

Curriculum Vitae **Sotirios Kokkalas**

Structural Geology-(Neotectonics / Microtectonics /Geotectonics)

Dr. Sotirios Kokkalas

Professor



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EDUCATION

Ph.D. Structural Geology, University of Patras, Greece (1995–2000)

B.S. Geology, University of Patras, Greece (1990–1995)

RESEARCH INTERESTS

As a field-oriented Structural Geologist I use quantitative field and/or laboratory data and principles of structural geology to study fundamental problems of faulting, fracturing, and rock deformation in the upper crust at various space-time scales.

My main research interests are in the area of brittle and ductile faulting and fracturing in the upper crust with applications to the oil and gas industry, orogenic evolution of the fold-and-thrust belts, strike-slip tectonics, magmatic intrusions, tectonic geomorphology and earthquake geology-paleoseismology. My current research focus is in the areas of 1) quantitative study of ore deposits to determine their formation and their structural control, 2) evaluation and interpretation of fracture analysis data combined with petrophysical data at rock physics level for reservoir characterization.

PROFESSIONAL EXPERIENCE

Aug 2021-today	Professor Neotectonics-Microtectonics-Geotectonics Department of Geology, University of Patras, Patras, Greece.
Jan 2019–Aug 2021	Associate Professor Department of Geology, University of Patras, Patras, Greece.
Jan 2014–Jan 2019	Associate Professor Department of Petroleum Geosciences, The Petroleum Institute, Abu Dhabi, U.A.E. (part of Khalifa University)
Jun 2013–Jan 2014	Associate Professor Department of Geology, University of Patras, Patras, Greece.
Jun 2008–Jun 2013	Assistant Professor Department of Geology, University of Patras, Patras, Greece.
Sept 2006–Feb 2007 (6 months)	Visiting Researcher Department of Chemical Engineering, Stanford University, California, USA
Apr 2003–May 2008	Lecturer Department of Geology, University of Patras, Patras, Greece.

FIELD WORK EXPERIENCE

- Geological mapping in Greece, Austria, UAE, Italy and Spain.
- Orogenic evolution of fold-and-thrust belts in the Hellenides-Dinarides (Greece-Montenegro), Eastern and Northern Emirates (Arabic Peninsula).
- Active faulting and Paleoseismology in Greece, and summer school training in Nevada, Utah (USA).
- Fracture analysis in Greece, UAE, Montenegro and Valley of Fire (Nevada, USA).

RESEARCH INTERESTS

- Fault/fracture geometry, fault/fracture interaction and linkage
- Reservoir characterization
- Orogenic evolution of fold-and-thrust belts
- Strike-slip tectonics
- Strain analysis and quartz c-axes in ductile shear zones
- Active faulting, seismotectonics, Earthquake geology

RESEARCH PROJECTS

- Project Title:** **Relations of faults and folds in the Cretaceous Limestones of the Ionian zone. (1998)**
- Funding Agency:** Enterprise Oil Exploration Ltd.
- Collaborator(s):** Univ. of Patras (Prof. T. Doutsos)
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- Project Title:** **Fracture characterization and fold-fracture relationships from the combination of LiDAR high resolution topographic data and outcrop analogue data: the Jebel Hafit anticline (UAE) as a case example. (2015)**
- Funding Agency:** Petroleum Institute Research Initiation Funding Program
- Collaborator(s):** Dr. Richard Jones (GRL-Durham UK)
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- Project Title:** **Scaling effect of fracture distribution on heterogeneity and anisotropy in carbonate rocks (2015)**
- Funding Agency:** PI Research Initiation Funding Program
- Collaborator(s):** Dr. Sandra Vega (PI)
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- Project Title:** **Magnetic Nanoparticles (MNPs) for Reservoir Characterization (2015-2018)**
- Funding Agency:** ADNOC Oil Subcommittee
- Collaborator(s):** Dr. Saeed Al Hassan (PI), Demokritos Research Center (Greece), UoI (Greece), KBSI (S. Korea), Vanderbilt (USA).
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- Project Title:** **Reservoir characterization from outcrop analogues in Montenegro coastal area (2019).**
- Funding Agency:** Energean Montenegro
- Collaborator(s):** Dr. Richard Jones (GRL-Durham UK), S. Morad (Khalifa University, UAE).
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- Project Title:** **Seabed fluid flow and its implications to earthquakes and global climate (2020)**
- Funding Agency:** ELIDEK (Greece)
- Collaborator(s):** Dr. G. Papatheodorou (Univ. of Patras)
-
- Project Title:** **Interpretive Depositional Model and Sequence Stratigraphy, in combination with Biostratigraphy in the Montenegro Cretaceous carbonate platform and sealing integrity of cap rock units (2021)**
- Funding Agency:** Energean Montenegro
- Collaborator(s):** Dr. Richard Jones (GRL-Durham UK), S. Morad (Khalifa University, UAE), S. Bellas (Institute of GeoEnergy IG/FORTH, Crete), I. Vakalas (Department of Geological Sciences, NTUA).

PUBLICATIONS OVERVIEW-AUTHOR EVALUATION-AWARDS

- Published articles in International Scientific Journals: 57 (40 in SCI journals)
- Abstracts in International conferences and workshops: 72
- Total number of citations: **1039 (h-index=21)** (self-citations excluded): 936 (*h-index=20*) (source: Scopus-Elsevier B.V. & ISI-Thomson Scientific-accessed 04-2022)
- **Google Scholar Citations: Citations 1568, h-index=25, i-10 index=29** (accessed 04-2022)
- **Reviewer in SCI journals:** *Geological Society of America, (Sp. Publ.), Geological Society of London, (Sp. Publ.), Tectonophysics, Tectonics, Geosphere, Lithos, Zeitschrift der Deutschen Gesellschaft für Geowissenschaften, Journal of Geodynamics, Geomorphology, Earth Science Informatics, Quaternary International, Journal of Asian Earth Sciences, Basin Research, Gondwana Research, GSA Bulletin, Turkish Journal of Earth Science, International Journal of Earth Sciences, Geological Journal and Bulletin of Geological Society of Greece (non SCI-journal).*
- Supervision and advising committee for 42 MSc thesis and 16 PhD thesis.
- Technical Committee for the **4th EAGE Middle East Geomechanics Workshop “Lessons Learned & New Frontiers”** in Abu Dhabi UAE on March 2022.
- Technical Committee for the **EAGE/SPE Workshop on Integrated Geomechanics in E&P (Manage & Improve Asset Performance using Geomechanics)** 23-26 October 2016, Abu Dhabi, UAE.)
- Committee Member and session 6 chair (**Future of Geomechanics: Strengthening impact and Education** (with G. Burrige and J. Verdon)) in the **EAGE/SPE Workshop The Future of Geomechanics in Brown Fields and Unconventionals** (2-3 May 2018) Abu Dhabi.
- **Imtinan Best Teacher Award** for Petroleum Geoscience department (Oct 2017) (by student's votes)
- Nomination for the Dean of the **College of Engineering Teaching Award** by the PG-students for the academic year 2016-2017
- **Member of the Editorial Board** of the international journal **All Earth** (Taylor & Francis)
- **Guest Editor for Sp.Issue** in Applied Sciences (MDPI) on “Advances in Structural Geology”.

SELECTED PUBLICATIONS

I. Articles in Refereed Journals

- (1) EMMANOUILIDIS, A., KATRANTSIOTIS, C., DOTSIKA, E., KOKKALAS, S., UNKEL, I., AVRAMIDIS, P., 2022. Holocene paleoclimate variability in the eastern Mediterranean, inferred from the multi-proxy record of Lake Vouliagmeni, Greece. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 595, 110964, <https://doi.org/10.1016/j.palaeo.2022.110964>
- (2) TRIANTAFYLIDIS, S., TOMBROS, S.F., ZHAI, D., & KOKKALAS, S., 2021. The Upper Cretaceous Ermioni VMS Deposit, Argolis Peninsula, Peloponnese, Greece: Type, genesis and geotectonic setting. *Ore Geology Reviews* 138, 104403, <https://doi.org/10.1016/j.oregeorev.2021.104403>
- (3) KORDELLA S., CHRISTODOULOU, D., FAKIRIS E., GERAGA M., KOKKALAS S., MARINARO G., IATROU M., FERENTINOS, G., PAPTAEODOROU G., 2021. Gas Seepage-Induced Features in the Hypoxic/Anoxic, Shallow, Marine Environment of Amfilochia Bay, Amvrakikos Gulf (Western Greece). *Geosciences*, 11(1), 27; doi:10.3390/geosciences11010027
- (4) KIM, S., JANG, Y., KWON, S., SAMUEL, V.O., KIM, S.W., PARK, S.I., SANTOSH, M., KOKKALAS, S., 2020. Petro-tectonic evolution of metamorphic sole of the Semail ophiolite, UAE. *Gondwana Research* 86, 203-221
- (5) JOUN, H., KOKKALAS, S., TOMBROS, S. 2019. Recycled oceanic crust as a source for tonalite intrusions in the mantle section of the Khor Fakkan block, Semail ophiolite (UAE). *Geoscience Frontiers*, 10, 1187-1210.
- (6) BRUNO, P.P.G., DUROSS, C.B., KOKKALAS, S. 2017. High-resolution seismic profiling reveals faulting associated with the 1934 Ms 6.6 Hansel Valley earthquake (Utah, USA). *Bulletin of the Geological Society of America*, 129 (9-10), pp. 1227-1240.
- (7) WILKINSON, M.W., JONES, R.R., WOODS, C.E., GILMENT, S.R., MCCAFFREY, K.J.W., KOKKALAS, S., LONG, J.J. 2016. A comparison of terrestrial laser scanning and structure-from motion photogrammetry as methods for digital outcrop acquisition. *Geosphere*, 12 (6), pp. 1865-1880V.
- (8) ZYGOURI, I. KOUKOUVELAS, S. KOKKALAS, P. XYPOLIAS, AND G. PAPADOPOULOS, “The Nisi fault as a key structure for understanding the active deformation of the NW-Peloponnese, Greece” *Geomorphology*, 237, 142-156, 2015.
- (9) V. CHATZARAS, P. XYPOLIAS, S. KOKKALAS, AND I. KOUKOUVELAS, “Tectonic evolution of a crustal-scale oblique ramp, Hellenides thrust belt, Greece,” *Journal of Structural Geology*, 57, 16-37, 2013.

- (10) S. KOKKALAS, AND A. AYDIN, "Is there a link between faulting and magmatism in south-central Aegean Sea?" *Geological Magazine*, 150 (2) 193-224, 2013.
- (11) A. KAPLANIS, I. KOUKOUVELAS, P. XYPOLIAS, AND S. KOKKALAS, "Kinematics and ophiolite obduction in Gerania and Helicon Mountains, central Greece," *Tectonophysics*, vol. 595-596, 215-234, 2013.
- (12) S. KOKKALAS, E. KAMBERIS, P. XYPOLIAS, S. SOTIROPOULOS, AND I. KOUKOUVELAS, "Coexistence of thin- and thick-skinned tectonics in Zakynthos area (Western Greece): insights from seismic sections and regional seismicity," *Tectonophysics*, vol. 597-598, 73-84, 2013.
- (13) P. XYPOLIAS, I. ILIOPOULOS, V. CHATZARAS, AND S. KOKKALAS, "Subduction- and exhumation-related structures in the Cycladic Blueschists: insights from the south Evia Island (Aegean region, Greece)," *Tectonics*, 31 (2), art.no. TC2001, 2012.
- (14) V. CHATZARAS, P. XYPOLIAS, S. KOKKALAS, AND I. KOUKOUVELAS, "Oligocene-Miocene thrusting in central Aegean: insights from the Cycladic Island of Amorgos," *Geological Journal*, 46, (6), 619-636, DOI: 10.1002/gj.1304, 2011.
- (15) I. KOUKOUVELAS, S. KOKKALAS, AND P. XYPOLIAS, "Surface deformation during the Mw 6.4 (June 08, 2008) Movri Mt earthquake, Peloponnese and its implications for the seismotectonics of Western Greece," *International Geology Review*, 52, 2-3, 249-268, 2010.
- (16) P. XYPOLIAS, D. SPANOS, V. CHATZARAS, S. KOKKALAS, AND I. KOUKOUVELAS, "Vorticity of flow in ductile thrust zones: examples from the Attico-Cycladic Massif (Internal Hellenides, Greece)," *Geological Society, London, Special Publication 335, "Continental Tectonics and Mountain Building"*, 687-714, 2010.
- (17) G. PE-PIPER, D.J. PIPER, I. KOUKOUVELAS, L. DOLANSKY, AND S. KOKKALAS, "Post-orogenic shoshonitic rocks and their origin by melting underplated basalts: the Miocene of Limnos, Greece," *Geological Society of America Bulletin* v. 121, p.17-38, 2009.

II. Selected Articles in Refereed Conference Proceedings

- (1) KOKKALAS, S., VAKALAS, I., JONES, R., 2022. Fracture density variation at different observation scales in carbonate reservoir outcrop analogues. EAGE Middle East Geomechanics Workshop: Lessons Learned & New Frontiers, p.1-5, <https://doi.org/10.3997/2214-4609.2022614021>.
- (2) JONES, R.R., KOKKALAS, S., LONG, J.J., DANIELS, S.E., GILMENT, S.R., WILKINSON, M.W., OXLADE, D.M. 2018. Calibration of fracture models using multi-scale outcrop analogues-The importance of mechanical stratigraphy, In 3rd EAGE Workshop on Naturally Fractured Reservoirs, Muscat Oman, 2018-February.
- (3) JONES, R.R., LONG, J.J., KOKKALAS, S., DANIELS, S.E., OXLADE, D.M., GILMENT, S.R., WOODS, C.E., WILKINSON, M.W. 2015. Improved Multi-scale fracture models based on quantitative analysis of outcrop analogues. In 3rd EAGE Workshop on Iraq: Unlocking the Potential of the Giant Oil Field in Southern Iraq, pp. 47-51.
- (4) D. Papoulis, Th. Romiou, and S. Kokkalas, "Clay minerals from the Arkitsa Fault gouge zone, in Central Greece, and implications for fluid flow," in 13th International Congress of the Geological Society of Greece, Chania, Crete Island, Greece, 2013.
- (5) D. Spanos, I. Koukouvelas, S. Kokkalas, and P. Xypolias, "Patterns of ductile deformation in Attico-Cycladic massif," in the Proceedings of the 12th International Congress, Patras, 368-378, 2010.
- (6) S. Kokkalas, "Segmentation and interaction of normal faults in Central Greece" in the Proceedings of the 12th International Congress, Patras, 428-441, 2010.
- (7) I. Koukouvelas, S. Pavlides, D. Agrafiotis, G. Alexandris, L. Stamatopoulos, V. Zygouri, S. Verroios, S. Sboras, and S. Kokkalas, "Coseismic and aseismic adjustment of a river course: The case history of Kerynities river, Gulf of Corinth, Greece," in Ancient Helike and Aigialeia, Archaeological Sites in Geologically Active Regions (eds) Katsonopoulou D., Soter S., Koukouvelas I., Helike III, Proceedings of the 3rd International Conference, Nikolaiika, Diakopton, 223-241, 2000.
- (8) S. Kokkalas, R.R. Jones, K.J.W. McCaffrey, P. Clegg, "Quantitative fault analysis at Arkitsa, Central Greece, using terrestrial Laser-Scanning (LiDAR)," *Bulletin of the Geological Society of Greece*, vol. XXXX, 1959-1972, 2007.

III. Invited Seminars & Conference Presentations / Posters

- (1) KOKKALAS S., 2019. From the ancient seas 600 million years ago to the modern deserts and sabkhas of UAE: a geological journey of the United Arab Emirates. The Oil and Gas Year-Abu Dhabi 2019, pp.44-46. (Invited article)
- (2) S. KOKKALAS, S. NIZAMUDDIN, S. VEGA 2019. Multi-scale Fracture Network Characteristics in a Carbonate Reservoir Outcrop Analogue: Insights from μ CT data in Core Plugs and Thin Sections. 15th

- International Congress of the Geological Society of Greece, Athens 22-24 May 2019, Bulletin of the Geological Society of Greece Sp. Publ. 7. Ext. Abs GSG2019-357.
- (3) KOKKALAS S., 2017. 3D fracture networks from reservoir outcrop analogues with new digital methodologies. Innovate, Technical Picks, Issue I-July 2017, p. 18-19, Society of Petroleum Engineers, Young Professionals Egyptian Section, Egypt. (Invited article).
 - (4) S. Kokkalas, M. Zampos, D. Papoulis, and R. Jones, "Tectonic analysis of Arkitsa fault scarp with LiDAR application and fluid flow inside the fault zone" presented at the EGE meeting "The Arkitsa Fault-A Geopark of global geoheritage and its importance for the seismic risk of Lokris area, (Central Greece). (Invited talk), Atalanti, Greece, 2013.
 - (5) V. Zygouri, S. Kokkalas, P. Xypolias, I. Koukouvelas, and G. Papadopoulos, "The Movri Mountain earthquake: understanding active deformation of NW-Peloponnese", presented at 2nd INQUA-IGCP-567 International Workshop on Active Tectonics, Earthquake Geology, Archaeology and Engineering, Corinth, Greece, 2011.
 - (6) P. Xypolias, V. Chatzaras, S. Papadopoulou, and S. Kokkalas, "Strain-partitioning during fabric transposition and mylonitization: insights from the Cycladic Blueschist Nappe (Aegean region, Greece), presented at "Deformation Localization in Rocks: New advances, Penrose Conference, Cadaques, Catalonia, Spain, 2011.
 - (7) V. Chatzaras, P. Xypolias, S. Kokkalas, and I. Koukouvelas, "Localization of deformation along inherited structures: insights from the Omalos Transverse Zone (western Crete, Greece), presented at "Deformation Localization in Rocks: New advances, Penrose Conference, Cadaques, Catalonia, Spain, 2011.G
 - (8) S. Kokkalas, "Segmentation and interaction of normal faults in central Greece", presented at *12th International Conference of the Geological Society of Greece, Patras, Greece, 2010.*

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