

Report on



Post-conference 2nd IAG-EGU Intensive Course for Young Geomorphologists
“Coastal Geomorphology of Climatically and Tectonically Sensitive Areas”



22-27 September 2019

Harokopio University of Athens– Hellenic Centre for Marine Research



As part of the programme of the Regional Conference on Geomorphology ATHENS2019, the post-conference 2nd IAG-EGU Intensive Course for Young Geomorphologists has been organized during 22-27 September 2019. Lectures and laboratory activities took place at the Harokopio University of Athens and the Hellenic Centre for Marine Research while two fieldtrips along with field activities were organized along the south coast of the Gulf of Corinth, Perachora Peninsula and the Bay of Psatha (Alkyonides Gulf). The Intensive Course focused on the “Coastal Geomorphology of Climatically and Tectonically Sensitive Areas”. The event was part of the IAG Training Programme, which encourages and promotes early career Geomorphologists worldwide by offering grants and bringing them to interact with renowned Geomorphologists and Geoscientists regarding their research activities. The course was for the second time organized in collaboration with the EGU Division on Geomorphology, based on a Memorandum of Understanding signed between the aforementioned and the IAG. IAG and EGU co-financed the initiative with 8 grants and 5,000 €, which have been allocated to cover part of the course expenses for 19 Early Career Geomorphologists from Brazil, Colombia, Croatia, Greece, India, Indonesia and Italy.

The 2nd IAG-EGU Intensive Course for Young Geomorphologists was an extraordinary occasion, especially for those from less-favored countries, to learn pioneering techniques, innovative and multidisciplinary approaches to be used in geomorphological field work in climatically and tectonically sensitive coastal areas. The Course provided participants the opportunity to discuss their research experience with young colleagues from different countries as well as to meet experienced scientists and early career researchers in an informal setting, which favors scientific discussion.

The first day of the Intensive Course included 4 lectures by Dr. Dimitris Papanastassiou (Institute of Geodynamics, National Observatory of Athens), Dr. David Fernández-Blanco (Institut de Physique du Globe de Paris), Dr. Julius Jara-Muñoz (Institute of Geosciences, University of Potsdam) and Prof. Stefano Furlani (Department of Mathematics and Geosciences, University of Trieste). The lectures covered topics related to i) the uplifted marine terraces of the Northern Peloponnese; ii) the growth of the rift-bounding fault of the modern Corinth Rift; iii) metrics and models of coastal landscape evolution and iv) novel tools to measure surface deformation and methods for assessing erosion rates on rocky coasts.

The second day included laboratory exercises related to i) GIS-based automatic landform analysis and marine terrace mapping and modeling utilizing TerraceM (Landscape Evolution Model); ii) extraction of high resolution contour lines, DSM and DTM using UAV techniques and iii) coastline displacement rates trend through GPS and remote sensing techniques.

The field-trip of the third day was chaired by Prof. Efthimios Karymbalis (Harokopio University of Athens), Dr. David Fernández-Blanco (Institut de Physique du Globe de Paris) and Dr. Dimitris Papanastassiou (Institute of Geodynamics, National Observatory of Athens) who organized a route along the north coast of the Saronic Gulf and the south coast of the Gulf of Corinth (Figure 1), one of the world's most tectonically active and studied post-orogenic rift basins. At the first stop the surface signature of the active normal fault of Kakia Skala along the northern margin of the tectonic basin of the Saronic Gulf, has been observed. The route continued visiting the Corinth Canal and the uplifted beachrocks of Diolkos (a paved road built by the Corinthians to connect the Corinthian coast to the Saronic Gulf in order to haul ships from one side of the isthmus to the other) located at the western entrance of the Canal. The field-trip continued crossing the uplifted marine terrace and perched fan-deltas of the North Peloponnese.

The field-trip of the fourth day's morning was chaired by Prof. Efthimios Karymbalis (Harokopio University of Athens), and Prof. Niki Evelpidou (National and Kapodistrian University of Athens) who organized a route to the Perachora Peninsula (Figure 2) where two series of uplifted beachrocks of Lake Vouliagmeni as well as the uplifted tidal notches of Heraion have been observed. The participants had also the opportunity to become familiar with OSL sampling methodologies. The afternoon of the third day was dedicated to field activities at the Bay of Psatha (East Alkyonides Gulf) (Figure 3). Field activities included i) borehole drilling using portable drilling tool set in the swampy area of Psatha, in order to reconstruct the palaeo-depositional environments during the Late Holocene; ii) coastline tracing with equipment of RTK-GNSS and research flight with UAV for collection of high resolution photogrammetric data; iii) planning and preparation for the seagoing expedition, detection of seafloor bedforms using a side scan sonar and high resolution marine seismic reflection profiling using a chirp sub-bottom profiler.

The fifth day of the Intensive Course was dedicated to Physical Geography laboratory activities like i) borehole logging and qualitative description of the sedimentary stratigraphy; ii) granulometric and micropalaeontological analysis of selected sediment samples; iii) reconstruction of palaeo-depositional environments.

During the last day the Young Geomorphologists created bathymetric maps based on single beam and/or swath bathymetry data and became familiar with the analysis and Interpretation of high-resolution seismic reflection profiles.



Figure 1: Sites visited along the route of the third day's field-trip. 1st Stop: Kakia Skala (the main Kakia Skala normal fault of the northern margin of the tectonic basin of Saronic Gulf); 2nd Stop: The Corinth Canal - Neotectonic evolution of the Isthmus of Corinth; 3rd Stop: Diolkos; 4th Stop: View of the New Corinth uplifted marine terrace; 5th Stop: View of the uplifted marine terrace; 6th Stop: View of the uplifted marine terrace and the valley of Katharoneri (discussion about long term stream incision rates); 7th Stop (on the way to 8th Stop): Evrostini giant Gilbert-type fan delta panoramic view; 8th Stop: Reversed river drainages- Dervenios – Olvios wind gap.

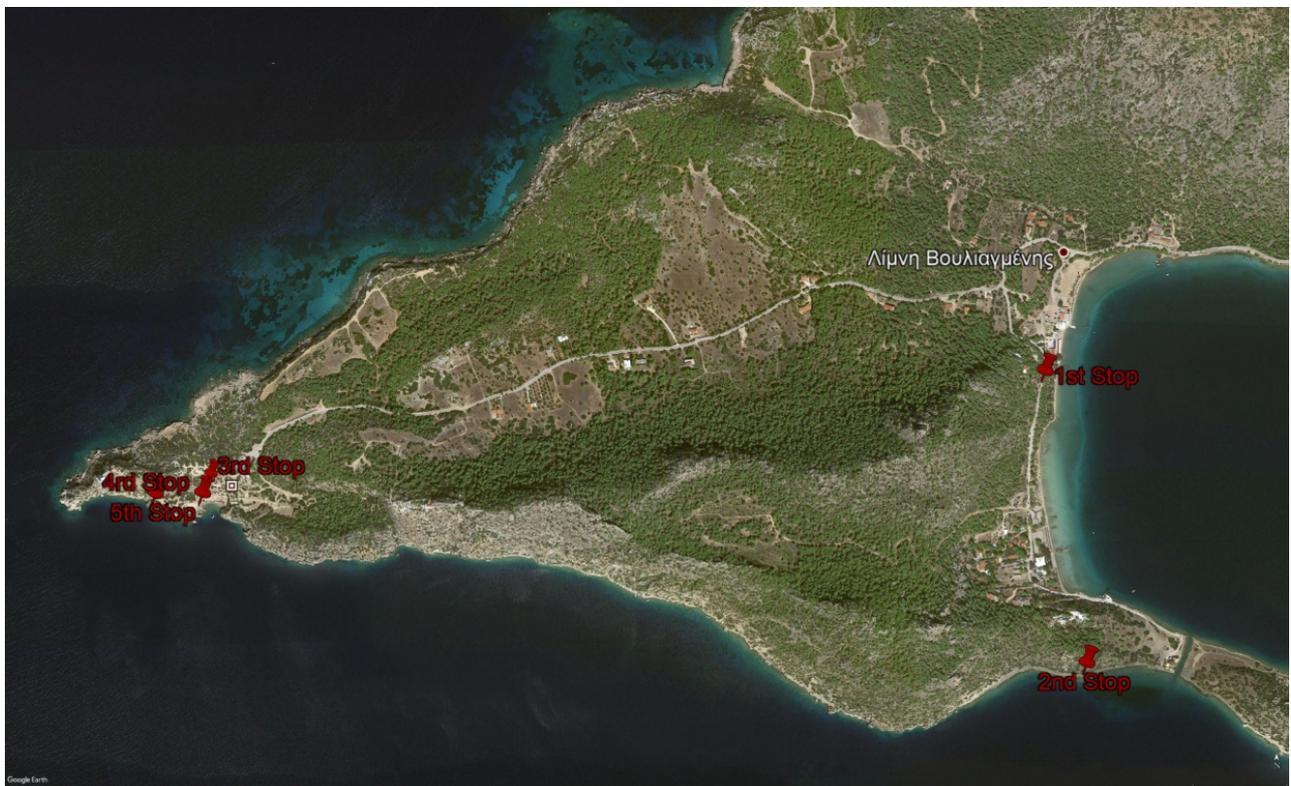


Figure 2: Stops of the third day's fieldtrip. 1st Stop: OSL sampling; 2nd Stop: Uplifted beachrocks (Lake Vouliagmeni); 3rd Stop: Panoramic view of Heraion; 4th Stop: Uplifted tidal notches (Archaeological Site of Heraion); 5th Stop: Uplifted tidal notches.

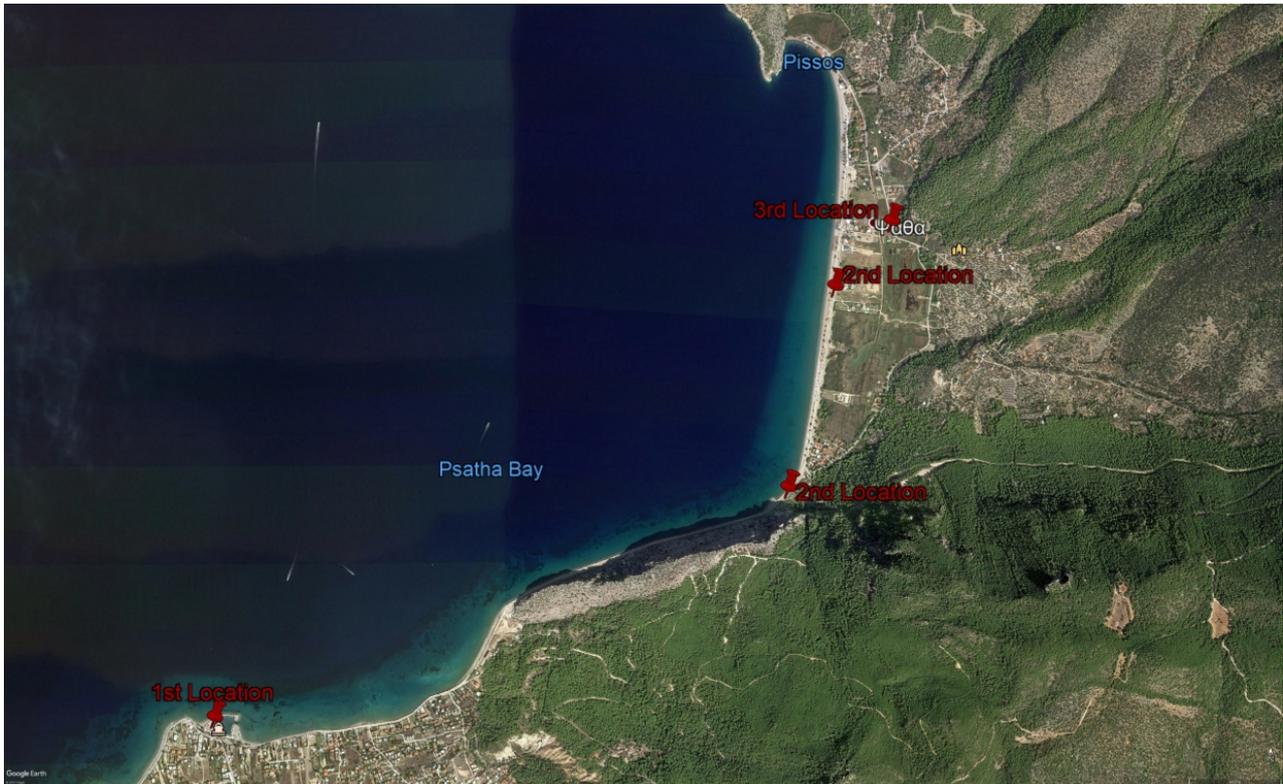


Figure 3: Locations of the field activities during the third day of the Intensive Course. 1st Location (small part of Alepochori): Activity: Coastal bathymetry and seismic profiles; 2nd Location (Psatha beach): Activities: Research flight with UAV-collection of high resolution photogrammetric data & coastline tracing with equipment of RTK-GNSS; 3rd Location (Psatha swamp): Activity: Vibrocore drilling.



Photos of the lectures of the 2nd IAG-EGU Intensive Course.



Photos of the laboratory activities of the 2nd IAG-EGU Intensive Course.



Photos of the third day's field-trip.



Photos of the fourth day's field-trip and field activities.



Photos of the Physical Geography laboratory activities of the 2nd IAG-EGU Intensive Course.