A., Marotta A.M. & Spalla M.I.

GIGS Annual meeting

[Catania, 30/09/2015]

Oral presentation, "2D numerical model of an ocean/continent subduction system: examples from the Variscan crust" - Regorda A., Marotta A.M., Roda M., Lardeaux J.M. & Spalla M.I.

Variscan 2015

[Rennes, 09/06/2015 – 11/06/2015]

Oral presentation, "Effects of mantle hydration and viscous heating on the dynamics of mantle wedge in a subduction system: differences and similarities of 2D model predictions with examples from the Variscan crust" - Regorda A., Marotta A.M., Roda M., Lardeaux J.M. & Spalla M.I.

SGI-SIMP Annual congress

[Milan, 10/09/2014 – 12/09/2014]

Oral presentation, "2D numerical study of the effects of mantle hydration and viscous heating on the dynamics of the wedge area within an ocean/continent subduction complex: the case study of Variscan crust in the Alpine domain" - Regorda A., Marotta A.M., Spalla M.I., Roda M. & Rebay G.

EGU General assembly

[Wien, 28/04/2014 – 02/05/2014]

Poster, "Numerical modelling of an ocean/continent subduction and comparison with Variscan orogeny real data" - Marotta A.M., Regorda A., Spalla M.I., Roda M. & Rebay G.

GIGS Annual meeting

[Milan, 28/10/2013 – 29/10/2013]

Oral presentation "Numerical modelling of an ocean/continent subduction and comparison with Variscan orogeny real data" - Regorda A., Marotta A.M. & Spalla M.I.

REVIEWING ACTIVITIES

Reviewer of Earth and Planetary Science Letters

[11/2023]

Reviewer of Frontiers in Earth Science

[07/2022]

Reviewer of Scientific Reports - Nature

[01/2022]

Reviewer of Geophysical Journal International

[01/2022]

HOBBIES AND INTERESTS

Since 1998 basketball player for amateur associations. Enjoy mountaineering, hiking, climbing, skiing, camping.