



The Geological Society of Greece

EGE 2019

15th International Congress of the Geological Society of Greece

Athens, 22-24 May 2019

EXPLORING AND PROTECTING OUR LIVING PLANET EARTH

www.gsg2019.gr



Second Circular

Δεύτερη Εγκύκλιος

ORGANIZER:



National and Kapodistrian
University of Athens

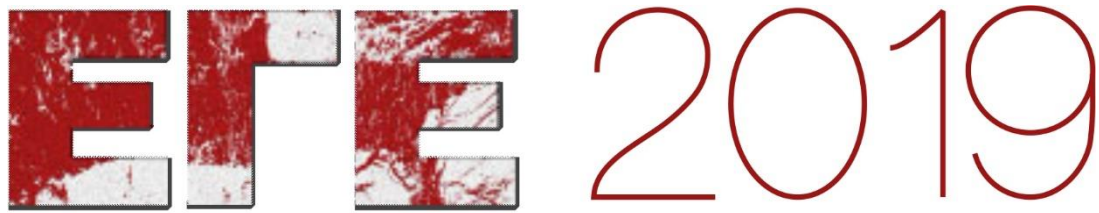
Co-ORGANIZERS



Harokopio University
of Athens



ΓΕΩΤΕΧΝΙΚΟ
ΕΠΙΜΕΛΗΤΗΡΙΟ
ΕΛΛΑΔΑΣ
Geotechnical Chamber
of Greece



15th International Congress of the Geological Society of Greece
Athens, 22-24 May 2019

EXPLORING AND PROTECTING OUR LIVING PLANET EARTH

SECOND CIRCULAR

Dear colleagues,

This is the second circular for the **15th International Congress of the Geological Society of Greece – GSG2019: “Understanding and Protecting our Living Planet Earth”**, to be held at the premises of Harokopio University, Athens, Greece, between 22-24 May 2019.

The International Congresses of the Geological Society of Greece are multidisciplinary earth science events, focusing on, but not limited to, the broader Aegean region and its surroundings, with the view to highlighting the contribution of geosciences to the study of natural resources, natural hazards and environment.

Please check the official GSG2019 web site: www.gsg2019.gr for updated information.

SUBJECTS

GSG 2019 addresses all subjects of Earth Science, including: Active Tectonics, Applied Geophysics, Applied Mineralogy, Archaeometry, Atmospheric Environment, Climatology, Energy Resources, Engineering Geology, Environment and Health, Geoarchaeology, Geochemistry, Geochronology, Geology and Education, Geosciences and Environment, Geothermal Energy, Geoconservation, GIS and Geoinformatics, Hydrogeology, Industrial Rocks and Minerals, Marine Geology, Meteorology, Mineralogy, Mineral Exploration, Natural Hazards, Neotectonics, Oceanography, Ore Deposits, Palaeoclimatology, Palaeontology, Physical Geography, Physics of the Earth's Interior, Quaternary Geology, Remote Sensing / Earth Observation, Sedimentology, Seismology, Speleology, Stratigraphy, Structural Geology, Sustainable Development, Tectonics, Urban Geology. The Congress Scientific Program is grouped under broad thematic headers and organizes in Sessions – more at the [respective chapter](#) in this circular.

ORGANIZATION

The GSG2019 Congress is organized by the **National and Kapodistrian University of Athens (NKUA)**. Co-organizers are the **Harokopio University of Athens (HUA)** and the **Geotechnical Chamber of Greece (GEOTEE)**.

ORGANIZING COMITEE

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Institute of Geology and Mineral Exploration

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Institute of Geology and Mineral Exploration

Xenophon Stavropoulos, *Dr. Geologist*,

Association of Greek Geologists

SECRETARIAT AND CORRESPONDENCE

For any inquiries and information, please contact one of the Congress Secretaries, the Congress Treasurer, or through the Congress organizing agency:

Niki Bai, NBevents

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You can also use the contact form at: <https://www.gsg2019.gr/contact-us-3/>, or email us: info@gsg2019.gr

LOCATION



Located at the crossroads of three continents, the capital of Greece – Athens, with a population of more than four million, has been the hub of many cultures.

Characterized by a culture and people that are welcoming and hospitable, every visitor just feels at home. Athens is an ideal congress destination, combining state-of-the-art infrastructure, excellent conference facilities and easy access from all over the world with world-class cultural attractions, modern amenities, diverse entertainment and natural beauty.

CONGRESS VENUE



HUA main building

The Congress will take place at the premises of the Harokopio University of Athens (HUA).

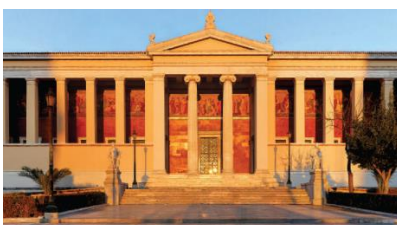
Situated within a twenty-acre landscaped garden, the HUA campus offers modern conference facilities and ample space for inter-session meetings and social events.



HUA Department of Geography

The congress sessions will be held at the main building of HUA, which will also host the Congress Exhibition and at the new building of the Department of Geography.

HUA campus is easily accessible by public transport (buses and trolley buses), in a 15-minute ride from downtown Athens (Syntagma sq.) Find out more at: <https://www.hua.gr/index.php/en/university-2/access>



NKUA central building

The opening ceremony is scheduled to take place at the central building of the National and Kapodistrian University of Athens; more details to be announced when the Congress schedule is finalized.

ACCOMODATION

Athens is a major tourist destination, so there is a great range of accommodation. Congress participants are kindly invited to arrange accommodation themselves. A list of convenient hotels nearby the congress venue will be posted on the congress website.

TOPICS AND SESSIONS, WORKSHOPS AND SEMINARS

The Congress is organized in thematic/technical sessions and topics. **General Sessions** cover a broad range of topics under a thematic header; **Special sessions** are the result of the call-for-sessions round; these focus on particular, state-of-the-art topics, of particular interest to the colleagues in the corresponding scientific fields. All Special sessions and some General Sessions (see below) are managed by the Session conveners, who manage, organize and co-operate with the Organizing Committee in the construction of the Scientific Program of the Congress.

During the conference, a series of events has also been arranged. These include **workshops** and **seminars**, aimed at training and hands-on experience on tools and methodologies used at various geoscientific areas; the target audience is mainly young scientists and Early Stage Researchers. The workshops and conference are managed by their corresponding Instructors, who will provide further information to anyone who wishes to attend.

A list of Sessions, workshops and seminars follows; for detailed information about these, please see the [ANNEX](#) at the end of this circular. Note also that Session accomplishment is dependent upon the number of contributions it will attract. The Organizing Committee reserves the right to merge or cancel sessions with poor performance.

The Scientific program of GSG2019 includes:

GENERAL SESSIONS

- T1 Stratigraphy, Palaeontology and Sedimentology
- T2 Geodynamics, Tectonics and Structural Geology
(co-organized by the Structural Geology and Tectonics Committee, G.S.G)
- T3 Geophysics and Seismology
- T4 Geochemistry, Mineralogy, Petrology, Volcanology and Geothermy
- T5 Geomorphology, Quaternary Geology and Geoarchaeology
(co-organized by the Committee for Geomorphology and Environment, G.S.G.)
- T6 Economic Geology and Energy Resources
- T7 Natural Hazards
- T8 Marine Geology and Oceanography
- T9 Engineering Geology, Hydrogeology and Environmental Geology
- T10 Geology and Society: Geo-environmental education and Sustainability, Geological Heritage
- T11 Geoinformatics: Remote Sensing and Information Technology in Geosciences
- T12 Atmospheric Sciences

SPECIAL SESSIONS

T1.S1 Updating Paleontology and Stratigraphy in Greece and Eastern Mediterranean

(Organized by the Palaeontology-Stratigraphy Committee of the G.S.G)

Conveners: **Maria Triantafyllou** (NKUA), **Dimitris Kostopoulos** (AUTH), **George Eliopoulos** (UPAT)

T2.S1 The Hellenic Subduction, the North Anatolian Fault and the Aegean back-arc deformation: how do they interact in space and time?

Conveners: **Dimitris Sakellariou** (HCMR), **Nicholas Chamot-Rook** (Ec. Sup. Paris),
Laurent Jolivet (Univ. P.M Curie)

T3.S1 Statistical Seismology

Conveners: **Eleftheria Papadimitriou** (AUTH), **G. Tsaklidis** (AUTH), **R. Console** (INGV)

T3.S2 Seismicity & Geodynamics in the Ionian Islands and the Corinth Gulf

Conveners: **Vasileios Karakostas** (AUTH), **George Kaviris** (NKUA), **Efthymios Sokos** (UPAT),
Pierre Briole (Ec. Norm. Sup./CNRS)

T3.S3/T11.S3 HELPOS: Hellenic Plate Observation System

Conveners: **Panagiotis Papadimitriou** (NKUA), **Vassileios Sakkas** (NKUA), **Christos Evangelidis** (NOA)

T4.S1 Geochemical mapping for environmental and resource management

(Jointly organized jointly by the IUGS Commission on Global Geochemical Baselines (CGGB), the Society for Environmental Geochemistry and Health and the EuroGeoSurveys Geochemistry Expert Group)

Conveners: **Ar. Argyraki**, (NKUA), **A. Liakopoulos** (IGME), **A. Demetriades** (IUGS-CGGB)

T4.S2 Insights into the Nature of the Earth's Upper Mantle approached from the study of Ophiolites and Volcanic Rocks

Conveners: **Petros Koutsovitis** (IGME), **Theo Daflos** (Un. Wien), **Andreas Magganas** (NKUA)

T6.S.1 Advances in Hydrocarbon Exploration

Co-organized by the Hellenic Hydrocarbon resources Agency (HHRA)

Conveners: **Yannis Bassias**, **Spyros Bellas** (HHRA)

T7.S1 Natural hazards under climate change impact

Conveners: **C. Loupasakis** (NTUA), **Ch. Anagnostopoulou** (AUTH), **E. Zervas** (HOU)

T7.S2 New advances in InSAR and GNSS techniques and their applications for geohazards

Conveners: **A. Ganas** (NOA), **P. Elias** (NOA), **S. Valkaniotis**, **M. Foumelis** (BRGM), **P. Kourkouli** (ICEYE)

T7.S3 The Geohazard supersites initiative with emphasis on the Greek supersite (Enceladus)

Conveners: **Spyros Lalechos** (EPPO), **Thomas Salonikios** (EPPO)

T10.S1. Highlighting, Protection and management of Geosites

Conveners: **N. Zouros** (Univ. Aegean), **E. Moraiti** (IGME), **Ch. Fassoulas** (Nat. His. Mus. Crete),
P. Paschos (IGME)

T11.S1 Innovative Sensing Techniques for Geohazards

Conveners: **V. Marinis** (AUTH), **C. Loupasakis** (NTUA), **E. Vassilakis** (NKUA)

T11.S2 Soft Computing and Intelligent Methods in Geosciences

Conveners: **Ch. Roumpos** (T.U. Crete), **I. Kapageridis** (TEI W. Macedonia), **M. Galetakis** (T.U. Crete)

WORKSHOPS – SHORT COURSES - SEMINARS

T4.W1 Workshop on Global-Scale Geochemical Mapping

Instructors: **Alecos Demetriades** (IUGS-CGGB, Chair of Sampling Committee),
Ariadne Argyraki (IUGS-CGGB, Chair of Public Relations & Finance Committee),
Anna Ladenberger (IUGS-CGGB, EuroGeoSurveys, Geochemical Expert Group Deputy Chair).

T9.W1 Free and open source tools for groundwater resources management

Instructors: **Andreas Kallioras** (NTUA)

T11. W1 Geoinformatics: Earth Observation - GIS free & open software, data and platforms

Instructors: **Isaak Parcharidis** (HUA)

LANGUAGE

The official language of the Congress is English; no translation facilities will be available.

SUMBISSION OF EXTENDED ABSTRACTS (EA)

Contributions to GSG2019 are in the form of **Extended Abstracts**, (EA), which should be not more than two pages long (except keynote and/or invited contributions), including figure(s), table(s) and list of references.

Extended Abstracts should be prepared according to the Congress format: Please visit <https://www.gsg2019.gr/abstract-submission/> for information on the submission of your EA.

Submission system opens on 1st January 2019; submission deadline is 15th March, 2019.

Presentation modes

There will be both oral and poster presentations in all sessions. Participants will be able to choose their preference (oral or poster mode) in the application form, but the definite mode of presentation will be decided by the Program Committee and the respective Conveners, based on space / time restrictions.

- **Oral Presentation** – The allocated time for oral presentations will be 15 minutes in total. This includes time for the presenter to be introduced, present his/her contribution, answer a number of questions, and do any wrap-up. Therefore, presenters should plan their actual presentation for no more than 12 minutes. There is a tight schedule and it is important that each presenter stay within the time limit. Presenters will have access to a laptop with LCD projector and a laser pointer. Please, bring your presentation to the meeting on a USB flash drive to load on the in-room laptops. You will not be able to use your own laptop for your presentation. You can load your presentation on one of the conference laptops before the first session, during the coffee breaks, or during lunch preceding your presentation. A support staff member will be in each room to assist with the loading.
- **Poster Presentation** – For each poster, display boards will be allocated. The poster board usable space will be announced in GSG2019 website when further details become available. The poster area will open thirty minutes before the sessions begin each day. It is advisable to hang the posters sometime before 9:00 a.m. the day of the respective session, if possible. Posters will need to be taken down by the end of the day of each session. Presenters will be required to be

next to their posters site during specific time slots. Walk-through sessions, where poster authors will be asked to give a brief description (c. 2 min) of their work, will be organized by the respective session conveners.

REGISTRATION FEES

To register, visit www.gsg2019.gr and click 'Registration'. Participation fees are summarized in the following table:

Category	Early Registration (until 15 March 2019)	Late Registration (after 15 March 2019)
1a. Delegates – G.S.G members*	130 €	180 €
1b. Delegates (non- G.S.G. members)	150 €	200 €
2a. Young Scientists (G.S.G members)*, **	80 €	130 €
2b. Young scientists (non-G.S.G members)	100 €	150 €
3. Students ***		30 €
4. Senior delegates****		50 €

(*) Active members of the Geological Society of Greece who have paid their 2018 subscription to the Society.

(**) In order for delegates to qualify for Young Scientists, they should:

- Be 35 years of age or younger (i.e. born not earlier than 1 January, 1984)
- And
- Be the lead author of the associated abstract(s)

(***) Undergraduate and Master's (NOT PhD) students (proof of status must be provided). The fees include attendance and coffee breaks only.

(****) Emeritus Professors, Retired Professionals, or delegates over 70 years of age

Regular and young scientist delegates are entitled to all Congress activities (presentation, conference material, proceedings in electronic format, gala dinner, coffee breaks, etc.). Undergraduate student delegates are entitled to attendance and coffee breaks only.

One-abstract-per-delegate rule: the fees correspond to one abstract per delegate. In case a delegate wants to submit more than one abstract, a fee of **30 €** per additional abstract will be charged.

Please note that no abstract will be accepted without prior payment of the registration fees. All additional costs regarding the payment (e.g. bank expenses) must be borne by the delegates themselves.

Cancellation policy: All requests for cancellations must be made in writing to NB EVENTS (info@gsg2019.gr). Cancellation fees apply as follows:

- Before 15 January, 2019: full refund minus bank expenses.
- Before 31 March, 2019: 50% cancellation fee (50% refund).
- After 1 April 1, 2019 – no refund can be processed.

USEFUL INFORMATION

FACILITIES. Delegates of GSG2019 may choose from a variety of restaurants located nearby the Congress venue.

Transportation: HUA campus is located at Kallithea (<https://www.hua.gr/index.php/en/university-2/access>), a 15-min bus ride from the city center (Syntagma). Bus, trolley-bus, metro and taxi services to and from HUA are offered round the clock. Detailed information on the metropolitan transport system of Athens can be found at: <http://www.oasa.gr/?id=ind3ex&lang=en>

Arrival by airplane. Athens is served by the Eleftherios Venizelos airport ('Athens International Airport', AIA) (airport IATA code: ATH), located 30 km east of the city centre. It is the largest airport in Greece and serves all regular and low-cost airlines. Delegates are strongly recommended to book air travel as early as possible, as Greece is a busy tourist destination. More information on arriving by airplane and getting to Athens can be found at the official airport website: <http://www.aia.gr>

Arrival by train. The central train station of Athens is "Stathmos Larissis", which is linked to the metropolitan transport system via metro and bus. Details, timetables, fare prices and maps can be found at: <http://www.trainose.gr/en/>

Arrival by car. Those wishing to drive to Greece may either ferry their cars across to one of the country's major ports (Igoumenitsa, Piraeus, Patras etc.) or enter the country overland. The mainland points of entry are Kakavia, Kristallopigi (Albania), Evzoni, Niki (FYR of Macedonia), Promahonas (Bulgaria), Kastania and Kipi (Turkey). All border stations operate on 24 hour service basis. Note that parking is regulated in Athens, so you had better leave your car in an organized parking facility; a number of parking lots are located within a few minutes walking distance from the Conference venue.

Visas. Greece is a member of the European Union; therefore no visa is needed for E.U. citizens. Non-E.U. participants should contact their nearest Greek Embassy or Consulate for further information. For a complete listing of Greek Embassies and Consulates abroad, including full contact information, you may visit the page of the Greek Ministry of Foreign Affairs at www.mfa.gr. Those who require a formal invitation for the purpose of obtaining a visa, or raising travel funds in their country, may apply to NB Events (info@gsg2019.gr).

Insurance. Travel insurance and medical care, when needed, are solely under the responsibility of the participants.

Climate & Clothing. Weather is usually mild in late May. The Temperature may sometimes reach 25° C, but it usually stays around 20°C. Generally one should expect bright and sunny days (May is relatively dry month in Athens), and perhaps mildly cool nights which might require warmer clothing.

ANNEX: SESSION, WORKSHOP AND SEMINAR DETAILS

GENERAL SESSIONS

General Sessions (GS) are intended to accommodate every paper that is not specifically submitted under a Special Session. Please, indicate the General Session number when you submit a paper. The management of GS will be coordinated by the Organizing Committee and by the respective conveners, where applicable.

T1 Stratigraphy, Palaeontology and Sedimentology

T2 Geodynamics, Tectonics and Structural Geology

(co-organized by the Structural Geology and Tectonics Committee, G.S.G)



Conveners: Alexandros Chatzipetros (AUTH), Haralambos Kranis (NKUA)

Keynote speaker(s): TBA

Session description: The session aspires to present results of ongoing research on cutting-edge topics on the broad field of Geodynamics, Tectonics and Structural Geology (GTSG). The topics include, but are not limited to: rheology in the lithosphere; transient vs. steady-state deformation; subduction zone dynamics, continental rifting and major intraplate faults; link(s) and interaction between tectonics and earth-surface processes; tectonic hazards and research response to societal needs; instrumentation and recent technological advances technologies (remote-sensing, UAS/UAV, SfM, etc.) on structural and tectonics research; numerical and analogue modelling of tectonic processes; geochronological tools in tectonics and structural geology; fault zone architecture, fracture networks and topology.

We particularly welcome young scientists and Early Stage Researchers to submit their contributions: awards will be given to outstanding oral and/or poster presentations by YS and ESRs

T3 Geophysics and Seismology

T4 Geochemistry, Mineralogy, Petrology, Volcanology and Geothermy

T5 Geomorphology, Quaternary Geology and Geoarchaeology

(co-organized by the Committee for Geomorphology and Environment, G.S.G.)



Conveners: Niki Evelpidou (NKUA), Efthymios Karymbalis (HUA)

Session description: The geomorphology of the landscape represents the dynamic between creative and destructive processes. The interaction of these processes forms, modifies, or destroys geomorphic features on the Earth's surface. Landforms and landscape are the result of uplift and erosion, both of which are moderated by tectonic and climatic boundary conditions. This session will focus all geomorphological environments (fluvial, coastal, etc.), on the new challenges for geomorphologists to better understand the response of the Earth system, to approach with new techniques and methods, to make new assessments and predictions for the future, and to contribute to societal adaptation and preparedness.

We welcome contributions related to applied geomorphology, natural hazards, geomorphological mapping – techniques and methods, coastal geomorphology, paleogeography & paleoenvironment, sea level changes and coastal landscape.

T6 Economic Geology and Energy Resources

T7 Natural Hazards

-
- T8 Marine Geology and Oceanography
-
- T9 Engineering Geology, Hydrogeology and Environmental Geology
-
- T10 Geology and Society: Geo-environmental education and Sustainability, Geological Heritage
-
- T11 Geoinformatics: Remote Sensing and Information Technology in Geosciences
-
- T12 Atmospheric Sciences
-

SPECIAL SESSIONS

T1.S1 Updating Paleontology and Stratigraphy in Greece and Eastern Mediterranean



(Organized by the Palaeontology-Stratigraphy Committee of the G.S.G)

Conveners: Maria Triantafyllou (NKUA), Dimitris Kostopoulos (AUTH), George Eliopoulos (UPAT)

Session Description: This session provides an opportunity for systematic presentation of the new data on Palaeontology and Stratigraphy of Greece and Eastern Mediterranean regarding the following objectives: new paleontological and excavation researches, micropaleontological-biostratigraphic-chronostratigraphic applications, stratigraphic correlations and dating of sedimentary deposits in the Hellenic territory and beyond, paleogeographical reconstructions, palaeoenvironmental evolution of ecosystems-palaeoecological datasets, micropaleontology and hydrocarbon exploration, high resolution palaeoceanographic evolution of the E. Mediterranean and palaeoclimatic changes, microfossils as environmental health proxies in marine ecosystems, geo-biodiversity: fossils and fossiliferous sites as key elements of the National and World Geological Heritage, geoarchaeology: contribution of paleontology in the archeological research.

T2.S1 The Hellenic Subduction, the North Anatolian Fault and the Aegean back-arc deformation: how do they interact in space and time?

Conveners: Dimitris Sakellariou (HCMR), Nicholas Chamot-Rook (Ec. Sup. Paris), Laurent Jolivet (Univ. P.M Curie)

Session description: Back-arc deformation processes are widely studied in various convergent plate boundaries. Despite the fact that there is no consensus on the geodynamic processes which control the evolution of the deformation, it is widely accepted that the style of deformation in back-arc settings varies between highly extensional (eg. Mariana Arc) and highly compressional (eg. Chilean Arc). Transtensional and transpressional deformation are known to dominate in many back-arc regions too. The Aegean constitutes a complicate back-arc area, where understanding of the evolution and style of deformation and the present-day kinematics requires understanding of the interaction of the Eocene-to-present Hellenic Subduction and slab roll-back with the post-Miocene (or later) propagation of the North Anatolian Fault into the Aegean Sea and with potential inherited mechanical discontinuities in the overriding plate (e.g. the Vardar Suture Zone).

Geological, geophysical, seismological and geodetic studies and campaigns conducted over the last decades have led to the formulation of different and contradicting models for the evolution of the deformation in the Aegean during the Plio-Quaternary. Arc-perpendicular back-arc extension and exhumation of metamorphic core-complexes along low-angle detachments in Miocene have been replaced in the Plio-Quaternary by a complicate deformation pattern. Extension at directions varying locally within the Aegean, enhanced extension at the termination of the North Anatolian Fault splays, localized to diffuse strike-slip tectonics in the North Aegean, SW-ward translation of "rigid" masses and/or radial extension in the South Aegean, arc-parallel extension along the Hellenic Arc, as well as transtension/transpression accommodated by left and right lateral shearing to oblique rifting have been proposed in

an effort to provide a comprehensive kinematic explanation for the observed geological structure and the mode of seismicity in the Aegean back-arc.

In this session we welcome papers which will present new, geological (on-, offshore), geophysical (bathymetry, seismic), geodetic and seismological data and results or review papers which will provide regional or local syntheses and will contribute to the understanding of the geological and tectonic structure and deformation of the Aegean back-arc area and its post-Miocene evolution under the light of the interaction of the Hellenic slab roll-back with the westwards propagating North Anatolian Fault.

T3.S1 Statistical Seismology

Conveners: **Eleftheria Papadimitriou** (AUTH), **G. Tsaklidis** (AUTH), **R. Console** (INGV)

Session description: Statistical Seismology has become a strong component in earthquake physics and forecasting research, since it provides the tools for modeling and shedding more light to earthquake generation processes, earthquake occurrence probabilities, models of earthquake occurrence, foreshock and aftershock productivity evaluation, earthquake triggering and hazard. Merging geophysics and statistics deepens our understanding in earthquake spatial, temporal and size distribution, and in forecasting feasibility of physical and statistical models. Participants are encouraged to join the session and submit their contribution related with earthquake predictability and the validity of various models, through the employment of statistical methods and testing hypotheses.

T3.S2 Seismicity & Geodynamics in the Ionian Islands and the Corinth Gulf

Conveners: **Vasileios Karakostas** (AUTH), **George Kaviris** (NKUA), **Efthymios Sokos** (UPAT),
Pierre Briole (Ec. Norm. Sup./CNRS)

Session description: The area of Central Ionian islands and its continuation to the Western Corinth Gulf, constitute the most seismically active part of the eastern Mediterranean region, with frequent moderate and strong ($M > 6.0$) earthquakes. During the last two decades the strong earthquakes that took place in the region, were extensively studied and gave rise to the installation and densification of local seismological networks. Lower magnitude earthquakes and seismic swarms are very frequent giving a huge amount of data to study their properties and any possible connection to the larger ones. This session aims to scientific contributions related to the understanding of the geodynamic evolution and the seismotectonic properties of the area. We invite new geophysical (seismic, geodetic etc) and geological observations concerning the seismotectonic properties of the area, source and kinematic modeling, seismic anisotropy, active deformation, the properties of the medium and the seismogenesis style.

T3.S3/T11.S3 HELPOS: Hellenic Plate Observation System

Conveners: **Panagiotis Papadimitriou** (NKUA), **Vassileios Sakkas** (NKUA), **Christos Evangelidis** (NOA)

Session description: The understanding of physical processes which are responsible for earthquakes, volcanic eruptions, surface and tectonic processes, ground motion, wave propagation, seismic response of engineering structures and tsunamis requires the prompt and long-term availability of high-quality data and services.

The accessibility to such data can accelerate the discovery of new earth science and earthquake engineering results, as well as of novel uses for societal benefit. HELPOS is a distributed network of geosciences and earthquake engineering observatories, running by the Greek Research Institutions and Universities. The backbone of the project is formed by permanent stations (seismic, GPS, strong motion) involved in global, regional and local networks, which feed high-quality services, mostly in real time. Permanent observatories are complemented with local stations and networks in selected regions of interest. The in-situ monitoring and forecast modeling services of the HELPOS Research Infrastructure is essential for earthquake, earthquake engineering, volcano and tsunami early-warning systems, as well as for disaster relief, risk assessment, management and prevention. Open access to this multidisciplinary research infrastructure will not only stimulate innovative research on earth dynamics and processes leading to catastrophic events but will also result in new developments in engineering seismology towards more effective disaster prevention.

The scope of the session is to present the research that is currently performed by the scientific community on the previously mentioned fields, based on the existing infrastructure, as well as on the work that is planned in the multidisciplinary studies in the field of the earth sciences.

T4.S1 Geochemical mapping for environmental and resource management

(Jointly organized by the IUGS Commission on Global Geochemical Baselines (CGGB); the Society for Environmental Geochemistry and Health; and the EuroGeoSurveys Geochemistry Expert Group)



Conveners: **Ar. Argyraki**, (NKUA), **A. Liakopoulos** (IGME),
A. Demetriades (IUGS-CGGB)

Keynote Speakers: **Anna Ladenberger**, Geological Survey of Sweden
Andrew Hursthouse, Univ. of the West of Scotland, UK

Session description: Geochemical maps are the principal means of presenting the spatial distribution of chemical elements and compounds in materials occurring at or below the Earth's surface. The patterns revealed by geochemical mapping can provide information on a wide range of Earth processes at different scales, from nanometres to thousands of kilometres. For example, continental- and regional-scale geochemical projects can identify districts of enhanced mineral potential within which targeted exploration can be conducted. They also provide the geochemical baseline that is required to evaluate effectively local-scale environmental projects. Mapping at a sub-mineral-grain scale can provide a basis for understanding mineralisation processes and to determine optimal strategies for extraction of valuable target elements, while the sub-micron distribution of trace elements in Earth materials can provide insights into their speciation, environmental fate and bioavailability. The focus of the session will be on geochemical surveys at all mapping scales for the study of the environment and natural resources. Our main objective is to provide the opportunity for young researchers to present their work and benefit from the interaction with well-established applied geochemistry experts. We particularly welcome studies that have combined geochemical data with data from other sources in order to provide tools for effective environmental and resource management.

T4.S2 Insights into the Nature of the Earth's Upper Mantle approached from the study of Ophiolites and Volcanic Rocks

Conveners: **Petros Koutsovitis** (IGME), **Theo Daflos** (Un. Wien), **Andreas Magganas** (NKUA)

Session description: The petrological, geochemical and structural study of ophiolites is of immense interests since it sheds light to the origin and nature of the oceanic lithosphere. This is essential for resolving complex plate tectonic processes and effects from subduction-related processes. Lavas and their derivatives having oceanic lithosphere and/or subduction-related affinities provide additional information about melt segregation, degrees of partial melting as well P-T conditions that occur in the depths of their origin contributing towards better understanding the magmatic processes and the evolution of the Earth's crust.

The session welcomes contributions focusing on (i) mineralogical, petrological and geochemical study of ophiolites and volcanic rocks; (ii) insights into the formation, evolution and emplacement of ophiolites; (iii) petrogenetic processes (e.g. partial melting, magmatic differentiation); (iv) the nature of the metasomatic agents; (v) comprehension of subduction phenomena.

T6.S.1 Advances in Hydrocarbon Exploration

Co-organized by the Hellenic Hydrocarbon resources Agency (HHRA)



Conveners: **Yannis Bassias**, **Spyros Bellas** (HHRA)

Session description: Keynote talks on cutting-edge issues on H/C exploration.

T7.S1 Natural hazards under climate change impact

Conveners: **C. Loupasakis** (NTUA), **Ch. Anagnostopoulou** (AUTH), **E. Zervas** (HOU)

Session description: Climate change, beside its impact on the climate, affects severely the occurrence frequency of natural catastrophic events, such as landslides, floods, and erosion and land subsidence. The objective of the proposed session is to present holistic studies considering the influence of the climate change, as preparatory or as triggering factor, on the occurrence of these natural disasters. Research outcomes and case studies concerning the spatial distribution of these natural hazards, their mechanism and their prevention techniques are welcome aiming to increase the efficiency of the civil protection.

T7.S2 New advances in InSAR and GNSS techniques and their applications for geohazards

Conveners: **A. Ganas** (NOA), **P. Elias** (NOA), **S. Valkaniotis**, **M. Foumelis** (BRGM), **P. Kourkoulis** (ICEYE)

Keynote Speakers: **Pierre Briole** (Ecole Normale Supérieure, Paris, France),
Panagiotis Psimoulis (University of Nottingham, UK)

Session description: Geodetic observations from InSAR and GNSS, comprise well-established techniques for studying tectonic, volcanic/ geothermal, pumping and injection, or other geophysical processes that induce crustal deformation and changes on the natural environment. Advances in these techniques allow us to observe ever-smaller deformation signals and to differentiate the time sequence of geohazards as more data are available to users. In addition, new data products based on new satellite missions such as ALOS 2 and Sentinel-1, have dramatically increased the temporal and spatial coverage, may require modifications to current processing strategies. We seek novel contributions on processing strategies and noise characterization for geodetic data, and their applications and integration with other high-resolution imaging data such as UAV and LIDAR. The session topics include, but not limited to InSAR time series analysis, InSAR combined with GNSS observations, tropospheric and ionospheric corrections, InSAR and GNSS applications in the study of tectonic strain, earthquakes, landslides, subsidence, etc., as well as on noise characterization.

T7.S3 The Geohazard supersites initiative with emphasis on the Greek supersite (Enceladus)

Conveners: **Spyros Lalechos** (EPPO), **Thomas Salonikios** (EPPO)

Keynote Speaker: **Stefano Salvi**, INGV, Supersite General Coordinator

Session description: Geohazard Permanent Supersites (Supersites) are single sites or extended areas of highest priority to the geohazards community in which single or multiple geological hazards caused by single or multiple sources poses a threat to human population and/or critical facilities. Supersites are subject to investigations aimed at broadening the scientific understanding of the causative geological processes narrowing down the uncertainty in hazard and risk assessment. Supersites provide open and free-of-charge access to comprehensive satellite (optical and/or SAR) and ground-based geophysical data sets derived from different sources and different disciplines. (e.g., Seismic, GNSS, Strain meter, Tilt, Gas, gravity, LIDAR). The area of the Hellenic Supersite covers the most seismically active area of Central Greece. More specifically it comprises the areas of:

- Ionian Islands, where the highest seismicity in Europe is observed and the highest acceleration in Greece have been recorded. The area is undergoing rapid and intense ground deformation with large magnitude of recorded uplift (> 4 mm/yr) that took place in the western part of Cephalonia Island for the period of 2003 to 2010.
- Corinth Rift, which is an ideal natural laboratory to investigate rift deformation mechanisms. Both 5-10-yr GPS and 100-yr triangulation GPS velocity estimates suggest N-S extension at 15mm/yr in the west.
- Evoikos Rift, which shows a strongly thinned continental crust below the central section of the northern part with thicknesses of only 19-20km and a local uplift rate exceeding 1mm/year. A rotation rate of 3-5°/Myr is reported for the eastern central Greece domain.

This special session aims at collecting scientific investigations related to the task of the supersite.

T10.S1. Highlighting, Protection and management of Geosites

Conveners: **N. Zouros** (Univ. Aegean), **E. Moraiti** (IGME),
Ch. Fassoulas (Nat. His. Mus. Crete), **P. Paschos** (IGME)



Session Description: The last decade has seen new approaches towards the basic, and not only, topics of Geosciences. The awareness towards the protection of GeoEnvironment and the preservation of the Natural and Cultural Heritage is now established, both in scientific research and in the public eyes. The preservation management of geological sites and monument is of paramount importance; the conservation of protected natural habitats, as these areas are the irrefutable and irreplaceable proof the history, and evolution of our living planet.

This Special session welcomes contributions on the conservation, protection, management and outreach activities related to geo-heritage, geo-parks and geosites, with the view to highlighting their importance in a sustainable and environmentally viable society.

T11.S1 Innovative Sensing Techniques for Geohazards

Conveners: **V. Marinos** (AUTH), **C. Loupasakis** (NTUA), **E. Vassilakis** (NKUA)

Session description: Landslides, rockfalls, and debris flows, have been occurring extensively in a large number of countries, causing heavy economic losses and casualties. In order to understand and mitigate geological disasters, the use of innovative technologies is mandatory. Remote sensing and in particular, close- and long-range sensing and laser scanning techniques are one of the most dynamically developing methods for data acquisition on various scales in the field of Engineering Geology. New developments in sensor technology and platforms enable 3D monitoring, near-continuous kinematic sensing, autonomous mapping by means of robotics and multispectral 3D acquisitions. Remote sensing technology encompasses different types of sensors (Differential Synthetic Aperture Radar (DInSAR), Laser imaging Detection and Ranging (LiDAR), Thermal, Optical, Multispectral, and Hyperspectral) and platforms (Terrestrial, Satellites, Aircraft, and Unmanned Aerial Vehicles (UAV)). The recent advancements in UAV deployment have extended the use of remote sensing technology and enabled to overcome some of the challenges related to temporal and spatial resolution associated with satellite platforms. These sensors and platforms enable us to collect data and monitor earth surface for engineering geology applications at different spatial scales at locations where comparable physical measurements are not feasible. Mainly, those technologies are focusing on improving the understanding of their characteristics, give new insights into landslide mechanisms and present the development of real-time monitoring and novel approaches to landslide forecasting and prediction. This technical session would broadly cover the application of innovative remote sensing technologies and close photogrammetry for engineering geology and landslide applications.

T11.S2 Soft Computing and Intelligent Methods in Geosciences

Conveners: **Ch. Roumpos** (T.U. Crete), **I. Kapageridis** (TEI W. Macedonia), **M. Galetakis** (T.U. Crete)

Session description: The session will include papers on the research and application of soft computing techniques and intelligent methods such as neural networks, genetic algorithms, fuzzy systems, clustering methods and agent systems to classification, prediction and estimation problems in mathematical geology and geosciences. Soft computing techniques have been applied to geoscience problems for decades and they provide solutions to an ever-increasing number of problems. The scope of the session will be to present the current state and progress of soft computing techniques, their range of applications, and examples of actual scientific and industrial implementations of soft computing-based solutions, including open and commercially available systems. Current research, future trends and potential applications of soft computing techniques to emerging problems in geosciences is also within the scope of the session. The objective is to stress the importance of such techniques in geosciences, provide researchers in the field with the means to present their work, and raise the awareness of the academic, research and industry community on the maturity and potential of soft computing techniques as the basis for developing sophisticated and robust solutions.

WORKSHOPS – SHORT COURSES – SEMINARS

T4.W1 Workshop on Global-Scale Geochemical Mapping

Instructors: **Alecos Demetriades** (IUGS-CGGB, Chair of Sampling Committee),

Ariadne Argyraki (IUGS-CGGB, Chair of Public Relations & Finance Committee),

Anna Ladenberger (IUGS-CGGB, EuroGeoSurveys, Geochemical Expert Group Deputy Chair).

Description: The International Union of Geological Sciences (IUGS) Commission on Global Geochemical Baselines is organizing a one-day workshop on Global Geochemical Baselines methods. This is one of a series of workshops given by the Commission to promote mapping the chemistry of the Earth's surface at the global scale. Previous workshops have been held in China, Iran, Tanzania, South Africa and Canada.

The workshop will include lectures where the attendees will be given an overview of the methods, tools, and techniques used in global geochemical baseline mapping. All training materials will be provided in electronic format. An optional field excursion to Lavreotiki peninsula to the south-east of Athens is included, where the sampling methods used in global-scale geochemical mapping will be demonstrated.

The workshop will include discussions of the following topics:

- Sampling design
- Field sampling methods
- Sample preparation and chemical analysis

- Quality control methods
- Data processing
- Map generation
- Interpretation of geochemical patterns
- Management of global-scale geochemical projects

Workshop instructors have considerable experience in the planning, execution, and management of global-scale geochemical mapping projects and in the publication of products resulting from these studies. Therefore, it will be a good opportunity for young researchers to learn internationally accepted applied geochemical methods.

T9.W1 Free and open source tools for groundwater resources management

Instructors: Andreas Kallioras (NTUA)

Description: The short course will include a series of tutorials on "Open source and public domain GIS integrated modelling environment for the simulation of water quantity and quality in surface water and groundwater with an integrated water management and planning module". The course will be based on the FREEWAT platform (as developed under a HORIZON 2020 project financed by the EU Commission under the call WATER INNOVATION: BOOSTING ITS VALUE FOR EUROPE). FREEWAT is conceived as a composite plugin for the well-known QGIS (<http://qgis.org>) GIS open source desktop software.

During the short course, the participants will be trained in using:

- Tools for the analysis, interpretation and visualization of hydrogeological and hydrochemical data and quality issues, also focusing on advanced time series analysis, embedded in akvaGIS module.
- Simulation of models related to the hydrological cycle and water resources management: flow models, transport models, crop growth models, management and optimization models (also related to irrigation management and rural issues).
- Tools to perform model calibration, sensitivity analysis and uncertainty quantifications.
- Additional tools for general GIS operations to prepare input data, and post-processing functionalities (module OAT – Observation and Analysis Tool).

T11. W1 Geoinformatics: Earth Observation - GIS free & open software, data and platforms



Instructors: Isaak Parcharidis (HUA)

Description: The seminar is offered by the Department of Geography/Harokopio University of Athens (HUA). It focusses on the use of Sentinel Hub platform to access and download the following free satellite data from Copernicus missions:

- Sentinel-1 mission is the European Imaging Radar Observatory for the Copernicus joint initiative. The mission is composed of a constellation of two satellites, Sentinel-1A and Sentinel-1B, sharing the same orbital plane and featuring a short repeat cycle of 6 days optimized for SAR interferometry science and applications. This imagery can be used for precise terrain deformation monitoring over landslide, seismic or subsidence areas by providing regular and frequent interferometric observations. It can also support impact assessment for many types of hazard including hydrometeorological and geological events.
- Sentinel-2 mission is the European Multispectral Imaging. The Sentinel-2 mission includes 13-spectral band multispectral optical imager with different resolution (down to 10 m) and a swath width of 290km. The mission is composed of a constellation of two satellite units, Sentinel-2A and Sentinel-2B, sharing the same orbital plane and featuring a short repeat cycle of 5 days at the equator optimized to mitigate the impact of clouds for science and applications.

The seminar includes hands-on experience on the open ESA SNAP software by processing Sentinel 1 and 2 for geohazards applications; and an introduction to QGIS free software

- **Cost:** Free
- **Duration:** Two days (5 hours each day)
- **Capacity:** 24 congress participants; it will be offered on a first-come-first-served basis. Priority will be given to motivated young scientists.
- **Location:** master Lab-room of the Department of Geography

Certificate of attendance will be given to all successful participants.