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DANS2
DANUBIUS RI SUPPORT

Newsletter

Nr.4 May 2021

Danube Delta Supersite

For the Danube Delta Supersite component of the DANUBIUS-RI project, the best locations of scientifically critical importance were chosen, studied, proposed, and prepared to achieve all the project's scientific objectives, following its requirements and compliance with national and European legislation.

Following the trips and meetings held in Tulcea County, the analyzes performed by the implementation team for the Danube Delta Supersite, the measurement areas were determined - observation areas and locations for field stations, each with several observation points.

The seven locations of field research stations were selected to ensure the Danube Delta Supersite (Natural Laboratory) 's good functioning in optimal socio-economic conditions, with a minimal negative impact on the environment: Murighiol (future area HUB), Chilia Veche, Tulcea, Sulina, Sf. Gheorghe, Jurilovca and Grindu.

Each field station will have several observation points rounded off for data collection and sampling. The field stations will be located in existing buildings (Sulina) or on free construction land, in the case of stations located at Murighiol Hub, Chilia Veche, Tulcea, Sf. Gheorghe, Jurilovca, Grindu.

A. The Field Research Station (ST) JURILOVCA

Fig. 1. Location plan in the area JURILOVCA OBSERVATION AREA

The location of the Jurilovca field station was selected for the detailed study of the Razelm-Sinoe lagoon system and its connection with the Black Sea through the following areas of scientific interest:
• Portița - covers the area around the former natural river mouth Portița, closed by hydrotechnical works in 1974. There is a natural tendency to reopen communication and interaction between seawater - brackish - freshwater.
• Periboina and Edighiol connecting canals - covers the communication between the Sinoe Lagoon and the Black Sea and the processes in the lagoon, along the barrier beach in natural and marine evolution.
• Coastal stations for the Danube-north western Black Sea interaction. It measures the mixing zone between the Danube river and the Black Sea waters in the coastal area under the influence of the river.

The building
The building will be in Jurilovca, Tulcea County. The built area is 245.76 sqm. The proposed functional composition is as follows: - Ground floor, which will include: hall, technical room, multifunctional room, bathroom, hall, head office, office, 2 bathrooms, room for cleaning and storage of test equipment, test space, storage / storage, life sciences laboratory, earth sciences laboratory, porch.

Fig. 2. JURILOVCA FIELD RESEARCH STATION

Jurilovca mooring point.
The mooring of the technical ship that will serve Jurilovca Station will be done at a dedicated pontoon that will be moored at the existing quay in Jurilovca Port.
The part of the quay that will be used for this purpose will be rented (annual fee) from the quay administrator - Jurilovca Commune City Hall.

B.Observation Points (PO) and Piezometric Drilling.

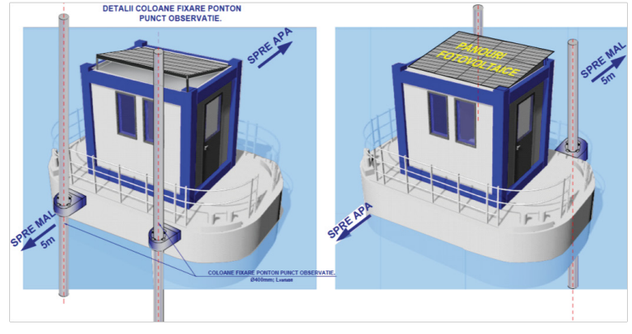
The Research System (the necessary equipment complex) will be mounted in containers on a floating platform anchored with two metal columns to be able to take over the differences in water level, either, where this is not possible or where the location conditions don't allow it, in containers on the shore.

It is specified that the installation of equipment in containers on land has a major impediment, namely the need to hold the Land Ownership documents on which they are located.

Considering this, the container solution on the land was made only in those cases where the placement costs on floating platforms were unjustifiably high (eg. At the Gura Sulina Weather Station or in the case of placing two floating platforms at Crisan, at the confluence with the Old Danube).

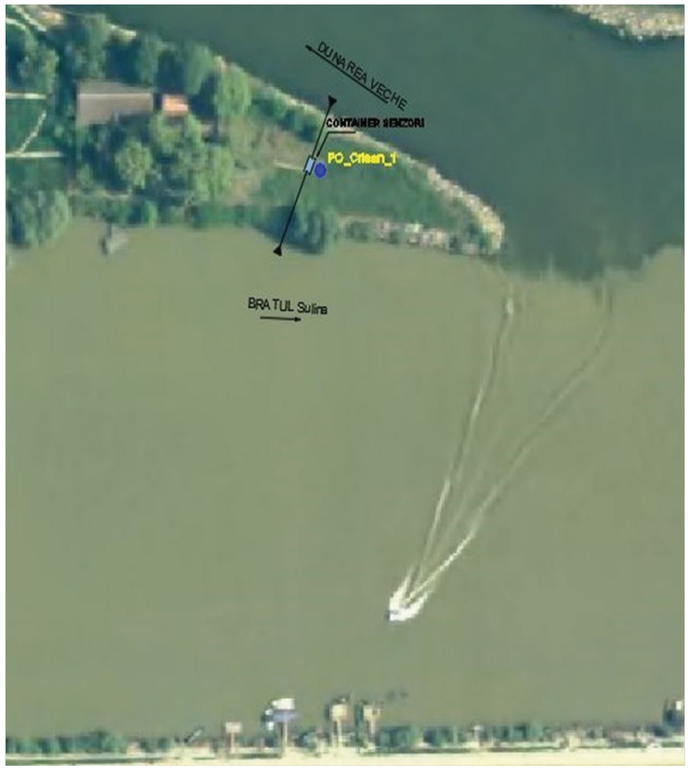
For the same reason of the Land Ownership, where this is required, the necessary steps hav been taken to conclude Protocols by which the respective owners (Romanian Waters Dobrogea – Seaside, Lower Danube River Administration) will make available the lands that the project require.

Example: observation point type 1 - Sulina_1.



Observation point type 1. Container on a floating platform.

Example: observation point type 2 - Crisan_1.



Observation point type 2. Land container.

The station has rounded:
A.3 observation points:

1. Portița_1: Pontoon + Container, location on the right bank access channel to Portița Resort, next to Portița Weather Station; Access to (PO) Portița_1 will be made exclusively on the water.

2. Periboina_1: Pontoon + Container, location on the shores of Lake Sinoe - near the Romanian Waters Canton; Access to (PO) Periboina_1 will be made either on water or on land with the help of the transport equipment provided by Jurilovca Station.

3. Edighiol_1: Pontoon + Container, location on the shores of Lake Sinoe - near the Romanian Waters Canton; The access to (PO) Edighiol_1 will be made either on water or on land with the help of the transport equipment provided by Jurilovca Station.

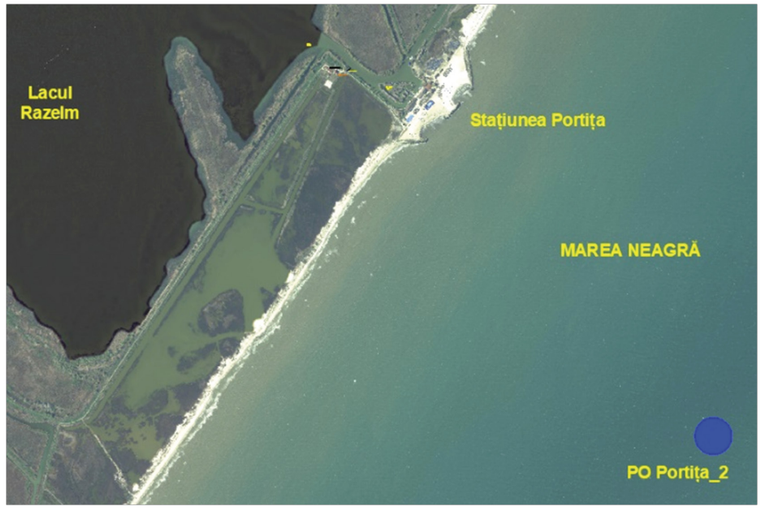
B. Piezometric drilling:

1. Portița piezometric drilling (FP), is located near the Portița Weather Station. Access to (FP) Portita will be on land.

2. Piezometric drilling (FP) Periboina, is located near the Romanian Water Canton. Access to (FP) Periboine will be on land.

3. Pieometric drilling (FP) Edighiol, is located near the Canton of Romanian Waters. Access to (FP) Edighiol will be on land.

C. Coastal observation points:



1. Portița_2: Coastal Beacon: the beacon will be mounted at the isobath of (-15.00) m near Portița Resort. The access to Portița_2 will be made exclusively on the water, with the help of the technical maritime ship dedicated especially to the maintenance of all the buoys and coastal beacons that will belong to DANUBIUS-RO.

2. Edighiol_2: Coastal Beacon: the beacon will be mounted at the isobath of (-15.00) m near the Connection Canal between Lake Sinoe - the hydrotechnical system (lock) and the Black Sea. The access to Edighiol_2 will be made exclusively on the water, with the help of the technical maritime ship dedicated especially to the maintenance of all the buoys and coastal beacons that will belong to DANUBIUS-RO.

C. Measured parameters

The description of the equipment and the parameters to be determined shall be measured and analysed at least the following parameters: Air temperature, humidity, visibility, evapotranspiration, precipitation, aerosols, wind (speed/direction), flow, level (includes tides), waves and currents (coastal stations), water flow characterization, light transmittance (sea, lake), water temperature, conductivity/salinity, pH, chlorophyll-a, turbidity, total suspended sediments, particle size distribution (suspended and bottom), NO3 seawater and freshwater, NH4 seawater and freshwater, TP seawater and freshwater, SRP seawater and freshwater, carbon (TOC, DOC), dissolved oxygen, hydrogen sulphide (H2S), methane (CH4).

Containers installed in the observation points will have equipment that will measure a large number of hydrological, geochemical, geological, geomorphological, hydro chemical, biological, etc., parameters. From the construction point of view, the observation points (containers) will be positioned on water or land. Sensors for measuring the physical and chemical parameters of the water will be placed inside. Other sensors (e.g., for measuring the level, water speed, and flow) will be mounted on movable scaffolding in water to be easily maintained/repaired/replaced.

Each observation point will be equipped with communication equipment for the transmission of measured data, with solar panels and batteries to ensure the necessary energy, and with surveillance and guard equipment (proximity sensors, perimeter lights, and video surveillance).

The equipment and endowments necessary for each observation point will be purchased according to the parameters to be measured and analysed: water level, conductivity, water temperature, chlorophyll-a, pH, turbidity, NO3, NO2, NH4, TN, carbon (TOC, DOC), dissolved O2, T ° air, humidity, visibility, evapo-perspiration, precipitation, aerosols, wind, CH4, H2S, CO2, pressure (level), 3 x (conductivity, Tapa) (at various depths), light transmissivity, NO3 seawater / Acoustic Doppler Current Profiler (ADCP), SRP, a submersible multi-parametric system for in-situ observation of particle size distribution (suspended and bottom) and volumetric concentration.

D. Networking ESFRI

In order to network with other research infrastructures, on the territory of the Danube Delta Supersite will be installed:

• 4 observation points on the Murighiol meander, Murighiol observation area, for collaboration with DREAM - Danube River Research and Management

• 2 ICOS towers in the positions of the Caraorman_1 and SfGheorghe_2 observation points, for the collaboration with ICOS RI - Integrated Carbon Observation System Research Infrastructure

• 1 complete seismic station in Murighiol and a complex observatory for measuring the magnetic field, ionization of the atmosphere, modern weather station, GPS and detection of electrical discharges at the FP Letea observation point, thus ensuring collaboration with EPOS - European Plate Observing System - Research Infrastructure for Solid Earth Science. Coastal stations will also be integrated into the Black Sea hazard monitoring system and the EPOS network.

The JURILOVCA Field Research Station will not have any networking infrastructure under management.

E. Transport equipment

ST Juriloca will be equipped with the following transport equipment:

1. a catamaran - which will be used for the maintenance of the PO in the delta area of the Supersite, under the administration of ST Jurilovca.

2. 4 x 4 off-road car - which will be used for land trips to the Observation Points and the Letea Magnetic Observatory.

3. a UTV (Utility Terrain Vehicle) - used for transporting samples and maintaining sensors in hard-to-reach points.

News

A New Industrial Emissions Directive

A New Industrial Emissions Directive regarding our new position paper: Mastering water efficiency and reuse challenges. The Industrial Emission Directive has proven its added value with the industrial emissions being decreased over the past decade in Europe. However, it is now time to focus on pollution reduction to water and soil and improve water efficiency. Therefore, Water Europe has welcomed the initiative of the European Commission to update this directive which will contribute to:

- Securing European Competitiveness
- Improving our environmental legacy for the future generations
- Strengthening European strategic autonomy

THE FAVORABLE ANSWER FROM EC TO THE ROMANIAN MINISTRY OF RESEARCH, INNOVATION AND DIGITIZATION REGARDING ESTABLISHING DANUBIUS-ERIC (ADDRESS NO. 9967/ 28.08.2020)

DANUBIUS-ERIC (the analysis of the conformity of the first stage of the application of the pan-European research infrastructure DANUBIUS-RI) received a favourable opinion from the EC on 15.04.2021. The invitation to send the second phase of the application was sent through this address.

www.dans2.ro

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