

PONTOS Newsletter #1

Common borders. Common solutions.



Copernicus assisted environmental monitoring
across the Black Sea Basin

Black Sea Project, PONTOS, Launched

PONTOS-EU.AUA.AM

The 30-month Copernicus Assisted Environmental Monitoring Across the Black Sea Basin (PONTOS) project was publicly launched on July 22, 2020 with the participation of 6 project partners and a total of 80 researchers, scientists, policymakers and other stakeholders from partnering countries as well as international and Black Sea regional bodies. "I want to acknowledge the forward thinking cross border cooperation calls from the European Union," emphasized Prof. Karin Markides, President of AUA, in her welcome remarks. "The complex challenges of this century need border-free, university-public-private partnerships. I want to congratulate the EU for taking on a leadership role in this," she added.

In her remarks at the launch event, Ambassador Andrea Wiktorin of the EU Delegation to the Republic of Armenia noted that the European Commission "shows great commitment to take on climate and environmental challenges. ... The European Green Deal is a response to these challenges ... But we all know that the environmental ambitions of the Green Deal will not be achieved by Europe acting alone ..."

She emphasized the key role of cooperation regionally, such as between the Black Sea Basin and Eastern Partnership countries, and multi-sectorally between science, society, government, and industry, in pooling resources to achieve common economic and environmental goals. She also pointed out how initiatives like PONTOS can further support the implementation of the Comprehensive and Enhanced Partnership Agreement between Armenia and EU, where there are provisions to align Armenia's environmental governance with those of the EU.

The PONTOS project being the first EU-funded regional project that AUA leads, will make Black Sea environmental information from the EU Copernicus Earth Observation system accessible to scientists, policymakers, citizens, and other relevant stakeholders.

The Director of the AUA Acopian Center for the Environment, Mr. Alen Amirkhonian, stated, "The AUA Acopian Center is proud to bring to AUA and Armenia a project with a wide regional significance. EU funding enables us to deepen relationships between our Armenian, Georgian, Greek, and



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Ukrainian partners, building homogenized local and regional environmental monitoring capacity. We are also committed to incorporating past and ongoing environmental initiatives of relevance, funded by the EU and others, looking for synergies and greater results.”

Ms. Aghavni Harutyunyan, PONTOS Project Manager at the AUA Acopian Center, pointed out the multidisciplinary aspect of the project. “PONTOS will bring together environmental science and field monitoring, data science, IT, mapping and remote sensing, and more to offer an online platform that provides on-demand data and analysis on multiple countries. The challenge is complex and the solutions require collaboration across disciplines. Our partners have shown eagerness to tackle this complex challenge,” she said.

The project’s six partners are the AUA Acopian Center for the Environment (lead), the Environmental Protection and Mining Inspection Body of the Republic of Armenia, Green Alternative (Georgia), Centre for Research and Technology Hellas (Greece), Democritus University of Thrace (Greece), and Odessa National I.I. Mechnikov University (Ukraine). The total project budget of EUR 999,967 is ninety-two percent funded by the EU ENI Cross-Border Cooperation Black Sea Basin Programme 2014-2020, with the remaining co-funded by the project partners.

The recording of the event is available on the AUA Acopian Center’s [YouTube](#) channel. For updates on the project, visit <https://pontos-eu.aua.am/>.



PONTOS Pilot Area Map

Click [here](#) for the larger view of the map.

Pilot Areas Profiles, PONTOS

The development of the PONTOS project is a response to many existing and actual environmental challenges. Shelf waters, coastal and deltaic areas, being extensively and intensively used, are probably the most vulnerable zones within the Black Sea Basin (BSB), where anthropogenic activities coupled with global climate change dramatically impact the natural habitats, biodiversity, and ecosystems.

To assess the existing environmental challenges, the PONTOS will develop publicly available methods and tools to be tested during the project lifetime, which will benefit the project partners and key stakeholders by providing detailed information on the assessments conducted in the pilot sites.

These methods and the specific tools will be applied when investigating the four pilot areas in each partner countries.



Panoramic view of the Nestos river delta, project pilot area in Greece (Eastern Macedonia-Thrace, Greece).
Photo Credit: Artware

THE PILOT AREA IN UKRAINE

The pilot area in Ukraine is located in the northwestern part of the Black Sea, consisting of two joint study sub-areas – the coastal line and the Dniester River Delta.

The coastal line includes the best beaches and recreational areas in the South of Ukraine, from Odessa city to the Danube River Delta. A substantial part of the Dniester Delta area belongs to the Lower Dniester National Nature Park; through adjacent Dniester Estuary, having high environmental and economic significance for the region, the river connects to the Black Sea.

The Pilot area faces such challenges as coastal erosion and nutrient pollution impacting drinking and irrigation water quality, wildfires and burning of wetlands, river water discharge perturbation (due to hydropower station impact).



The Dniester, Landscape near Mykolaivka village, project pilot area in Ukraine. Photo Credit: Sergiy Medinets

THE GEORGIAN PILOT AREA

In Georgia, the pilot areas are the Coastal Line and the Kolkheti (Colcheti) Lowlands in west Georgia. The former, covering the entire coastline of Georgia, is facing a threat of severe coastal erosion caused by a combination of sea-level rise, the tectonic sinking of the land, alteration of the river, and the sediment flow. The latter covers the downstream part of the Rioni river, including the delta area.

The main ecosystems there, are ancient deciduous Colchic forests and wetlands, the Colchic rainforests being the most humid temperate deciduous rainforests, that host 1,100 species of vascular plants, particularly woody species, bryophytes, almost 500 species of vertebrates, and a high number of invertebrates.

Among the environmental problems that the region faces are the reduction of the river and sedimentation flow which impacts the delta area and natural habitats due to the construction of several regulating dams and reservoirs in the Rioni Basin.

Among other threats are the constant land erosion and the loss of the coastal area, as well as deforestation, that caused spawning sites of Sturgeon species (including Atlantic sturgeon) to have been severely degraded or lost.



Kolkheti lowlands, project pilot area in Georgia.
Photo Credit: Zura Javakhishvili

THE ARMENIAN PILOT AREA

The Armenian pilot area includes Lake Sevan, the largest freshwater source for Armenia, and its catchment area.

The urgent challenges are similar to those of river delta sites of other Pilot Areas, including nutrient pollution, insufficiently treated wastewaters, biodiversity loss, perturbation of ecosystem functioning, illegal fishing, etc.

Moreover, land cover changes due to water level changes, and urban encroachment is a major challenge.

THE GREEK PILOT AREA

The pilot area in Greece is located in the Nestos River Delta, and the adjacent coastal zone close to the Delta.

The main problems are similar to those of the river delta sites of Ukraine and Georgia, such as long-term nutrient pollution from the agricultural sector, municipal and industrial wastewater discharge, anthropogenic perturbation of ecosystem functioning.



Lake Sevan, project pilot area in Armenia.
Photo Credit: Sevan National Park

Shoreline Change Methodology Training Conducted, PONTOS

Trainer Profile

Mr. Konstantinos ZACHOPOULOS holds an MSc in Marine Renewable Energy and currently, he is a Ph.D. candidate at Laboratory of Ecological Engineering & Technology, Department of Environmental Engineering, School of Engineering, Democritus University of Thrace, Greece.



In November and December 2020, the PONTOS project team conducted two online capacity-building training sessions on Shoreline Change Methodology and AquaCrop Model for the core research team. For PONTOS researchers, these training sessions are important capacity development additions that enhance the quality and value of their forthcoming research. The PONTOS team is planning a number of other training events focusing on activities related to measurement and retrieval of data, assessment, and analysis. Many of these training events will be open and targeted to the project's external stakeholders.

A 2-day training session on Shoreline Change Methodology

Led by Konstantinos Zachopoulos, the Shoreline Change Methodology training comprised theoretical and practical components. The theoretical part covered topics in coastal erosion, remote sensing, open-source databases for satellite images, methodology for conducting coastal erosion assessments, satellite image selection, and shoreline extraction. During the practical part, the participants gained hands-on knowledge on how to use Planet Explorer and Copernicus Open Access Hub. In particular, they learned how to utilize the theory on the selection of historical images, satellite image downloading, and shoreline extraction using Geographic Information Systems (GIS) tools.

Coastal erosion is a growing environmental concerns for local communities. It is aggravated by the continuous sea-level rise due to climate change and inadequate management practices. The training provided the particular methodology to use in conducting coastal erosion assessments.

Furthermore, the trainer introduced the participants to the Digital Shoreline Analysis System (DSAS) tool, which enables researchers to estimate and evaluate shoreline changes through multiple years.

The methodology will include the ways to import and use satellite data from a number of sources, including Earthexplorer, Scihub, Copernicus, and PlanetScope, and import them into the GIS environment to proceed with the analysis.

AquaCrop Model Training Conducted, PONTOS

Trainer Profile

Mr. Ioannis Tsakmakis holds a BSc degree in Environmental Engineering, an MSc degree in Hydraulics Engineering and he is currently a Ph.D. Candidate at the Laboratory of Ecological Engineering & Technology Department of Environmental Engineering, School of Engineering, Democritus University of Thrace.



A 3-day training session on AquaCrop Model

The training, delivered by Ioannis Tsakmakis, introduced the AquaCrop model to participating PONTOS partners and researchers. This is a crop growth model developed by the Land and Water Division of the Food and Agriculture Organization (FAO) to address food security and to assess the effects of the environment and management practices on crop production. The online training session also covered topics in data requirements for model implementation in various areas, such as climate, irrigation, crop, etc. The project team also discussed the potential use of the AquaCrop model in the PONTOS project.

During the project implementation, the PONTOS team will obtain precipitation and evapotranspiration data from satellite-borne and Copernicus-based databases. Through the use of the AquaCrop model and access to soil profiles from national/ international databases, the team will produce results that simulate various water balance components and identify water productivity indicators. Space-borne data will be used to assess water stress status, considering that the scale of surface water and runoff are closely related to the quantity of effluents reaching the Black Sea.

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FOR MORE INFORMATION
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