Curriculum Vitae

Kleanthis Simyrdanis

Geologist - Geophysicist

(BSc, MSc, PhD)

Rethymno

February 2018

SHORT DESCRIPTION

Dr. Kleanthis Simyrdanis is a geophysicist specializing in Electrical Resistivity Tomography. He currently holds a position as a Postdoctoral researcher at the “Laboratory of Geophysical-Satellite Remote Sensing and Archaeo-environment” (GeoSat ReSeArch) of Institute for Mediterranean Studies of Foundation for Research and Technology, where he works on algorithm development for ERT optimised configurations in 3D (scholarship “Stavros Niarchos” Foundation). Kleanthis began his career in geophysics with a bachelor’s degree from the School of Geology at Aristotle University of Thessaloniki (AUTh) in Greece. After this he proceeded to complete a Masters in Geophysics (Laboratory of Geophysics, AUTh), where he specialised in the experiment study of ERT applied in boreholes. After the completion of his masters he was accepted into a PhD program (scholarship “Herakletos II”) in geophysics, where he completed his thesis titled “Development of tomographic geophysical techniques for the study of geotechnical and environmental problems”. Kleanthis has a wide range of skills, and has applied this skill set to marine environments as well as terrestrial, all of which have been, or are in the process of being published. Kleanthis also works as a member of the Research and Development (R&D) department, where he is both a technical illustrator and product developer. His role as an illustrator involves providing technical sketches, scientific visual representation of concept ideas and drawings for presentations. As well as this, he works as a tutor at the Laboratory of Applied Geology and Hydrogeology (Technological Educational Institute of Crete) where he is also a member (“Terra” lab).

GENERAL INFORMATIONS

Full name	Kleanthis Simyrdanis
Date of Birth	20 April 1978
Address	Markou Portaliou 12, Rethymno (Crete), T.K. 74100, Greece
Mobile	(+30) 6973 284826
Office	(+30) 2831 503175
e-mail	ksimirda@ims.forth.gr
Researcher ID	SCHOLAR ID

Military Service	2004-2005, 12 months at Engineering of Greek Army
Foreign Languages	English (Proficiency - C2), Italian (Diploma)
Computer Knowledge	**Γλώσσες προγραμματισμού:** C, Fortran 77, Matlab **Σχεδιαστικά προγράμματα:** Adobe Illustrator, Adobe Photoshop, LightRoom, Corel Draw **Data Visualisation (2D/3D):** Surfer, Voxler, Grapher, Blender, 3D StudioMax, ArcGIS, qGiS **Προγράμματα Γεωφυσικής:** Res2Dmod (GeoTomoSoft), Res2DInv (GeoTomoSoft), Res3Dmod (GeoTomoSoft), Res3DInv (GeoTomoSoft), Electre II, III, Pro (Iris Instruments), Prosys II, III (Iris Instruments), Earth_Imager (AGI) DC_2DPro (KIGAM), DC_3DPro (KIGAM), DC_PrePro (KIGAM), DC_4D (KIGAM), FlashRes-Universal (ZZ-Geo)

EDUCATION/STUDIES

2009 - 2013 **PhD** in Applied Geophysics
Thesis Title: “Development of tomographic geophysical techniques for the study of geotechnical and environmental problems”. Construction of “Special-Array” and “Surface-to-Tunnel” apparatus.
Software developed: “2DInvCode” (Matlab)
http://pefyka.ims.forth.gr/en/software.php
Department of Geophysics, School Of Geology A.U.Th.
Degree Classification: Excellent

2005 - 2009 **MSc** in Applied Geophysics
Thesis title:«Experimental Study of Electrical Resistivity Tomography Applied in boreholes»
Department of Geophysics, School Of Geology A.U.Th.
Degree Classification: 8.87 (maximum 10.0)

1997 - 2004 **BSc** in Geology
Thesis title: «Method of Georadar: Calculation of 2D Model Response», Software development: “GPR View” (Matlab)
Department of Geophysics, School Of Geology A.U.Th.
Degree Classification: 6.55 (maximum 10.0)

1990 - 1996 33ο High School- 26ο Lyceum
Degree Classification: 18.1 (maximum 20.0)

FELLOWSHIPS

- “Stavros Niarchos Foundation – FORTH Fellowship”, ARCHERS, Laboratory of Geophysical-Satellite Remote Sensing and Archaeo-environment, Institute for Mediterranean Studies of Foundation for Research and Technology
  Duration: 1 year, 2018
- "Endeavour, Scholarships & Fellowships”, Flinders University, Adelaide (South Australia),
  Duration: July - December, 2017
- “Heraklitos II: Operational Program Educational and Lifelong Learning, investing in knowledge society, Ministry of Education, Lifelong Learning and Religious Affairs”, NSFR, EU,
  Duration: 2007-2013.

ACTIVITY

2018 Postdoctoral researcher at Laboratory of Geophysical-Satellite Remote Sensing and Archaeo-environement, Institute for Mediterranean Studies of Foundation for Research and Technology at Rethymno (Crete). Project: Algorithm Development for ERT optimised configurations in 3D. “Stavros Niarchos Foundation – FORTH Fellowship” - ARCHERS.

2017 Field School National Exploration Undercover School (NExUS). Tutoring of ERT geophysical method, Adelaide SA, 5 December

- DISC course seminar, “Geophysical Electromagnetics: Fundamentals and Applications”, Doug Oldenburg, Society of Exploration Geophysics (SEG), Adelaide SA, 2-3 August

- Masterclass: “ERT for Archaeology”, Flinders Campus, Humanities building, Adelaide SA, 1 September

- Archaeology Seminars, Semester 2, “Marine archaeological mapping using geophysical methods: A case study of Elounda, Creta’ (Greece)”, Humanities North Lecture, Flinders University, Adelaide SA, 14 September

- “Arch Geophysics Intensive Course”, Flinders University, Tutoring ERT geophysical method and fieldwork application at Meadows Wesleyan Cemetery, Adelaide SA, 18-29 September

- Research on mapping a submerged barge Crowie in Murray River using ERT.
"Endeavour, Scholarships & Fellowships”, Flinders University
Adelaide (South Australia),
Duration: July - December

- Tutor of lesson: “Environmental Geotechnology” at Technical University in Chania, Sector of Water Resources and Geoenvironment (Department of Environmental and Natural Resources Engineering), Semester 2017-2018.

- Member of the Laboratory of Applied Geology and Hydrogeology (“Terra”), Department of Environmental and Natural Resources Engineering, Technological Educational Institute of Crete

- Lecture to MSc students: “Geophysical Methods: Electrical Resistivity Tomography”, Department of Environmental and Natural Resources Engineering, Technological Educational Institute of Crete, 13 January.
Invited by prof. Soupios Pantelis

2016 Piraeus Port, Application of ERT and Seismic method in a store house (St. Dionisios area) for geotechnical subsurface characterisation, 6-8 August

- Lambayianna Beach (Argolic Gulf). Underwater geophysical mapping with ERT and Magnetics in the submerged prehistoric site in Lampayianna beach at Argolida, 10-24 July

- 3D Scanner Seminars: Faro Focus X330
  (Theory, Application and Data Processing in Faro Scene software)
  Rethymno (Crete), 21- 24 June
  Instructor: Irene Thalami

- Tutor of lesson: “Investigation on ground water resources” at Technical University in Chania, Sector of Water Resources and Geoenvironment, Department of Environmental and Natural Resources Engineering. Semester 2016-2017.

- ISAP - Reconstructing the Cultural Dynamics in Shallow Marine Environment through Electrical Resistivity Tomography and Photogrammetry, 25-29 February
  Applicant’s position: Assistant Investigator, Construction of prototype “Dasyatis” (R&D)
  Description of applicant’s duties: Data collection, processing, interpretation, Reporting. Chief Researcher: Nikos Papadopoulos

- Technological Educational Institute of Crete, Department of Environmental and Natural Resources Engineering, Lecture to MSc students: “Electrical Resistivity Tomography - Theory and Applications”, 8 February
  Invited by prof. Soupios Pantelis

2015 Underwater ERT survey at the harbour of Pafos, Cyprus, 24-28 June
Applicant’s position: Assistant Investigator
Description of applicant’s duties: Geophysical Data Collection, Processing, interpretation, Reporting
Chief Researcher: Nikos Papadopoulos

- GPR seminars, Thessaloniki, “COST Training School on Numerical Modelling of GPR using gprMax”, 9-11 November
  Instructors: Dr. Antonis Giannopoulos, Craig Warren

2014 RESTECH WORKSHOP I, Rethymno “Culture-Technology: New technologies in research, study, documentation and accessibility in the information of items and monuments of cultural heritage” IMS, 17-28 February

2013 - 2015 Post-doctoral researcher at Laboratory of Geophysical-Satellite Remote Sensing and Archaeo-environement, Institute for Mediterranean Studies of Foundation for Research and Technology. Project: Electrical resistivity tomographies (ERT) application for underwater archaeological sites investigation.

2012 - 2015 “PEFYKA-KRIPIS” – Environment and Natural Disasters: New methods to evaluate and improve the environmental quality and encounter the natural disasters.
Test Site for “wastes” monitoring, Institute for Mediterranean Studies, Heraklion (Crete), construction of prototype “Spider” (R&D team).
Chief Researcher: Manolis Skarsoulis

- “PEFYKA” – Environment and Natural Disasters: New methods to evaluate and improve the environmental quality and encounter the natural disasters.
  Geophysical mapping of coastal and marine archaeological sites in Crete - Ag. Theodoroi, Istron, Elounta, Collection, processing and data interpretation”.
  Chief Researcher: Manolis Skarsoulis

- POLITEIA: Culture-Technology: New technologies in research, study, documentation and accessibility in the information of items and monuments of cultural heritage
  Applicant's position: Assistant Investigator
  Description of applicant's duties: Geophysical data collection, Processing
  Chief Researcher: Dimitris Agglos

- ARISTEIA -Innovative Geophysical Approaches for the Study of Early Agricultural Villages of Neolithic Thessaly
  Applicant's position: Assistant Investigator
  Description of applicant's duties: Geophysical data processing
  Chief Researcher: Apostolos Sarris

2010 - 2015 "THALIS": Environmental monitoring tool to the end-users, by combining the most updated and known geoenvironmental methods (geochemical analysis, geoinformatics, geophysical and biogeophysical methods) for studying and understanding the environmental impact of olive-oil mill waste and the definition of a strategic framework for addressing this problem.
Chief Researcher: Pantelis Soupios

2009 - 2015 "Archimedes III": Quantitative and qualitative characteristics of an aquifer and identification of the components of an optimal management plan for the study of the groundwater. Qualitative and quantitative study and characterization of the groundwater under investigation.
Chief Researcher: Pantelis Soupios

2010 - 2013 Laboratory assistant at Aristotle University of Thessaloniki at the Department of Geophysics (School of Geology)

2009 - 2013 Monitoring and Data Processing of seismic Activity of Greece at the Seismological Station of Aristotle University of Thessaloniki.

2007 - 2008 Employment at Florina Prefecture, through Ministry of "Rural Development and Food" for 1 year as Geologist.

2007 "Electrical Tomography Technology for monitoring Environmental Problems using boreholes".
Survey site: French River, Thessaloniki Prefecture
Resp.: Panagiotis Tsourlos

- Meeting for results of European Program: "Monitoring Recycled Water Injection Into a Confined Aquifer using Electrical Resistivity Tomography, 21 June, Central University Library of A.U.Th.

2005 Participation in surveys of applied geophysics:
- July, Vasiliko Kiato, Archaeometry, Electrical Tomographies.
  Resp.: Apostolos Sarris
- July, Thessaloniki, «Testing Contact Electrodes».
  Resp.: Panagiotis Tsourlos
- July, Thasos, «Electrical Tomographies locating beach-rock structures». Measurements for PhD Thesis of D. Psomiadis.
  Resp.: Panagiotis Tsourlos

2004 - 2007 Participation in research committee surveys of A.U.Th.:

- «Geophysical Survey at the site for University of Peloponnesia erection at Sparta, locating and mapping buried antiquities».
- «Geophysical Survey at wastewater treatment pipe at Municipality of Kropia».
- «Locating Depth of Foundation of Medieval wall and rampart of Vardari Square».
- «Geophysical Survey at Grevena using Electrical Tomography».
  Resp.: George Vargemezis

2002 Seminar of Hellenic Physical Society, "C Programming Language", 22/10 –28/11.

Co-SUPERVISOR - MENTORING

- Walter Duane Hano, PhD Thesis Title: 2018 "Lost but Not Forgotten: The Significance of Nineteenth-Century American Brigs To a Developing Colonial Australia".
  Main Supervisors: Wendy van Duivenvoorde and Mark Polzer - Date of submission: April 2018
- Dave Ross, PhD Thesis Title: "Archaeo-Geophysics – Mapping The Magnetic, Resistive and Electromagnetic Past. A geophysical study of Indigenous Earth Mounds at Calperum Nature Reserve", Location of data acquisition: Calperum Station – South Australia.
  Main Supervisors: Mick Morrisson and Ian Moffat - Date of submission: 27/4/18
- Elsa Karabasi, Bachelor thesis: "Construction of Geological and Hydrogeological data base for Chania using Rockworks software".
  Main supervisors: Pantelis Soupios, Helen Kokkinou - Date of submission: 2018
- Christopher Power, PhD Thesis title: "Electrical Resistivity Tomography for Mapping Subsurface Remediation"
  Main Supervisors: Jason Gerhard and Panagiotis Tsourlos - Υποβολή: 29/5/2014

MEMBER OF RESEARCH & DEVELOPMENT (R&D) TEAM

(SEE APPENDIX I)

Research and Development team focused on constructing prototype apparatus for geophysical applications. Products of the department:

- **"Nereid" project** (May-July 2016)

The "Nereid" is a floating apparatus designed to collect magnetic data from a marine environment. It has fully adjustable sensors that can be move up and down in order to adjust the distance from the sea bottom, so as to come as close as safely possible to the targets.

- **"Dasyatis" project** (January 2016)

The "Dasyatis" is a small-scale floating "vehicle" capable of being remotely operated while recording camera footage of the sea bottom. It collects video and photo data using a waterproof GoPro camera for a Digital Bathymetry Model (DBM) construction.

- **"Platypus" project** (August 2015)

The "Platypus" collects ERT data from marine environment in a "dynamic" mode - that is, data acquisition occurs in real time while the sensors are moving. It is used for archaeological purposes, such as detecting submerged buildings.

- **"Spider" project** (September-October 2015)

The "Spider" collects ERT data using horizontal and vertical sensors, spatially distributed in an optimised time-lapse configuration, below the ground surface.

- **"Easy Probes" project** (February 2014)

"Easy Probes" is an unfinished prototype developed in 2014. Its modus operandi is to facilitate the quick and easy collection of ERT data, using metallic probes with easy-to-connect adaptors.

PHD PROJECT

- **"Talpidae"** (August 2012) **and "Special-Array"** (May 2011) **project**

The "Talpidae" and "Special-Array" apparatus were developed during the course of my PhD.

The first, acquires data in small-scale distances (10-50 cm) between the "surface" and a "tunnel". It has two parallel arrays and adjustable components. The green pipe is filled with water and simulates the ground surface, the blue simulates the "inside-the-earth" array and the black pipe is empty (being filled with air), and simulates a tunnel. The apparatus is stable and uses pre-calculated distances to set the pipes at precise distances.

The latter, acquires data using probes set at 5 cm apart, that are placed along two horizontal arrays; "surface" and "interior", which are spaced 40 cm apart. It was made as a prototype apparatus for "locating" a target using a new protocol configuration named "Surface-to-Tunnel". In these images, an empty plastic bottle is used as a "target" and is embedded between the parallel arrays.

SCIENTIFIC ILLUSTRATOR

(SEE APPENDIX II)

As a Scientific Illustrator I am able to provide pre-sketches for concept visualisation, technical sketches for scientific articles and drawings for presentations.
https://www.behance.net/kleanthis

Projects:

- Figures developed for a proposal, titled “Integrated Monitoring of Biological Soil Crust (Biocrust) Properties using Innovative Geoenvironmental Methods Spanning Multiple Scales – Application to Southern European Regions”, Department of Environmental and Natural Resources Engineering (TEI Crete).
  August 2017

- Preliminary sketch for the “Spider” apparatus. “Spider” collects ERT data using horizontal and vertical sensors, spatially distributed in an optimised time-lapse configuration, below the ground surface, R&D product, GeoSat ReSeArch Lab (IMS).
  September 2015

- Preliminary sketch on the “Platypus” apparatus. “Platypus” collects ERT data from marine environment in a “dynamic” mode - that is, data acquisition occurs in real time while the sensors are moving. It is used for archaeological purposes, such as detecting submerged buildings, R&D product, GeoSat ReSeArch Lab (IMS).
  August 2015

- Figure developed for the proposal, titled “Neolithic Thessaly Biographies Revisited: From Settlements to Landscape (NeTBio)”, Horizon 2020 - ERC, GeoSat ReSeArch Lab (IMS).
  October 2014

- Preliminary and final sketches on the “Talpidae” apparatus. The “Talpidae” apparatus was developed during the course of my PhD. It acquires data in small-scale distances between the “surface” and a “tunnel”, PhD product (IMS).
  August 2012

- Illustrations for the book “Earthquakes, Myths and Truths” and a poster. It is an educational seismic book distributed at schools. Program “INTERREG IIIA”, Aristotle University of Thessaloniki.
  April 2008

CONFERENCE PARTICIPATION

Simyrdanis K., Papadopoulos N., Cantoro C., "3D Electrical Resistivity Imaging in shallow marine environment: Case Study at the harbour Kato Pafos", 12th International Conference of Archaeological Prospection, Bradford, 12th-16th September **2017**.

Papadopoulos N., **Simyrdanis K.**, "Dynamic 3D Electrical Resistivity Tomography for shallow off-shore archaeological prospection", 12th International Conference of Archaeological Prospection, Bradford, 12th-16th September **2017**.

Papadopoulos N., **Simyrdanis K.,** Gianluca Cantoro, "Recent Trends in Shallow Marine archaeological prospection in eastern mediterranean", 12th International Conference of Archaeological Prospection, Bradford, 12th-16th September **2017**.

Papadopoulos N., Beck J., **Simyrdanis K.**, Cantoro G., Argyriou N., Nikas N., Kalayci T., Koutsoumpa D., "Ultra Shallow Marine Geophysical Prospection in the Prehistoric Site of Lambayanna, Greece", 12th International Conference of Archaeological Prospection, Bradford, 12th-16th September **2017**.

Simyrdanis K., Papadopoulos N., Theodoulou T., "Marine archaeological mapping using geophysical methods: A case study in Elounda, Creta (Greece)", 12th International Conference in Greek Research, Flinders University, Adelaide, South Australia, 23-24 June **2017**.

Baika, K., Psarogiannis, A., Tzigounaki, A., Karamaliki, N., Sarris, A., Vött, A., Fischer, P., Röth, J., Reicherter, K., Dumas, V., Papadopoulos, N., Cantoro, G., Manataki, M., Cuenca-García C., Kalayci, T., Simon, F.X., Donati, J., **Simyrdanis, K.**, Kalogeropoulos, K., Chrysocheri, E., (2016). "Interdisciplinary survey on the maritime installations of ancient Rithymna", 4th Conference on the Archaeological Work of Crete, Rethymno, Crete, 24-27 November **2016**.

Sarris, A., Papadopoulos, N., Cantoro, G., Manataki, M., Cuenca-García, C., Kalayci, T., Simon, F.-X., Donati, J., **Simyrdanis, K.**, Fisher, P., Vött, A., Baika, K., Röth, J., Reicherter, K., Tzigounaki, A., Karamaliki, N., Giapitsoglou, K. Geophysical and Photogrammetric Measurements at Fortezza Castle of Rethymnon, 4th Conference on the Archaeological Work of Crete, Rethymno, Crete, 24-27 November **2016**.

Papadopoulos N., **Simyrdanis K.,** Theodoulou T., "Reconstructing the Cultural Dynamics of Shallow Marine Archeological Sites through Electrical Resistivity Tomography, 22th European Meeting of Environmental and Engineering Geophysics Barcelona, Spain, 4-8 September **2016**.

Simyrdanis K., Tsourlos P., Papadopoulos N.G., Kirkou S., "Monitoring of "Contaminant" Flow Using Time-lapse Optimized 3D ERT in a Supervised Experimental Test Site", 22th European Meeting of Environmental and Engineering Geophysics, Barcelona, Spain, 4-8 September **2016**.

Rani P., Di Maio R., Piegari E., **Simyrdanis K.**, Papadopoulos N. and Soupios P., "Application of self-potential method for monitoring the contamination from Olive oil mills' waste (OOMW)", 60th IAH 2016, Montpellier France, **2016b**.

Rani P., Di Maio R., Piegari E., **Simyrdanis S.**, Papadopoulos N., Dokou Z., Kourgialas N., Karatzas G. and Soupios P., 2016c, "Application of time-lapse electrical resistivity tomography and groundwater simulation models to monitor the transport of organic contaminants under unsaturated and saturated conditions", 60th IAH, Montpellier France, **2016**.

Papadopoulos, N., **Simyrdanis, K.**, Cantoro, G., and Theodoulou, T., "Reconstructing the submerged city of Ancient Olous with geoinformatics" (in greek), One-day meeting in Elounda, Elounda, 10 March **2016**.

Kritikakis G.S., Papadopoulos N., **Simyrdanis K.**, Theodoulou T., "Imaging of shallow underwater ancient ruins with ERT and seismic methods", 8th Congress of the Balkan Geophysical Society, Chania, 4-8 October, **2015**.

Simyrdanis K., Papadopoulos N., Theodoulou T., "Optimisation of Electrical Resistivity Tomography Protocols for detecting archaeological structures in shallow water marine environment", 11th International Conference, Archaeological Prospection 2015, Warsaw, Poland, 15-19 September **2015**.

Papadopoulos, N., Theodoulou, T., **Simyrdanis, K.,** Moffat, I., Kritikakis, G., "Mapping of shallow marine archaeological sites through geoinformatics: The case of Agioi Theodoroi in Heraklion, Crete", Ephorate of Marine Antiquities, Museum of Acropolis, Athens, March 6th, **2015**.

Simyrdanis K., Tsourlos P., Power C.,"Surface-to-Tunnel ERT measurements and a bench-scale application for monitoring of dense non-aqueous phase liquids", Workshop on 4-Dimensional and High-Definition Geophysics, Korea, 11-12 December **2014**.

Simyrdanis K., Papadopoulos N., Kim J.-H., "Electrical Resistivity Tomographies in shallow water marine environment for detecting archaeological targets", Recent work in Archaeological Geophysics, The Geological Society, London, December 2nd **2014**.

Papadopoulos, N., Mylonopoulos, I., **Simyrdanis, K.**, Kirkou, S. "Geophysical Explorations at ancient Onchestos, Boeotia, central Greece. Recent Work in Archaeological Geophysics & Forensic Geoscience: Future Horizons", Geological Society of London, Burlington House, Piccadilly, London, 2nd and 3rd December **2014**.

Simyrdanis K., Tsourlos P., Papadopoulos N., Soupios P., "Optimised Arrays for Surface-to-Tunnel ERT measurements", 20th European Meeting of Environmental and Engineering Geophysics, Near Surface Geoscience 2014, Athens, 14-18 September **2014**.

Papadopoulos, N., Soupios, P., Kim, J-H., **Simyrdanis, K.**, Kirkou, S., Tsourlos, P., "Mapping of Olive Oil Mills' Wastes (OOMW) through Electrical Resistivity Tomography: A case study from Alikianos site in eastern Crete (Greece)", 20th European Meeting of Environmental and Engineering Geophysics, Near Surface Geosciencee 2014, Athens, 14-18 September **2014**.

Simyrdanis K., Papadopoulos N., Kirkou S., Sarris A., Tsourlos P., "Monitoring of Olive Oil Mills' Wastes using Electrical Resistivity Tomography Techniques"', Second International Conference on Remote Sensing and Geoinformation of Environment, Coral Beach Hotel, Paphos, Cyprus 7-10 April, **2014.**

RESTECH WORKSHOP I, 17-28 February, Rethymno, "Culture-Technology: New technologies in research, study, documentation and accessibility in the information of items and monuments of cultural heritage", Institute of Mediterranean Studies, **2014.**

Simyrdanis K., Soupios P., Tsourlos P., Tsokas G., "Simulation of ERT surface-to-Tunnel", 13th International Congress of the Geological Society of Greece, Chania, Crete, 5 September, **2013**.

Simyrdanis K., Tsourlos P., Soupios P., Kim J.-H., “ERT survey for Tunnel-to-Surface Measurements”, Near Surface Geoscience 2012 – 18th European Meeting of Environmental and Engineering Geophysics, France, Paris, 3-5 September **2012**.

Sarris, A., Papadopoulos, N., Trigkas, V., Kokkinou E., Alexakis, D., Dimitrides, D., Kakoulaki, G., de Marco, E., Seferou, E., Aresti, G., Shen, G., Kondili, F., Karaoulis, M., Karifori, M., **Simyrdanis, K.**, Koustas, G., Nikas-Karayiannis, Y., Dogan, M., Stamatis, G., Kappa, E., Lolos, Y., Kalpaxis, Th., (2007). “Recovering the Urban Network of Ancient Sikyon Through Multi-component Geophysical Approaches, International Conference of Computer Applications in Archaeology: Layers of Perception” (CAA2007), Berlin, Germany, April 2-6, **2007**.

(submitted abstracts)

Simyrdanis K., Bailey B., Moffat I., Roberts A., van Duivenvoorde W., Savvidis A., Kowlessar J. Cantoro G., “3D Modelling of Submerged and Subsurface Features Using ERT: A Case Study from the Crowie wreck, South Australia”, 24th Annual Meeting of the European Association of Archaeologists, Barcelona, 5-8 September **2018** (submitted abstract).

Simyrdanis K., Moffat I., Kowlessar J., Bailey M., Papadopoulos N., Roberts A., “Old heritage, new approaches! How Electrical Resistivity Tomography can aid in the reconstruction of history”, 24th Annual Meeting of the European Association of Archaeologists, Barcelona, 5-8 September **2018** (submitted abstract).

Moffat, I., Mallett, X., **Simyrdanis, K.**, Kowlessar, J., & Bailey, M., Forensic applications of electrical resistivity tomography: Lessons from the Beaumont investigation, ANZFSS 24th International Symposium on Forensic Sciences in September 2018, Perth WA, 9-13 September **2018** (submitted abstract).

PUBLICATIONS

Simyrdanis K., Papadopoulos N., Cantoro G., "Shallow off-shore archaeological prospection with 3-D electrical resistivity tomography: The case of Olous (modern Elounda), Greece", Special Issue: Archaeological Prospecting and Remote Sensing, vol.8 Issue 11, November **2016**.

Papadopoulos, N., **Simyrdanis, K.** and Cantoro, G., "Mapping the submerged remains of Elounda (Greece) through Geoinformatics: Results of the first ISAP Fund. ISAP News, Issue 47, June 2016, pp. 3-6, **2016**.

Simyrdanis K., Papadopoulos N., Kim J.-H., Tsourlos P., Moffat I., "Archaeological investigations in the shallow seawater environment with electrical resistivity tomography", Near Surface Geophysics 2015, vol.13, p. 601-611, **2015**.

Simyrdanis K., Tsourlos P., Soupios P., Tsokas G., Kim J.-H., Papadopoulos N., "Surface-to-tunnel electrical resistance tomography measurements", Near Surface Geophysics, Vol 13, No 4, August 2015, p. 343 - 354, **2015**.

Simyrdanis K., Papadopoulos N., Theodoulou Th., "Off-Shore Archaeological Prospection Using Electrical Resistivity Tomography", p.63-69, Archaeopress Publishing Ltd. Book Published. ISBN 9781784911621, **2015**.

Power C., Gerhard J.I., Tsourlos P., Soupios P., **Simyrdanis K.**, Karaoulis M., "Improved time-lapse electrical resistivity tomography monitoring of dense non-aqueous phase liquids with surface-to-horizontal borehole arrays", Journal of Applied Geophysics, vol.112., p.1-13, **2015**.

Simyrdanis K., Papadopoulos N., Kim J.-H., (2014), "Electrical Resistivity Tomographies in shallow water marine environment for detecting archaeological targets", NSGG Day Meeting on Recent Work in Archaeological Geophysics, Geological Society of London, 2nd December **2014**.

(submitted articles)

Moffat I., Calo S., **Simyrdanis K.**, "Geophysical Investigations of the Sembiran Archaeological Site, Bali, Antiquity" (in preparation)

Simyrdanis K., Bailey M., Moffat I., Roberts A., van Duivenvoorde W., Savvidis A. Jarrad Kowlessar, Cantoro G., "Resolving dimensions: ERT imaging and 3D modelling of the Crowie barge, South Australia", 3D Recording and Interpretation for Underwater Archaeology, Springer (book) (submitted **14 February 2018 and accepted**).

Simyrdanis K., Soupios P., Papadopoulos N., Kirkou S., Tsourlos P., "Characterization and Monitoring of Subsurface Contamination from Olive Oil Mills' Waste Waters using Electrical Resistivity Tomography" (submitted **2 February 2018 and accepted** at 'Science of the Total Environment' journal).

Simyrdanis K., Moffat I., Papadopoulos N., Kowlessar J. and Bailey M., "3D mapping of the submerged Crowie barge using Electrical Resistivity Tomography
(submitted **29 December 2017 and accepted** at 'International Journal of Geophysics').

FIELDWORK - REPORTS

Castalloy project - January 2018
Application of ERT geophysical method of a potential grave location for investigating a murder-case in Adelaide city, South Australia.
(https://theconversation.com/how-were-developing-underground-mapping-technologies-lessons-from-the-beaumont-case-90687?utm_source=facebook&utm_medium=facebook-button)

Ida project - September 2017
Mapping the shipwreck of Ida using geophysical methods (ERT, Mag, GPR), Port Willunga, Adelaide, South Australia

Crowie project - July-December 2017
Underwater ERT, marine magnetics and sonar survey at Crowie, Australia, Flinders University, Morgan city, South Australia, Endeavour Fellowship.

- Kleanthis Simyrdanis "The Crowie project", Endeavour Fellowship, December 2017 (final report)

Lambayianna project - July 2016 and 2017
Underwater ERT survey at Lambayianna, PHASE I and II (Swiss Archaeological School & Underwater Archaeological Ephorate, Peloponnesus, Greece, Construction of "Nereid" (R&D team)

Marathon project - June 2016
Geophysical survey in Marathon tumuli at Marathon (The Archaeological Society at Athens), Attika, Greece

Onchestos - May 2016
Electrical Resistance, GPR and magnetic gradiometry survey at Onchestos, Boetia (Columbia University)

Elounda project - January 2016
Underwater ERT and photogrammetry survey at the Elounda (Olous), Crete, ISAP Funding

Creta Maris Hotel project - January 2016
GPR, resistivity and ERT survey at Creta Maris Hotel, Crete, Greece, TEAB AE

Elounda project - August 2015
Underwater ERT survey at the Elounda (Olous), Crete, Greece, PEFYKA
Construction of prototype "Platypus" (R&D team)
Karavostasi project - August 2015
Underwater ERT survey at the Karavostasi, Istro, Crete, PEFYKA
Kalo Chorio project - August 2015
Underwater ERT survey at the Kalo Chorio, Istro, Crete, PEFYKA

- **Kleanthis Simyrdanis**, Nikos Papadopoulos, "Results on Simulation and Inversions", November 2014 (report in greek).
- **Kleanthis Simyrdanis**, Nikos Papadopoulos, "Technical Report on geoelectrical tomography application in 4-5 different case studies, gear, methodology, results and interpretation. Δημιουργία GIS projects construction and information management", September 2015 (technical report in greek)

Paphos project - June 2015
Underwater ERT survey at the harbour of Pafos, Cyprus, Archaeological Service of Cyprus

- **Kleanthis Simyrdanis** and Nikos Papadopoulos. Technical Report: Marine geophysical investigations at the harbour of Kato Pafos, Cyprus. Laboratory of Geophysical-Satellite Remote Sensing & Archaeo-environment, Institute for Mediterranean Studies - Foundation of Research & Technology (F.O.R.T.H.), Rethymno, Crete, July 27th, 2015 (in greek)

Kenchries, Corinth - June 2015
Multisensor magnetic, GPR, multi-frequency EM, ERT and resistivity survey at Kenchrae, Corinth, University of Maryland

Hraia project - May 2015
Multisensor magnetic, GPR, multi-frequency EM survey at Heraia PHASE II
(ARISTEIA II), Arkadia

- Nikos Papadopoulos, Jamieson Donati, **Kleanthis Simyrdanis**, Nikos Nikas, Kelsey Lowe. Preliminary report on geophysical survey at Heraia. Laboratory of Geophysical-Satellite Remote Sensing & Archaeo-environment, Institute for Mediterranean Studies - Foundation of Research & Technology (F.O.R.T.H.), Rethymno, Crete, October 2nd, 2015 (report)

Mani project - July 2014

Magnetic, GPR, EM, ERT survey at Alepotrypa (Mani), Chicago Field Museum of Natural History.

Mantineia Project - May 2014
Multisensor magnetic, GPR, multi-frequency EM, ERT, Resistivity survey at Mantineia Tripolis – Phase II, ARISTEIA II

Delfoi project - July 2014
Magnetic, EM, GPR, ERT survey at Delphi-Phase III, Sancuary of Apollo, French School of Athens.

Fortezza Castle project - February 2014
GPR and ERT survey in various areas on topo of Fortezza Castle, Rethymno,
(POLITEIA).

Agioi Theodoroi, Heraklion - October 2014
Underwater ERT survey at Agioi Theodoroi, Heraklion, Crete PEFYKA (2014)

Pefyka-Kripis project - 2013-2014
Time Lapse geophysical monitoring of the pollution caused by Olive Oil Mill Wastes in Ag. Andreas, Rethymno.

- Kleanthis Simyrdanis, Nikos Papadopoulos, Stella Kirkou, Panagiotis Tsourlos, “Olive Oil Mills Waste study and monitoring in an artificial pond at Agios Andreas (Crete)”, June, 2015, (technical report in greek).

GeoDiametris project - 2013 - 2014
Time Lapse geophysical monitoring of the pollution caused by Olive Oil Mill Wastes in Alikianos (Chania), “THALIS”.

- Deliverable for a systematic monitoring pattern of environmental consequences on areas with waste disposals (Deliverable Action 7- ΟΠΣ 380207, in greek).
- Analysis assessment of environmental hazard from Olive oils mills wastes using GIS (Deliverable Action 8 - ΟΠΣ 380207, in greek).

APPENDIX I

RESEARCH & DEVELOPMENT (R&D team)

"Nereid"

The "Nereid" is a floating apparatus designed to collect magnetic data from a marine environment. It has fully adjustable sensors that can be move up and down in order to adjust the distance from the sea bottom, so as to come as close as safely possible to the targets.

Construction period: May-July 2016, GeoSat ReSeArch lab

Features/Specifications:

- Application in shallow marine environments.
- Ease of use - can either be towed by hand, or can connect to a boat for larger survey areas.
- Ability to adjust sensors to maintain closest possible distance to target.

“Dasyatis”

The “Dasyatis” is a small-scale floating “vehicle” capable of being remotely operated while recording camera footage of the sea bottom. It collects video and photo data using a water-proof GoPro camera for a Digital bathymetry Model (DBM) construction.

Construction period: January 2016, GeoSat ReSeArch lab

Features/Specifications:

- Using a waterproof GoPro camera.
- Application in very shallow marine environments.
- Ability to be remotely operated.

“Platypus”

The “Platypus” collects ERT data from marine environment in a “dynamic” mode - that is, data acquisition occurs in real time while the sensors are moving. It is used for archaeological purposes, such as detecting submerged buildings.

Construction period: August 2015, GeoSat ReSeArch lab

Features/Specifications:

- Ability to collect data from a very shallow marine environment.
- Ease of use (simply ‘drag and collect’- requires no motor).
- Incorporation of existing ERT gear into the framework.
- GPS recording Real-Time acquisition.
- Ease of assembly and disassembly (able to occur in a timely manner, in situ).

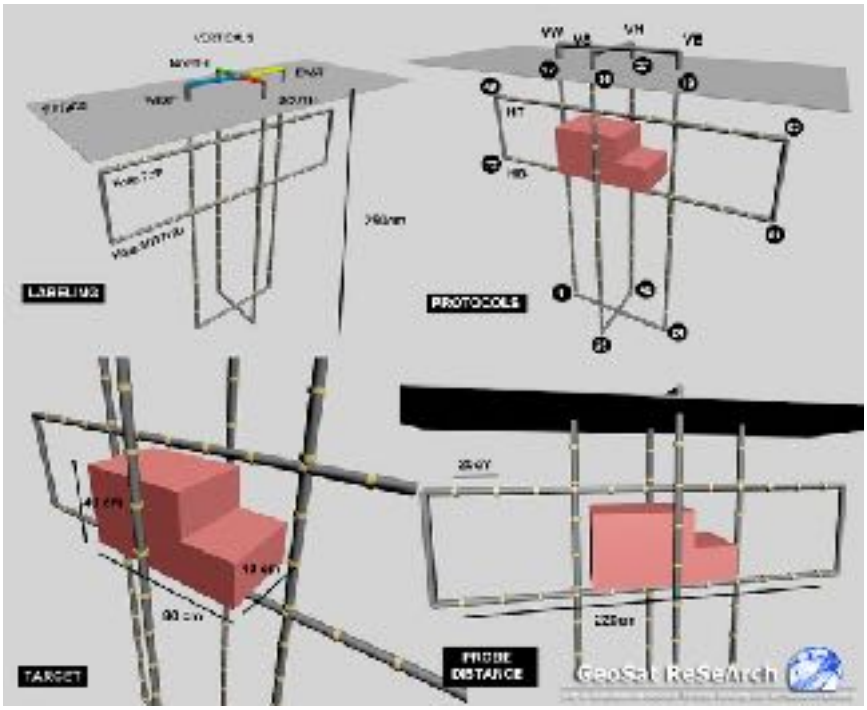
“Spider”

The “Spider“ collects ERT data using horizontal and vertical sensors, spatially distributed in an optimised time-lapse configuration, below the ground surface.

Construction period: September-October 2015, GeoSat ReSeArch lab

Features/Specifications:

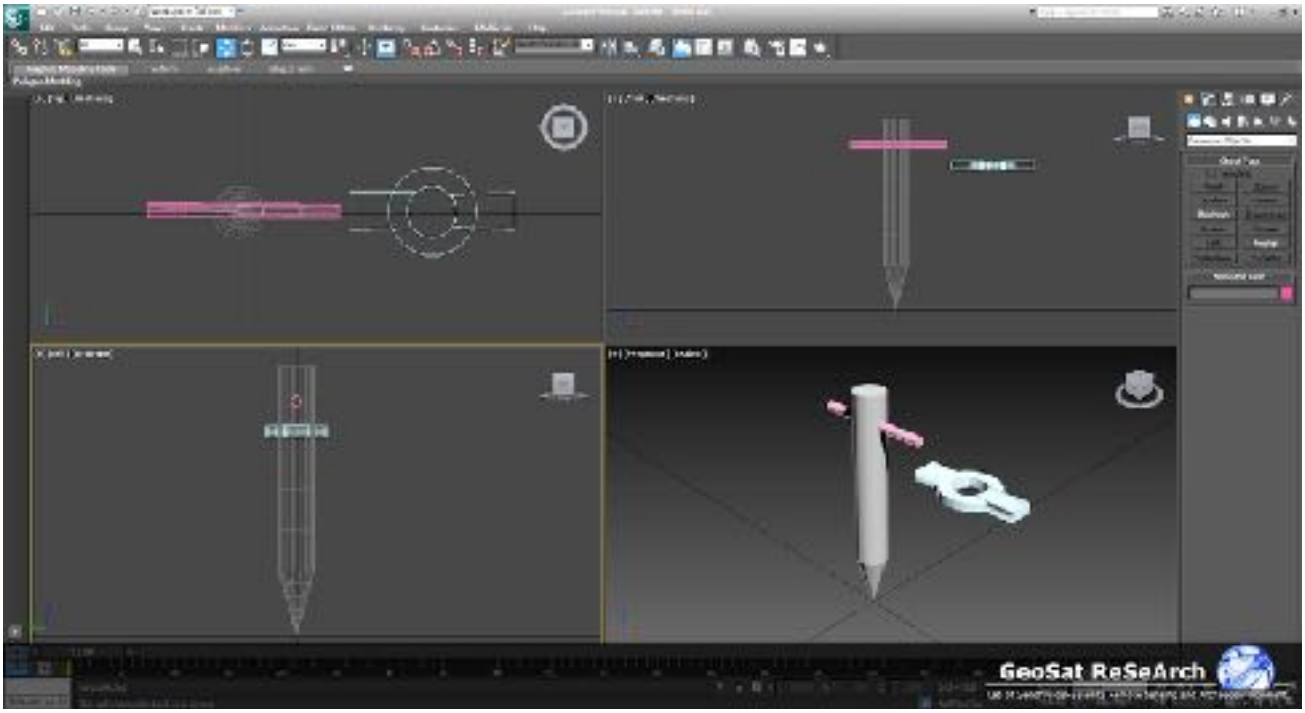
- 6 plastic pipes, 4 vertical and 2 horizontal (3cm diameter, 2.5 m length).
- Distance between W-E pipes 1m, between N-S pipes 0.6m, between horizontal pipes 0.6m.
- 72 sensors consisting of metallic rings placed 20 cm apart (12 per pipe).



“Easy Probes”

“Easy Probes” is an unfinished prototype developed in 2014. Its modus operandi is to facilitate the quick and easy collection of ERT data, using metallic probes with easy-to-connect adaptors.

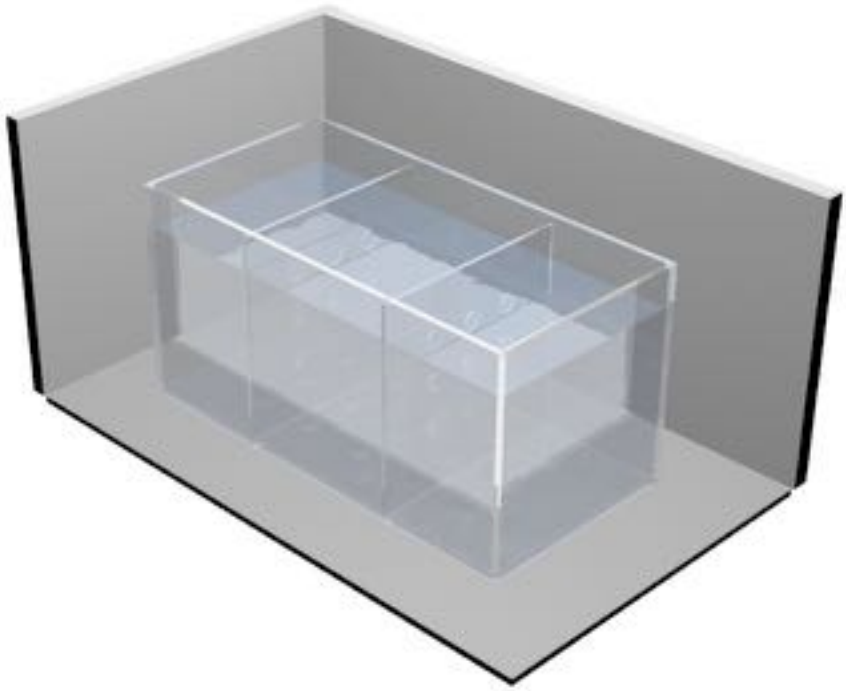
Construction period: February 2014, GeoSat ReSeArch lab



“Tank”

Tank Construction prototype

Construction period: January 2014 - Department of Environmental and Natural Resources Engineering, TEI Chania



“Talpidae”

The “Talpidae” apparatus was developed during the course of my PhD. It acquires data in small-scale distances (10-50cm) between the “surface” and a “tunnel”. It has two parallel arrays and adjustable components. The green pipe is filled with water and simulates the ground surface, the blue simulates the “inside-the-earth” array and the black pipe is empty, (being filled with air) and simulates a tunnel. The apparatus is stable and uses pre-calculated distances to set the pipes at precise distances.

Construction period: August-September 2012

Features/Specifications:

- Stability during the measurements.
- Adjustable components providing variable distances between pipes at predefined positions.
- Tunnel simulator (black pipe, filled with air).
- “Inside-the earth” simulator (blue pipe).
- Ground surface simulator (green pipe, filled with water).
- No metallic parts.
- 20 sensors in each pipe (2 cm apart).
- Lightweight but sturdy.

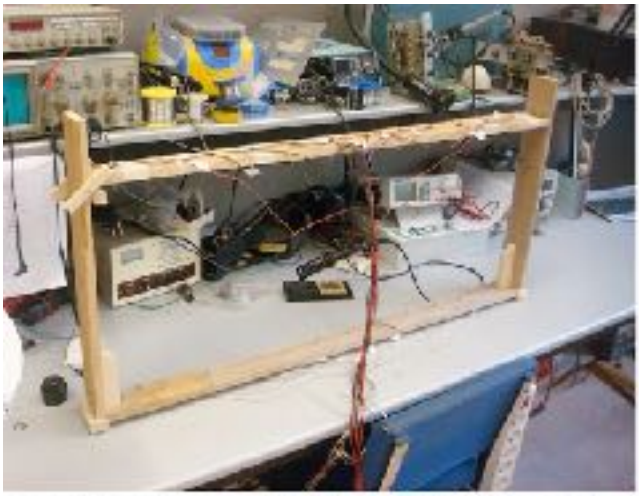
“Special Array”

The “Special Array” apparatus was developed during my PhD. It acquires data using probes set at 5 cm apart, that are placed along two horizontal arrays; “surface” and “interior”, which are spaced 40 cm apart. It was made as a prototype apparatus for “locating” a target using a new protocol configuration named “Surface-to-Tunnel”. In these images, an empty plastic bottle is used as a “target” and is embedded between the parallel arrays.

Construction period: May 2011

Features/Specifications:

- Handmade wooden apparatus.
- Two parallel, horizontal arrays made up of electrodes (nails) set at 5 cm apart.



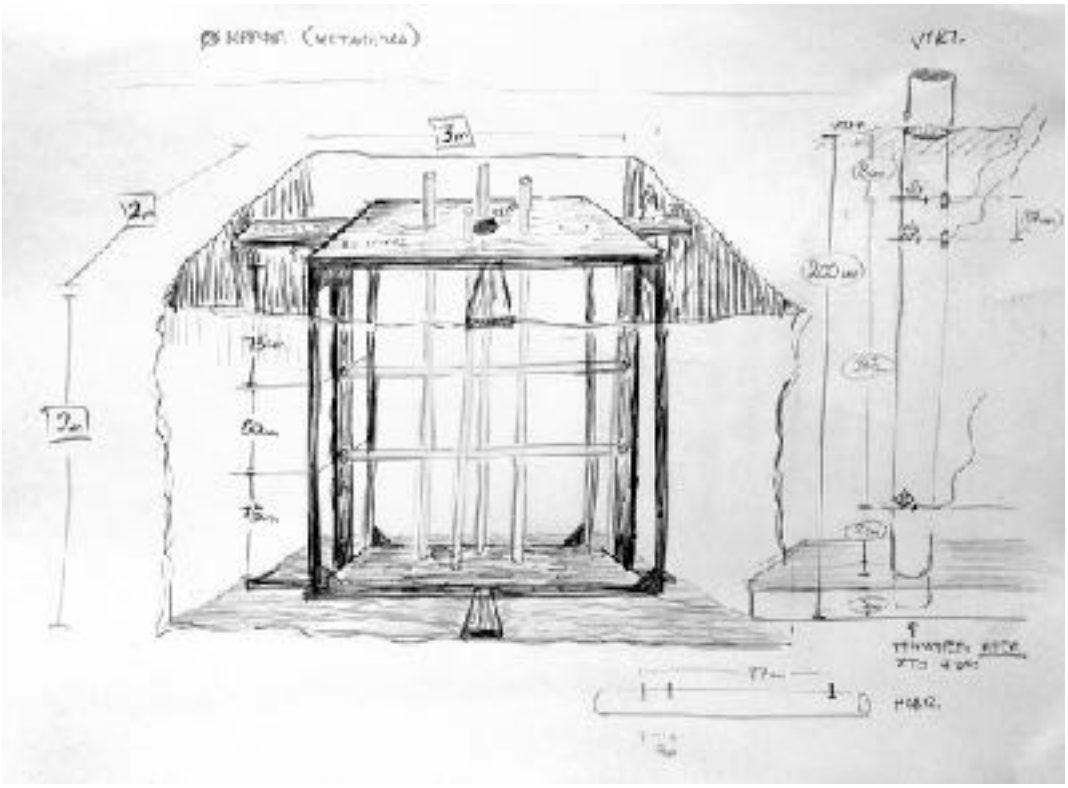

APPENDIX II

SCIENTIFIC ILLUSTRATIONS

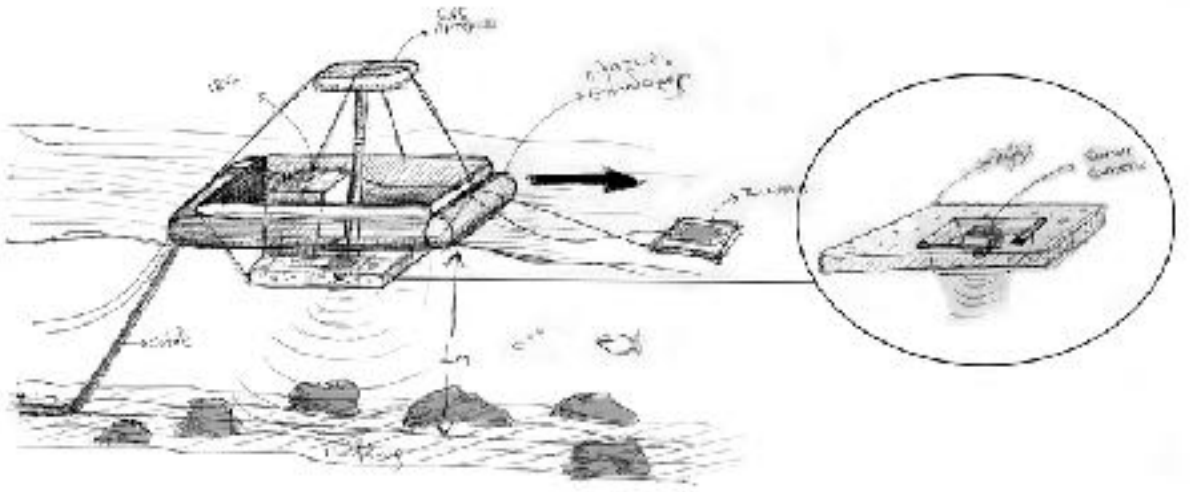
https://www.behance.net/kleanthis

A. CONCEPT VISUALISATION

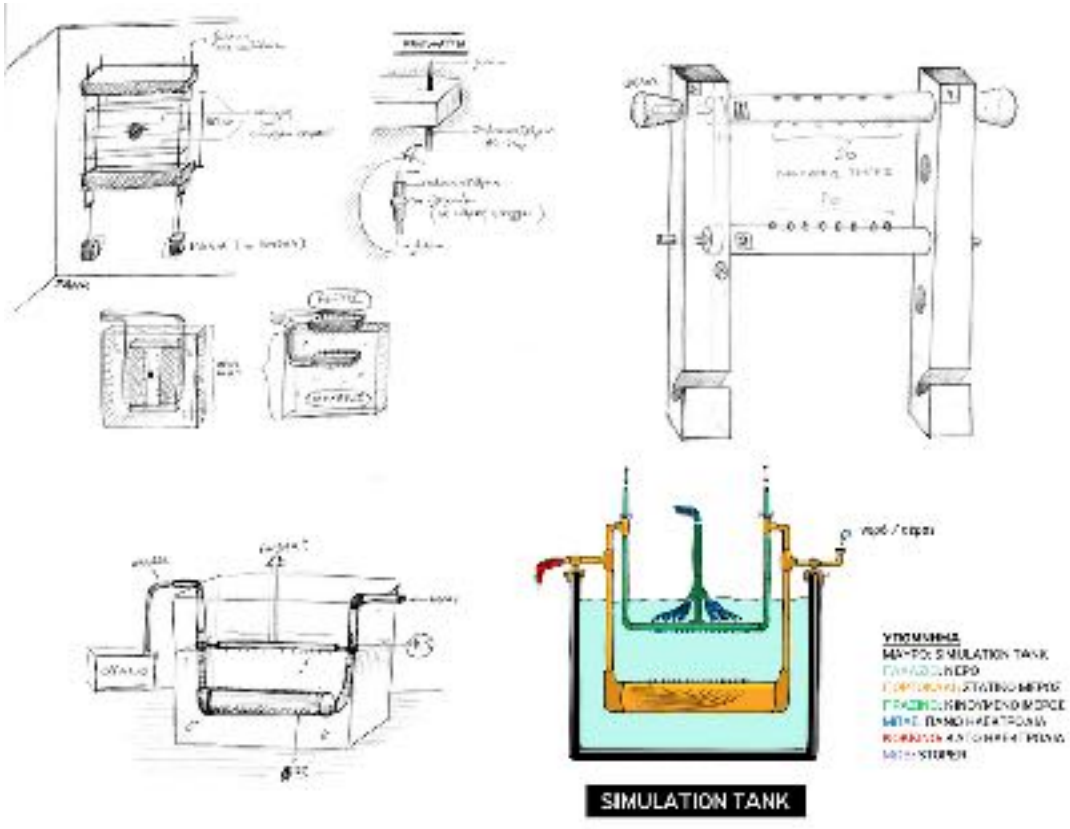
- Preliminary sketch for the “Spider” apparatus. “Spider” collects ERT data using horizontal and vertical sensors, spatially distributed in an optimised time-lapse configuration, below the ground surface (R&D product)
  September 2015, GeoSat ReSeArch lab



- Preliminary sketch on the “Platypus” apparatus. “Platypus” collects ERT data from marine environment in a “dynamic” mode. It is used for archaeological purposes, such as detecting submerged buildings (R&D product)
  August 2015, GeoSat ReSeArch lab

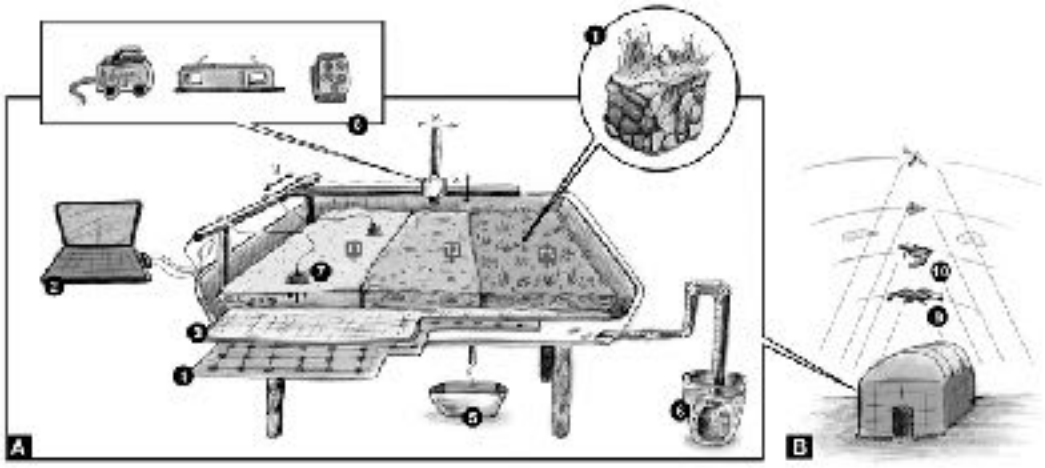


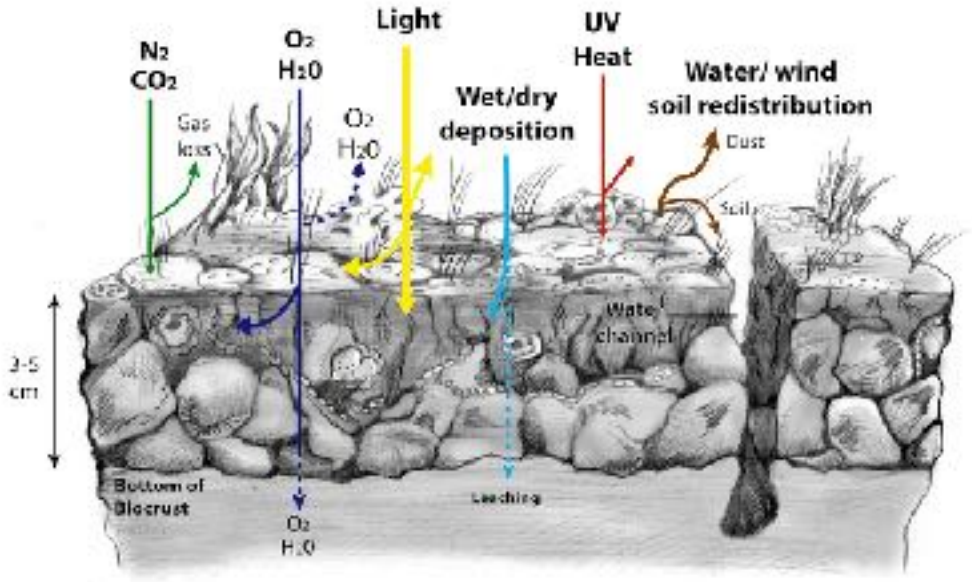
- Preliminary and final sketches on the “Talpidae” apparatus. The “Talpidae” apparatus was developed during the course of my PhD. It acquires data in small-scale distances between the “surface” and a “tunnel” (PhD product).
  August 2012, A.U.Th



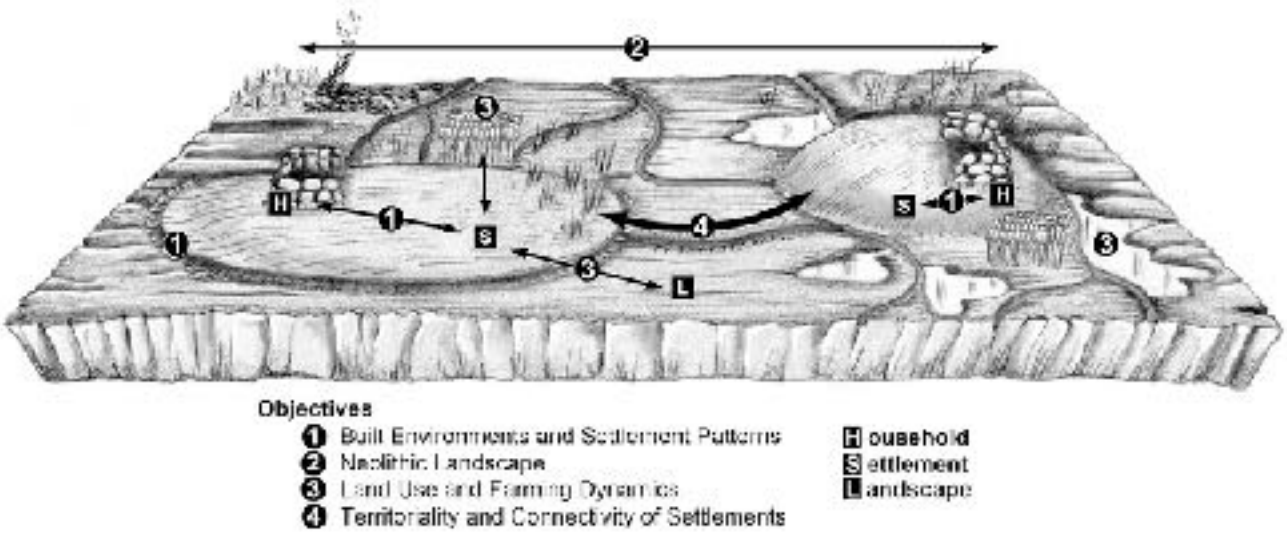
B. SCIENTIFIC FIGURES

- Figure developed for a proposal, titled “Integrated Monitoring of Biological Soil Crust (Biocrust) Properties using Innovative Geoenvironmental Methods Spanning Multiple Scales – Application to Southern European Regions”.
  August 2017, Technological Educational Institute of Crete, Department of Environmental and Natural Resources Engineering

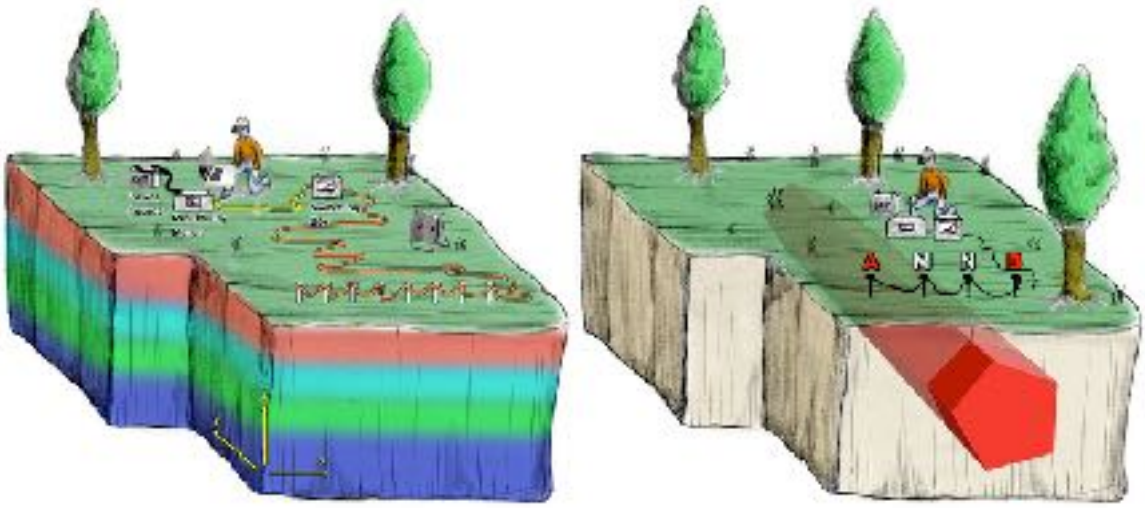


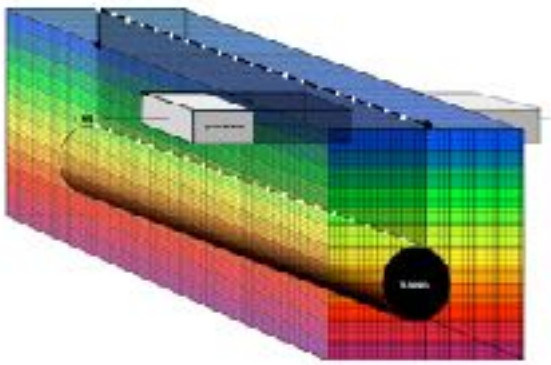


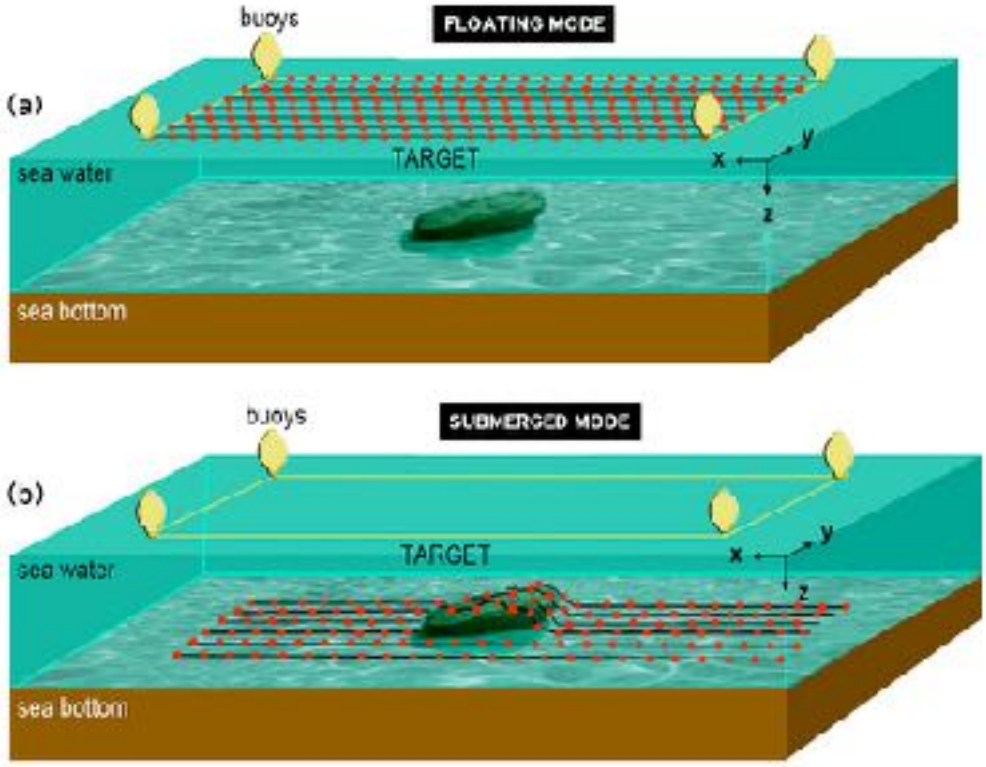
- Figure developed for the proposal, titled “Neolithic Thessaly Biographies Revisited: From Settlements to Landscape (NeTBio)” Horizon 2020- ERC.
  October 2014, GeoSat ReSeArch lab

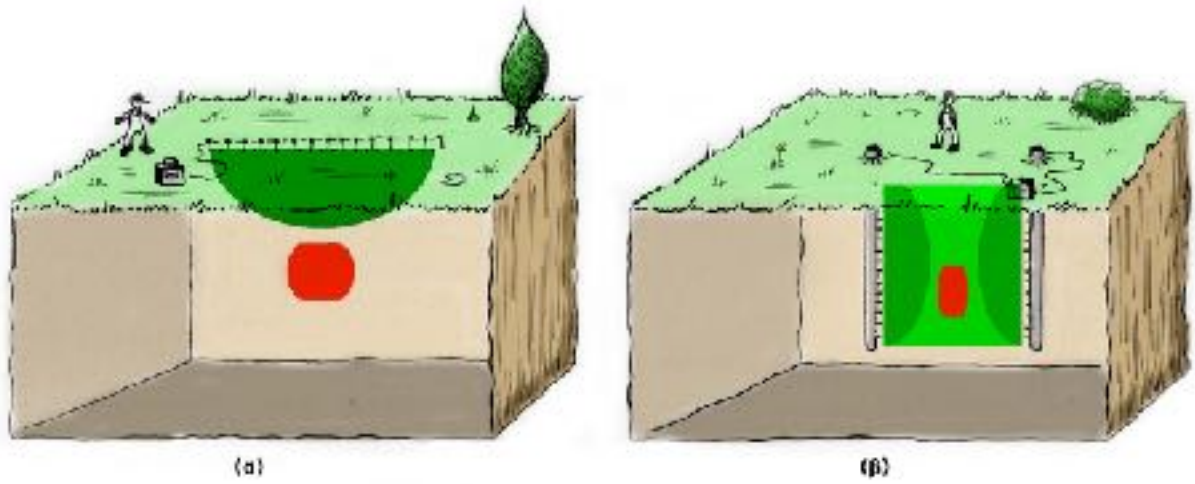


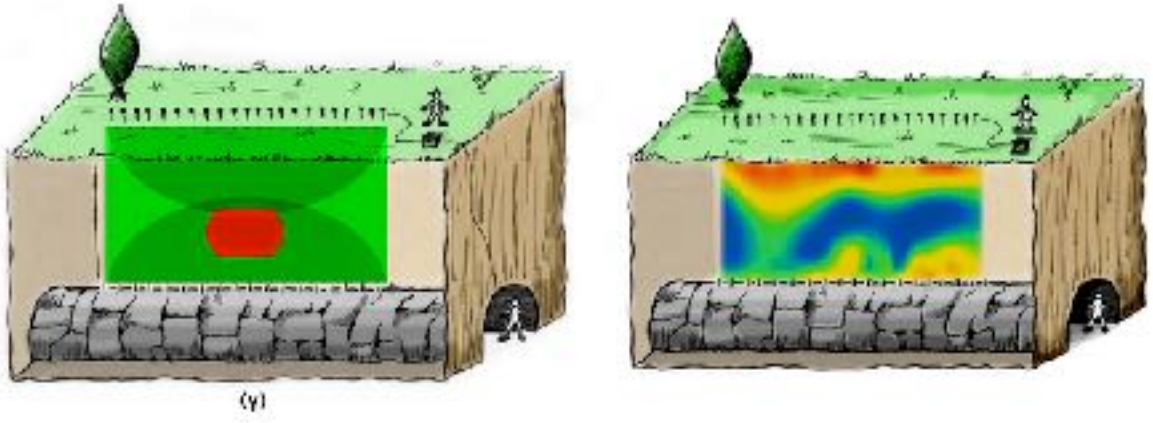
- Various figures used for geophysical illustration on methodological representations. Usage for manuscripts, posters, oral presentations, thesis etc.



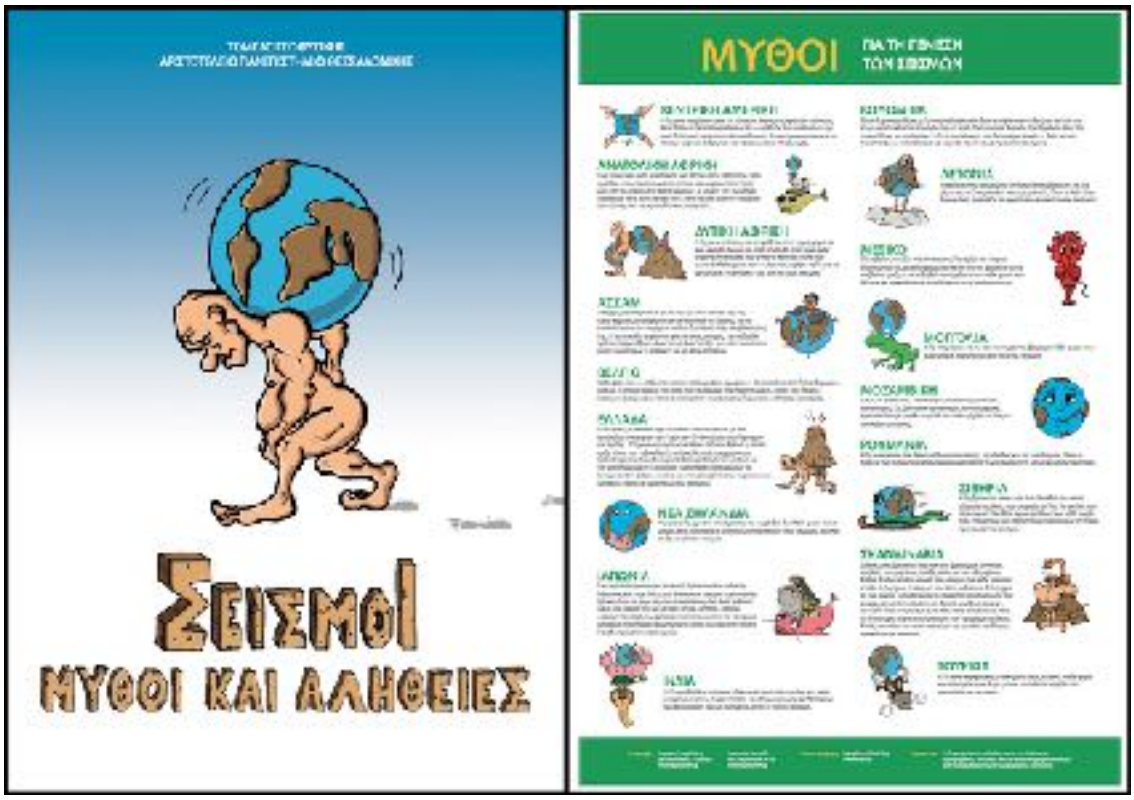


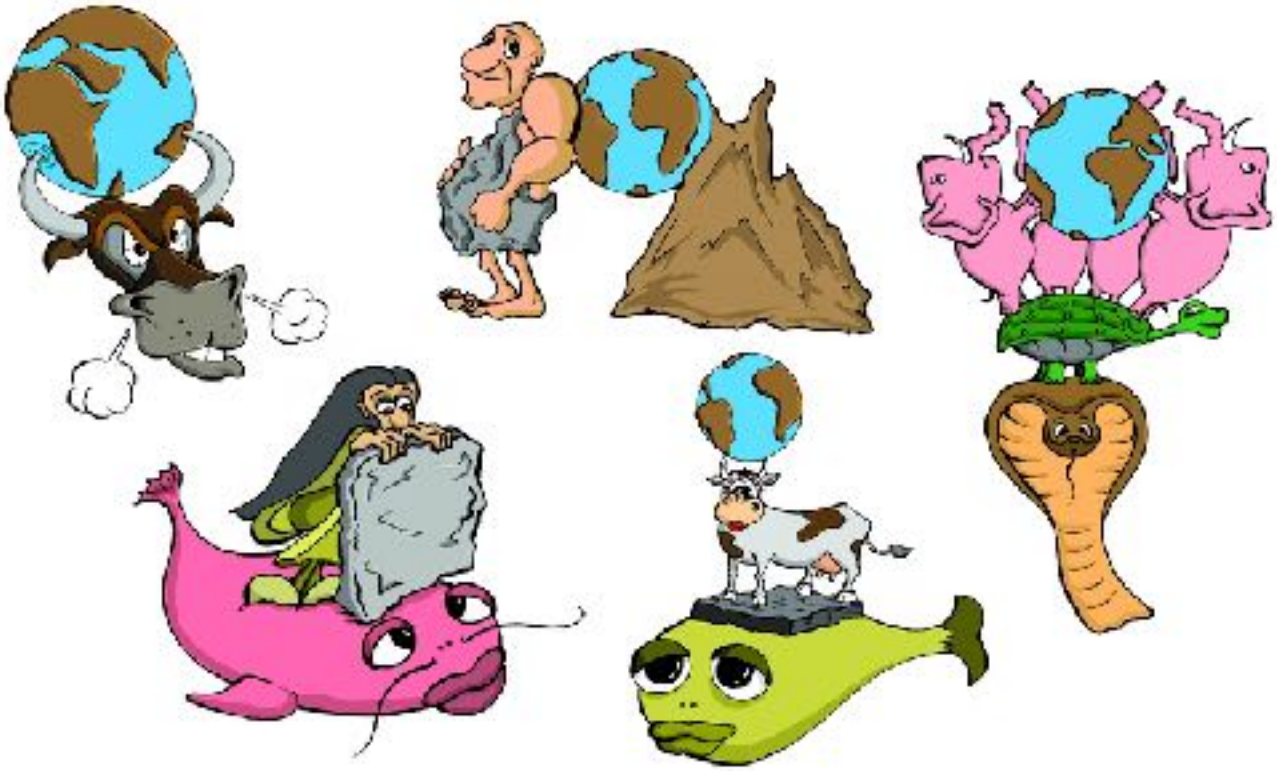

buoys
FLOATING MODE
(a)
sea water
TARGET
x
y
z
sea bottom
buoys
SUBMERGED MODE
(b)
sea water
TARGET
x
y
z
sea bottom


(α)
(β)


(γ)

- Book “Earthquakes, Myths and Truths” and a poster. It is an educational seismic book distributed at schools. Program “INTERREG IIIA”
  April 2008, Aristotle University of Thessaloniki





- Illustrations for presentations