

# **CURRICULUM VITAE**

of

**Dr. Economou Nikos**

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## **1. Personal data**

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Telephone: 0030-2821037677  
Fax: 0030-2821006901  
Date of birth: 10<sup>th</sup> July 1971  
Place of birth: Thessaloniki, Greece.  
Nationality: Greek  
Army duties fulfilled: 1997-1998 Greek Navy  
Marital status: Married to Trinta, we have 2 sons: Themistoklis and Thomas

## **2. Education**

1998 B. Sc. Mineral Resources Engineering Department (MRED) Technical University of Crete (TUC), Greece. Title: “Geophysical research at the archaeological site of Itanos, Lasithi, Crete, Greece”.  
2002 M.Sc., MRED, TUC, Greece. Title: “Presentation and interpretation of geophysical data using GIS”  
2010 Doctor of Philosophy (Ph.D) in Applied Geophysics, MRED, TUC, Greece. Title: “Development of GPR data processing methods using S-transform”.

## **3. Honors**

- 1999 Scholarship - Technical University of Crete, Greece, for M. Sc.
- I have received **invitation** for
  - A) Presentation-speaking
    - 1) 2002- For the 11<sup>th</sup> meeting of Greek GIS users, ArcInfo-ArcView, Marathon Data Systems, Athens, November, 2002. Publication 7DC1.
    - 2) 2007- Two presentations in the conference “Likto Euktimeni”, 9-11 November, Kastelli Pediaos, Crete. Publications 7DB1, 7DB2.
    - 3) 2013 to 2015- Four (4) presentations at TU1208 Cost Action meetings at EGU and/or workshops, Publications 7DB3, 7DB4, 7DC2, 7DC3.
  - B) Submission of article at scientific journal:
    - 1) 2009 – From journal Near surface Geophysics, after presentation to the GSG2009 conference. Publications 7C4, 7DA15.
    - 2) 2010-From Journal of Applied Geophysics, after the presentation at GPR2010. Publications 7C5, 7DA17.
    - 3) 2011-From journal NDT International, after the presentation at EGU2011. Publications 7C6, 7DD1.
    - 4) 2014-From journal First Break, at special issue regarding geophysics in Greece. Publication 7C10.
    - 5) 2018-From Journal of Applied Sciences, after the presentation at IEEE2018. Publication 7DA34.

- 6) 2018-From journal Geosciences, in order to contribute to the special issue “Advances in Ground Penetrating Radar Research”. Publication 7C16.
- 7) 2021 – From journal “Applied Sciences”, in order to contribute to the special issue "Applications of Ground-Penetrating Radar to Geomorphology, Near-Surface Geology and Geoarchaeology”. Under preparation.
- C) Authorship at sections in books
  - 1) 2015-Section relevant to advanced GPR signal processing methods - Springer.
  - 2) 2017-Section in book relevant with the GPR activities in Greece-Arachne, Open access.
- D) 2017-Serve as Chief-guest Editor for a special issue in the journal Signal Processing (more details below at scientific community services section) and  
2021- as Guest Editor for a special issue in the journal Geophysics (more details below at scientific community services section).
- E) 2020 - Serve as Topic Editor for the journal “Geosciences”.
- 2013-2017 Leader (with Prof. F. Benedetto from University of Roma) of the project “Development of advanced GPR data processing techniques”, TUD COST Action TU1208.
- 9/2018 Elected, after open call, for teaching as a visiting professor the course “Environmental Geophysics” at Technological Institute of Crete, Greece, for the summer semester 2019.
- 2/2021 Elected, after open call, for teaching as a visiting professor the course “Applied Geophysics” at University of Western Macedonia, Greece, Mineral Resources Engineering Dpt, for the summer semester 2021.

## **4. Scientific community services**

### **4A. Editorial work**

- 2011-today: I have reviewed articles for the following scientific journals *Geophysics, Signal Processing, Journal of Applied Geophysics, Nondestructive Testing and Evaluation International, Journal of Balkan Geophysical Society, Journal of Geophysics and Engineering, Environmental Earth Sciences, Construction & Building Materials, Research in Nondestructive Evaluation, Transactions on Geoscience and Remote Sensing, Pure and Applied Geophysics, Journal of King Saud University.*
- 2014: Expert reviewer at 20th Near Surface Geosciences Conference.
- 2017: Expert reviewer at 9th International Workshop on Advanced Ground Penetrating Radar - IWAGPR2017.
- 2017: Expert reviewer at BCRRA 2017 Tenth International Conference on the Bearing Capacity of Roads, Railways and Airfield.
- 2017: Chief-guest-Editor, Special Issue in the journal “Signal Processing” by Elsevier, “Special issue - Ground penetrating radar signal processing”, Vol. 132.
- 2021: Guest-editor, special issue in the journal "Geophysics", by SEG, "GPR data imaging and interpretation", on-going for 2021, with M. Bano, J. Bradford, E. Slob, A. Giannopoulos, G. Tsoflias, A. Klotzsche.
- 2020-2022: Topic Editor for the journal “Geosciences”.

#### **4B. Conferences**

2013 – Organizing committee of the 13<sup>th</sup> International Conference of the Greek Geological Society.

2014 – Chair for the GPR and Electromagnetics session at the 20<sup>th</sup> Near Surface Geosciences Conference.

2015 – Organizing committee of the 8<sup>th</sup> Conference of Balkan Geophysical Society.

2017-Scientific committee of the 10<sup>th</sup> International Conference on the Bearing Capacity of Roads, Railways and Airfields (BCRRA 2017).

2021-Scientific committee of the 11<sup>th</sup> International Conference on the Bearing Capacity of Roads, Railways and Airfields (BCRRA 2021).

### **5. Professional and scientific experience**

#### **5A. Academic experience**

- 9/1998 to 1/2003: Researcher at the Applied Geophysics Lab. of the Mineral Resources Engineering Department, under six month's sequential contracts.
- 8/2001: Visiting researcher at the University of Bochum, Germany, for seismological data processing, Professor Hans-Peter Harjes.
- 2/2003 to 7/2014: At Technical University of Crete as “Specific Technical and Laboratory Personnel” (STLP) for the Applied Geophysics Lab.
- 9/2013 to 12/2014: External advisor for Arab Center for Engineering Studies (ACES), Jeddah, Saudi Arabia.
- 8/2014 until today: At Technical University of Crete as “Teaching and Laboratory Personnel” (TLP) in Geophysics.
- 2/2021 until today: Visiting Professor at University of Western Macedonia, Greece, Mineral Resources Engineering Dpt.

#### **5B. On – going R&D activities (29)**

*PI: Principal Investigator (coordinator)*

*Participation in the projects below mainly includes partial involvement in initial proposal, geophysical measurements and preparation of the corresponding technical reports or deliverables*

1. Geophysical survey at the ancient city of Itanos, Lasithi, Crete, Greece (1995-2001). Funded by the French Archaeological School of Athens. PI: A. Vafidis.
2. Passive and active seismics in Western and Central Crete, Greece (1996 – 2006). Funded by the German Science Foundation. PI: H-P Harjes.
3. Geophysical survey for antiquities at Alexandria, Egypt (6/2000). Resistivity mapping, sounding and tomography at the Old Jewish Cemetery of Alexandria, Egypt. Funded by the Foundation of Research and Technology, Greece (6/2000). PI: A. Sarris.
4. Geoelectrical prospection at N. Marmara, Chalkidiki for ground water research (2001). Funded by GEOTEK. PI: A. Vafidis.
5. Geophysical survey for hydrogeological purposes at Kalimnos island (2001). Funded by the Kalimnos Municipality. PI: G. Tsokas.
6. Geological and geophysical survey of Vasilies village (2002). Funded by Heraklion Municipality PI: D. Monopolis.
7. Artificial lakes in West Crete: Geophysical survey at Kountoura. Funded by the Pelekanos Municipality (2003-2004). PI: A. Vafidis.
8. Geophysical research for the delineation of the ground water table at Heraklion, Crete (2003). Funded by EPAN (SMILES). PI: A. Vafidis.

9. Hybrid Geophysical technology for the Evaluation of Insidious contaminated Areas (HYGEIA) (2001-2005). Funded by the European Union. PI: A. Vafidis.
10. Monitoring of soil and groundwater pollution from petroleum products using modern geophysical methods (2004–2006). Funded by the General Secretariat of Research and Development, Greece. PI: A. Vafidis.
11. Groundwater management and protection from saline water intrusion (2004 – 2005). Funded by the General Secretariat of Research and Development, Greece. PI: A. Vafidis.
12. Hybrid geophysical survey for imaging the saline water front at Stilos, Chania Prefecture, Greece (2005-2006). Funded by the Ministry of Education. PI: A. Vafidis.
13. “Geophysical survey on the E65 national road, Greece”. Applied Geophysics Lab and ISTRIA Ltd. (7/3/2006-6/4/2006). PI: A. Vafidis.
14. Geophysical survey on Ionian national road, Greece”. Applied Geophysics Lab and ISTRIA Ltd. (2/7/2007-31/8/2007). PI: A. Vafidis.
15. “Geophysical survey on the E55 national road Greece”. Applied Geophysics Lab and ISTRIA Ltd. (19/5/2008-18/12/2008). PI: A. Vafidis.
16. Geophysical survey at Ofrynon Kavala, Greece, for the detection of saline-fresh water interface. Funded by GEOTEK. PI: A. Vafidis.
17. “Geophysical survey at coastal areas on Crete and nearby small islands”,. LIFE+ Nature project “Actions for the conservation of coastal dunes with Juniperus spp. in Crete and the South Aegean (Greece)”, known as JUNICOAST, LIFE07NAT/GR/000296. Applied Geophysics Lab. Is a subcontractor of MAICH (1/5/2009-30/6/2010). PI: A. Vafidis.
18. Geophysical survey at the Loutsia Remeri quarry”. Applied Geophysics Lab. and Titan AE (25/1/2010-24/4/2010). PI: A. Vafidis
19. “Geophysical survey at the Kelefina dum, Sparti, Greece”, Applied Geophysics Lab and ISTRIA Ltd. (1/9/2010-30/12/2010). PI: A. Vafidis.
20. “Geophysical survey at Mallia, Crete, Greece”, Applied Geophysics Lab and ISTRIA Ltd. (1/7/2011-30/10/2011). PI: A. Vafidis.
21. “Geotechnical evaluation of carbonates at the Electrical Company of Greece mines”, Geomechanics Lab and Applied Geophysics Lab of TUC (7/2012-3/2013). PI: Z. Agioutantis.
22. “geophysiCaL basEd hydrogeologicAL modeling to pRevent pollution from sea WATER intrusion at coastal areas- CLEARWATER”, BLACK SEA ERA.NET. Technical University of Crete, Chania, Ankara University, Ankara and Greifswald University, Greifswald (1/2/2012-30/1/2015). PI: A. Vafidis.
23. THALIS, Hellenic Republic, Ministry of Education and Religious Affairs, funded by ESPA. Acronym: GEOCHARACTERIZATION. Cooperation of TUC, NTUA, ITSAK, TEI-Crete and IMS-FORTH (1/2/2012 – 30/9/2015). PI: A. Vafidis.
24. “Geophysical investigation using electrical tomography at the Loutsia-Remeri quarry”. Funded by TITAN cements ltd. Applied Geophysics Lab. (7/2012-10/2012). PI: A. Vafidis.
25. “Additional works for the delineation of the Omalos polje dam, including the environmental effects estimation due to its construction”. Municipality of

- Innachorion and Technical University of Crete. PI: A. Vafidis (7/2012-10/2012).
26. TUD COST Action TU1208 Civil Engineering Applications of Ground Penetrating Radar (4/4/2013-3/4/2017). This action consists of several working groups (WG) and “Projects”. I am the co-leader (with Prof. F. Benedetto from University of Roma) of the project “Development of advanced GPR data processing techniques”. PI: L. Pajewski.
  27. ISTRIA. Development of an integrated rock fall monitoring and prediction system. Synergasia 2011-Greek National Organization of Research and Technology. (5/2012-5/2015). PI: G. Exadaktylos.
  28. BEWEXMIN-Bucket wheel excavators operating under difficult mining conditions including unmineable inclusions and geological structures with excessive mining resistance. RFCR-CT-2015-00003 (1/09/2015- 31/08/2018). EUROPEAN COMMISSION. PI: G. Galetakis.
  29. DE.F.I.C.I.T.- DEcision system For Irrigation in Crete based on Innovative Technologies – 5028242 (2019-2022). RIS3Crete. PI: Dr. N. Kourgialas.

## **6. Teaching experience**

- Support of:  
5 MSc thesis, >10 Graduate thesis.
- Teaching as a visiting professor the course “Applied Geophysics” at University of Western Macedonia, Greece, Mineral Resources Engineering Dpt, for the summer semester 2020-2021.
- Tutor: Teaching of exercises for the courses related to 1) seismics (1998-2008 and 2014-today), 2) near surface geophysical methods (1998-today) and 3) loggings (1998-2013). “Applied Geophysics I” (shallow and deep seismics – head and reflected seismic waves), “Applied Geophysics II” (near surface geophysics) and “Geological Formations Evaluation using Loggings”; courses under Dr. A. Vafidis. School of Mineral Resources Engineering. Technical University of Crete.
- Tutor: Teaching of exercises for courses related to the Geology of Greece, under Dr. E. Manoutsoglou (from October 2013 until today). “Geology”, School of Mineral Resources Engineering.
- Tutor: Teaching of exercises for courses related to the Geology of Greece, under Dr. E. Manoutsoglou (from October 2013 until today). “Environmental Geology” School of Environmental Engineering. Technical University of Crete.
- Tutor: Teaching of exercises for courses related to the Geographical Information Systems (GIS), under Dr. P. Partsinevelos (from October 2019 until today). “Geographical Information Systems” School of Mineral Resources Engineering. Technical University of Crete.
- Tutor: Teaching of exercises for the graduate courses “Seismic Imaging and well logging” related to Petroleum Engineering (PetEng), MSc program (2014-2015), courses under Dr. A. Vafidis. School of Mineral Resources Engineering. Technical University of Crete.
- I am also teaching MatLab non-regular seminars related to data processing at a graduate level since 2013. These are introductory seminars for geophysical signal processing.

- Participation in all field works related to students exercises every year from 1998 until today. Field works mainly included integrated geophysical surveys for the detection of buried antiquities, mapping of saltwater intrusion at coastal areas and detection of dolines, caves, fractures and weak zones in karstic limestones. These field works are implemented once a year under the frame of the lesson “Field work IV” of the School of Mineral Resources Engineering.

## **7. Academic work**

### **7A. Thesis (3)**

1. “Geophysical research at the archaeological site of Itanos, Lasithi, Crete, Greece”, **Diploma thesis**, Mineral Resources Engineering, Technical University of Crete, Greece, Chania 1998. Supervisor: A. Vafidis.

This thesis includes the results of an integrated geophysical research conducted at the archaeological site of Itanos, Lasithi, Crete, Greece, during 1995-2001, in order to detect buried antiquities. The methods employed were electrical resistivity mapping, electrical tomography, magnetics, GPR, electromagnetic mapping and seismic refraction. Processing for all the methods mentioned above was applied during the development of this thesis and the final results were presented to an open audience.

2. “Presentation and interpretation of geophysical data using GIS”, **MSc thesis** in the Environmental Geotechnology Post-Graduate Program, Department of Mineral Resources Engineering, Technical University of Crete, Greece, Chania 2002. Supervisor: A. Vafidis.

This thesis is related to the development of a GIS project (based on the ArcView GIS) dedicated to the presentation and integrated interpretation of different geophysical methods. A dedicated user interface was created, using the programming language “Avenue”, which permitted the user to view and interpret different geophysical, topographic and geological data. It’s use and capability for relevant applications were presented to an open audience.

3. “Development of GPR data processing methods using S-transform”, **PhD thesis** in the Environmental Geotechnology Post-Graduate Program, Department of Mineral Resources Engineering, Technical University of Crete, Greece, Chania 2010. Supervisor: A. Vafidis.

In this PhD thesis, a methodology for efficient time-variant deconvolution for EM waves (GPR data) is proposed, which is mainly implemented in the t-f domain, using S-transform. In order to correct for attenuation effects, a spectral balancing technique, using the S-transform, is proposed. Furthermore, it is demonstrated that spectral balancing must be applied prior deconvolution, rather than being an alternative technique. After wavelet deconvolution a further correction of the residual phases is taking place using the maximization of kurtosis method. The technique’s efficiency is demonstrated first on synthetic data. Then, it is applied on a dataset acquired over a controlled experiment for buried in sand utilities detection and reflections from the water table and a capillary zone above it are revealed. The proposed methodology was also tested on a dataset acquired in the Bissen quarry, in Wisconsin, USA and its ability to delineate reflections buried in noise and wavelet ringing is demonstrated. Finally the proposed methodology is applied on a dataset from an area where buried metallic tanks existed proving its



efficiency in increasing the temporal resolution. The processing method's steps and efficiency were presented to an open audience.

## 7B. Published work – Chapters in books (2)

Cross (+) indicates invitation

- 1) **+Economou, N.**, Vafidis, A., Benedetto, F., and Alani, A., 2015, GPR Data Processing Techniques, invited chapter in the book entitled “Civil Engineering Applications of Ground Penetrating Radar”, Springer ISBN 978-3-319-04812-3.
- 2) **+Loizos, A.**, Plati, C., Vafidis, A., **Economou, N.**, Cuenca-García, C., and Diamanti, N., 2017, GPR activities in Greece, invited chapter in the book entitled “GPR activities in COST Countries”, Publishing House: Aracne, Rome, Italy, Open Access, in press.

## 7C. Published work - Scientific journals (17)

Cross (+) indicates invited paper

- 1) Vafidis, A., **Economou, N.**, Ganiatsos, Y., Manakou, M., Poulioudis, G., Sourlas, G., Vrontaki, E., Sarris, A., Guy, M., and Kalpaxis Th., 2005, Integrated geophysical studies at ancient Itanos (Greece), Journal of Archaeological Science, 32, 1023-1036.
- 2) Hamdan H., Kritikakis G., Andronikidis, N., **Economou, N.**, Manoutsoglou E., and Vafidis, A., 2010, Integrated geophysical methods for imaging saline karst aquifers. A case study of Stylos, Chania, Greece Journal of the Balkan Geophysical Society, 13, no. 1, 1-8.
- 3) **Economou, N.**, and A., Vafidis, 2010, Spectral balancing GPR data using time variant band-width in t-f domain, Geophysics, 75, no. 3, J19-J27.
- 4) **+Economou, N.**, and A., Vafidis, A., 2011, Deterministic deconvolution for GPR data in t-f domain, Near Surface Geophysics, 9, no. 5, 427-433. Invitation was based on the presentation made at the 5<sup>th</sup> Congress of Balkan Geophysical Society, Belgrade, Serbia, 10-16 May 2009.
- 5) **+Economou, N.**, and Vafidis, A., 2012, GPR data time varying deconvolution by kurtosis maximization, Journal of Applied Geophysics, 81, 117-121. Invitation was based on the presentation made at GPR2010, 21-25 May 2010, Lecce, Italy.
- 6) **+Economou, N.**, Vafidis A., Hamdan H., Kritikakis G., Andronikidis N., and Dimitriadis K., 2012, Time varying deconvolution of GPR data in civil engineering, Nondestructive Testing and Evaluation International, 27, 3, 285-292. Invitation based on the presentation made at the EGU Conference, Session GI-6 Civil Engineering Applications of Ground Penetrating Radar, Vienna, Austria, 3-8 April, 2011.
- 7) Hamdan, H., **Economou N.**, Kritikakis, G., Andronikidis, N., Manoutsoglou E., Vafidis, A., Pangratis, P., and Apostolidou, G., 2012, 2D and 3D imaging of the metamorphic carbonates at Omalos plateau/polje, Crete, Greece by employing independent and joint inversion on resistivity and seismic data, Journal of Speleology, 41, 2, 199-209.

- 8) Vafidis, A., Andronikidis, N., **Economou, N.**, Panagopoulos, G., Zelilidis, A., and Manoutsoglou, E., 2012, Reprocessing and interpretation of seismic reflection data at Messara Basin, Crete, Greece, Journal of the Balkan Geophysical Society, 15, no 2, 31-40.
- 9) Hamdan, H., Andronikidis, N., Kritikakis, G., **Economou, N.**, Agioutantis, Z., Schilizzi, P., Steiakakis, C., Papageorgiou, C., Tsourlos, P., Vargemezis, G., and Vafidis, A., 2014, Contribution of electrical tomography methods in geotechnical investigations at Mavropigi lignite open pit mine, Northern Greece, Environmental Earth Sciences, 72, 5, 1589-1598.
- 10) +Vafidis, A. Soupios, P., **Economou, N.**, Hamdan, H., Andronikidis, N., Kritikakis, G., Panagopoulos, G., Manoutsoglou, E., Steiakakis, E., Candansayar, E., and Schafmeister, M., 2014, Seawater intrusion imaging at Tybaki, Crete, Greece, using geophysical data and joint inversion of electrical and seismic data, First Break, 32, 8, 107 - 114.
- 11) **Economou, N.**, 2016, Time varying band pass filtering GPR data by self-inverse filtering, Near Surface Geophysics EAGE, 14, 2, 207 - 217.
- 12) **Economou, N.**, and Kritikakis, G., 2016, Attenuation analysis of real GPR wavelets: the Equivalent Amplitude Spectrum (EAS), Journal of Applied Geophysics, 126, 13-26.
- 13) Partsinevelos, P., Kritikakis, G., **Economou, N.**, Agioutantis, Z., Tripolitsiotis, A., Mertikas, S. and Vafidis, A., 2016, Integration of seismic and image data processing for rockfall monitoring and early warning along transportation networks, Natural Hazards, 83, 1, 133-153.
- 14) **Economou, N.**, Benedetto, F., Bano, M., Tzanis, A., Nyquist, J., Sandmeier, K-J., and Cassidy, N., 2017, Advanced Ground Penetrating Radar Signal Processing Techniques, Editorial, Signal Processing, 132, 197-200.
- 15) Vafidis, A., Kritikakis, G., **Ecomonou, N.**, Galetakis, M., Soultana, A., Michalakopoulos, T., Apostolopoulos, G., Roumpos, C., and Pavloudakis, F., 2018, Assessment of geophysical methods for the detection of hard rock formations in lignite mines employing bucket wheel excavators. the case of South Field lignite mine, Macedonia, Greece, Górnictwo Odkrywkowe, “Poltegor – Instytut” Instytut Górnictwa Odkrywkowego, R. 59, No 4, 23-30.
- 16) +Bianchini, L., Tosti F, **Economou, N.**, and Benedetto, F., 2019, Signal Processing of GPR data for road surveys, Geosciences, 9(2), 96. Cite Score (Scopus): 1.97.
- 17) **Economou, N.**, Vafidis, A., Bano, M., Hamdan, H., and Ortega-Ramirez, J., 2019, Ground-penetrating radar data diffraction focusing without a velocity model, Geophysics, 85, no. 3, 1-12. IF: 2.391.

#### 7D. Published work - Conferences - proceedings

Asterisk (\*) on my surname indicates that I presented the specific work and underlining indicates that I participated in the relevant conference.

7DA. Articles at conferences and extended abstracts (36)

- 1) Vafidis, A., Sarris, A., **Economou** N. & Kalpaxis, Th. (1996). Geophysical survey in the archaeological site of Itanos, Lasithi, Greece. 1<sup>st</sup> Balkan Geoph. Society Ext. Abstracts September 23-27, Athens, 54-55.
- 2) Sarris, A., Vafidis, A., **Economou**, N., Poulioudis, G., Limneou-Papakosta, C., (2001), "Prospecting the old Jewish Cemetery in the center of Alexandria, Egypt", 4th Int. Conf. On Archaeological Prospection, Austrian Academy of Sciences, Vienna, September 19-23.
- 3) Vafidis, A., **Economou**\*, N., and Sarris, A., "Geophysical data presentation using GIS", (2002), Computer Applications and Quantative Methods in Archaeology Conference 2-6 April, 2002, Heraklion, Crete, Greece.
- 4) N. Andronikidis, K. Georgila, N. **Economou**, E. Manoutsoglou, and A. Vafidis, Geologic interpretation and mapping of seismic reflection data at Ano Vathia, Heraklion, Crete, Greece, Proceedings of the 7th National Cartografic Conference, Island Cartography, Hellenic Cartographic Society, Mitilini 23-26, October 2002, 451-460.
- 5) G. Kritikakis, Y. Gougogiannis, A. Vafidis, D. Monopolis, N. **Economou**, and E. Manoutsoglou, Imaging geological formations at the area of Almiros river, Heraklion, Crete, Greece, Proceedings of the 7th National Cartografic Conference, Island Cartography, Hellenic Cartographic Society, Mitilini 23-26, October 2002, 419-429.
- 6) **Economou**\*, N., Vafidis, A., H. Hamdan, N. Andronikidis, A., Koukadaki, M., Kritikakis, G., Spanoudakis, N., and E. Manoutsoglou, 2004, Geophysical survey at the Omalos Plateau, Chania, Crete, Proceedings of the 8<sup>th</sup> Congress of Chartography, Thessaloniki, 24-26 November, 2004, 491-501.
- 7) Vafidis, A., H. Hamdan, N. Andronikidis, A. Dasyras, G. Kritikakis, M. Koukadaki, E. Koumakis, S. Lampathakis, E. Manoutsoglou, N. **Economou**, K. Papakonstantinou, and N Spanoudakis, Contribution of electrical tomography and seismic refraction in site selection for a dam at Kountoura, Chania, Greece, Proceedings of the 10th International Congress of the Hellenic Geological Society, 15 – 17 April 2004, Thessaloniki, Greece, 1214-1223.
- 8) Vafidis, A., Manoutsoglou, E., Hamdan, H., Andronikidis, N., Koukadaki, M., Kritikakis, G., **Economou**\*, N., and Spanoudakis, N., Geophysical survey at the Omalos Plateau, Chania, Proceedings of the 10th International Congress of the Hellenic Geological Society, 15 – 17 April 2004, Thessaloniki, Greece, 1204-1213.
- 9) Manoutsoglu, E., A. Vafidis, G. Kritikakis, H.A. Hamdan, N. Andronikidis, N. Spanoudakis and N. **Economou**, (2004), Methods of 3D visual representation of interpreted geophysical data in regions of hydrogeological interest, Proceedings of the 1<sup>st</sup> International Conference «Advances in Mineral Resources Management and Environmental Geotechnology (AMIREG)», 7 – 9 June, Chania, Greece.
- 10) Michalakos, I., **Economou**, N., Hamdan, H., Vafidis, A., Manoutsoglou, E., Panagopoulos, G., Roubedakis, S., Vozinakis, C., Lampathakis, S., and Dassys, E., (2006), Geological and geophysical study of saltwater contamination at Stylos, Crete , Proceedings of the 2<sup>nd</sup> International

Conference «Advances in Mineral Resources Management and Environmental Geotechnology (AMIREG)», 25 – 27 September, Chania, Greece.

- 11) Kritikakis, G., **Economou**, N., Hamdan, H., Spanoudakis, N., Antoniou and Vafidis, A., Bano, M., Pasadakis, N., and Gourry, J.C., (2006), Contribution of the geophysical methods in delineating soil contamination, Proceedings of the 2<sup>nd</sup> International Conference «Advances in Mineral Resources Management and Environmental Geotechnology (AMIREG)», 25 – 27 September, Chania, Greece.
- 12) **Economou\***, N., Mosialos, B., Vafidis, A., Meier, T., Rische, M., Endrun, B., and Harjes, H-P., (2006), Microseismicity observations in Crete using temporary arrays, Proceedings of the 2<sup>nd</sup> International Conference «Advances in Mineral Resources Management and Environmental Geotechnology (AMIREG)», 25 – 27 September, Chania, Greece.
- 13) Vafidis, A., **Economou\*** N., N.S. Spanoudakis, H.A. Hamdan & V. Niniou-Kindeli, (2007), «Application of Classification Methods on Geophysical Data from the Archaeological Site of Aptera, Chania, Greece», Proceedings of «Near Surface 2007» – the 13th European Meeting of Environmental and Engineering Geophysics of the Near Surface Geoscience Division of EAGE, 3-5 September, Istanbul, Turkey.
- 14) **Economou\***, N., and Vafidis, A., (2008), Spectral balancing of GPR data using time-variant bandwidth in t-f domain, Proceedings of «Near Surface 2008» – the 14th European Meeting of Environmental and Engineering Geophysics of the Near Surface Geoscience Division of EAGE, Krakow, Poland, 15-17 September.
- 15) **Economou\***, N., and Vafidis, A., (2009), Deterministic deconvolution for GPR data in t-f domain, Proceedings of 5<sup>th</sup> Congress of Balkan Geophysical Society, Geophysics at the Cross-Roads, Belgrade, Serbia, 10-16 May [*Invited paper by “Near Surface Geophysics”*].
- 16) Mertzanides, Y., **Economou**, N., Hamdan, H., and Vafidis, A., (2010), Imaging sea water intrusion in coastal areas, Proceedings of the 12th International Congress of the Geological Society of Greece, 19-22 May, Patras, Greece.
- 17) **Economou\***, N., and Vafidis, A., (2010), GPR data time varying deconvolution by kurtosis maximization, GPR2010, 21-25 May, Lecce, Italy [*Invited paper by “Journal of Applied Geophysics”*].
- 18) Vafidis, A, **Economou** , N., and Dimitriadis, K., 2011, Time varying zero-phase filtering of GPR data for imaging pavement layers, Proceedings of 73rd EAGE Conference & Exhibition incorporating SPE EUROPEC 2011, Vienna, Austria, 23-26 May.
- 19) Zannetidis, S., **Economou**, N., Hamdan, H, Nyktas, P., Kazakis, G., Ghosn, D., Remoundou, E., and Vafidis, A., 2011, Imaging sand dunes at Kedrodasos coastal area, Crete, Greece. 6<sup>th</sup> Congress of Balkan Geophysical Society, 3-6 October 2011, Budapest, Hungary.
- 20) **Economou**, N., Hamdan, H., Kritikakis, G., Andronikidis, N., Manoutsoglu, E. and Vafidis, A., 2011, Geoelectrical and seismic imaging of the Omalos plateau, Crete, Greece, 6<sup>th</sup> Congress of Balkan Geophysical Society, 3-6 October 2011, Budapest, Hungary.

- 21) Vafidis A., Steiakakis M., Agioutantis Z., Andronikidis N., Kritikakis G., **Economou N.**, Pandi K., Spanoudakis N., Savvaidis A., Margaritis B., Theodoulidis N., Lekidis V., Karakostas Ch., Mangriotis M-D., Kalogeras I., Koutrakis S., Rozos D., Loupasakis C., Rondoyanni Th., Tsangaratos P., Dikmen U., Papadopoulos N., Sarris A., Soupios P., Kokkinou E., Papadopoulos I., Kouli M., and Vallianatos F., (2013). “GEO-CHARACTERIZATION” of selected areas in Crete, Greece, towards realistic assessment of seismic design actions. Proceedings of the EGE13, Chania.
- 22) Vafidis, A., N. Andronikidis, H. Hamdan, G. Kritikakis, N. **Economou**, G. Panagopoulos, P. Soupios, E. Steiakakis & E. Manoutsoglou, 2013, The CLEARWATER project: preliminary results from the geophysical survey in Tympaki, Crete, Greece, EGE13, Chania.
- 23) Vafidis, A. N. Andronikidis, H. Hamdan, G. Kritikakis, N. **Economou**, G. Panagopoulos, S. Zanetidis, D. Merziotis, S. Pateras, E. Nikofoarakis & J.P. Blais, 2013, Rock characterization for the foundation of two water reservoirs using geophysical and borehole data, EGE2013, Chania.
- 24) Vafidis, A., H. Hamdan, N. Andronikidis, G. Kritikakis, and N. **Economou**, 2013, Imaging of karstic carbonates using electrical resistivity data at Malia, Crete, Greece, 7th Congress of the Balkan Geophysical Society, Tirana, Albania.
- 25) Vafidis, A., P. Soupios, G. Kritikakis, N. Andronikidis, N. **Economou**, H. Hamdan, E. Manoutsoglou, E. Steiakakis, E. Candansayar, M.T. Schafmeister and M. Kritsotakis, 2014, Salt Water Intrusion Imaging at Tybaki (Greece) Using Geophysical Methods, Near Surface Geoscience 2014 - 20th European Meeting of Environmental and Engineering Geophysics.
- 26) Vafidis, A., N. **Economou**, G. Kritikakis, E. Manoutsoglou, G. Vargemezis, P. Tsourlos, A. Fotiadis, E. Antonopoulos and A. Tziritas, 2014, Void Detection at Chania Airport by Combining ERT and Borehole Data, Near Surface Geosciences 2014 - 20th European Meeting of Environmental and Engineering Geophysics.
- 27) Candansayar M.E., I. Demirci, A. Vafidis, P. Soupios, N. **Economou**, N. Andronikidis, H. Arslan, 2015, Two dimensional joint inversion of seismic refraction, radiomagnetotelluric and DC resistivity data: an example from Bafra plain, Turkey, 8th Congress of the Balkan Geophysical Society, Chania, Crete, Greece.
- 28) Hamdan H., E. Candansayar, I. Demirci, N. **Economou\***, N. Andronikidis, H. Arslan, P. Soupios and A. Vafidis, 2015, Imaging the saline/fresh water interface at Bafra, Turkey using joint inversion of seismic refraction and ERT data, 8th Congress of the Balkan Geophysical Society, Chania, Crete, Greece.
- 29) **Economou\*** N., G. Kritikakis, A. Tripolitsiotis, P. Partsinevelos, G. Vlachou, Z. Agioutantis and A. Vafidis, 2015, Seismic monitoring for automatic rockfall detection along transportation corridor, 8th Congress of the Balkan Geophysical Society, Chania, Crete, Greece.
- 30) Hamdan H., E. Candansayar, I. Demirci, N. **Economou**, N. Andronikidis, H. Arslan, P. Soupios and A. Vafidis, 2015, Imaging the saline/fresh water interface at Bafra, Samsun, Turkey using joint inversion of seismic

refraction and direct current electricity data, International Conference on Engineering Geophysics, Al Ain, United Arab Emirates, 15-18 November 2015: 232-235.

- 31) Vafidis A., **Economou N.**, Galetakis M., Vasiliou A., Michalakopoulos T., and Apostolopoulos G., 2016, Assessing the potential of ground penetrating radar (GPR) to detect hard geological formations and inclusions during the excavation by bucket-wheel excavators, 13th ISCSM 2016 Belgrade, 11-14 September.
- 32) Vafidis, A., **Economou\***, N., Kritikakis, G., Galetakis, G., Vasiliou, A., Apostolopoulos, G., and Michalakopoulos, T., 2017, Imaging boulders using the GPR method, 10th International Conference on Bearing Capacity of Roads, Railways and Airfields (BCRRA2017), Athens, Greece, 28-30th June.
- 33) Apostolopoulos, G., A. Vafidis, N. **Economou**, T. Michalakopoulos, P. Kofakis, G. Amolochitis, G. Kritikakis and M. Menegaki, 2017, Geophysical Measurements to Detect Ahead of Bucket Wheel Excavators the Problematic Hard Formations in Coal Mines, Near surface Geosciences 2017, 23rd European Meeting of Environmental and Engineering Geophysics.
- 34) **Economou\***, N., Vafidis, A., Bano, M., Hamdan, H., and Ortega-Ramirez, J., 2018, GPR data multipath summation: Diffractions focusing without a velocity model, 41st International Conference on TSP, IEEE, Athens, July 4-6.
- 35) Bianchini, L., **Economou**, N., and Santarelli, R., 2020, Prospecting an archaeological site by GPR: A case study of the buried necropolis Laurentina, 43rd International Conference on TSP, IEEE, Milan, July 6-8.
- 36) Hamdan, H., **Economou N.**, and Vafidis, A., 2020, Data Adaptive GPR Diffraction Focusing Using Multi-Path Summation, Near surface Geosciences 2020, 26<sup>th</sup> European Meeting of Environmental and Engineering Geophysics.

#### 7DB. Invited presentations with articles (4)

- 1) Vafidis, A., and **Economou\*** N., 2007, Intergated geophysical surveys for antiquities in Crete, Proceedings of conference “Liktos Euktimeni”, 9-11 November, Kastelli Pediados, Crete.
- 2) Vafidis, A., and **Economou\*** N., 2007, Pilot geophysical research at the archaeological site of Littos, Kastelli Pediados, Crete, Proceedings of conference “Liktos Euktimeni”, 9-11 November, Kastelli Pediados, Crete.
- 3) **Economou**, N., Vafidis, A., and Benedetto, F., 2013, Presentation entitled “Development of advanced GPR data processing techniques. State of the art and open issues”, First Meeting of the COST ACTION TU1208, Rome, Italy. Proceedings, <http://gpradar.eu/resources/books.html>, ISBN978-88-548-7221-9. *[Invited chapter for the Springer Book entitled CIVIL ENGINEERING APPLICATIONS OF GROUND PENETRATING RADAR]*.
- 4) **Economou N.** and F. Benedetto, 2014, Development of advanced GPR data processing techniques, Vienna, 2<sup>nd</sup> meeting of the TU1208 Cost

Action, EGU 2014. Proceedings, <http://gpradar.eu/resources/books.html>, ISBN 978-88-548-7224-0.

7DC. Invited presentations without articles (3)

- 1) **Economou\*, N.**, and Vafidis, A., 2002, Geophysical data presentation using GIS, an example from the archaeological site of Itanos, Crete, Greece, 11<sup>th</sup> meeting of Greek GIS users, ArcInfo-ArcView, Marathon Data Systems, Athens, November.
- 2) **Economou\* N.**, and F. Benedetto, 2015, State of the art on Advanced data processing algorithms for GPR, Athens, 4<sup>th</sup> meeting of the TU1208 Cost Action.
- 3) **Economou\* N.**, 2015, Conventional data processing steps to be included in guidelines for GPR assessment of flexible pavements & for GPR detection and location of utilities and voids, Athens, 4<sup>th</sup> meeting of the TU1208 Cost Action.

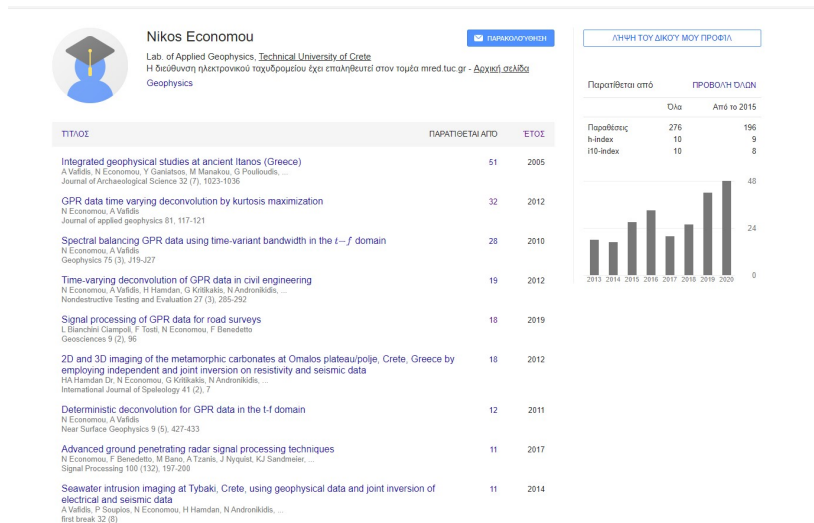
7DD. Presentations at conferences (abstracts) (3)

- 1) **Economou\*, N.**, and Vafidis, A., 2002, Geophysical data presentation using GIS, an example from the archaeological site of Itanos, Crete, Greece, 11<sup>th</sup> meeting of Greek GIS users, ArcInfo-ArcView, Marathon Data Systems, Athens, November 2001.
- 2) **Economou\* N.**, Vafidis A., Hamdan H., Kritikakis G., Andronikidis N., and Dimitriadis K., 2011, Time varying deconvolution of GPR data in civil engineering, Conference of European Geosciences Union, General Assembly 2011, Session GI-6 Civil Engineering Applications of Ground Penetrating Radar, Vienna, Austria, 3-8 April [*invited paper by “Nondestructive Testing and Evaluation” for the Special Issue on “Civil Engineering Applications of Ground Penetrating Radar”*].
- 3) Pajewski, L., Giannopoulos, A., Sesnic, S., Randazzo, A., Lambot, S., Benedetto, F., and **Economou, N.**, 2017, COST Action TU1208 –Working Group 3 – Electromagnetic modelling, inversion, imaging and data-processing techniques for Ground Penetrating Radar, Session GI3-1 Civil Engineering Applications of Ground Penetrating Radar, Vienna, Austria, Geophysical Research Abstracts, Vol. 19, EGU2017-16855-1, 2017, EGU General Assembly 2017.

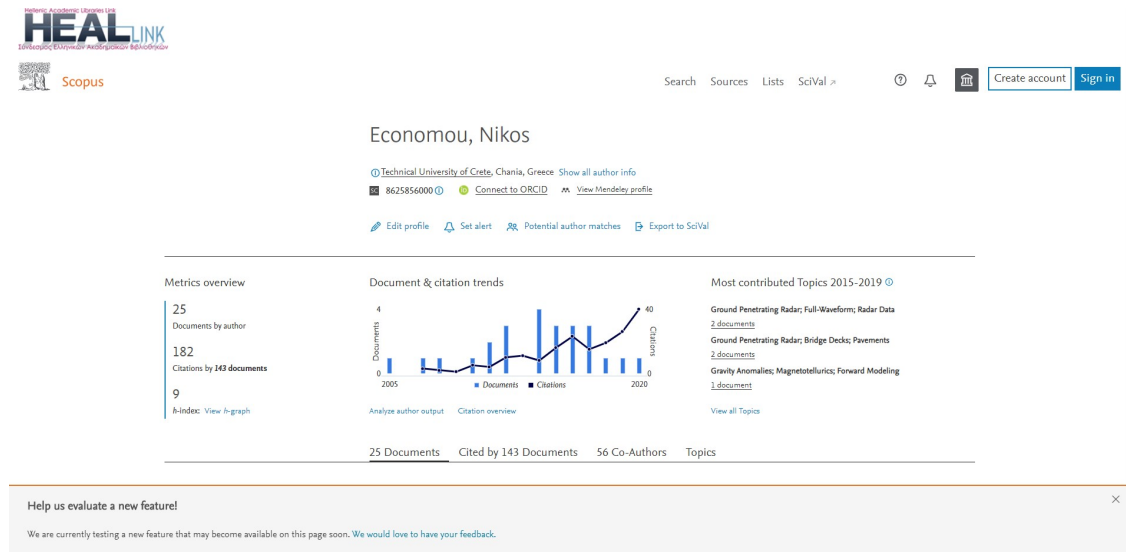
**7E. Participation in the development of students notes**

- 1) Courses of “Applied Geophysics II” (near surface geophysics courses including the electrical, magnetic, gravimetric and electromagnetic methods). Professor A. Vafidis.
- 2) Courses of “Formation Evaluation using Loggings” (courses related to the interpretation of loggings). Professor A. Vafidis.

## 7D. Citations

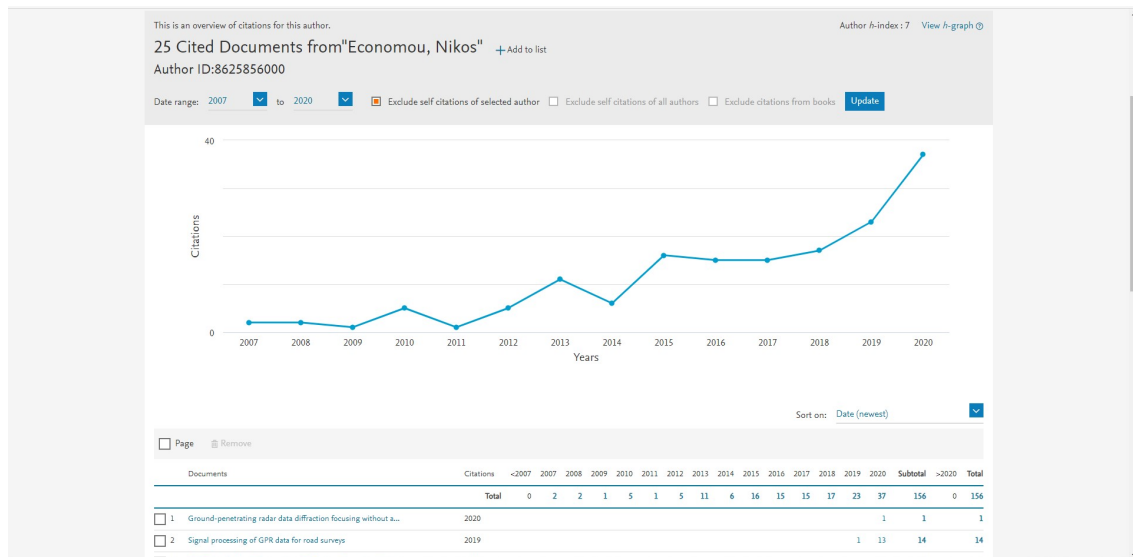


### Google Scholar citations (276)



### Scopus citations (182)





Scopus citations (excluding self-citations 156)