

Dr. GEORGE KAVIRIS
ASSOCIATE PROFESSOR OF
SEISMOLOGY – SEISMIC ANISOTROPY



Full Name: George I. Kaviris

Current Position: Associate Professor of "Seismology – Seismic Anisotropy", Section of Geophysics and Geothermics, Department of Geology and Geoenvironment, National and Kapodistrian University of Athens (since 2021).

Education:

1994: Graduated from the Faculty of Physics, National and Kapodistrian University of Athens.

2003: PhD of Seismology, Section of Geophysics and Geothermics, Department of Geology and Geoenvironment, National and Kapodistrian University of Athens with the grade of "Excellent" (10). Thesis subject: "Study of Seismic Source Properties of the Eastern Gulf of Corinth". Study of seismic anisotropy was a major part of the PhD thesis.

Date of Birth: 2 January 1972

Marital Status: Married and father of two children

Foreign Languages: English: Excellent (Proficiency, Teaching Adequacy)

French: Excellent (Diplôme d' Etudes Supérieures, Teaching Adequacy)

German: Very Good (Mittelstufe)

PC Knowledge: Experienced with operational systems UNIX, LINUX and WINDOWS. Long-term expertise on seismic data analysis software, including algorithms for probabilistic seismic hazard assessment.

Previous Professional career

- 2004-2007: Post-Doc Researcher in the Research Project "Pythagoras" entitled: «Identification of Anisotropic Media in Greece using body and surface waves» focusing on the study of seismic anisotropy, as is evident from the title of the Project.
- 2006-2013: Research Associate (IDAX) at the Laboratory of Seismology, Section of Geophysics and Geothermics, Department of Geology and Geoenvironment, National and Kapodistrian University of Athens.
- 2013-2016: Lecturer of "Seismology", Section of Geophysics and Geothermics, Department of Geology and Geoenvironment, National and Kapodistrian University of Athens.
- 2016-2021: Assistant Professor of "Seismology – Seismic Anisotropy", Section of Geophysics and Geothermics, Department of Geology and Geoenvironment, National and Kapodistrian University of Athens.

Teaching Experience

- 1995-2011: Active participation in teaching of Laboratories of the courses "Seismology", "Special Courses of Seismology", "Tectonics of Lithospheric Plates – Seismology in Greece", "Earthquake Prediction", "Geophysics" and "Geothermics" to the undergraduate students of the Department of Geology and Geoenvironment
- 2004-2009: Adjunct Lecturer P.D. 407/80 for five (5) academic semesters at the National and Kapodistrian University of Athens, teaching courses of the Section of Geophysics and Geothermics.
- 2005-2009: Teaching for four (4) continuous academic years at ASPETE (School of Pedagogical and Technological Education) as Research Fellow at the rank of Assistant Professor (General Department of General Courses).
- 2013-2021: Co-teaching the Lectures and Laboratories of the courses "Seismology", "Tectonics of Lithospheric Plates – Seismology in Greece", "Earthquake Prediction", "Applied and Engineering Seismology", "Macroseismology" and "Exploration of the Earth's Interior" of the Undergraduate Programme of the Department of Geology and Geoenvironment.
- 2013-2019: Co-teaching the courses "Special Courses of Seismology I", "Seismic Parameters – Source Properties", "Advanced Seismology II", "Exploration of the Deep Earth's interior", "Theoretical and Applied Seismology", "Collection and Analysis of Seismological Data" of the MSc Programme of the Department of Geology and Geoenvironment, Specialization in "Geophysics - Seismology".
- 2014-2021: Co-teaching the course "Natural Disasters" of the MSc Programme of the Department of Nursing of the National and Kapodistrian University

of Athens. "Disaster Medicine and Crisis Management", Specialization in "Emergency Health Care".

2018-2021: Co-teaching the courses "Seismology – Engineering – Seismology" and "Modern Seismological Research" of the MSc Programme of the Department of Geology and Geoenvironment, Specialization in "Applied Geology – Geophysics"

2015-2021: Teaching and Research Staff Member in the MSc Programme "Strategies in Environment, Disasters and Crises Management" of the Department of Geology and Geoenvironment of the National and Kapodistrian University of Athens.

2017-2021: Co-teaching the course "Physics" of the Undergraduate Programme of the Department of Geology and Geoenvironment.

I have supervised ten (10) and I am currently supervising five (5) theses of undergraduate students of the Department of Geology and Geoenvironment. Most of the completed theses involve seismic anisotropy studies, such as "**Seismic anisotropy study in the broader area of Aigion, W. Corinth Gulf, during the occurrence of a seismic swarm in May – August 2013**", "**Seismic anisotropy study in the W. Corinth Gulf, during the second semester of 2014**", "**Seismic anisotropy study in the area of Santorini, during the 2011-2012 period**" and "**Seismic anisotropy study in the Greek territory using SKS phases**". Other theses I have supervised are "Seismic Hazard Assessment Study in Greece Using the Extreme Values Method" and "Probabilistic seismic hazard assessment and earthquake scenarios for Kefallinia". In addition, I have co-supervised one thesis of undergraduate student of the Department of Physics of the National and Kapodistrian University of Athens.

I have supervised three MSc diploma theses and I participated in the Three-member Advisory and Examining Committee of eight (8) MSc diploma theses in the framework of the Post-Graduate Programme of the Department of Geology and Geoenvironment, Specialization "Seismology".

In addition, in the context of the Post-Graduate Programme "Strategies of Environmental Disaster and Crisis Management", I have supervised thirteen (13) MSc diploma theses and I participated in the Three-member Advisory and Examining Committee of fifty-one (51) MSc diploma theses.

I acted as the co-advisor of one (1) MSc diploma thesis in the framework of the Post-Graduate Programme "Geophysics and Meteorology" of the Universidad de Granada (University of Granada, Spain).

I participated in the Three-member Advisory and Examining Committee of one (1) MSc diploma thesis in the framework of the Post-Graduate Programme of the Department of Geology of the Aristotle University of Thessaloniki "Applied and Environmental Geology", Specialization "Applied Geophysics and Seismology".

I have also participated since 2016 in eight (8) 7-member Examining Committee of PhD Dissertations in the Department of Geology and Geoenvironment of the National and Kapodistrian University of Athens and one (1) in the Department of Geology of the Aristotle University of Thessaloniki.

I am currently supervising two (2) PhD theses in the Department of Geology and Geoenvironment of the National and Kapodistrian University of Athens. I act as a member of the Advisory Committee of seven (7) theses, six (6) of which in the Department of Geology and Geoenvironment of the National and Kapodistrian University of Athens and one (1) in the Department of Geology of the Aristotle University of Thessaloniki.

International Scientific Activity

I have participated in forty (40) International Conferences, with oral and poster presentations. I have acted and still act as a reviewer in thirteen (13) international scientific journals, among which «Geophysical Journal International», «Natural Hazards and Earth System Sciences», «Tectonophysics», «Physics of the Earth and Planetary Interiors», «Acta Geophysica», «Natural Hazards and Earth System

Member of the Organizing Committee of the International Conference "10 Years since the occurrence of the Athens Earthquake: Experiences and Lessons", co-organized by the Seismology Laboratory of NKUA (SL-NKUA), the European Centre on Prevention and Forecasting of Earthquakes (ECPFE) and the Geodynamic Institute of the National Observatory of Athens (GI-NOA), held in Athens in December 2010.

December 2017: Invited presentation in the Workshop entitled "Recent Strong Earthquakes in the Greece and Worldwide", co-organized by the Faculty of Geology and Geoenvironment and the Master Degree Program "Environmental, Disaster & Crises Management Strategies" of the National and Kapodistrian University of Athens (NKUA).

Workshop webpage: <https://edcm.edu.gr/index.php/11-ekdilwseis/217-imerida-prosfatoi-isxyroi-seismo-i-ston-elliniko-diethni-xwro>

Since 2019 I am a member of the Organizing Committee of the international CRL School for MSc Students and School teachers, which is organized in a yearly basis in Nafaktos and Patras.

Since 2020 I am a member of the National Permanent Seismotectonic Committee of the Earthquake Planning and Protection Organization.

I am appointed as a member of both the Local Organizing Committee and the Scientific Committee of the "37th General Assembly of the European Seismological Commission".

In 2019 I acted as a convener of the "15th International Congress of the Geological Society of Greece, Exploring and Protecting our Living Planet Earth" that was held in Athens, Sessions: "T3. Geophysics and Seismology" and "T3.S2. Seismicity & Geodynamics in Ionian Islands and Corinth Gulf".

Scientific Experience

I have participated in a large number of research projects, among which:

- 2000: *«Regular Update of Seismic Hazard Maps through Thermal Space Observations SEISMOSAT».*
- 2001-2002: *«Informative system for the Management of Tectonic and Seismic data of active faults».*
- 2004-2007: *«Management of Seismic Crises in Greece and Slovenia: Characteristic Cases of Recent and Past Earthquakes».*
- 2010-2012: *«Seismic Hazard Harmonization in Europe (SHARE)».* I was responsible on behalf of the Department of Geophysics - Geothermics of the National and Kapodistrian University of Athens for the compilation of a homogenized and updated Greek earthquake catalogue that was following used for probabilistic seismic hazard assessment. The catalogue was published in a scientific journal.
- 2011-2014: *«EPOS: European Plate Observing System»*
- 2013-2015: *«Greco-Risks Hellenic Natural-Hazards Risk-Mitigation System of Systems (A real time 365/24 operational platform)».* Five geo-hazards and risks were analyzed. **I was responsible for the module "Earthquake", which is integrated in the Greco-Risks platform and includes probabilistic seismic hazard, vulnerability and risk.**
- 2017-2021: *«HeLlenic Plate Observing System (HELPOS)»* aiming to enhance the equipment of the Hellenic Laboratories and Institutes of Seismology and Geophysics and to upgrade, harmonize and integrate infrastructures, as well as to develop, a sustainable, permanent, geographically distributed, unified infrastructure network. **I am responsible** on behalf of the Department of Geophysics - Geothermics of the National and Kapodistrian University of Athens for the actions "Monitoring Ground Movements and Active Tectonic Structures" and "Development of New Tools and Improvement of Informatics Infrastructures".
- 2019-2022: *«Tilemachos – Innovative Seismic Risk Management System for the Ionian Islands Prefecture»* participating to the: *«Collection of Available Seismological Data, Seismicity Maps and Seismic Hazards Maps of the Ionian Islands».*
- 2019-2021: *ARIS – Integrated System for Early Warning & Seismic Risk Management with application to industrial infrastructures»* being responsible for *«development and application of early-warning algorithms, development and application of seismic risk estimation algorithms and evaluation of the obtained results».*
- 2020-2021: Scientific Responsible of the Project "The effect of fluids on the seismicity of the Western Gulf of Corinth" aiming to provide new

models for the understanding of the dynamics of fluid diffusion in the crust and the induced by them seismicity. The study is based to the compilation of a precise relocated earthquake catalogue for the Western Gulf of Corinth and of precise Shear-Wave Splitting measurements.

Award

January 2017: Highly cited Research Award for the publication "Karst collapse susceptibility mapping considering peak ground acceleration in a rapidly growing urban area" in which I was a co-writer. This publication was awarded being among the five (5) most cited works of the international journal "Engineering Geology" for the period January 2014 - June 2016. The award was given in recognition for the contribution of this work to the quality of the scientific journal "Engineering Geology". A certificate has been issued by Elsevier. Scopus Page <https://www.scopus.com/record/pubmetrics.uri?eid=2-s2.0-84877005399#tabs=1> January 2017. This award is also mentioned to the "Internal Evaluation Report" of the Department of Geology and Geoenvironment of the University of Athens for the academic year 2016-2017.

Selected Scientific Publications

139 publications in peer-reviewed scientific journals, international congresses and reports, among which 43 full papers in peer-reviewed scientific journals. Selected publications are listed below:

P. Papadimitriou, **G. KAVIRIS** and K. Makropoulos, 1999. Evidence of shear wave splitting in the eastern Corinthian Gulf (Greece). *Physics of the Earth and Planetary Interiors*, 114, 3-13.

C. Tiberi, H. Lyon-Caen, D. Hatzfeld, U. Achauer, E. Karagianni, A. Kiratzi, E. Louvari, D. Panagiotopoulos, I. Kassaras, **G. KAVIRIS**, K. Makropoulos and P. Papadimitriou, 2000. Crustal and upper mantle structure beneath the Corinth rift (Greece) from a teleseismic tomography study. *Jour. Geophys. Res.*, 105, No B12, 28159-28171.

P. Papadimitriou, **G. KAVIRIS**, N. Voulgaris and I. Kassaras, 2000. Shear-wave splitting analysis using aftershocks of the 7th September 1999 Earthquake: Preliminary Results. *Ann. Geol. Pays Hellen.*, 1e Serie, T. XXXVII, FASC. B, p. 89-103.

P. Papadimitriou, N. Voulgaris, I. Kassaras, **G. KAVIRIS**, N. Delibasis and K. Makropoulos, 2002. The Mw=6.0, September 7, 1999 Athens earthquake. *Natural Hazards*, 27, 15-33.

P. Papadimitriou, **G. KAVIRIS** and K. Makropoulos, 2006. The Mw=6.3 2003 Lefkada Earthquake (Greece) and induced transfer changes. *Tectonophysics*, 423, 73-82.

G. KAVIRIS, P. Papadimitriou and K. Makropoulos, 2007. Magnitude Scales in Central Greece. *Bull. Geol. Soc. Greece*, vol. XXXX, part 3, p. 1114-1124, 2007.

G. KAVIRIS, P. Papadimitriou and K. Makropoulos, 2008. An Overview of Anisotropy Studies in Central Greece using recordings around the Gulf of Corinth (Greece) and aftershocks of the 1999 Athens Earthquake. *Short Papers*, 31st ESC General Assembly, Hersonissos, Crete, Greece, p. 215-223.

G. KAVIRIS, P. Papadimitriou and K. Makropoulos, 2010. Anisotropy study of the February 4th 2008 swarm in NW Peloponnesus (Greece). *Bull. Geol. Soc. Greece*, vol. XLIII, No 4, p. 2084-2092.

P. Papadimitriou, **G. KAVIRIS**, A. Karakonstantis and K. Makropoulos, 2010. The Cornet seismological network: 10 years of operation, recorded seismicity and significant applications. *Hellenic Journal of Geosciences*, vol. 45, p. 193-208.

K. Makropoulos, **G. KAVIRIS** and V. Kouskouna, 2012. An updated and extended earthquake catalogue for Greece and adjacent areas since 1900. *Nat. Hazards Earth Syst. Sci.*, 12, 1425-1430.

K. Pavlou, **G. KAVIRIS**, K. Chousianitis, G. Drakatos, V. Kouskouna and K. Makropoulos, 2013. Seismic hazard assessment in Polyphyto Dam area (NW Greece) and its relation with the "unexpected" earthquake of 13 May 1995 ($M_s = 6.5$, NW Greece). *Nat. Hazards Earth Syst. Sci.*, 13, p. 141-149.

K. Papadopoulou-Vrynioti, G. Bathrellos, H. Skilodimou, **G. KAVIRIS** and K. Makropoulos, 2013. Karst collapse susceptibility mapping considering peak ground acceleration in a rapidly growing urban area. *Engineering Geology*, 158, p. 77-88.

I. Kassaras, V. Kapetanidis, A. Karakonstantis, **G. KAVIRIS**, P. Papadimitriou, N. Voulgaris, K. Makropoulos, G. Popandopoulos and A. Moshou, 2014. The April-June 2007 Trichonis Lake earthquake swarm (W. Greece). New implications toward the causative fault zone. *Journal of Geodynamics*, 73, p. 60-80.

G. KAVIRIS, V. Kapetanidis, Ph. Kravvariti, A. Karakonstantis, G. Bozionelos, P. Papadimitriou, N. Voulgaris and K. Makropoulos, 2014. Anisotropy study in Villia (E. Corinth Gulf, Greece). *Full Paper*, 2nd ECEES, Istanbul, Turkey.

V. Kouskouna and **G. KAVIRIS**, 2014. Seismic Hazard Study in Messinia (SW Peloponnesse) Area. *Full Paper*, 2nd ECEES, Istanbul, Turkey.

G. KAVIRIS, P. Papadimitriou, Ph. Kravvariti, V. Kapetanidis, A. Karakonstantis, N. Voulgaris and K. Makropoulos, 2015. A detailed seismic anisotropy study during the 2011-2012 unrest period in the Santorini Volcanic Complex. *Physics of the Earth and Planetary Interiors*, 238, 51-88.

P. Papadimitriou, V. Kapetanidis, A. Karakonstantis, **G. KAVIRIS**, N. Voulgaris and K. Makropoulos, 2015. The Santorini Volcanic Complex: A detailed multi-parameter seismological approach with emphasis on the 2011-2012 unrest period. *Journal of Geodynamics*, 85, 32-57.

I. Kassaras, D. Kalantoni, Ch. Benetatos, **G. KAVIRIS**, K. Michalaki, N. Sakellariou and K. Makropoulos, 2015. Seismic damage scenarios in Lefkas old town (W. Greece). *Bull. Earth. Engin.*, Vol. 13, Iss. 12, 3669-3711.

V. Kouskouna, **G. KAVIRIS**, G. Sakkas, I. Misailidis, N. Sakellariou, A. Pomonis, K. Cholevas, D. Kallidromitou and A. Kassela, 2015. Earthquake, landslide and volcano activity in the Cyclades. Proc. 5th International CEMEPE 2015 and SECOTOX Conference, Mykonos, Greece, p. 107 - 114.

V. Kapetanidis, A. Deschamps, P. Papadimitriou, E. Matrullo, A. Karakonstantis, G. Bozionelos, **G. KAVIRIS**, A. Serpetsidaki, H. Lyon-Caen, N. Voulgaris, P. Bernard, E. Sokos and K. Makropoulos, 2015. The 2013 earthquake swarm in Helike, Greece: a detailed seismotectonic study. *Geophys. Journ. Int.*, 202, 2044–2073.

G. Sakkas, I. Misailidis, N. Sakellariou, V. Kouskouna and **G. KAVIRIS**, 2016. Modeling landslide hazard in Greece: A Weighted Linear Combination approach using Analytic Hierarchical Process, validated with spatial and statistical analysis. *Natural Hazards*, 84, 1873-1904, doi 10.1007/s11069-016-2523-6.

G. KAVIRIS, I. Spingos, V. Kapetanidis and P. Papadimitriou, 2016. Preliminary shear-wave splitting results in the broader Aigion area (Greece) during 2013. *Bulletin of the Geological Society of Greece*, vol. L, paper 42.

G. KAVIRIS, I. Spingos, V. Kapetanidis, P. Papadimitriou, N. Voulgaris and K. Makropoulos, 2017. Upper crust seismic anisotropy study and temporal variations of shear-wave splitting parameters in the Western Gulf of Corinth (Greece) during 2013. *Physics of the Earth and Planetary Interiors*, 269, 148-164, <https://doi.org/10.1016/j.pepi.2017.06.006>.

P. Papadimitriou, A. Karakonstantis, V. Kapetanidis, G. Bozionelos, **G. KAVIRIS** and N. Voulgaris, 2017. Seismicity and tomographic imaging of the Broader Nisyros region (Greece). *"Nisyros Volcano. The Kos - Yali - Nisyros Volcanic Field" e-book*, Springer, 245-271, DOI 10.1007/978-3-319-55460-0.

P. Papadimitriou, I. Kassaras, **G. KAVIRIS**, G.-A. Tselentis, N. Voulgaris, E. Lekkas, G. Chouliaras, C. Evangelidis, K. Pavlou, V. Kapetanidis, A. Karakonstantis, D. Kazantzidou-Firtinidou, I. Fountoulakis, C. Millas, I. Spingos, T. Aspiotis, A. Moumoulidou, E. Skourtsos, V. Antoniou, E. Andreadakis, S. Mavroulis and M. Kleanthi, 2018. The 12th June 2017 Mw=6.3 Lesvos earthquake from detailed seismological observations. *Journal of Geodynamics*, 115, 23–42. <https://doi.org/10.1016/j.jog.2018.01.009>

G. KAVIRIS, C. Millas, I. Spingos, V. Kapetanidis, I. Fountoulakis, P. Papadimitriou, N. Voulgaris and K. Makropoulos, 2018. Observations of shear-wave splitting parameters in the Western Gulf of Corinth focusing on the 2014 Mw=5.0 earthquake. *Physics of the Earth and Planetary Interiors*, 282, 60-76. <https://doi.org/10.1016/j.pepi.2018.07.005>

G. KAVIRIS, I. Spingos, C. Millas, V. Kapetanidis, I. Fountoulakis, P. Papadimitriou, N. Voulgaris and G. Drakatos, 2018. Effects of the January 2018 seismic sequence on shear-wave splitting in the upper crust of Marathon (NE Attica, Greece). *Physics of the Earth and Planetary Interiors*, 285, 45-58. <https://doi.org/10.1016/j.pepi.2018.10.007>.

G. KAVIRIS, I. Fountoulakis, I. Spingos, C. Millas, P. Papadimitriou and G. Drakatos, 2018. Mantle dynamics beneath Greece from SKS and PKS seismic anisotropy study. *Acta Geophysica*, 66 (6), 1341-1357. <https://doi.org/10.1007/s11600-018-0225-z>.

S. Mavroulis, E. Lekkas, E. Andreadakis, E. Skourtsos, **G. KAVIRIS**, G.-A. Tselentis, I. Kassaras, N.-I. Spyrou, N. Voulgaris, P. Papadimitriou, P. Carydis and V. Antoniou, 2019. UAV and GIS based rapid earthquake-induced building damage assessment and application of the EMS-98 for the June 12, 2017 Mw 6.3 Lesvos (Northeastern Aegean, Greece). *Int. J. Disaster Risk Reduction*, 37, 101169. <https://doi.org/10.1016/j.ijdr.2019.101169>

A. Karakonstantis, P. Papadimitriou, C. Millas, I. Fountoulakis, I. Spingos and **G. KAVIRIS**, 2019. Tomographic imaging of the NW edge of the Hellenic Volcanic Arc: schoCase study of the 2016-2017 Poros earthquake swarm. *J. Seismology*, 23, 995–1016, doi: 10.1007/s10950-019-09849-8.

I. Spingos, **G. KAVIRIS**, C. Millas, P. Papadimitriou and N. Voulgaris, 2020. Pytheas: An open-source software solution for local shear-wave splitting studies. *Computers & Geosciences*, 134, 104346. doi: 10.1016/j.cageo.2019.104346.

G. KAVIRIS, I. Spingos, V. Karakostas, E. Papadimitriou and T. Tsapanos, 2020. Shear-wave splitting properties of the upper crust in the CO₂ field of Florina Basin, Greece. *Physics of the Earth and Planetary Interiors*, 303, 106503. doi: 10.1016/j.pepi.2020.106503.

V. Kapetanidis, A. Karakonstantis, P. Papadimitriou, K. Pavlou, I. Spingos, **G. KAVIRIS** and N. Voulgaris, 2020. The 19 July 2019 earthquake in Athens, Greece: a delayed major aftershock of the 1999 Mw = 6.0 event, or the activation of a different structure?. *Journal of Geodynamics*, 139, 101766, doi: 10.1016/j.jog.2020.101766.

V. Kouskouna, G. Sakkas, I. Cecic, V.I. Tsimpidaros, S. Sakkas, **G. KAVIRIS** and A. Tertulliani, 2020. Earthquake induced crises: game tree approached risk communication and lessons learnt. *Annals of Geophysics*, 63. doi: 10.4401/ag-8405.

P. Papadimitriou, V. Kapetanidis, A. Karakonstantis, I. Spingos, K. Pavlou, **G. KAVIRIS** V. Sakkas and N. Voulgaris, 2021. The 25 October, 2018 Zakynthos (Greece) earthquake: seismic activity at the transition between a transform fault and a subduction zone. *Geophys. J. Int.*, 225, 15–36. doi: 10.1093/gji/ggaa575.

Citations to my Scientific Work

My publications have been cited 706 times (among which 604 excluding self-citations) with h-index 13, according to Scopus, and 1263 times with h-index 17, according to Google Scholar.