

Francesca Remitti

CURRENT POSITION:

2015 – present. Associated Professor in Structural Geology at the Università di Modena e Reggio Emilia, Dipartimento di Scienze Chimiche e Geologiche.

EDUCATION:

2006. PhD in Earth Science. Thesis title: "Insights into deformation of subduction channels: ancient examples from Northern Apennines of Italy and South Island of New Zealand".

Advisor: Prof. G. Bettelli, Università di Modena e Reggio Emilia.

2002. Ms in Geological Sciences, Università di Modena e Reggio Emilia.

PROFESSIONAL EXPERIENCE:

2008-2015 Researcher in Structural Geology at the Università di Modena e Reggio Emilia (Maternity leave in 2013 and 2016).

2006-2008 Post-doc fellowship at the Università di Modena e Reggio Emilia.

SCIENTIFIC INTERESTS:

Subduction zone, faults and fluid, clay-rich faults, megathrust, mélanges.

She is interested in the influence on seismic behavior of the heterogeneity characterizing the shallow (updip) part of megathrust where lithification occurs together with progressive deformation. The main interest focuses on the internal architecture, mechanics and deformation processes in the frontal part of subduction zones ($T_{max} < 150^{\circ}\text{C}$) through the study of ancient analogues (mainly in the Northern Apennines of Italy) and the comparison with active examples. Her studies range from the field mesostructures to the microstructural analysis. Specifically, in the last years she has focused on: i) The mechanics of clay-rich fault at different slip rate, temperature, clay mineralogy; ii) Faulting in overpressured rocks and the role of fluid pressure/permeability cycle; iii) Tectonic and gravitational disruption of rocks at shallow depth and the evolution with increasing temperature and pressure of the block-in-matrix fabric.

She is author or co-author of several scientific papers

SCOPUS METRICS OVERVIEW (october 2023)

Documents by author: 31

Citations: 1200

h-index: 18

TEACHING ACTIVITIES

Structural Geology and Tectonics (Degree Course in Geological Science)

Tectonics (Master Degree Course in Geosciences, Geohazards and Georesources)

Earth Dynamic System (Master Degree Course in Science for Education)

Tutor/co-tutor of several Bachelor and Master Thesis in "Structural Geology"

Publication

- Aretusini S., Mitterpergher S., Remitti F., Arletti R., Polisi M., De Paola N., Tesei T. (2023) Heterogeneity-Driven Localization and Weakening in Scaly Clays From a Fossil Accretionary Prism *Journal of Geophysical Research: Solid Earth*, 128 (9), art. no. e2023JB027332 DOI: 10.1029/2023JB027332
- Festa, A., Barbero, E., Remitti, F., Ogata, K., & Pini, G. A. (2022). Mélanges and chaotic rock units: Implications for exhumed subduction complexes and orogenic belts. *Geosystems and Geoenvironment*, 1(2), 100030. <https://doi.org/10.1016/j.geogeo.2022.100030>
- Brodsky, E.E., Mori, J.J., Anderson, L., Chester, F.M., Conin, M., Dunham, E.M., Eguchi, N., Fulton, P.M., Hino, R., Hirose, T., Ikari, M.J., Ishikawa, T., Jeppson, T., Kano, Y., Kirkpatrick, J., Kodaira, S., Lin, W., Nakamura, Y., Rabinowitz, H.S., Regalla, C., Remitti, F., Rowe, C., Saffer, D.M., Saito, S., Sample, J., Sanada, Y., Savage, H.M., Sun, T., Toczko, S., Ujiie, K., Wolfson-Schwehr, M., Yang, T. (2020) The State of Stress on the Fault Before, During, and after a Major Earthquake *Annual Review of Earth and Planetary Sciences*, 48, pp. 49-74. DOI: 10.1146/annurev-earth-053018-060507
- Geersen, J., Festa, A., Remitti, F. (2020) Structural constraints on the subduction of mass-transport deposits in convergent margins. *Geological Society Special Publication*, 500 (1), pp. 115-128. DOI: 10.1144/SP500-2019-174
- Cerchiari, A., Remitti, F., Mitterpergher, S., Festa, A., Lugli, F., Cipriani, A. (2020) Cyclical variations of fluid sources and stress state in a shallow megathrust-zone mélange. *Journal of the Geological Society*, 177 (3), pp. 647-659. DOI: 10.1144/jgs2019-072

- Panini, F., Bettelli, G., Carlini, M., Fioroni, C., Nirta, G., & Remitti, F. (2020). Geology of the High Sillaro Valley (Northern Apennines of Italy). *Journal of Maps*, 16(2). <https://doi.org/10.1080/17445647.2020.1832926>
- Festa A., Dilek, Y., Mitterpergher, S., Ogata, K., Pini, G.A., Remitti, F. (2018) Does subduction of mass transport deposits (MTDs) control seismic behavior of shallow–level megathrusts at convergent margins? *Gondwana Research*, 60, 186-193.
- Fagereng, A., Diener, J.F.A., Ellis S. and Remitti F. (2018) Fluid-related deformation processes at the up- and down-dip limits of the subduction thrust seismogenic zone: What do the rocks tell us? *Geological Society of America Special Papers Geology and Tectonics of Subduction Zones: A Tribute to Gaku Kimura*
- Mitterpergher, S., Cerchiari, A., Remitti, F.; Festa, A. (2017) From soft sediment deformation to fluid assisted faulting in the shallow part of a subduction megathrust analogue: the Sestola Vidiciatico tectonic Unit (Northern Apennines, Italy), *Geological Magazine* 1-13. doi:10.1017/S0016756817000668
- Remitti, F., Smith, S.A.F., Mitterpergher, S., Gualtieri, A.F., Di Toro, G. (2015) Frictional properties of fault zone gouges from the J-FAST drilling project (Mw 9.0 2011 Tohoku-Oki earthquake), *Geophysical Research Letters*, 42 (8), 2691-2699.
- Kirkpatrick, J.D., Rowe, C.D., Ujiie, K., Moore, J.C., Regalla, C., Remitti, F., Toy, V., Wolfson-Schwehr, M., Kameda, J., Bose, S., Chester, F.M. (2015) Structure and lithology of the Japan Trench subduction plate boundary fault, *Tectonics*, 34, 53–69.
- Chester, F.M., Rowe, C., Ujiie, K., Kirkpatrick, J., Regalla, C., Remitti, F., Moore, J.C., Toy, V., Wolfson-Schwehr, M., Bose, S., Kameda, J., Mori, J.J., Brodsky, E.E., Eguchi, N., Toczko, S. (2013) Structure and composition of the plate-boundary slip zone for the 2011 Tohoku-Oki earthquake, *Science*, 342 (6163), pp. 1208-1211.
- Remitti, F., Balestrieri, M.L., Vannucchi, P., Bettelli, G. (2013) Early exhumation of underthrust units near the toe of an ancient erosive subduction zone: A case study from the Northern Apennines of Italy, *Bulletin of the Geological Society of America*, 125 (11-12), pp. 1820-1832.
- Rowe, C.D., Moore, J.C., Remitti, F. (2013) The thickness of subduction plate boundary faults from the seafloor into the seismogenic zone, *Geology*, 41 (9), pp. 991-994
- Lin, W., Conin, M., Moore, J.C., Chester, F.M., Nakamura, Y., Mori, J.J., Anderson, L., Brodsky, E.E., Eguchi, N., Cook, B., Jeppson, T., Wolfson-Schwehr, M., Sanada, Y., Saito, S., Kido, Y., Hirose, T., Behrmann, J.H., Ikari, M., Ujiie, K., Rowe, C., Kirkpatrick, J., Bose, S., Regalla, C., Remitti, F., Toy, V., Fulton, P., Mishima, T., Yang, T., Sun, T., Ishikawa, T., Sample, J., Takai, K., Kameda, J., Toczko, S., Maeda, L., Kodaira, S., Hino, R., Saffer, D. (2013) Stress state in the largest displacement area of the 2011 Tohoku-Oki earthquake, *Science*, 339 (6120), pp. 687-690.
- Remitti, F., Bettelli, G., Panini, F., Carlini, M., Vannucchi P. (2012) Deformation, fluid flow, and mass transfer in the forearc of convergent margins: A two-day field trip in an ancient and exhumed erosive convergent margin in the Northern Apennines. In: P. Vannucchi, D. Fisher. *Deformation, Fluid Flow, and Mass Transfer in the Forearc of Convergent Margins: Field Guides to the Northern Apennines in Emilia and in the Apuan Alps (Italy)*. Geological Society of America Field Guide. vol. 28, p. 1-33, Boulder, Colorado: GSA, ISBN: 9780813700281.
- Vannucchi, P., Remitti, F., Bettelli, G. (2012) Lateral variability of the erosive plate boundary in the Northern Apennines, Italy, *Italian Journal of Geosciences*, 131 (2), pp. 215-227.
- Vannucchi, P., Sage, F., Phipps Morgan, J., Remitti, F., Collot, J.-Y. (2012) Toward a dynamic concept of the subduction channel at erosive convergent margins with implications for interplate material transfer, *Geochemistry, Geophysics, Geosystems*, 13 (1), art. no. Q02003.
- Fagereng, Å., Remitti, F., Sibson, R.H. (2011) Incrementally developed slickenfibers - Geological record of repeating low stress-drop seismic events?, *Tectonophysics*, 510 (3-4), pp. 381-386.
- Remitti, F., Vannucchi, P., Bettelli, G., Fantoni, L., Panini, F., Vescovi, P. (2011) Tectonic and sedimentary evolution of the frontal part of an ancient subduction complex at the transition from accretion to erosion: The case of the Ligurian wedge of the Northern Apennines, Italy, *Bulletin of the Geological Society of America*, 123 (1-2), pp. 51-70.
- Fagereng, Å., Remitti, F., Sibson, R.H. (2010) Shear veins observed within anisotropic fabric at high angles to the maximum compressive stress, *Nature Geoscience*, 3 (7), pp. 482-485.
- Vannucchi, P., Remitti, F., Bettelli, G., Boschi, C., Dallai, L. (2010) Fluid history related to the early Eocene-middle Miocene convergent system of the Northern Apennines (Italy): Constraints from structural and isotopic studies, *Journal of Geophysical Research: Solid Earth*, 115 (5), art. no. B05405.
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- Remitti, F., Bettelli, G., Vannucchi, P. (2007) Internal structure and tectonic evolution of an underthrust tectonic mélange: The Sestola-Vidiciatico tectonic unit of the Northern Apennines, Italy, *Geodinamica Acta*, 20 (1-2), pp. 37-51.

