

PROTECT-STREAMS-4-SEA

The newsletter of the Protect-Streams-4-Sea (BSB963)

Issue # 6, July 2023

Common borders. Common solutions

Protect-Streams-4-Sea advancing water resources sustainable water management

By George N. Zaimes

The “Protecting streams for a clean Black Sea by reducing sediment and litter pollution with joint innovative monitoring and control tools and nature-based practices” project was financed in the frame of the Joint Operational Programme BLACK SEA BASIN 2014-2020. The project started July 19th 2020 and ended July 19th 2023.

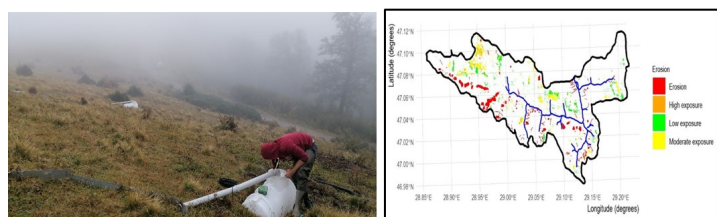


Figure 1. Runoff plots in the Turkish pilot area (top left). The hot spots of erosion in the Moldavian pilot area (top right). The NDWI and NDSI for the Greek pilot area (bottom).

for stream bank erosion, field methods were used (erosion and cross-sections) and utilizing this data, the GIS Stream Bank Erosion Index was developed and Hot Spots were identified through drone mapping (Figure 2). All these were implemented in the pilot areas of all five countries of the consortium. The implementation of these innovative methods was done for the first time in the Black Sea region.

Another important innovation was the implementation of the fingerprinting method in all five pilot areas for the first time in the Black Sea region. To be able to implement the fingerprinting method, soil surface under different land-uses, stream bank and bed and water samples were collected and analyzed (Figure 3). Based on the surface and stream bank and the fingerprinting results best management practices were suggested and a multi-criteria decision analysis and an online decision support system for stakeholders to find the optimal nature-based solution depending on the problem and the characteristics of the area of interest. Finally, some “green”

The overall objective was the environmental protection and reduction of pollutants and litter in Black Sea. The specific objectives were: SP1. New tools for Joint Monitoring, SP2. Identification of Major Sources of Pollutants and Litter and their Contributions and SP3. Recommend Best Management Practices.

So how were these specific objectives met. Firstly, there is a better understanding of the nonpoint source pollutant contribution to surface water. This was done by combining traditional and new methodologies. Specifically, surficial erosion plot methods (runoff plots, Gerlach traps) were combined with remote sensing techniques that utilized satellite and unmanned area vehicles images to develop indices and these data was input in hydrologic models that were calibrated and also showcased erosion hot spots (Figure 1). Similarly

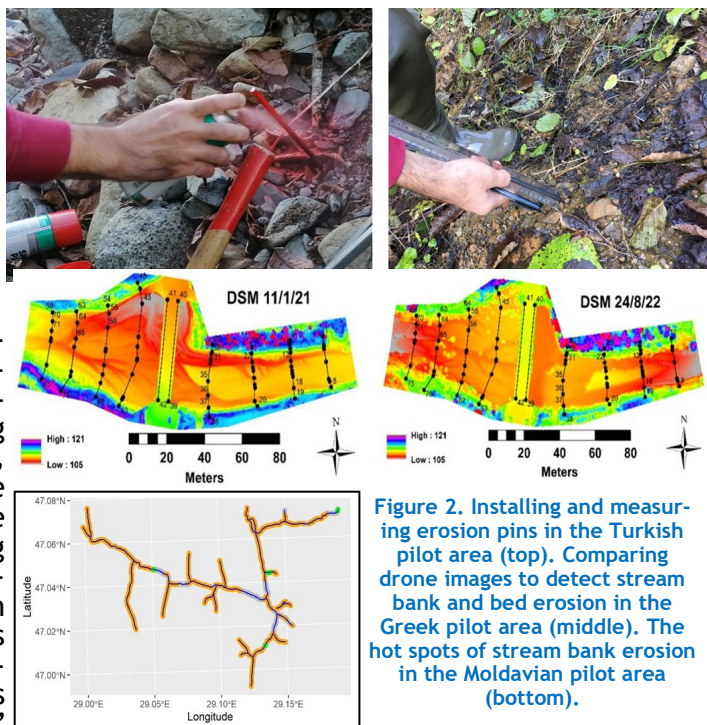


Figure 2. Installing and measuring erosion pins in the Turkish pilot area (top). Comparing drone images to detect stream bank and bed erosion in the Greek pilot area (middle). The hot spots of stream bank erosion in the Moldavian pilot area (bottom).



Project funded by EUROPEAN UNION

This publication has been produced with the financial assistance of the European Union. „This publication was produced with the financial assistance of the European Union. Its contents are the sole responsibility of Valasia Iakovoglou, Paschalis Koutalakis et Georgios Gkiatas, (IHU SARF) and do not necessarily reflect the views of the European Union”



PROTECT-STREAMS-4-SEA

The newsletter of the Protect-Streams-4-Sea (BSB963)

Issue # 6, July 2023

Common borders. Common solutions



Figure 3. Collecting and analyzing soil samples from the Greek pilot area (top). Collecting and analyzing macro and microplastics from the Romanian pilot area (middle). Measuring water quality in the Armenian pilot area (bottom left). The sampling location for the Moldavian pilot area (bottom left).

solutions were actually installed. Specifically, four different types of litter traps in four countries and the purchase of skimmer vessel in Siriu Lake, Romania (Romania) (Figure 4).

In many research studies great results might be achieved but may never reach the target groups and stakeholders. This was a priority for us, so many and various dissemination activities took place. A Neighbourhood Network called “Protect-Streams” was established that had 7 online meeting (approximately every 6 months) with more than 50 participants in each meeting from all consortium countries. In addition, 5 in person workshops (one in each country) was conducted with all partners participating and presenting. More local events also took place specifically with 15 press conference and 14 awareness events. Finally, an international conference took place in Drama Greece. The conference lasted 3 days had presentations from six different countries with more than 150 participants. Other avenues of dissemination were the 6 newsletters, the 25 press releases, the more than 7 publications in scientific journals and the more than 18 presentations at national and international conference.

Overall, we believe that the Protect-Streams-4-Sea project was a great success. Many innovative and new tools specific to the Black Sea region were developed tested and implemented that will help promote joint monitoring. A better understanding of the contributions of non-point source pollutants and plastic in the region and nature-based solutions has been developed. All the target groups in all five countries of the consortium have been reached and the region’s awareness has been substantially

increased. Finally, long lasting collaboration has been established among the partners of the project achieving another important of Black Sea Basin Programme “common borders common solutions.”



Figure 4. The Litter traps in the Turkish pilot area (left photo) and the Moldavian pilot area (middle photo). The skimmer vessel in Siriu Lake in the Romanian pilot area (right photo).



Current research activities achieved - BIWA-Romania - FINGERPRINTING ANALYSIS

By Maria Marinescu

A very interesting study, done for the first time on river and reservoir in Romania, is the fingerprinting analysis which is the qualitative analysis of plastic fragments to identify the type of POLYMER from which that microscopic fragment is made. Some of the filters were selected for the determination of polymers of microplastic particles by FTIR spectrometry.

The results of the fingerprint analysis are: 1-The highest concentration on the filters are the fragments of polypropylene, polyethylene and polyethylene terephthalate (PP, PE and PET)= 50 - 60% of all tested particles, having as source of these polymers the household waste; 2.Other polymer types identified were polystyrene PS, polyvinyl chloride PVC and PMMA (Methyl polymethacrylate - construction industry) having as source household and construction waste and 3.ABS type elastomers (Acrylonitrile butadiene styrene), used in the car industry having as source = public roads, with heavy traffic. The conclusions showed that : the microplastic has been identified in all collected samples and the density is relatively low; the degree of pollution with microplastic particles being medium to low taking into account the fact that pilot area is situated in a mountain area with a low population and the presence of microplastic in all samples can be considered an ALARM SIGNAL for environment and human health.

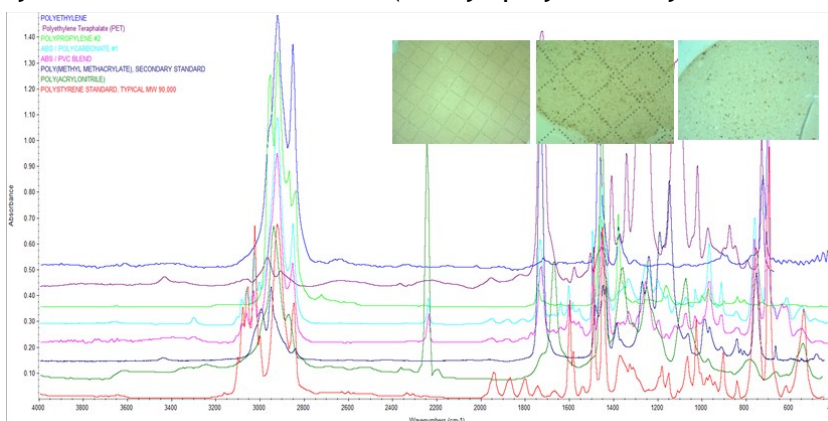


Figure 1. FT-IR spectra for each plastic polymer type suspected to be identified in the samples

Current research activities achieved - Eco-TIRAS, Moldova - Application of RUSLE method

By Olga Crivova

For assessing soil erosion from a certain area per year we had used RUSLE method, based on the methodology of Wischmeier and Smith (1878), which obtains the mean annual soil loss by multiplying rainfall erosivity factor, soil erodibility factor; topographical factor, i.e soil length and soil steepness factor, and land cover and management factor (the last one equaled to one in our model, since there were no conservation practices applied at that time).

For calculating the erosivity, we had monthly precipitations and maximum diurnal precipitations data for 2020 for the 15 meteorological stations, acquired from State Hydrometeorological Service. We used the Modified Fourier index, and the

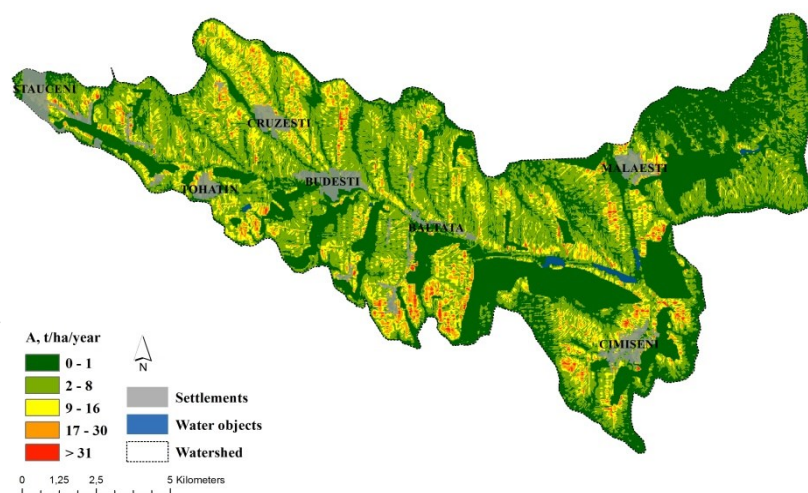


Figure 1. Map of soil loss

correction formula by Castravet afterwards. The land cover factor in the RUSLE equation ranges from 0 to 1, where 0 is soil cover completely preventing erosion, and 1 is soil without any cover, comparable, for example, to tilled bare fallow. The formula for soil erodibility factor uses data on soil particle size distribution, humus content, soil structure code and permeability rating. Topographical factor was estimated from 1-arc second (30 meters) DEM of Baltata River basin. We had used flow accumulation grid and slope grid to derive the soil length and soil steepness.

The resulting RUSLE model for the project area allows us to estimate stream banks susceptibility to erosion. According to the model's results, annual soil losses in the area range from 0 to 151.77 t/ha/yr. The values of annual soil washout correspond with the susceptibility to erosion, 0-1 t/ha/yr - very low; 2-8 t/ha/yr - low; 9-16 t/ha/yr moderate; 17-30 t/ha/yr high; and more than 31 t/ha/yr corresponds to a very high susceptibility to erosion.

The right bank of the Baltata River in the central zone of Moldova has the largest share of steep slopes in the entire river basin, however, due to the fact that the same area accounts for most of the extended areas with forests, as well as half of the orchards and vineyards of the basin, the annual loss of soil under these plantations is quite small (0 - 8 t/ha/yr). At the same time, where the protective effect of the vegetation cover is absent, we observe the most prone to erosion zone (to the south of the village of Baltata). Histogram for the erosion susceptibility classes demonstrates, that 82.6% of the area of Baltata River basin are comprised by areas with low and very low erosion susceptibility (<1- 8 t/ha/year), which can be explained by the fact that areas with the largest slopes or the largest runoff in many cases fall on forested areas in the Baltata River basin, which neutralizes the effect of erosion.

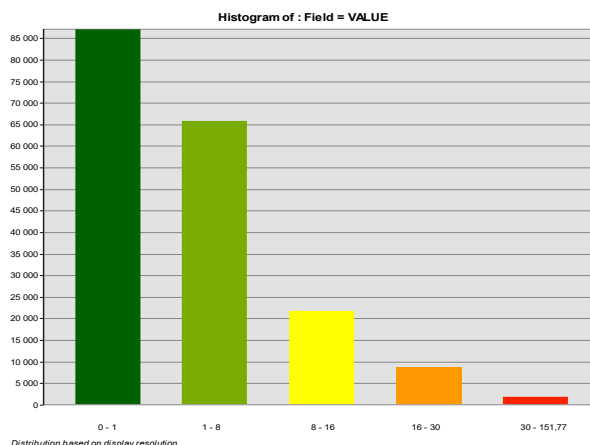


Figure 2. Mean annual soil loss

Current research activities achieved - IHU, Greece - Multi Criteria Decision Analysis and online Decision Support System

By Paschalis Koutalakis

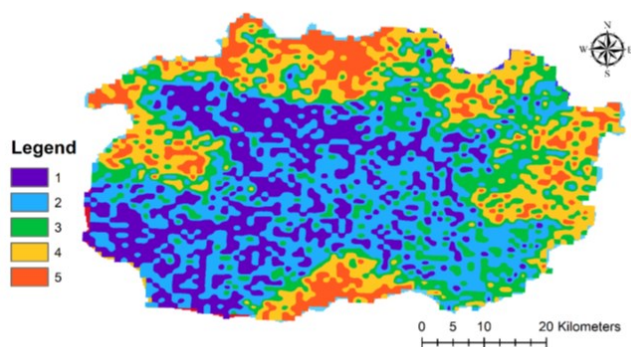


Figure 1. The produced MCDA result concerning the hot spots of soil erosion.

Areas vulnerable to soil erosion have been increased and changed because of the climate change phenomena leading to more land degradation and desertification reports. For this reason, need to give emphasis on protection against soil's erosion on the river/stream's catchment area. There are various tools to study and estimate the soil erosion prone areas such as field measurements, expert software and sensors, modeling tools, remote sensing monitoring and spatial analysis in Geographic Information Systems (GIS). GIS-based multi-criteria decision analysis (MCDA) has been widely adapted and utilized for decision support research within the field of environmental monitoring, land use management, soil erosion or flood protection by prioritization of vulnerable "hot-spots". MCDA is defined as the activity of the person who examines a problem and seeks evidence through answers.

PROTECT-STREAMS-4-SEA

The newsletter of the Protect-Streams-4-Sea (BSB963)

Issue # 6, July 2023

Common borders. Common solutions

These answers are given to questions, which are proposed by those involved in the decision-making process. Alternatively, MCDA aims to compare different actions or solutions according to a variety of criteria and policies. The analytical hierarchy process (AHP) suggested by Saaty (1987) is the most commonly used and effective method in the MCDA process to assign the relative importance of each criterion.

Eleven erosion-related factors used to identify and map potential areas susceptible to erosion: elevation, slope, flow accumulation, stream power index (SPI), rainfall, drainage density, topographic wetness index (TWI), land use and land cover, Normalized Difference Vegetation Index (NDVI), soil type, and curvature. By studying and analyzing these factors, the spatial distribution of erosion susceptibility in the study area was identified, mapped and classified into five categories ("1" was very low, "2" was low, "3" was moderate, "4" was high and "5" was very high).

The produced output (Figure 1) showed that more than the half of the study area, located mostly in the flat agricultural plain, is characterized by low (23.05%) to very low (28.92%) susceptibility. The remaining area of about 19.63%, 16.81%, and 11.59% of the study area experienced moderate, high, and very high susceptibility to soil erosion, respectively. The high and very high susceptibility to soil erosion was found in areas dominated by high elevation and steep slope, high drainage density, higher rainfall amount, higher flow accumulation, higher TWI, vulnerable soils and bare land or sparse vegetation. The results were identical to other measurements and outputs performed in the previous

various activities of the BSB963 project. The integrated use of GIS-based MCDA and AHP was found to be indispensable, free, and effective for the identification and mapping of areas vulnerable to soil erosion and sediment yield for effective land-cover management.

Nature-based Solutions and Ecosystem-based Practices can be utilized to mitigate soil erosion. NbS are actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptive-

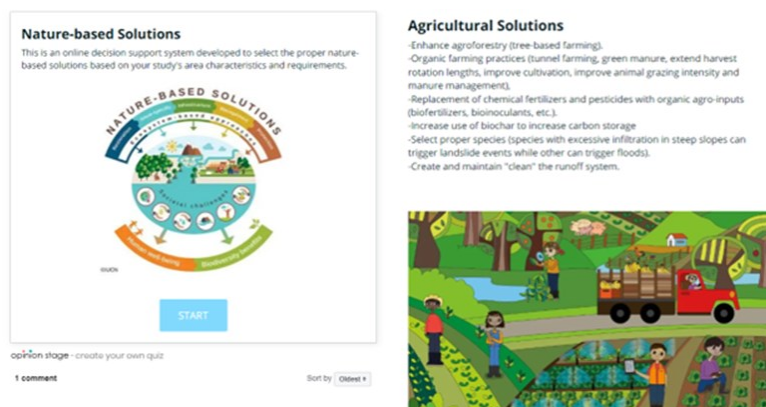


Figure 2. Nature based solutions

ly, simultaneously benefiting people and nature. Ecosystem-based approaches focus on ecosystem restoration and enhancement of ecosystem services to protect society against negative impacts of climate change (Figure 2). An online decision support system (Figure 3) by the utilization of a decision-making quiz was developed in order to provide to the stakeholders a greater understanding and recommendation of NbS and EbA. This was done based on the needs of the study area and the problems recorded in each one. Online quizzes are extremely popular, user-friendly and make great impact by providing also reports of the answers and outcomes. The user has the possibility to provide comments but also to promote it in social media. The online DSS can be found in the following QR code as well as in the project's official website.



Figure 3. QR code for the online decision system



Current research activities achieved - YFU, Armenia - The NDVI index

By Narek Harutyunyan

The natural and climatic conditions of the Debed river basin have contributed to the formation of various natural ecosystems with diverse vegetation. The severe fragmentation of the relief of the Debed River catchment area, large differences in altitude, different orientations and slopes of the mountainsides, variegated parent rocks, diverse climatic conditions and different vegetation groups have had their impact on soil formation, which is responsible for the heterogeneity and characteristics of the soil cover of the study area. The study was carried out by the method of calculating and mapping the Normalized Difference Vegetation Index in GIS. Normalized Difference Vegetation Index (NDVI) quantifies vegetation by measuring the difference between near-infrared (NIR) and red light (Red). The vegetation NDVI index of the Debed River basin was calculated for different vegetation phases of 2020, 2021 and 2022: spring, summer and autumn. NDVI indices were calculated using Sentinel-2 satellite images for May, August and November. The vegetation indices were classified into six groups: -1 to 0 (no vegetation), 0 to 0.2 (Unhealthy vegetation), 0.2 to 0.4 (Poor healthy vegetation), 0.4 to 0.6 (Moderately healthy vegetation), 0.6 to 0.8 (Healthy vegetation), 0.8 to 1 (Very healthy vegetation).

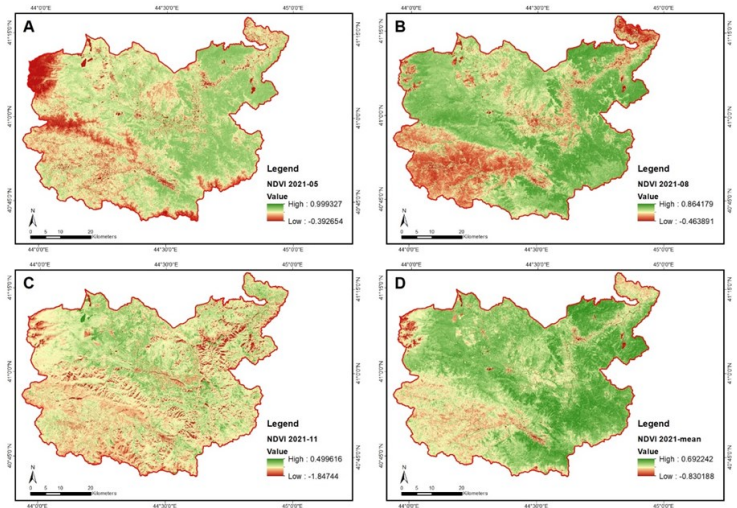


Figure 1. the NDVI index have been generated for the Debed river Basin.

NDVI indices were calculated using Sentinel-2 satellite images for May, August and November. The vegetation indices were classified into six groups: -1 to 0 (no vegetation), 0 to 0.2 (Unhealthy vegetation), 0.2 to 0.4 (Poor healthy vegetation), 0.4 to 0.6 (Moderately healthy vegetation), 0.6 to 0.8 (Healthy vegetation), 0.8 to 1 (Very healthy vegetation).

Current research activities achieved - IHU, Greece - Litter Trap

By Iordanis Kasapidis, Paschalis Koutalakis & George Gkiatas

The Greek litter trap was placed experimentally in the area of the park of Agia Varvara, in Drama. This trap have been constructed in such a way as to trap plastic pollution with the help of the stream itself, without disturbing the bird and fish fauna of the area. The construction of the litter trap become with metal and wood so it will be ecofriendly.



Figure 1. The litter trap in Drama, Greece

Awareness Event - ACU, Turkey - Erosion, water quality and water pollution

By Mustafa Tufekcioglu, Aydin Tufekcioglu, Cengizhan Yildirim

Artvin Coruh University's 4th Awareness event was held on Saturday, May 20, 2023, at the project locations with the project team members and other participants. At the first stop of the event, Kavak area, the participants were informed about the sediment transport patterns in streams. Detailed information was given by Dr. M. Tufekcioglu about the morphological characteristics of the Kapisre stream in the plot area. He explained that stream meandering structure need to be maintained to preserve the balance between discharge and sediment loads that stream receives, but despite the fact, stream morphological structure in plot area has been deteriorated and narrowed and the stream was forced to flow from a straight structure. As a result of this, it was explained that in the past, the stream overflowed from its channel and caused great destruction in the settlement areas.



Figure 1. Kavak locality (Basin Outlet) Kapisre Stream, Arhavi, Turkiye.



Figure 2. Surface runoff plot under hazelnut garden in Derecik locality

In the second stop of the event, Derecik locality, the surface erosion mechanisms with the use of runoff plots has been explained in accordance with the different types of land uses in application. So far it was found that surface runoff in hazelnut field was 15 times higher than that were in the forest and tea fields that may contribute the peak stream flows and associated flooding.

At the third stop of the event, Double Bridge locality, it was explained how the flow rate and discharge of the stream water was measured with the equipment used according to the depth and width of the stream. It was explained that measurements were taken from more than one point and the mean velocity value was found according to the averages of these measurements. It was explained to the participants that while 4-5 cubic meters of water passed through the stream in normal times, however it was also mentioned that this rate increased to 1000

cubic meters per second during the flood in July 22, 2021. Around 30 participants attended the event, including academicians, project team members and participating students. Participants expressed their satisfaction that the event was quite productive and informative in regards environmental issues and possible solutions. As final mission, all the participants were participated to the litter collection activity in the plot area.

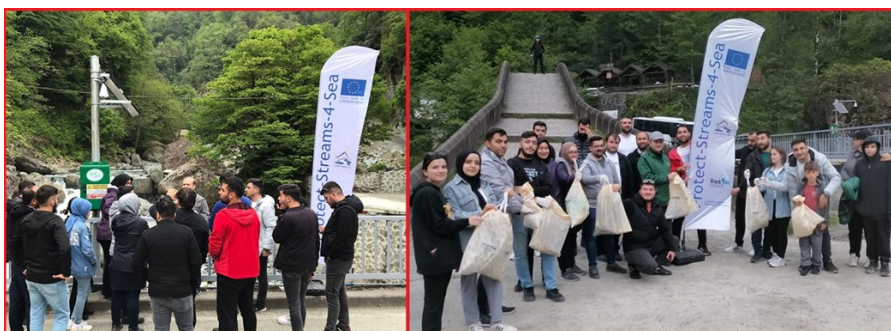


Figure 3. Double Bridge Locality & Waste Collection Activity

PROTECT-STREAMS-4-SEA

The newsletter of the Protect-Streams-4-Sea (BSB963)

Issue # 6, July 2023

Common borders. Common solutions

Awareness Events Protect-Streams-4-Sea by BIWA, Romania

By Maria Marinescu

On the occasion of the completion of this project, but also to celebrate the International Day of the Danube, BIWA organized an awareness event called "No PLASTIC, it's FANTASTIC" on July 1st, 10:30 am, at the Siriu reservoir location. At the beginning of the event, dr. biol. Oana Ristea presented the results of the Protect-Streams-4-Sea, BSB963 project, while thanking the project partners for their support and help, the schools in the pilot area, NGOs, Siriu, Nehoiu and Patarlagele Town Halls for their involvement in the project. Next, NGO partners presented their activities on plastic pollution in the pilot area - representatives of NGOs Alunis Art Center, Ținutul Buzăului and Romanian Ornithological Society. During the event, a competition of ecological projects on innovative solutions for the reduction of plastic and plastic waste was organized, consisting of the presentation of the poster made for this purpose and the awarding of prizes to the participants. Another interesting activity of the event was the organization of an outdoor laboratory "Life in a drop of water" in which biol. Alina Constantin, biol. Iulia Frățilă, biol. Marinela Bălan, biol. Daniela Șuruparu presented general and specific aspects of taking a macronevertebrate sample, visualizing water and macronevertebrate samples and visualizing a sediment sample to identify plastic fragments. At the end of the event, an exposition of photos taken by the partner NGOs, BIWA and the Romanian Ornithological Society, was organized and the participants thanked the organizers for the invitation to be part of this project, the interesting things presented and the experience gained during the project.



Figure 3. Romanian Awareness Event "No PLASTIC, it's FANTASTIC"

Awareness Events Protect-Streams-4-Sea by Armenia

By Luiza Gevorgyan & Adranik Ghulijanyan

More than 50 participants were participating in the awareness event that was organized within the framework of the project at the School Forest District's Field Training Center near Koghb village, Tavush region, during July 22-24, 2022. The participants community Council members, members involved in the school forest district, as well as the relevant specialists of the project. The program of the event was very rich and interesting: drone imaging, use of the pilot trap for capturing of litter, flow measurement technique with on field demonstration, GIS technologies and the importance of the use of new technologies for the clean streams were presented during the event. Cleaning works of the nearby river and coastal areas was also organized. During the camping the participants prepared paintings on the theme of "cleanrivers" which will be put in the Koghb Artschool gallery



Figure 1. The participants of the event



Project funded by
EUROPEAN UNION



Protect-Streams-4-Sea



PROTECT-STREAMS-4-SEA

The newsletter of the Protect-Streams-4-Sea (BSB963)

Issue # 6, July 2023

Common borders. Common solutions

Awareness Event - IHU, Greece - Forestry and Water Day

By Georgios Gkiatas & Valasia Iakovoglou

Forest Day

The project coordinator Dr. George Zaimes and the Deputy District Governor Mr. Gregory Pappaemmanouil showcased to undergraduate students the methodologies that were implemented in the BSB963 “Protect-Streams-4-Sea” project. The events were held during the World Forestry Day (21th March 2023) in the 1st Vocational High School and in the 2nd General High School of Drama, Greece.

Specifically, Dr. Zaimes educated the students about the value of the forests but also how important their protection and proper management is, due to the phenomenon of climate change. Also, because of the World Water Day (22th March 2023), they discussed about the value of the water and the possible problems that will arise in the future. More than 150 students participated in the awareness event, showing great interest in the project’s activities to act as volunteers in the future. (Figure 1)



Figure 1. The participants of the event

Water Day

George Zaimes, together with Roots AMKE and the Geomorphology Edaphology and Riparian Areas laboratory (GERi Lab) of the Department of Forestry and Natural Environment Sciences of the International Hellenic University showcased to students the methodologies that were implemented in the BSB963 “Protect-Streams-4-Sea” project. The event was organized in the frames of the World Forest and World Water Days (21th-22th March, 2023).

Specifically, Mr. Zaimes educated the students about the value of forests but also how important their protection and proper management is, due to the phenomenon of climate change. A group of Forestry students and volunteers cleaned the grove (the small forested area “Dasaki” in Drama, Greece), as well as the nearby passing stream which ends up on the paved street of May 19, of several kilos of waste (Figure 2). More than 50 students participated in the awareness event, showing great interest in the project’s activities to act as volunteers in the future.



Figure 2. The participants of the awareness event and the collected trash



Project funded by
EUROPEAN UNION



Protect-Streams-4-Sea



PROTECT-STREAMS-4-SEA

The newsletter of the Protect-Streams-4-Sea (BSB963)

Issue # 6, July 2023

Common borders. Common solutions

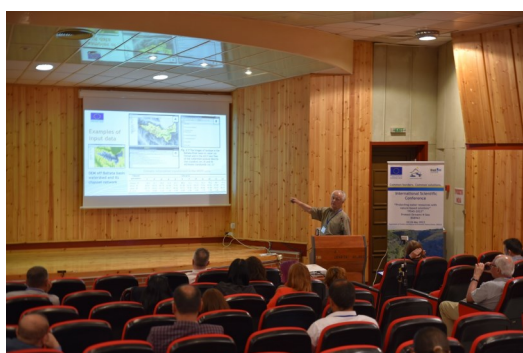
Awareness Events Protect-Streams-4-Sea by IHU, Greece

By Georgios Gkiatas & Valasia Iakovoglou

The Department of Forestry and Natural Environment Sciences (International Hellenic University in Greece) hosted the International Scientific Conference "Protecting water resources with nature-based solutions (PS4S-2023)" on May 24th -26th 2023 in the city of Drama (School of Geotechnical Sciences). The conference was dedicated to the European Parks Day (24th May 2023) and the World Environment Day 2023 (5th June 2023). The 3-day event had more than 250 participants originating from 7 different countries (Romania, Moldova, Armenia, Türkiye, Greece, Cyprus and Spain). There were more than 40 presentations! The partners had the chance to visit the Greek pilot area (Aggitis river basin), and specifically the springs of Agia Varvara Park in Drama, the Aggitis River, the Mount Pangaio, the Delta of Strymonas - A Natura 2000 Protected Site, and the Port of Amfipolis - Strymonikos Gulf. We would like to thank the organizing committee, the scientific committee, the organizers, the speakers, the participants and all those who contributed in a way to organize this successful event.



Figure 1. The participants and some of the presenters of the final conference



Project funded by
EUROPEAN UNION



Protect-Streams-4-Sea



PROTECT-STREAMS-4-SEA

The newsletter of the Protect-Streams-4-Sea (BSB963)

Issue # 6, July 2023

Common borders. Common solutions

Long lasting collaboration among the partner of the project.



Visit to Moldova



Visit to Turkey



Visit to Armenia



Visit to Romania



Visit to Greece



Project funded by
EUROPEAN UNION



Protect-Streams-4-Sea



PROTECT-STREAMS-4-SEA

The newsletter of the Protect-Streams-4-Sea (BSB963)

Issue # 6, July 2023

Common borders. Common solutions

Publication of Conference Proceedings

- ◆ Protect-Streams-4-Sea (editors). International Conference on Protecting water resources with nature-based solutions - PS4S-2023. May 24-26, 2023, International Hellenic University, Drama, Greece.

Each partner submitted 2-3 articles for the proceedings along with articles from other scientists.

Publications in Scientific Journals

Accepted

- ◆ Diaconu, D.C.; Koutalakis, P.D.; Gkiatas, G.T.; Dascalu, G.V.; Zaimes, G.N. River Sand and Gravel Mining Monitoring Using Remote Sensing and UAVs. *Sustainability* 2023, 15, 1944.
- ◆ Duman A., Yildirim C., Tufekcioglu M., Tufekcioglu A., and Satiral C., 2023. Variation in Certain Soil Properties Based on Land Use Type, and Elevation in Arhavi Sub-Basin, Artvin, Turkiye. *Sustainability*. 2023; 15(11):9114.
- ◆ Yavuz, M., Koutalakis, P., Diaconu, D. C., Gkiatas, G., Zaimes, G. N., Tufekcioglu, M., & Marinescu, M. (2023). Identification of Streamside Landslides with the Use of Unmanned Aerial Vehicles (UAVs) in Greece, Romania, and Turkey. *Remote Sensing*, 15(4), 1006.

Submitted

- ◆ Koutalakis, P.D.; Gkiatas, G.T.; Iakovoglou, V.; Zaimes, G.N. Utilizing new technologies to assess characteristics of an urban riparian area to enhance ecosystem services. Case study: The Agia Varvara Springs in Drama, Greece. *Sustainability*.

Publications in Proceedings of International Conference

- ◆ Zaimes, G.N., Koutalakis, P., Gkiatas, G., Iakovoglou, V., Marinescu, M., Ristea, O., Kuharuk, E., Trombitsky, I., Tufekcioglu, M., Yavuz, M., Tufekcioglu, A., Ahmet, Duman, A. Joint Innovative Monitoring to Reduce Nonpoint Source Pollutant and Litter in The Black Sea Proceedings of IASTEM International Conference Istanbul, Turkey, 20th - 21st June, 2023.
- ◆ Iakovoglou, V., Zaimes, G.N., Gkiatas, G., Pagonis, G., Koutalakis, P., Kasapidis, J. Aiming for Clean Waters at The Black Sea Region. Proceedings of IASTEM International Conference Istanbul, Turkey, 20th - 21st June, 2023
- ◆ Kuharuk E.S., Corman Yu.H. The role of NGOs in the protection of soils from erosion. In: Topical problems of soil science, ecology, and agriculture: Proceedings of the XVIII International Scientific and Practical Conference. Kursk, April 26-28, 2023. P. 157-159. In Russian.

Issue # 6, July 2023

Editor: Valasia Iakovoglou (IHU SARF)

Co-Editor: Paschalis Koutalakis and Georgios Gkiatas, (IHU SARF)

Social Media

Contact Links

Email: protectstreams4sea@gmail.com

Web.: Protect-Streams-4-Sea



[ProtectStreams4Sea](https://www.facebook.com/ProtectStreams4Sea)



[@SeaProtect](https://twitter.com/ProtectStreams4Sea)



[Protectstreams4sea](https://www.instagram.com/Protectstreams4sea)



[Protect Streams 4Sea](https://www.linkedin.com/company/Protect%20Streams%204Sea)



[Protect Streams 4 Sea](https://www.youtube.com/channel/UC...)

New Videos

Please check out the new videos on our Youtube channel:

a) Scientific Workshop "Sustainable Management of Mountainous Waters to Protect the Floodplains"

b) International Conference of Protect-Streams-4-Sea BSB963 Project in Drama, Greece (May 24-26 2023)

c) "Awareness Event "NO PLASTIC, IT'S FANTASTIC" 1st July, Siriu Dam, Romania 2023"

Joint Operational Programme Black Sea Basin 2014-2020. Editor: Valasia Iakovoglou, (IHU-SARF)

Co Editor: Paschalis Koutalakis and Georgios Gkiatas, (IHU-SARF)

JULY 2023

Joint Operational Programme Black Sea Basin 2014-2020 is co-financed by the European Union through the European Neighbourhood Instrument and by the participating countries: Armenia, Bulgaria, Georgia, Greece, Republic of Moldova, Romania, Turkey and Ukraine. This publication has been produced with the financial assistance of the European Union. „This publication was produced with the financial assistance of the European Union. Its contents are the sole responsibility of Valasia Iakovoglou, Paschalis Koutalakis et Georgios Gkiatas, (IHU SARF) and do not necessarily reflect the views of the European Union”



Project funded by
EUROPEAN UNION

