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Newsletter

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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.

The following figure shows the location of the CHILIA VECHE Observation Area.

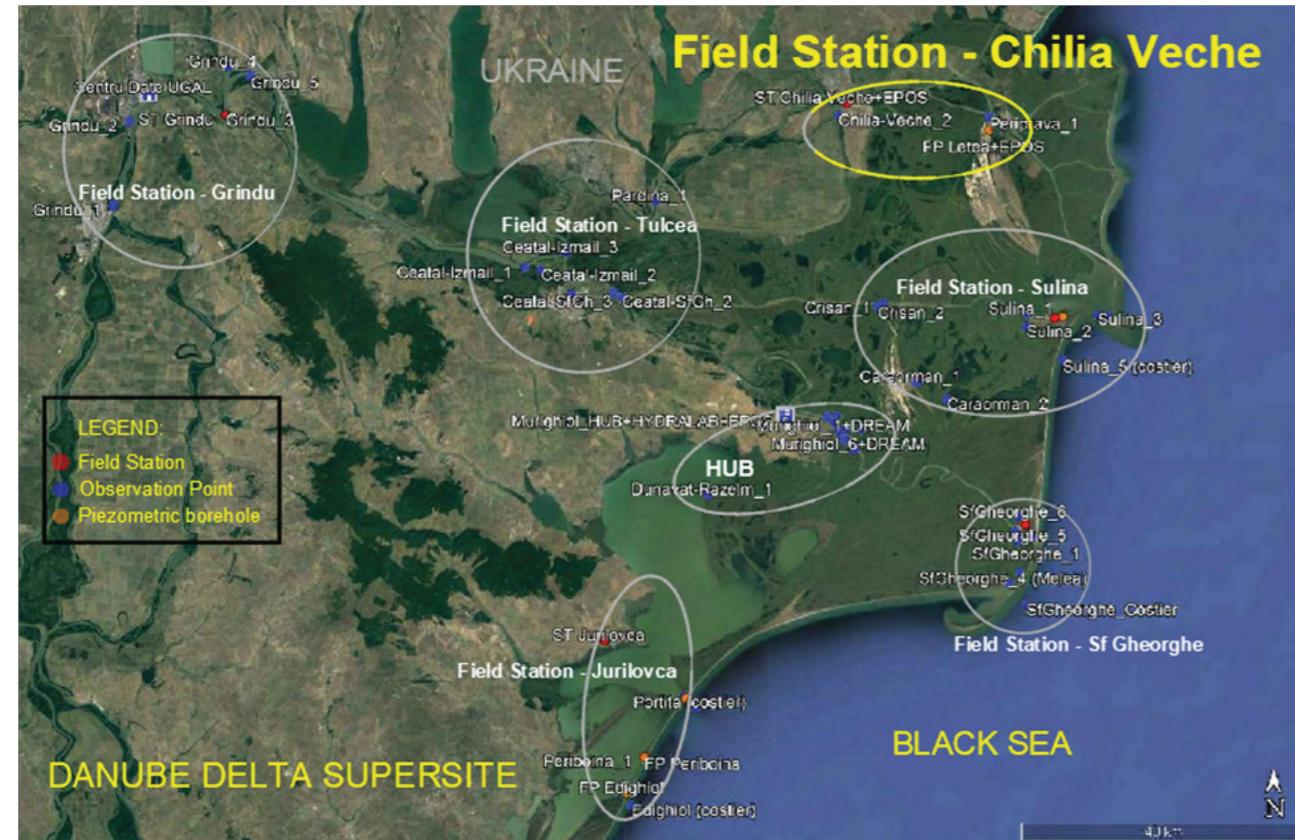


Fig. 1. Location plan in the area CHILIA VECHE OBSERVATION AREA

A. Field Research Station (ST) CHILIA VECHE.

The location of the Chilia Veche field station was selected for the study of the area covering the apex of the Chilia secondary delta representative for the connection between the Chilia arm and the Black Sea, but also the connection between the interdistributive areas located south of the Chilia arm.

The building will have the urban indicators presented in the following tables:

No. crt	Field station	Allocated land area	Land / construction use category
2	Chilia Veche	1013mp T4, A 58, cadastral no. 30723	According to the Urbanism Certificate no. 44/21.03.2019 - location: urban, Chilia Veche commune, Tulcea county. - type of property: property Chilia Veche Commune, private domain of Chilia Veche Commune, registered as a right of administration for a period of 49 years starting with 13.03.2019 by the Research-Development Institute for Marine Geology and Geoecology- GEOECOMAR - current use: urban, arable land. - proposed destination: arable, construction yards

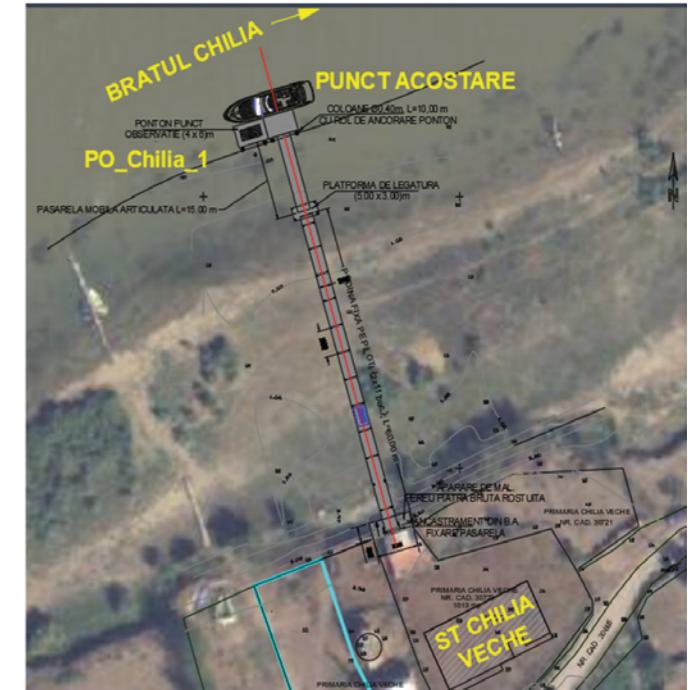


Fig. 2. CHILIA VECHE FIELD RESEARCH STATION

- The access to the Chilia Veche research station site is made on land from the existing road (to the southeast) and on water from the Danube (to the northwest). The current location is on the right bank of the Danube, has no neighborhoods and there have been no other structures in the past.

Chilia Veche mooring point.

- The berth itself will be made of a pontoon for mooring ships and access for people.
- The pontoon will be fixed by two collars, provided with rubber rollers, of 2 (two) columns on which the pontoon "slides" to take over the variation of the Danube water levels.
- The connection between the pontoon and the shore will be ensured by creating a fixed trestle, based on piles, except for a last section on which will be mounted a metal walkway, which will be supported with one end on the pontoon and the other end - articulated - on trestle., in order to be able to take over the level differences.



- The fixed trestle, on pillars, will connect the platform of the research station with the mobile, articulated walkway and the mooring pontoon.
- For the arrangement of the shore, a raw stone wall provided with cement mortar and a protective prism at the base, made of raw stone were provided.

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 the location conditions allow, in containers on land.

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.

In view of this, the adoption of the Container on Land solution was made only in cases where the costs of placing floating platforms were unjustifiably high (eg at the Gura Sulina Weather Station or in the case of placing two floating platforms at Crisan, the confluence with the Old Danube).

For the same reason of Land Ownership, in cases where this required it, the necessary steps have been taken to conclude Protocols by which the respective owners (Romanian Waters Dobrogea - Seaside, Lower Danube River Administration) will make available the Project necessary.



Example: observation point type 1

- Sulina_1.



Example: observation point type 2 - Crisan_1.

Observation point type 2. Land container.

The station has rounded:

A. 3 observation points:

Name PO	PO description	Location
Periprava_1 (pontoon + container)	- right bank of the Chilia Arm, at approx. 50-100 m upstream of the Periprava landing point; Access to (PO) Periprava_1 will be made exclusively from water.	
Chilia_1 (pontoon + container)	- right bank Chilia Arm - near the future Chilia Veche Field Station, at the downstream limit of Chilia Veche locality, the pontoon and the container that will contain the sensors will be mounted next to the mooring pontoon; Access to (PO) Chilia_1 will be made either from water or from land on the metal walkway that connects to the shore	
Chilia_2 (pontoon + container)	- right bank Brăt Tătaru - at approx. 1.6 km upstream of its confluence with the Chilia Arm, near the confluence with the Pardina Canal; Access to (PO) Chilia_2 will be made exclusively from water,	

C. Measured parameters

Description of the equipment and parameters to be determined

The following parameters will be measured and analyzed

Air temperature, humidity, visibility, evapo-perspiration, 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 sediment, particle size distribution (suspended and bottom), NO₃ seawater and freshwater, NH₄ seawater and freshwater, TP water seawater and freshwater, SRP seawater and freshwater, carbon (TOC, DOC), dissolved oxygen, hydrogen sulfide (H₂S), methane (CH₄).

Containers equipped with equipment that will measure a large number of hydrological, geochemical, geological, geomorphological, hydrochemical, biological, etc. parameters will be installed in the observation points. From the construction point of view, the observation points (containers) will be positioned on water or on land. Sensors for measuring the physical and chemical parameters of the water will be placed inside. Other sensors (eg those for measuring water level, speed and flow) will be mounted on movable scaffolding in water, so that it can 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 guarding equipment (proximity sensors, perimeter lights and video surveillance).

The equipment and endowments required for each observation point will be purchased according to the parameters to be measured and analyzed: water level, conductivity, water temperature, chlorophyll a, pH, turbidity, NO₃, NO₂, NH₄, TN, carbon (TOC, DOC), dissolved O₂, T ° air, humidity, visibility, evapo-transpiration, 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, submersible multi-parametric system for in-situ observation of particle size distribution (suspended and bottom) and volumetric concentration.

D. ESFRI Networking

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

- 4 observation points on the meander from Murighiol, Murighiol observation area, for the 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 Chilia Veche Field Research Station will not have any networking infrastructure under management

E. Transport equipment

ST Chilia Veche will have 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 Chilia Veche.

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



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





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