



National University of Life and
Environmental Sciences of Ukraine

Path4Med Horizon EU project
(101156867)



The kick-off
meeting

Ukrainian team part of
the Path4Med



Co-funded by
the European Union

29.01.2025





Agenda



- 1. Updating DS progress (Technical report M1-6) and Planned contribution for the next 6 months (M7-M12)**
- 2. Water sampling**
- 3. The assignments for preparing the article (step 1: datasets)**
- 4. Next step**
- 5. Discussion - needs**





Updating DS progress



Path4Med

Unofficial 6-month Technical Report.

1. Made Technical report M1-6

Partner Name: The National University of Life and Environmental Sciences of Ukraine

Partner Acronym: NUBiP of Ukraine

Summary:

(short summary of overall contribution in WPs, Tasks, Deliverables, Milestones, dissemination activities etc.)

The NUBiP of Ukraine is a leader of Demonstration site (DS) 3 (Ukraine) "Future pathways for zero pollution in the Dnipro Basin under emerging challenges and threats" (fig. 1), focusing on zero pollution pathways in the Dnipro Basin, including water quality monitoring, soil assessment, and real-time process-based environmental modeling to address emerging challenges. This Ukrainian DS is in Demonstration Group 3 – DG3-Ukraine.

DG3(Ukraine)

Scale: Dnipro River Basin: reservoirs and rivers





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Updating DS progress



2. Developed a project page on the university website

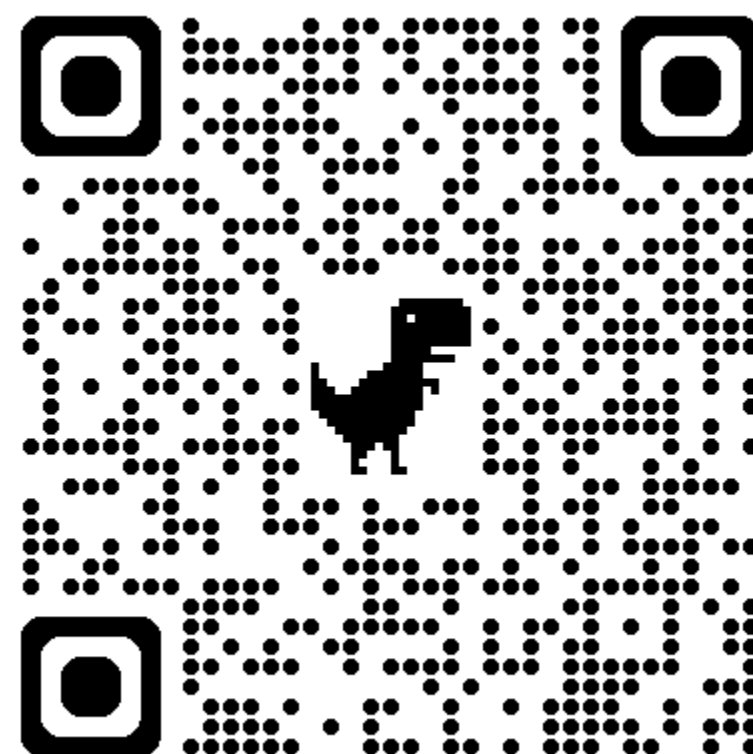
Path4Med (EU Horizon project) - Ukrainian part



Path4Med - Ukrainian part

Demonstrating Innovative Pathways Addressing Water and Soil Pollution in the Mediterranean Agro-Hydro-System

- List of participants
- Concept of this project
- The project leaflet (in English and Ukraine)



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<https://nubip.edu.ua/>



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Updating DS progress



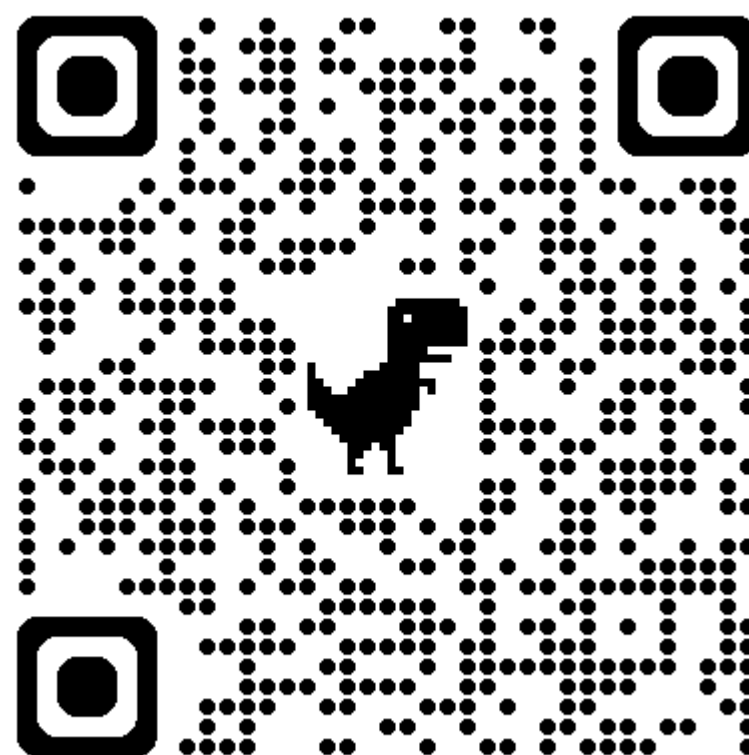
Path4Med Horizon EU project (101156867)

3. Developed and printed copies of the leaflet (in English and Ukrainian) about our DG3(Ukraine)

Demonstrating innovative pathways addressing water and soil pollution in the Mediterranean

Agro-Hydro-System

Демонстрація інноваційних шляхів
вирішення проблеми забруднення
води та ґрунту в
Середземноморській
агروهідросистемі
01.07.2024-30.06.2028



Ukrainian Demonstration Site

DG3(Ukraine) - "Future pathways for zero pollution in the Dnipro Basin under emerging challenges and threats"

Leader: NUBIP of Ukraine
Co-leader: WU-DES (The Netherlands)

- Scale: Dnipro River Basin: reservoirs and rivers
- Tools: monitoring water quality to support modeling of future pathways for zero pollution in the Dnipro Basin under emerging challenges and threats

The Dnipro River Basin

Co-funded by the European Union

Український демонстраційний майданчик

DG3 (Україна) - «Майбутні шляхи до нульового забруднення в басейні Дніпра в умовах нових викликів і загроз»

Керівник: НУБІП України
Спів-керівник: Університет Вагенінген (Нідерланди)

- Масштаб: Басейн р. Дніпро (водосховища та річки)
- Методи: моніторинг якості води та земель для підтримки моделювання майбутніх шляхів нульового забруднення в басейні Дніпра в умовах нових викликів і загроз

Басейн річки Дніпро

Co-funded by the European Union



<https://nubip.edu.ua/>



4. Submitted the abstract to the 2025 General Assembly of the European Geosciences Union (EGU)

Title: Relationship between climate drivers and agriculture in Ukraine: changes over the past two decades and potential implications on water scarcity in the future

Authors: Strokal V. P., Labenko O. M., Ladyka M. M., Palamarchuk S. P., Naumovska O. I., Vagaliuk L. V., Voitenko L. V.



PREVIEW
EGU General Assembly 2025
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27 April–2 May 2025



Relationship between climate drivers and agriculture in Ukraine: changes over the past two decades and potential implications on water scarcity in the future

Vita Strokal¹, Oleksandr Labenko², Maryna Ladyka³, Svetlana Palamarchuk⁴, Olena Naumovska⁵, Liudmyla Vagaliuk⁶, and Larysa Voitenko⁷

¹National University of Life and Environmental Sciences of Ukraine, Agrosphere Ecology and Environmental Control, Kyiv, Ukraine (vita.strokal@gmail.com)

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³National University of Life and Environmental Sciences of Ukraine, Agrosphere Ecology and Environmental Control, Kyiv, Ukraine

⁴National University of Life and Environmental Sciences of Ukraine, Agrosphere Ecology and Environmental Control, Kyiv, Ukraine

⁵National University of Life and Environmental Sciences of Ukraine, Agrosphere Ecology and Environmental Control, Kyiv, Ukraine

⁶National University of Life and Environmental Sciences of Ukraine, Agrosphere Ecology and Environmental Control, Kyiv, Ukraine

⁷National University of Life and Environmental Sciences of Ukraine, Analytical and Bioorganic Chemistry & Water Quality, Kyiv, Ukraine

Ukraine is prosperous in agricultural activities. Agricultural land covers 68.5% of the total land area. Additionally, Ukraine exports around 10% of the global cereals abroad and thus plays an important role in global food security. Crop production in Ukraine is dominated by grains (wheat, barley, corn), technical crops (sunflowers, sugar beets), potatoes¹. Livestock production is dominated by poultry, pigs, cows¹. However, agricultural activities have been under threat over the past two decades. An important reason is climate change. Climate drivers such as temperature and precipitation have changed their patterns in space and time in Ukraine since 2000. The implications of those changes on agriculture are poorly studied, namely on crop yield, synthetic fertilizers, and animal manure. Furthermore, the potential implications of agriculture and climate on future water scarcity are unknown considering the ongoing Russian-Ukrainian war.

In this study, we aim to assess the relationship between climate drivers and agriculture in Ukraine over the past two decades (2000-2020) and discuss the potential implications of these drivers on future water scarcity considering the Russian-Ukrainian war as an additional (unexpected) threat. We do this in a spatially explicit way. We collect the following data for agriculture: crop yield, crop area, fertilizers, irrigation². Data for climate drivers include air temperature and precipitation³. For agriculture, data is based on one-year time steps, and data for climate drivers is seasonal every year between 2000 and 2020. We map the data for 24 provinces in Ukraine. We also show the historical changes over the studied period. From a historical perspective, we identify the main





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Updating DS progress



5. Submitted the abstract to the Cross-sectoral OptimESM and ISIMIP Workshop

Title: Double threats for water pollution: agriculture and climate change

Authors: Strokal V. P., Labenko O. M., Ladyka M. M.



ABOUT ▾ GETTING STARTED ▾ PROTOCOL ▾ IMPACT MODELS ▾ RESOURCES ▾

Search >

Homepage > News > Save the date: cross-sectoral ISIMIP workshop 5-9 May 2025

Save the date: cross-sectoral ISIMIP workshop 5-9 May 2025

Posted by Martin Park on Sept. 13, 2024

Please save the date for the cross-sectoral ISIMIP workshop 2025:

- When: the week from **5-9 May 2025** (core meeting 6-8 May)
- Where: **PIK** Potsdam, Germany
- How: **hybrid**

The core event will probably be held on 6-8 May, while sector-specific meetings will preferably be scheduled before, or at the beginning of the main event.

Unlike in recent years, we unfortunately won't have funding at hand to support your travel and accommodation expenses this time. To ensure a successful meeting anyway, we will do our best to facilitate the most productive and comfortable mode of remote attendance possible.

Stay tuned for upcoming information on the [event page](#).



5 May 2025 to Friday, 9 May 2025



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Updating DS progress



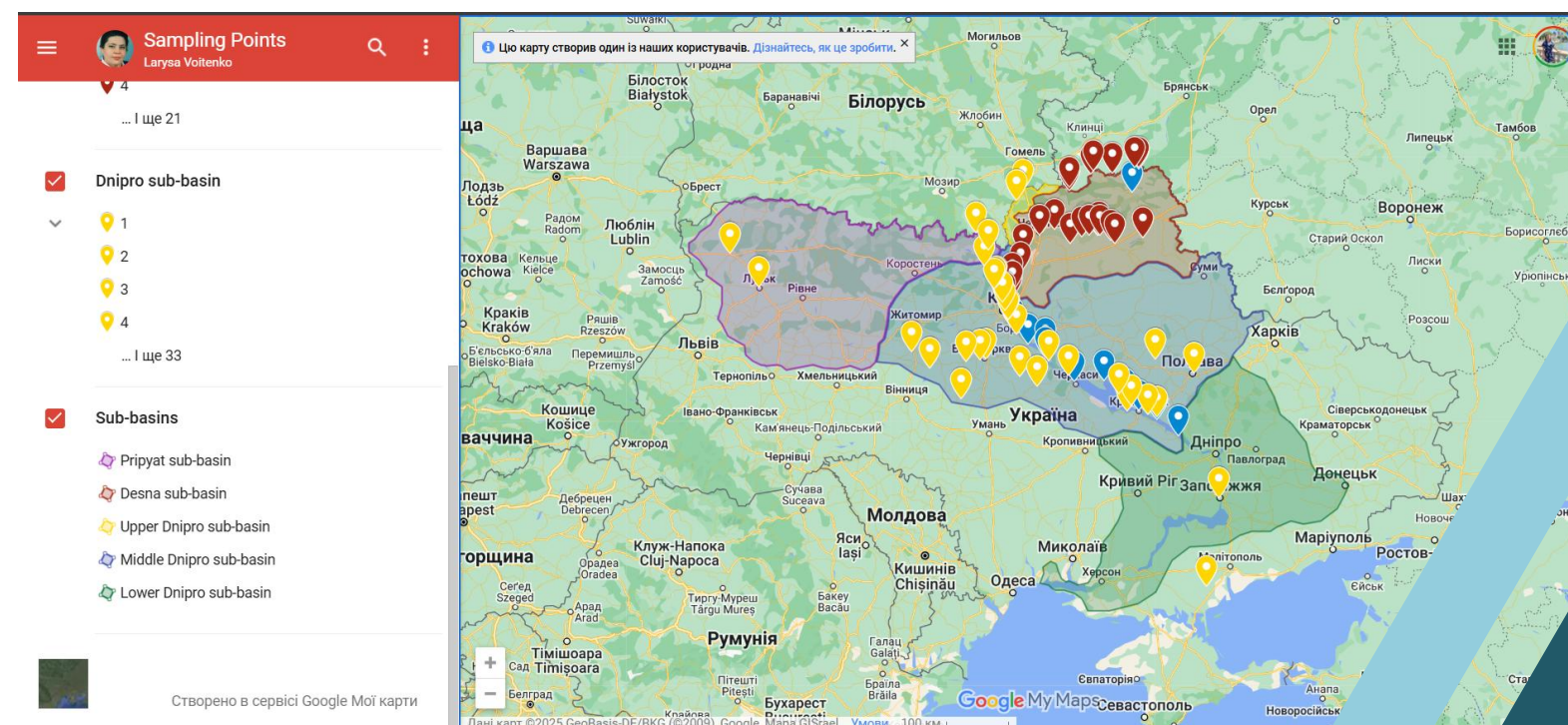
6. We are preparing the abstract for RAMIRAN 2025 – 19th international conference



15-Oct-2025 - 17-Oct-2025

Title: Impact of Municipal Residues on Agriculture Network and Water Quality in Ukraine

Authors: Strokal V., Voitenko L., Labenko O., Strokal M.



Co-funded by the European Union



Planned contribution for the next 6 months (M7-M12):

For the dissemination and outreach:

1. Attend and participate in the **EGU** conference, **ISIMIP** workshop
2. Attend and participate in the XI International Scientific Conference of Scientists “**Ecology - Philosophy of Human Existence**” in NUBiP of Ukraine (23-24 April 2025).
3. **Distribute the leaflets** to our stakeholders during the water and soil sampling period (April-May 2025).
4. Have an internal regular monthly meeting (generally every last week of the month)





Planned contribution for the next 6 months (M7-M12):

WP2:

T.2.1: to figure out the economic **costs and benefits** of different strategies to address water scarcity on the farm scale (related to Ukraine);

T.2.2: assess agricultural policies in Ukraine (related to DG3), to detail **the agricultural management in the farms** and socio-economic barriers to adopt sustainable practices

T.2.4: to work on analyses of existing **indicators of water quantity and quality** in the Dnipro River Basin (related to DG3)





Planned contribution for the next 6 months (M7-M12):

WP3:

T.3.5: to continue collecting **datasets** of historical meteorological data and agricultural activities;

T.3.1, 3.4: to take **water sampling** in the winter and spring of 2025 (related to case study 2 of DG3); to work on analyses of water parameters based on four water samplings (related to case study 2 of DG3);

T.3.2-3.3: to take **soil sampling** in the spring of 2025 (related to case study 2 of DG3)





Planned contribution for the next 6 months (M7-M12):

WP5:

1. **Stakeholders mapping** and made shape file of located farms (contribute to T5.1 and case study 1 of DG3)
3. Make **the shapefile** of the water sampling in the Dnipro River Basin; take water sampling in the winter and spring of 2025: take soil sampling (contribute to T3.1, 3.4 and case study 2 of DG3)
2. Start to collect **datasets** of socio-economic drivers and urbanization of the Dnipro River Basin to investigate the modeling of pathways for zero pollution in the Dnipro Basin (contribute to T4.7 and case study 3 of DG3)



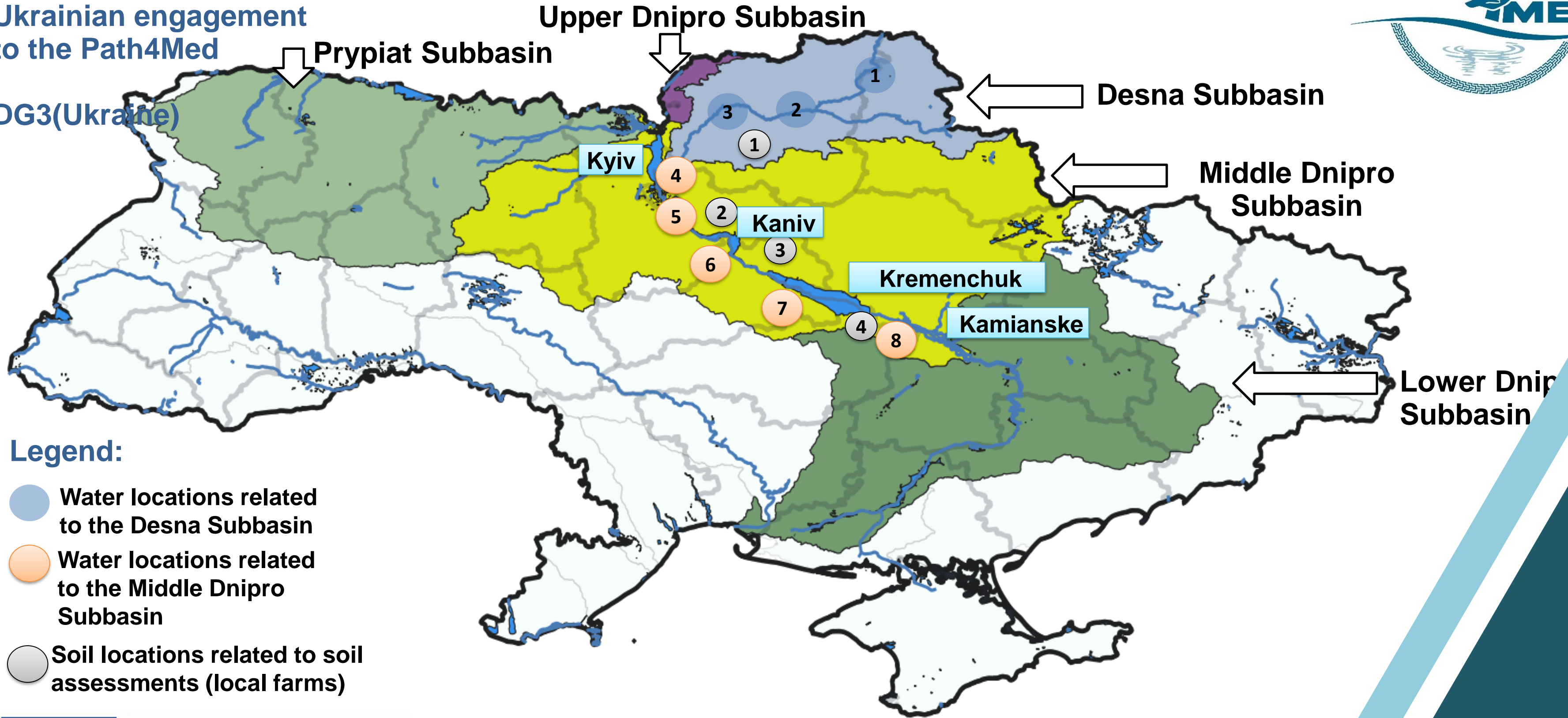


Water sampling



Ukrainian engagement to the Path4Med

DG3(Ukraine)



Legend:

- Water locations related to the Desna Subbasin
- Water locations related to the Middle Dnipro Subbasin
- Soil locations related to soil assessments (local farms)



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Reservoirs

Reservoirs in the Dnipro River Basin related to water sampling



Water sampling trip – 14-16 February 2025

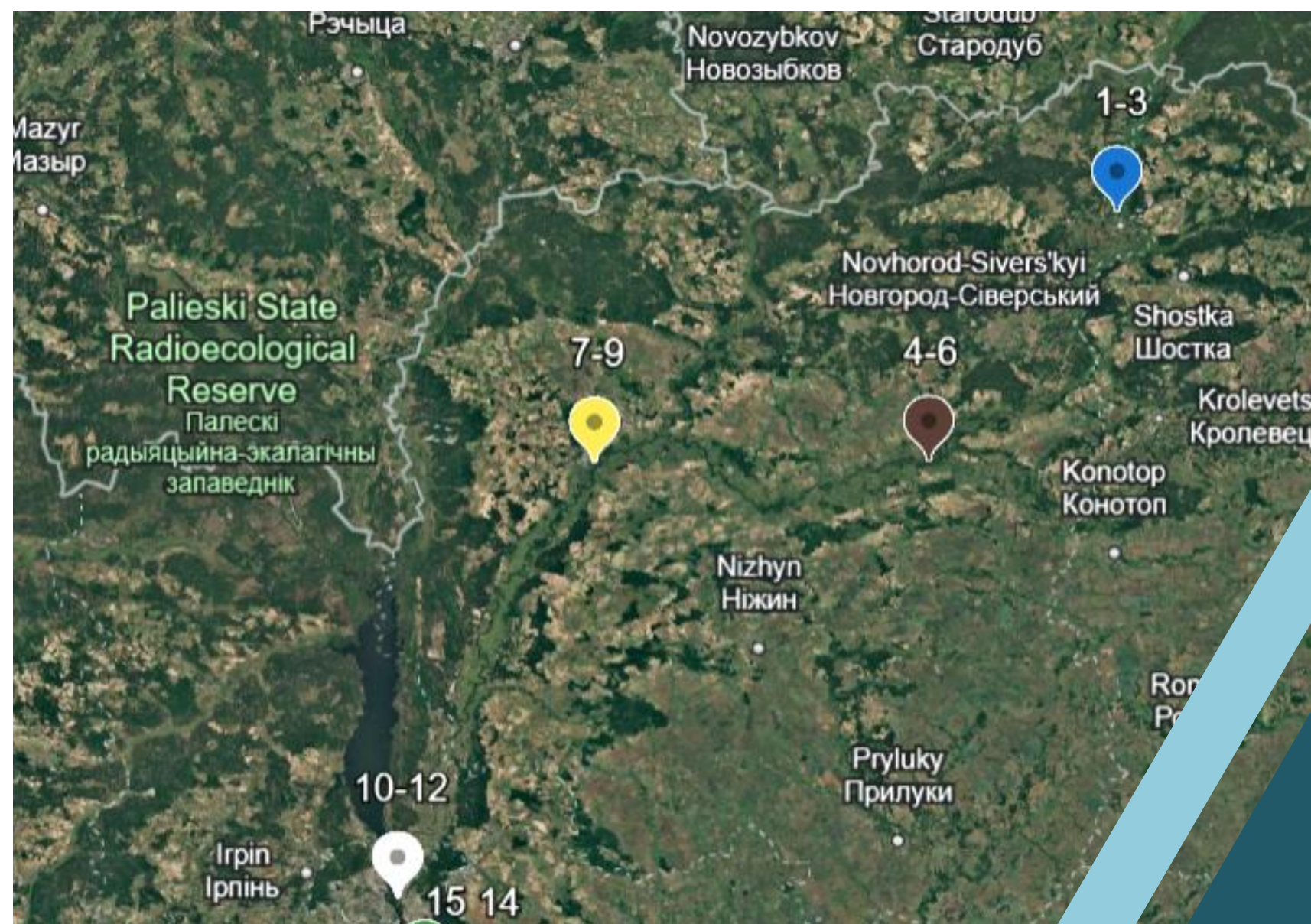
https://earth.google.com/earth/d/1BA6YXYu36FG7_Ofst8eP8crullwialF0?usp=sharing

14 February: Desna River subbasin

Виїзд з м. Київ в 06:00, повернення до м. Київ в 22:00

Локації 1-4

14.01.2025	1/1-3	Чернігівська область	м. Новгород-Сіверський	52°00'54"N 33°15'25"E	суббасейн р. Десна
	2/3-6	Чернігівська область	с. Велике Устя (с/мт Сосниця)	51°26'56"N 32°31'45"E	
	3/7-9	Чернігівська область	м. Чернігів (під мостом, траса Київ-Чернігів, при в'їзді до м. Чернігів зі сторони м. Києва)	51°27'13"N 31°17'32"E	
	4/10-12	м. Київ	Муніципальний пляж «Венеція», станція метро «Лівобережна»	50°26'57"N 30°34'36"E	Суббасейн Середнього Дніпра, р. Десна впадає у р. Дніпро

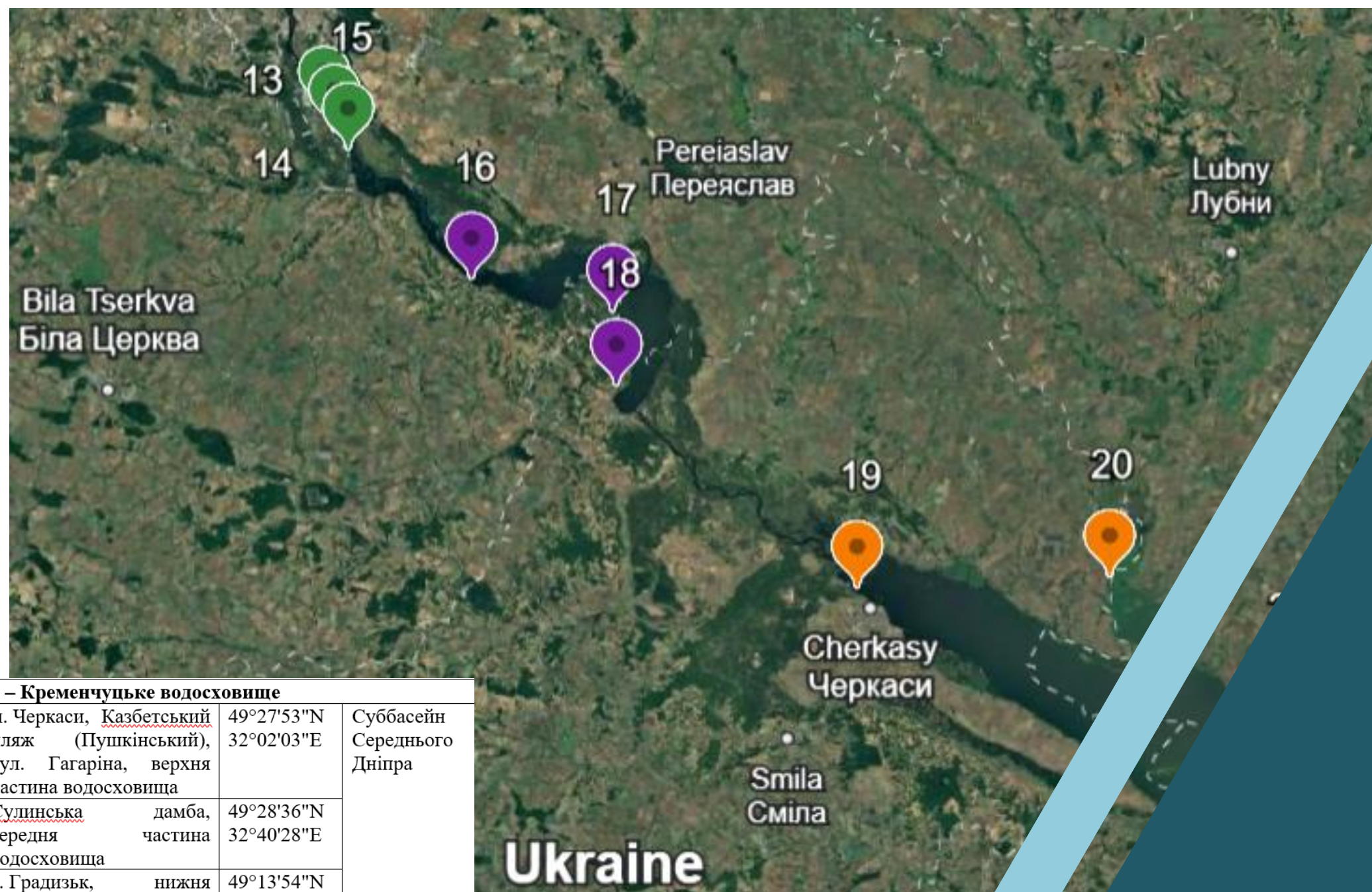




Water sampling trip – 14-16 February 2025

15 February: Desna River subbasin

15.01.2025	Вїїзд з м. Київ в 06:00 ранку				
Локація 5					
5/13	Київська область	с. Козин, Пейзажна вулиця	50°14'45"N 30°40'35"E	Суббасейн Середнього Дніпра	
5/14	Київська область	с. Козин, 4 км від точки відбору №13	50°12'58"N 30°42'13"E		
5/15	Київська область	с. Українка, 4 км від точки відбору №14	50°11'10"N 30°44'21"E		
Локація 6 – Канівське водосховище					
6/16	Київська область	м. Ржищів, верхня частина Канівського водосховища	49°58'26"N 31°03'24"E	Суббасейн Середнього Дніпра	
6/17	Київська область	Канівське водосховища, посередині, приблизно 30 км від точки відбору №16	49°55'16"N 31°25'02"E		
6/18	Черкаська область	с. Бобриня, нижня частина Канівського водосховища, 15 км від точки відбору №17	49°47'57"N 31°25'36"E		



Локація 7 – Кременчуцьке водосховище					
7/19	Черкаська область	м. Черкаси, Казетський пляж (Пушкінський), вул. Гагаріна, верхня частина водосховища	49°27'53"N 32°02'03"E	Суббасейн Середнього Дніпра	
7/20	Полтавська область	Сулінська дамба, середня частина водосховища	49°28'36"N 32°40'28"E		
7/21	Полтавська область	с. Градизьк, нижня частина водосховища	49°13'54"N 33°06'43"E		

Приїжджаємо в м. Кременчук, залишаємося на ніч в готелі Амстердам (номер бронювання 4422.195.857)

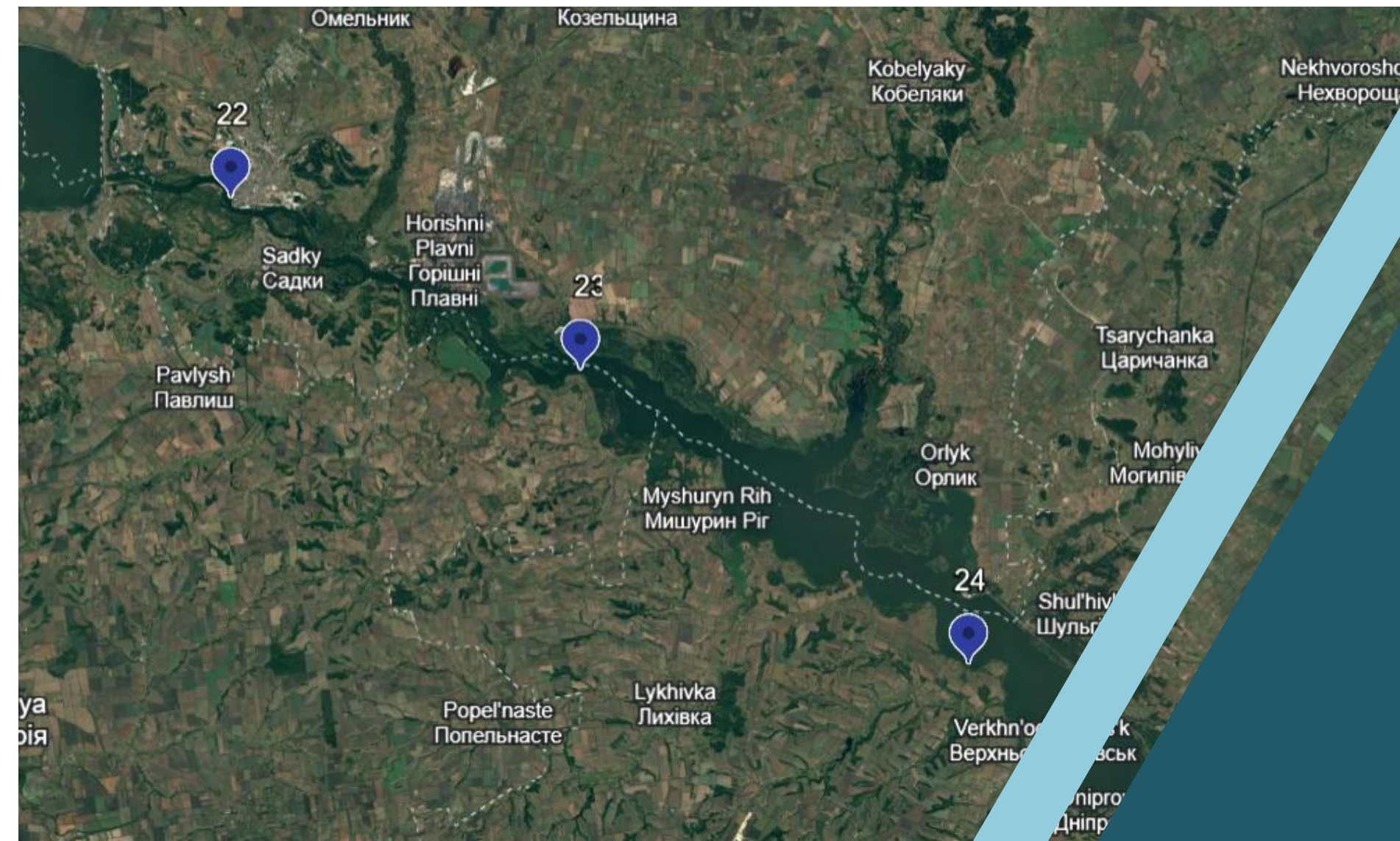




Water sampling trip – 14-16 February 2025

16 February: Desna River subbasin

16.01.2025	Виїзд 16.01.2025 в 06:00 ранку			
Локація 8 – Кременчук та Кам'янське водосховище				
8/22	Полтавська область	м. Кременчук, центральний пляж	49°03'38"N 33°23'53"E	Суббасейн Середнього Дніпра
8/23	Кіровоградська область	с. <u>Деріївка</u>	48°55'48"N 33°48'16"E	
8/24	Дніпропетровська область	с. <u>Домоткань</u>	48°42'17"N 34°15'08"E	
Повернення до м. Київ 22:00				





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The assignments for preparing the article



**Article name: Triple threats for water stress in the Dnipro Basin of
Ukraine: agriculture, urbanization and climate**

Authors: Strokal V., Labenko O., Voitenko L., Ladyka M., Palamarchuk S., Naumovska O., Vagaliuk L., Strokal M.* ...

*Strokal M. – correspondent author

International Journal – Q1-2

Datasets will be included in periods:

2020-2021 (before the war)

2022-2023 (after starting the war)



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The assignments for preparing the article



Article name: Triple threats for water stress in the Dnipro Basin of

Ukraine: agriculture, urbanization and climate

Overview of the indicators for integrated analysis for the sub-basins of the Dnipro Basin covering the two periods: 2020-2021 and 2022-2023

Indicator classes	Indicators	Impact
Water quality	<ul style="list-style-type: none"> ○ NO3 ○ NO2 ○ NH4 ○ PO4 ○ DO ○ BOD 	<ul style="list-style-type: none"> ○ Aquatic ecosystems (eutrophication) ○ Human health (drinking & bathing)
Agriculture	<ul style="list-style-type: none"> ○ Land use ○ Chemical fertilizers ○ Organic fertilizer ○ Crop yield ○ Irrigation ○ Pesticides 	<ul style="list-style-type: none"> ○ Food security ○ Food safety (pesticides)
Urbanization	<ul style="list-style-type: none"> ○ Urban population ○ Rural population ○ Urban population with sewage connections ○ Rural population with sewage connections ○ GDP (gross domestic products) ○ Primary, secondary, and tertiary wastewater treatment and no treatment 	<ul style="list-style-type: none"> ○ Economic development
Hydrology / climate	<ul style="list-style-type: none"> ○ Precipitation ○ Temperature 	<ul style="list-style-type: none"> ○ Climate change





The assignments for preparing the article



Article name: Triple threats for water stress in the Dnipro Basin of

Ukraine: agriculture, urbanization and climate

Responsible team

Indicator classes	Indicators	Impact
Water quality	<ul style="list-style-type: none"> NO3 NO2 NH4 PO4 DO BOD <p>Larysa Voitenko Vita Strokal</p>	<ul style="list-style-type: none"> Aquatic ecosystems (eutrophication) Human health (drinking & bathing)
Agriculture	<ul style="list-style-type: none"> Land use Chemical fertilizers Organic fertilizer Crop yield Irrigation Pesticides <p>Olena Naumovska Svitlana Palamarchuk Liudmyla Vagaliuk</p>	<ul style="list-style-type: none"> Food security Food safety (pesticides)
Urbanization	<ul style="list-style-type: none"> Urban population Rural population Urban population with sewage connections Rural population with sewage connections GDP (gross domestic products) Primary, secondary, and tertiary wastewater treatment and no treatment <p>Olena Naumovska Liudmyla Vagaliuk Oleksandr Labenko</p>	<ul style="list-style-type: none"> Economic development
Hydrology / climate	<ul style="list-style-type: none"> Precipitation Temperature <p>Maryna Ladyka Vita Strokal</p>	<ul style="list-style-type: none"> Climate





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Next step and discussion

For the next month



- 1 Conduct water sampling 14-16 February 2025
- 2 To make a Literature Review of water quality indicators in the Dnipro River basin based on monitoring datasets from water stations – *using Systematic Reviews and Meta-Analyses (PRISMA) methodology* – by 25 February 2025
- 3 Start to make a Literature Review of soil quality and health issues in Ukraine – *using Systematic Reviews and Meta-Analyses (PRISMA) methodology* – by 25 February 2025

**Vita Strokai, Olena Naumovska,
Svitlana Palamarchuk**

**Larysa Voitenko,
Vita Strokai**

**Ievgeniy Berezhniak,
Sergiy Pavluik
Anna Serbeniuk**



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Next step and discussion

For the next month



4 To make datasets of water quality indicators in the Dnipro River Basin based on two periods (2020-2021, 2022-2023)

**Larysa Voitenko,
Vita Strokai**

5 To make datasets of agriculture indicators in the Dnipro River Basin based on two periods (2020-2021, 2022-2023)

**Olena Naumovska,
Svitlana Palamarchuk,
Liudmyla Vagaliuk**

6 To make datasets of urbanization indicators in the Dnipro River Basin based on two periods (2020-2021, 2022-2023)

**Oleksandr Labenko,
Olena Naumovska,
Liudmyla Vagaliuk,
Vita Strokai**



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Next step and discussion

For the next month



7 To make datasets of hydrology and climate indicators in the Dnipro River Basin based on two periods (2020-2021, 2022-2023)

**Maryna Ladyka,
Vita Strokal**

8 To collaborate with stakeholders (local farms) and collect information

Svitlana Palamarchuk

Other suggestions,
recommendations...



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Next meetings



The next kick-off meeting – **26.02.2025** – 14:30-15:30

Data	Time	Important aspects	Tasks that we need to achieve
26.02.2025	14:30	Water sampling results. Working with stakeholders Stakeholder mapping and analyses (T5.1). NBSs	T5.1
26.03.2025	14:30	Water monitoring analyses. Prepare for soil sampling. Tender – soil sampling???. Working with stakeholders	
30.04.2025	14:30	Water sampling. Integration of agricultural influences (T6.1)	T6.1
28.05.2025	14:30	Soil sampling. Water monitoring analyses.	T3.1, T3.4
25.06.2025	14:30	Prepare the first draft of the report. Soil and water analyses. Overview of what we need. Make the water protocols. Deliverables!!!	Draft report (for the second project meeting)

