



Dr. Markos D. Tranos

Professor, Department of Structural, Historical & Applied Geology, School of Geology, Faculty of Sciences, Aristotle University of Thessaloniki (AUTH)

Dr. Markos D. Tranos received his B.Sc. in Geology and Ph.D. in Structural Geology at the Aristotle University of Thessaloniki (AUTH), Greece. He has more than 30 years of experience in research and more than 20 years in teaching. He has served the School of Geology of AUTH since 2006 as a faculty member specializing in Structural Geology-Neotectonics & Geological Mapping. He teaches the basic geologic courses (1) Geological Mapping and (2) Field Geology. He is the author of a geological textbook, 'Geological Mapping-Geological maps and cross-sections' (in Greek), published by Univ. Studio Press. He was a visiting researcher at Uppsala University, Sweden, for four months in 2012, and he joined the Geosciences Department at KFUPM (KSA) from Jun 2020 to Aug 2021. He has published more than 50 peer-review papers, mostly in international journals, and has been a reviewer for more than 15 international journals. His areas of specialization include neotectonic and seismogenic faults; fault activations and crustal stress regimes; stress inversion techniques and software; basin analysis; late- and post-orogenic processes. He has invented and developed the Tensor Ratio Method (TRM), a novel stress inversion method for separating heterogeneous fault-slip data.

Tel: + 30(2310)998830

Email: tranos@geo.auth.gr

Location: Department of Structural, Historical & Applied Geology, Aristotle University of Thessaloniki (AUTH)

Educational Qualifications

- Ph.D. in Structural Geology, Aristotle University of Thessaloniki, Greece, 1998
- B.Sc. in Geology, Aristotle University of Thessaloniki, Greece, 1988.

Research Interests

- Jointing and faulting analysis
- Faults and crustal stresses
- Active rupture zones; geometry, kinematics and seismotectonic properties
- Faulting deformation of basins; basin formation and evolution
- Thrust geometry and kinematics
- Granitoid emplacement and deformation
- Seismotectonics of active volcanoes
- Fault plane solutions and earthquake faults
- Late- and post-orogenic processes
- Geology and seismotectonics of Dams
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Selected Publications

- Z Wang, **M Tranos**, X Wang, R Zhao, R Zhang. 2022. 40Ar–39Ar geochronology and palaeostress analysis using lamprophyre dikes and quartz veins in the Sizhuang gold deposit: new implications for Early Cretaceous stress regime in the Jaodong Peninsula, North China Craton. *Geological Magazine*, <https://doi.org/10.1017/S0016756822001029>
- **Tranos, M.D.**, Neofotistos, P.G., Kokkalas, S.A., Tourigny, G.L. 2022. Insights into the Paleostress Analysis of Heterogeneous Fault-Slip Data by Comparing Different Methodologies: The Case of the Voltri Massif in the Ligurian Alps (NW Italy). *Appl. Sci.*, 12, 10098. <https://doi.org/10.3390/app121910098>
- KR Assie, Y Wang, **MD Tranos**, H Huimin Ma, SK Kouamelan. 2021. Late Cenozoic faulting deformation of the Fanshi Basin (northern Shanxi rift, China), inferred from palaeostress analysis of mesoscale fault-slip data. *Geological Magazine*, <https://doi.org/10.1017/S0016756822000085>
- **Tranos, M.D.**, Osman M.S. 2021. Rus detachment in Dammam Dome, Eastern Saudi Arabia: a new soft-sediment structure as a 'sensitive stress sensor' for the Zagros collision. *Geological Magazine*, doi: 10.1017/S001675682100121.
- Bubniak, I, **Tranos, M.**, Bubniak, A. 2021. Paleostress reconstruction of the southeast Ukrainian Outer Carpathians. *International Geology Review*, doi: 10.1080/00206814.2021.1986679
- **Tranos, M.D.**, Weber, J.C., Bussey, J., O'Sullivan, P. 2020. Trichonis basin, western central Greece: is it an immature basin in the Corinth Rift or a pull-apart in a sinistral rift–trench link?. *Journal of the Geological Society*, 177 (1), 120–140, <https://doi.org/10.1144/jgs2018-213>
- Tourigny, G., **Tranos, M.D.**, Masurel, Q., Kreuzer, O., Brammer, S., Owusu-Ansah, K., Yao, D., Hayford, Th. 2019. Structural controls on granitoid-hosted gold mineralization and paleostress history of the Edikan gold deposits (Kumasi Basin, southwestern Ghana). *Mineralium Deposita*, doi: 10.1007/s00126-018-0858-5.
- **Tranos, M.D.** 2018. Is the Monte Carlo search method efficient for a paleostress analysis of natural heterogeneous fault-slip data? An example from the Kraisthe area, SW Bulgaria. *Journal of Structural Geology*, 116, 178-188, doi: 10.1016/j.jsg.2018.08.008.
- **Tranos, M.D.** 2018. The use of Stress Tensor Discriminator Faults in separating heterogeneous fault-slip data with best-fit stress inversion methods. II. Compressional stress regimes. *Journal of Structural Geology*, 107, 153-162, doi: 10.1016/j.jsg.2017.12.015.
- **Tranos, M.D.** 2017. The use of Stress Tensor Discriminator Faults in separating heterogeneous fault-slip data with best-fit stress inversion methods. *Journal of Structural Geology*, 102, 168-178, doi: 10.1016/j.jsg.2017.08.002.
- **Tranos, M.D.** 2017. The seismogenic fault of the 2010 Efpalion moderate-size seismic sequence (western Corinth gulf, Central Greece). *Journal of Seismology*, 21, 287–303, doi: 10.1007/s10950-016-9601-9.
- **Tranos, M.D.** 2017. Slip preference analysis of faulting driven by strike-slip Andersonian stress regimes: an alternative explanation of the Rhodope metamorphic core complex (northern Greece). *Journal of the Geological Society*, 174, 129-141, doi: 10.1144/jgs2015-164.
- **Tranos, M.D.** 2015. TR method (TRM): A separation and stress inversion method for heterogeneous fault-slip data driven by Andersonian extensional and compressional stress regimes. *Journal of Structural Geology*, 79, 57-74, doi: 10.1016/j.jsg.2015.07.006.
- Plougarlis, A.P., **Tranos, M.D.** 2014. Geological map of Ammouliani Island (Northern Greece). Implications for the tectono-magmatic evolution of the Serbo-Macedonian Massif. *Journal of Maps*, 11, 4, 552-560, doi: 10.1080/17445647.2014.948504.
- **Tranos, M.D.** 2014. TR method: a practical tool to analyze focal mechanisms and identify the 'real' seismogenic fault of an extensional or compressional shallow earthquake sequence. *Tectonophysics*, 633, 77-97, doi: 10.1016/j.tecto.2014.06.027.
- **Tranos, M.D.**, Lacombe, O. 2014. Late Cenozoic faulting in SW Bulgaria: Fault geometry, kinematics and driving stress regimes. Implications for late orogenic processes in the Hellenic hinterland. *Journal of Geodynamics*, 74, 32-55, doi: 10.1016/j.jog.2013.12.001.
- **Tranos, M.D.** 2013. The TR method: the use of slip preference to separate heterogeneous fault-slip data in compressional stress regimes. The surface rupture of the 1999 Chi-Chi Taiwan earthquake as a case study. *Tectonophysics*, 608, 622-641, doi: 10.1016/j.tecto.2013.08.017.
- Savvaidis, A. Smirnov, M., **Tranos, M.D.**, Pedersen, L.B., Chouliaras, G. 2012. The seismically active Atalanti fault in Central Greece: a steeply dipping fault zone imaged from magnetotelluric data. *Tectonophysics*, 554-557, 105–113, doi.org/10.1016/j.tecto.2012.06.002.

- **Tranos, M.D.** 2012. Slip preference on pre-existing faults: a guide tool for the separation of heterogeneous fault-slip data in extensional stress regimes. *Tectonophysics*, 544-545, 60-74, doi: 10.1016/j.tecto.2012.03.032.
- **Tranos, M.D.** 2011. Strymon and Strymonikos Gulf basins (Northern Greece): Implications on their formation and evolution from faulting. *Journal of Geodynamics*, 51, 285–305, doi: 10.1016/j.jog.2010.10.002.
- **Tranos, M.D.**, Eleftheriadis, G.E., Kiliadis, A.A. 2009. Philippi granitoid as a proxy for the Oligocene and Miocene crustal deformation in the Rhodope Massif (Eastern Macedonia, Greece). *Geotectonic Research*, 96, 1, 69-85, doi:10.1127/1864-5658/09/96-0069.
- **Tranos, M.D.** 2009. Faulting of Lemnos Island; a mirror of faulting of the North Aegean Trough (Northern Greece). *Tectonophysics*, 467, 1-4, 72-88, doi: 10.1016/j.tecto.2008.12.018.