CURRICULUM VITAE (19/08/2025)
MANUELE FACCENDA
Dipartimento di Geoscienze (DoG)
Università di Padova
Padova, 35131, Italy
E-mail: manuele.faccenda@unipd.it
Tel: +39 0498279159
Personal website, NEWTON project website, Google Scholar
Research unique identifier(s):
ORCID: https://orcid.org/0000-0001-7717-5931
Scopus ID: 24334746900
WoS ID: GBC-0921-2022
Researcher ID: N-6806-2017

EDUCATION

2006 – 2010: PhD Geophysics, ETH Zürich, Switzerland, awarded on 29/01/2010 (Supervisor: Prof. Taras V. Gerya)
2000 – 2005: M.Sci. *cum laude* Earth Sciences, Università di Perugia, Italy, 2005

ACADEMIC APPOINTMENTS & FELLOWSHIPS

2019: Italian National Habilitation to the university professorship, Full Professor level (Academic field: (04/A4) Geophysics) awarded by the Italian Ministry of Education, University and Research.
2018: Italian National Habilitation to the university professorship, Associate Professor level (Academic field: (04/A1) Geochemistry, Mineralogy, Petrology, Vulcanology, Georesources and Applications) awarded by the Italian Ministry of Education, University and Research.
2018 – present - Associate Professor, Università di Padova, Italy
2012 – 2018 - Assistant Professor, Università di Padova, Italy
2012 – 2014 - Adjunct Fellow, Monash University, Australia
2009 – 2012 - Postdoctoral Fellow, Monash University, Australia

VISITING APPOINTMENTS

May – June 2025 - Institute of Geology and Geophysics, Chinese Academy of Sciences (Prof. Jianfeng Yang, Prof. Liang Zhao)
March – April 2017 - University College London (UCL) (Prof. Ana Ferreira, Prof. John Brodholt)
March – April 2014 - Monash University, Australia (Prof. Fabio Capitanio)

EXPERTISE AND RESEARCH TOPICS

Expertise: forward and inverse modelling of geological and geophysical processes, computational and HPC methods, programming (C, Fortran, MATLAB, Julia, to a less extent Python), scientific software development (e.g., ECOMAN).

Research topics: the research activities address multidisciplinary and across-scale topics through combined thermo-mechanical, petrological and seismological modeling techniques. These include:

Geodynamics: regional and global scale plate tectonics and mantle convection processes, metamorphic and magmatic processes in different tectonic settings, lithosphere faulting, fluid flow in porous media, deep seismicity, rock fabrics formation, mechanical anisotropy properties in deformed rocks and their effects on seismic imaging and Earth's dynamics.

Seismology: forward and inverse seismological modeling, multi-phase isotropic/anisotropic seismic tomography, development of seismic imaging techniques.

Geophysics for natural risks and resources: 3D-4D seismic tomography for the monitoring of volcanic, oil and geothermal fields (e.g., Etna and Val d'Agri areas).

External collaborations active during 2024:
Andrea Morelli, Silvia Pondrelli (INGV-Bologna)
Ornella Cocina, Marco Firetto Carlino, Elisabetta Giampiccolo (INGV-Catania)
Paola Baccheschi (INGV-Roma)
Ana M.G. Ferriera (UCL London, UK)
Sung-Joon Chang (Kangwon National University, South Korea)
Tuna Eken (Istanbul Technical University, Turkey)
Neil Ribe (CNRS, Orsay, France)
Jianfeng Yang (Institute of Geology and Geophysics, Chinese Academy of Sciences)
Emilie Hooft (University of Oregon)
Max Bezada (University of Minnesota)

COMMUNITY SERVICE

Conference session organization:
DI012 - Seismic Anisotropy and Mantle Dynamics: Observations, Models, and Experiments (AGU Fall Meeting, 2022, 2023)
DI002: Advances in understanding Earth's dynamic processes using seismic anisotropy (AGU Fall Meeting, 2017, 2018).
GD7.2: Anisotropy from crust to core: observations, models and implications (EGU General Assembly, 2016 - 2024)
T017: Fluids and Hydrous Phases in Subduction Zones (AGU Fall Meeting, 2012)

Workshop organization:
Main organizer of 2019 Ada Lovelace Workshop on Modelling Mantle and Lithosphere Dynamics (25-30 August 2019, Certosa di Pontignano, Siena, Italy)

Chair of the 2024-TF1 ILP: Lithospheric evolution and tectonic carbon cycle

INSTITUTIONAL RESPONSABILITIES

2012 – present Faculty member, @DoG_UNIPD
2014 – present Member of the PhD Board, @DoG_UNIPD
2018, 2023 Member of the PhD selection panel, @DoG_UNIPD
2014 – 2019 Member of the Scientific board, @DoG_UNIPD
2013 – present DoG representative for the UNIPD HPC board (Cloud Veneto, CAPRI cluster, UNIPD-HPC cluster)

COMMISSION OF TRUST

Journals: Science, Nature Geoscience, Nature Commun., EPSL, PEPI, Tectonophys., Geophys. J. Int., G-Cubed, JGR–Solid Earth, Marine and Petroleum Geology, Solid Earth, Terra Nova, J. Geodynamics, Frontiers in Earth Science, Geology, Commun. Earth and Env., Nat. Sci. Rev.
Funding Agencies: National Science Foundation (NSF), Agence Nationale de la Recherche (ANR), European Research Council (ERC-StG), National Science Centre Poland, Israel Science Foundation (ISF), Istituto Nazionale di Geofisica e Vulcanologia (INGV).
Member of the PhD defense panel: Keith Magali (Lyon Uni., 2020); Ben Mather (Monash Uni., 2021), Arcangela Bollino (Milan Uni. Statale, 2023), Irene Menichelli (Roma Tre Uni., 2023), Poulami Roy (GFZ Potsdam, 2024).
Guest Editor for the Special Volume *Subduction and collision dynamics of tectonic plates*. Front. Earth Sci. 10:1023604. doi:10.3389/feart.2022.1023604 (2022).
2023 – present – Member of Earth and Planetary Physics Editorial Board, Solid Earth
2021 – present – Member of the UGI (Unione Geofisica Italiana) Directive Council

FUNDING HISTORY

2025 – 2027 - [ERC PoC 101213818 MODEM]: Monitoring crustal stress state frOm 4D sEismic iMaging, €150,000.
2022 – 2025 – [INGV PhD fellowship EXOTESI]: EXploration and Optimization of new inversion TEchniques for Seismic Imaging, €70,000.
2018 – 2023 - [ERC StG 758199 NEWTON]: NEw Window inTO Earth's iNterior, €1,466,030 ([project website]).
2012 – 2015 - Progetto di Ateneo, Università di Padova, Italy, €44,000
2009 – 2010 - Swiss National Science Foundation Post-doctoral Fellowship PBEZP2-126187, CHF 42,000

AWARDS

2019 – present – ranked among the world's top 2% most-cited scientists.
2015 – Arne-Richter Award for Outstanding Young Scientist, European Geoscience Union.
2013 – Flinn-Hart Award for Outstanding Young Scientist's contributions to the Solid Earth Sciences, International Lithosphere Program, Vienna, Austria.
2008 – Outstanding Student Paper Award, AGU Fall Meeting, San Francisco, USA

UNDERGRADUATE AND GRADUATE TEACHING RESPONSIBILITIES

2023 – present – Planetary Dynamics and Evolution (Grad.)
2023 – present – Quantitative Methods for Earth Scientists (Grad.)
2015 – 2023 – Geophysics (Undergrad.)
2014 – present - Introduction to structure and dynamics of the Earth (Undergrad.)
2014 – 2015 - Introduction to Geosciences (at ENSTP – Yaoundè, Cameroon) (Undergrad.)
2013 – present - Numerical modelling in geoscience (Grad.)
2012 – 2015 - Macroscopic rock analysis (Undergrad.)

GRADUATING STUDENTS SUPERVISION

Filippo Zarabara, *Interaction between slab and superadiabatic lower mantle: a possible source of intraplate volcanism*, MSc 2025.
Matthew Hollinrake, *A Study of Upper Mantle Anisotropy in Cascadia Using Teleseismic Shear Wave Delays*, MSc 2024
Jiahua Zhao, *A Study on the Selection of Seismic Anisotropic Parameterizations in Linearized Inversion Schemes Used in Seismic Tomography*, MSc 2023
Lucia Martinati, *The Earth's Magnetic Field: State-of-the-art and research perspective*, BSc 2023
Gianmarco Del Piccolo, *Tomografia sismica anisotropa con il metodo Reversible Jump Markov Chain Monte Carlo,* MSc, 2022 (University of Bologna, co-supervision with Andrea Morelli and Brandon VanderBeek)
Riccardo Fantina, *Compositional evolution and differentiation of the Earth's mantle: a numerical study*, MSc, 2021
Giulia Fedrizzi, *The role of strain-induced microstructures on the bulk effective shear viscosity: A numerical study on two-phase aggregates*, MSc, 2018.
Giulia Fedrizzi, *Numerical simulations of strain-induced LPO development in plagioclase crystal aggregates*, BSc, 2016
Andrea Viscolani, *Numerical modelling of viscous shear instabilities*, BSc, 2016
William Sturgeon, *Investigating radial anisotropy in the upper lower mantle around subduction zones*, MSc, 2016 (UCL, co-supervision with Prof. Ana Ferreira)
Andrea Piccolo, *Exhumation mechanisms during continental collision*, MSc, 2014-2015
Luca Dal Zilio, *Continental drift induced by subduction*, MSc, 2014

PhD STUDENTS SUPERVISION

Kira Van Helden, *Geodynamic-seismological modeling of Mt. Etna* (2024-2027)
Gianmarco Del Piccolo, *Exploration of innovative methods for the inversion of seismological data and their optimization for seismic tomography models* (2022-2025)
Jun Ren, *Fluid-mediated Forearc Mantle Metasomatism: Insights from Petrological Thermomechanical Modelling* (2021-2024)
Francesco Rappisi, *Seismological forward and inverse modelling for upper mantle seismic anisotropy studies* (2018-2022)
Rosalia Lo Bue, *Geodynamic and seismological modelling of the central-western Mediterranean mid-late Cenozoic dynamics and structure* (2018-2022)

POST-DOCTORAL FELLOWS

Jun Ren (2024-2025)
Francesco Rappisi (2022-2023)
Rosalia Lo Bue (2022-2023)
Brandon Paul VanderBeek (2019-2025)
Albert DeMontserrat Navarro (2019-2022)
Jianfeng Yang (2018-2021)

OUTREACH

2024: Result in brief of the NEWTON project outcomes published in six languages on the CORDIS website.
2018: Main guest of "Vita da Ricercatore" (Life as a researcher), 1st episode, a RAI Scuola TV Show nationally broadcasted.
2017 – present: participations as an expert at Bo Live, the UNIPD scientific magazine, DoG social media and local newspapers.

PUBLICATION OVERVIEW

I am the author and coauthor of **63 scientific articles** (6 with the PhD supervisor as a co-author), including **4 review articles**, that have been cited 2753 times (Scopus, h-index = 25), 3421 times (Google Scholar, h-index = 27). I have also regularly presented my scientific results at national/international conferences and PhD schools (e.g., SGI-SIMP, GNGTS, AGU, EGU, JpGU, IGC, IUGG, Goldschmidt, **> 100 abstracts**), where I gave **>20 invited oral presentations**, and several departmental seminars (e.g., Italy: Uni. Roma Tre, Perugia, Milano–Bicocca, Bologna, INGV Bologna-Catania-Roma; Europe: BGI Bayreuth, Uni. Bristol, Cambridge Uni., Goethe Uni. Frankfurt, LMU Munich, UCL London, Uni. Lyon 1, CEED Oslo, Utrecht Uni., ETH-Zürich; USA: Carnegie Institute, Uni. Illinois, Jackson School, Washington Uni.; South Korea: Kangwon Nat. Uni, Seoul Nat. Uni.; China: Peking Uni., China Uni. Geoscience, UCAS- and IGGCAS-Beijing, GIGCAS-Guangzhou, Chengdu Uni. Tech.).

PEER-REVIEWED PUBLICATIONS

(* selected research spotlight; ** journal IF > 10, *** Review article)

1) Yang, J., **Faccenda, M.**, Chen, L., Wang, X., Shen, H., VanderBeek, B.P., Zhao, L. *The origin and fate of subslab partial melts at convergent margins*. National Science Review, nwaf314. https://doi.org/10.1093/nsr/nwaf314 (2025).
2) Wu, Y., **Faccenda, M.**, Liao, J., Fan, J., Guo, F. & Lai, Z. *Mantle-driven plate convergence due to slab detachment*. Commun. Earth Environ., 6, 494. https://doi.org/10.1038/s43247-025-02484-x (2025).
3) Del Piccolo, G., VanderBeek, B.P., **Faccenda, M.** et al. *Pressurized magma storage in radial dike network beneath Etna volcano evidenced with P-wave anisotropic imaging*. Commun. Earth Environ., 6, 405. https://doi.org/10.1038/s43247-025-02328-8 (2025).
4) Rappisi, F., Lo Bue, R., VanderBeek, B. P., … & **Faccenda, M**. *3-D Mantle Flow and Structure of the Mediterranean from Combined P-wave and Splitting Intensity Anisotropic Tomography*. J. Geophys. Res., 130, e2024JB030883. https://doi.org/10.1029/2024JB030883 (2025).
5) Roy, P., Steinberger, B., **Faccenda, M.**, & Pons, M. *Modeling anisotropic signature of slab-induced mantle plumes from thermochemical piles in the lowermost mantle*. Geophys. Res. Lett., 52, e2024GL113299. https://doi.org/10.1029/2024GL113299 (2025).
6) Confal, J., Taymaz, T., Eken, T., Bezada, M.J., **Faccenda, M.** *Remnant Tethyan slab fragments beneath northern Türkiye*. Earth Planet. Sci. Lett., 664, 119458, https://doi.org/10.1016/j.epsl.2025.119458 (2025).
7) **Faccenda, M.**, VanderBeek, B. P., de Montserrat, A., Yang, J., Rappisi, F., and Ribe, N. *ECOMAN: an open-source package for geodynamic and seismological modelling of mechanical anisotropy*. Solid Earth, 15, 1241–1264, https://doi.org/10.5194/se-15-1241-2024 (2024).
8) Lo Bue, R., Rappisi, F., Firetto Carlino, M., Giampiccolo, E., Cocina, O., VanderBeek, B.P., **Faccenda, M.** *Crustal structure of Etna volcano (Italy) from P-wave anisotropic tomography*. Geophys. Res. Lett. 51, 13, e2024GL108733, https://doi.org/10.1029/2024GL108733 (2024). Eos Research Spotlight.
9) Toffol, G., Pennacchioni, G., Menegon, L., Wallis, D., **Faccenda, M.**, Camacho, A., Bestmann, M. *On-fault earthquake energy density partitioning from shocked garnet in an exhumed seismic midcrustal fault*. Sci. Adv. 10, 9, https://doi.org/10.1126/sciadv.adi8533 (2024).

10) Rappisi, F., Witek, M., **Faccenda, M.**, Ferreira, A.M.G., Chang, S.-J. *Artificial age-independent seismic anisotropy, slab thickening and shallowing due to limited resolving power of (an)isotropic tomography*. Geophys. J. Int., 237, 1, 217-234, https://doi.org/10.1093/gji/ggae042 (2024)

11) Del Piccolo, G., VanderBeek, B. P., **Faccenda, M.**, Morelli, A., Byrnes, J. S. *Imaging Upper-Mantle Anisotropy with Transdimensional Bayesian Monte Carlo Sampling*. Bull. Seismol. Soc. Am. XX, 1–13, https://doi.10.1785/0120230233 (2024).

12) **Faccenda, M.**, VanDerBeek, B.P. *On constraining 3D seismic anisotropy in subduction, mid-ocean-ridge, and plume environments with teleseismic body wave data*. J. Geodyn., 158, https://doi.org/10.1016/j.jog.2023.102003 (2023).

13) VanderBeek, B.P., Lo Bue, R., Rappisi, F., **Faccenda, M**. *Imaging upper mantle anisotropy with travel-time and splitting intensity observations from teleseismic shear waves: Insights from tomographic reconstructions of subduction simulations.* Geophys. J. Int., 235, 3, 2640-2670, https://doi.org/10.1093/gji/ggad389 (2023).

14) Confal., J., Baccheschi, P., Pondrelli, S., Foivos, K., VanderBeek, B.P., Huang, Z., **Faccenda, M.** *Reproducing complex anisotropy patterns at subduction zones from splitting intensity analysis and anisotropy tomography*. Geophys. J. Int., 235, 1725-1735, https://doi.org/10.1093/gji/ggad329 (2023).

15) Yang, J., **Faccenda, M.** *On the Dynamics of Water Transportation and Magmatism in the Mid-Mantle.* J. Geophys. Res., 128/8, e2023JB026469, https://doi.org/10.1029/2022GL098402 (2023)

16) Turner, A. R., Ferreira, A.M.G, Berbellini, A., Brantout, N., **Faccenda, M.**, Kendall, E. *Across-slab propagation and low stress drops of deep earthquakes in the Kuril subduction*. Geophys. Res. Lett. 49, e2022GL098402. https://doi.org/10.1029/2022GL098402. (2022)

17) Kendall, E., **Faccenda, M.**, Ferreira, A.M.G, Chang, S.-J. *On the relationship between oceanic plate speed, tectonic stress, and seismic anisotropy.* Geophys. Res. Lett. 49, e2022GL097795. https://doi.org/10.1029/2022GL097795 (2022).

18) Rappisi, F., VanderBeek, B., **Faccenda, M.**, Morelli, A., Molinari, I. *Slab geometry and upper mantle flow patterns in the Central Mediterranean from 3D anisotropic P-wave tomography.* J. Geophys. Res. 127, e2021JB023488. https://doi.org/10.1029/2021JB023488 (2022).

19) Lo Bue, R., Rappisi, F., VanderBeek, B.P., **Faccenda, M.** *Tomographic Image Interpretation and Central-Western Mediterranean-Like Upper Mantle Dynamics From Coupled Seismological and Geodynamic Modeling Approach*. Front. Earth Sci. 10:884100. https://doi.org/10.3389/feart.2022.884100 (2022)

20) Boscaini, A., Marzoli, A., Bertrand, H., Chiaradia, M., Jourdan, F., **Faccenda, M.**, Meyzen, C.M., Callegaro, S., Serrano-Duran, L., *Cratonic kells controlled the emplacement of the Central Atlantic Magmatic Province (CAMP).* Earth and Planet. Sci. Lett., 584, 117480, https://doi.org/10.1016/j.epsl.2022.117480 (2022).

21) Toffol, G., Yang, J., Pennacchioni, G., **Faccenda, M.**, Scambelluri, M. *How to quake a subducting dry slab at intermediate depths: Inferences from numerical modelling.* Earth Planet. Sci. Lett. 578, 117289, https://doi.org/10.1016/j.epsl.2021.117289 (2022).

22) *De Montserrat, A., **Faccenda, M.**, Pennacchioni, G. *Extrinsic Anisotropy of Two-Phase Newtonian Aggregates: Fabric Characterization and Parametrization.* J. Geophys. Res. 126, e2021JB022232. https://doi.org/10.1029/2021JB022232 (2021). AGU Instagram Post.

23) Lo Bue, R., **Faccenda, M.**, Yang, J. *The role of Adria Plate Lithospheric Structures on the Recent Dynamics of the Central Mediterranean Region*. J. Geophys. Res. 126, e2021JB022377. https://doi.org/10.1029/2021JB022377 (2021).

24) Lee, H., Bezada, M. J., **Faccenda, M.** *Can sub-slab low-velocity anomalies be an artifact caused by anisotropy? A case study from the Alboran slab area in the western Mediterranean*. Tectonophys. 819, 229080, https://doi.org/10.1016/j.tecto.2021.229080 (2021).

25) VanderBeek, B. P., **Faccenda, M.** *Imaging upper mantle anisotropy with teleseismic P-wave delay: insights from tomographic reconstructions of subduction simulations*. Geophys. J. Int. 225 (3), 2097-2119, https://doi.org/10.1093/gji/ggab081 (2021).

26) ***Hansen, L. N., **Faccenda, M.**, Warren, J. M. *A review of the mechanism generating seismic anisotropy in the upper mantle.* Phys. Earth Planet. Int. 313, 106662, https://doi.org/10.1016/j.pepi.2021.106662 (2021).

27) Petrescu, L., Pondrelli, S., Salimbeni, S., **Faccenda, M.** *Mantle flow below the central and greater Alpine region: insights from SKS anisotropy analysis at AlpArray and permanent stations*. Solid Earth 11, 4, 1275-1290,

https://doi.org/10.5194/se-11-1275-2020 (2020).

28) ***Brovarone, A.V., Butch, C.J., Ciappa, A., Cleaves, H.J. II, Elmaleh, A., **Faccenda, M.**, Feineman, M., Hermann, J., Nestola, F., Cordone, A., Giovannelli, D. *Let there be water: how hydration/dehydration reactions accompany key Earth and life processes*. Am. Mineral. 105, 8, 1152-1160, https://doi.org/10.2138/am-2020-7380 (2020).

29) Pennacchioni, G., Scambelluri, M., Bestmann, M., Notini, L., Nimis, P., Plümper, O., **Faccenda, M.**, Nestola, F. *Record of intermediate-depth subduction seismicity in a dry slab from an exhumed ophiolite*. Earth Planet. Sci. Lett. 548, 116490, https://doi.org/10.1016/j.epsl.2020.116490 (2020).

30) Confal, J. M., Bezada, M. J., Eken, T., **Faccenda, M.**, Saygin, E., Taymaz, T. *Influence of upper mantle anisotropy on isotropic P-wave tomography images obtained in the Eastern Mediterranean region*. J. Geophys. Res. 125, 8, https://dx.doi.org/10.1029/2019JB018559 (2020).

31) **Yang, J., **Faccenda, M.** *Intraplate volcanism originating from upwelling hydrous transition zone*. Nature 579, 88-91, https://doi.org/10.1038/s41586-020-2045-y (2020).

32) Yang, J., Lu, G., Liu, T., Li, Y., Wang, K., Wang, X., Sun, B., **Faccenda, M.**, Zhao, L. *Amagmatic subduction produced by mantle serpentinization and oceanic crust delamination*. Geophys. Res. Lett. 47, 9, e2019GL086257. https://doi.org.10.1029/2019GL086257 (2020).

33) Peng, C.-C., Kuo, B.-Y., **Faccenda, M.**, Chiao, L.-Y. *Mantle flow entrained by the Hindu-Kush continental subduction inferred from source-side seismic anisotropy*. Earth Planet. Sci. Lett. 530, 115905, https://doi.org/10.1016/j.epsl.2019.115905 (2020).

34) Murri, M. Domeneghetti, M.C.,[…],**Faccenda, M.**, Alvaro, M. *Cooling history and emplacement of a pyroxenitic lava as proxy for understanding Martian lava flows*. Sci. Rep. 9(1), 17501, https://doi.org/10.1038/s41598-019-53142-0 (2019).

35) Chen, L., **Faccenda, M.** *Subduction-induced upwelling of a hydrous Transition zone: Implications for the Cenozoic magmatism in Northeast China*. J. Geophys. Res. 124(11), 11489-11504, https://doi.org/10.1029/2019JB018133 (2019).

36) Sturgeon W., Ferreira, A.M.G., **Faccenda, M.**, Chang, S.-J., Schardong, L. *On the origin of radial anisotropy near subducted slabs in the midmantle*. Geochem. Geophys. Geosys. 20 (11), 5105-5125, https://doi.org/10.1029/2019GC008462 (2019).

37) Cheng, Z., Ding, W., **Faccenda, M.**, […] *Geodynamic effects of subducted seamount at the Manila Trench: Insights from numerical modeling*. Tectonophys. 764, 46-61, https://doi.org/10.1016/j.tecto.2019.05.011 (2019).

38) **Ferreira, A.M.G., **Faccenda, M.**, Sturgeon, W., Chang, S.-J., Schardong, L. *Ubiquitous lower-mantle anisotropy beneath subduction zone*. Nat. Geo. 12, 301-306, https://doi.org/10.1038/s41561-019-0325-7 (2019)

39) ***Faccenda, M.**, Ferreira, A.M.G., Tisato, N., Lithgow-Bertelloni, C., Stixrude, L., Pennacchioni, G. *Extrinsic anisotropy in a compositionally heterogeneous mantle*. J. Geophys. Res. 124, https://doi.org/10.1029/2018JB016482 (2019). Editor Highlight.

40) Zhou, Q., Hu, J., Liu, L., Chaparro, T., Stegman, D. R., **Faccenda, M.** *Western U.S. seismic anisotropy revealing complex mantle dynamics*. Earth and Planet. Sci. Lett. 500, 156-167, https://doi.org/10.1016/j.epsl.2018.08.015 (2018).

41) Confal, J.M., **Faccenda, M.**, Eken, T., Taymaz, T. *Numerical simulation of 3-D mantle flow evolution in subduction environments in relations to seismic anisotropy beneath the eastern Mediterranean region*. Earth and Planet. Sci. Lett. 497, 50-61, https://doi.org/10.1016/j.epsl.2018.06.005 (2018).

42) Papa, S., Pennacchioni, G., Angel, R. J., **Faccenda, M.** *The fate of garnet during (deep-seated) coseismic frictional heating: The role of thermal shock.* Geology 46(5), 471-474, https://doi.org/10.1130/G40077.1 (2018).

43) **Hu, J., Liu, L., **Faccenda, M.**, Zhou, Q., Fisher, K. M., Marshak, S., Lundstrom, C. *Modification of Western Gondwana craton by plume-lithosphere interaction*. Nat. Geo. 11, 203-210, https://doi.org/10.1038/s41561-018-0064-1 (2018).

44) Piccolo, A., **Faccenda, M.**, Carosi, R., Montomoli, C., Visonà, D. *Crustal strength control on structures and metamorphism in collisional orogens*. Tectonophys., 746, 470-492, https://doi.org/10.1016/j.tecto.2017.09.018 (2018).

45) Dal Zilio, L., **Faccenda, M.**, Capitanio, F. A. *The role of deep subduction in supercontinent breakup*. Tectonophys., 746, 312-324, https://doi.org/10.1016/j.tecto.2017.03.006 (2018).

46) Hu, J., **Faccenda, M.**, Liu, L. *Subduction-controlled mantle flow and seismic anisotropy in South America*. Earth and Planet. Sci. Lett. 470, 13-24, https://doi.org/10.1016/j.epsl.2017.04.027 (2017).

47) Spiess, R., Dibona, R., **Faccenda, M.**, Mattioli, M., Renzulli, A. *Mylonitic gabbro nodules of Stromboli (southern Italy): Microstructural evidence of high-temperature deformation of cumulates during the evolution of the magmatic crustal roots of an active volcano*. Special Papers of the Geol. Soc. of Am. 526, 89-105, https://doi.org/10.1130/2017.2526(05) (2017).
48) ***Faccenda, M.** and Dal Zilio, L. *The role of solid-solid phase transitions in mantle convection*. Lithos 268-271, 198-224, https://doi.org/10.1016/j.lithos.2016.11.007 (2017)
49) *Bezada, M., **Faccenda, M.**, Toomey, D. R. *Representing anisotropic subduction zones with isotropic velocity models: A characterization of the problem and some steps on a possible path forward*. Geochem. Geophys. Geosyst., 17, 3164-3189, https://doi.org/10.1002/2016GC006507 (2016). Eos Research Spotlight.
50) **Chang, S.-J., A.M.G. Ferreira, **M. Faccenda**. *Upper- and mid-mantle interaction between the Samoan plume and the Tonga-Kermadec slabs*. Nat. Commun., 7:10799, https://doi.org/10.1038/ncomms10799 (2016).
51) ***Faccenda M.** *Water in the slab: a trilogy*. Tectonophys. 614, 1-30, https://doi.org/10.1016/j.tecto.2013.12.020 (2014).
52) **Faccenda M.** *Mid mantle seismic anisotropy around subduction zones*. Phys. Earth Planet. Int. 227, 1-19, https://doi.org/10.1016/j.pepi.2013.11.015 (2014).
53) **Faccenda M.** and Capitanio, F. A. *Seismic anisotropy around subduction zones: insights from three-dimensional modeling of upper mantle deformation and SKS splitting calculations*. Geochem. Geophys. Geosyst., https://doi.org/10.1002/ggge.20055 (2013).
54) Eberarth-Phillips, D., Reyners, M., **Faccenda, M.**, Naliboff, J. *Along-strike variation in subducting plate seismicity and mantle wedge attenuation related to fluid release beneath the North Island, New Zealand*. Phys. Earth Planet. Int. 225, 12-27, https://doi.org/10.1016/j.pepi.2013.10.002 (2013).
55) Capitanio, F. A. and **Faccenda, M.** *Complex mantle flow around heterogeneous subducting oceanic plates*. Earth Planet. Sci. Lett., 353-354, 29-37, https://doi.org/10.1016/j.epsl.2012.07.042 (2012).
56) **Faccenda M.** and Capitanio, F. A. *Development of mantle seismic anisotropy during subduction-induced 3D flow*. Geophys. Res. Lett., 39, https://doi.org/10.1029/2012GL051988 (2012).
57) ***Faccenda M.**, Gerya, T. V., Mancktelow, N. S. and Moresi, L. *Fluid flow during slab unbending and dehydration: Implications for intermediate-depth seismicity, slab weakening and deep water recycling*, Geochem. Geophys. Geosyst., 13, Q01010, https://doi.org/10.1029/2011GC003860 (2012). Eos Research Spotlight.
58) **Faccenda M.**, Mancktelow, N. S. *Fluid flow during unbending: implications for slab hydration, intermediate-depth earthquakes and deep fluid subduction*. Tectonophys. 494, 149-154, https://doi.org/10.1016/j.tecto.2010.08.002 (2010).
59) ****Faccenda M.**, Gerya, T.V., Burlini L. *Deep slab hydration induced by bending-related variation of the tectonic pressure*. Nat. Geosci. 2, 790-793, https://doi.org/10.1038/ngeo656 (2009).
60) **Faccenda M.**, Minelli G., Gerya T.V. *Coupled and decoupled regimes of continental collision: Numerical modelling*. Earth Plant. Sci. Lett. 278, 3-4, 337-349, https://doi.org/10.1016/j.epsl.2008.12.021 (2009).
61) ****Faccenda M.**, Burlini L., Gerya T.V., Mainprice D. *Fault-induced seismic anisotropy by hydration in subducting oceanic plates*. Nature 455, 1097-1100, https://doi.org/10.1038/nature07376 (2008).
62) **Faccenda M.**, Gerya, T.V., Chakraborty, S. *Styles of post-subduction collisional orogeny: Influence of convergence velocity, crustal rheology and radiogenic heat production*. Lithos 103, issue 1-2, pp. 257-287, https://doi.org/10.1016/j.lithos.2007.09.009 (2008).
63) **Faccenda M.**, Bressan G., Burlini L. *Seismic properties of the upper crust in the central Friuli area (northeastern Italy) based on petrophysical data*. Tectonophys. 445, 210-226, https://doi.org/10.1016/j.tecto.2007.08.004 (2007).

INVITED CONFERENCE PRESENTATIONS

1) **Faccenda, M.**, 2024, **INVITED LECTURE**. Title: *Present-day structure and recent dynamics of the Central Mediterranean from combined geodynamic and seismological modelling.* 39th ESC 2024, Corfu, Greece.
2) **Faccenda, M.**, 2024, **INVITED LECTURE**. Title: *Constraining Mantle Convection Patterns by Joint Geodynamic and Seismological Modelling.* EGU General Assembly, Vienna, Austria.
3) **Faccenda, M.**, 2023, **INVITED LECTURE**. Title: *Structures and metamorphism in collisional orogens: insights from numeriocal modeling.* PhD School in Understanding Deep crustal processes, Padova.
4) **Faccenda, M.**, 2022, **INVITED LECTURE**. Title: *Modeling techniques to address the role of anisotropic fabrics in mantle dynamics.* CEED Earth's History, Dynamics and Planetary Habitability, Sundvollen, Oslo, Norway

5) **Faccenda, M.**, 2022, **INVITED LECTURE**. Title: *Mantle dynamics and structure from coupled geodynamic and seismological modelling*. GNGTS, Trieste, Italy.
6) **Faccenda, M.**, 2021, **INVITED LECTURE**. Title: *Mantle dynamics and structure from coupled geodynamic and seismological modelling*. AGU Fall Meeting, New Orleans, USA.
7) **Faccenda, M.**, 2019, **INVITED LECTURE**. Title: *Mantle dynamics and structure from coupled geodynamic and seismological modelling*. EGU General Assembly, Vienna, Austria.
8) **Faccenda, M.**, 2018, **INVITED LECTURE**. Title: *Subduction zone dynamics and structure from coupled geodynamic and seismological modelling*. 32nd IUGG Conference on Mathematical Geophysics, Nizhny Novgorod, Russia.
9) **Faccenda, M.**, 2017, **INVITED LECTURE**. Title: *Subduction zone dynamics and structure from coupled geodynamic and seismological modelling*. XV International Workshop on Modelling Mantle and Lithosphere Dynamics, Putten, Netherlands.
10) **Faccenda, M.**, 2017, **INVITED LECTURE**. Title: *Patterns of seismic anisotropy in the mid-mantle around subduction zones: predictions from 3D geodynamic modelling*. Big Transition Zone: Below and Beyond, University College London, UK.
11) **Faccenda, M.**, 2017, **INVITED LECTURE**. Title: *Subduction zone dynamics and structure from coupled geodynamic and seismological modelling*. EGU General Assembly, Vienna, Austria.
12) **Faccenda, M.,** 2016, **INVITED LECTURE**. Title: *Petrological numerical modelling of the convective Earth*. GNM school on: Modeling the mineralogical world: how and why. Rome, Italy
13) **Faccenda, M.,** 2016, **INVITED LECTURE**. Title: *Hydration and dehydration of oceanic plates at subduction zones. JpGU Meeting, Japan*
14) **Faccenda, M.,** 2016, **INVITED LECTURE**. Title: *Visco-elasto-plastic deformation and hydration of oceanic plates at trench-rise systems. JpGU Meeting, Japan*
15) **Faccenda, M.,** 2015, **INVITED LECTURE**. Title: *Combined micro and macro geodynamic modelling of mantle flow: methods, potentialities and limits*. AGU Fall Meeting, San Francisco, USA.
16) **Faccenda, M.**, 2015 **ARNE-RICHTER AWARD MEDAL LECTURE**. Title: *Patterns of seismic anisotropy and mantle flow around convergent margins: predictions from 3D geodynamic modelling, comparison with observations and implications for the interpretation of seismic tomographies*. EGU General Assembly, Vienna, Austria.
17) **Faccenda, M.**, 2015, **INVITED LECTURE**. Title: *The role of phase transitions at subduction zones*. EGU General Assembly, Vienna, Austria.
18) **Faccenda, M.**, 2014, **INVITED LECTURE**, Title: *Water in the oceanic lithosphere: a trilogy*. Congresso SGI-SIMP, Milano, Italy
19) **Faccenda, M.**, 2013, **INVITED LECTURE**, Title: *Numerical modelling of metamorphic and igneous processes in geodynamics: the role of phase diagrams*. PhD school on: Build-up of petrological phase diagrams. S. Margherita, Italy.
20) **Faccenda, M.** and Capitanio, F. A., 2012, **INVITED LECTURE**. Title*: Development of seismic anisotropy during subduction/induced 3D mantle flow*. AGU Fall Meeting, San Francisco, USA.
21) **Faccenda, M.**, et al., 2009, **INVITED LECTURE**. Title: *Mechanisms of deep slab hydration and related geodynamical processes.* Goldschmidt conference, Davos, Switzerland.
22) **Faccenda, M.**, et al., 2008, **INVITED LECTURE**. Title: *Continental Crust Recycling at Collision Zones: Insights from Numerical Modeling and Observations*. AGU Fall Meeting, San Francisco, USA.