



Marine Observatories

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IR0000032 – ITINERIS, Italian Integrated Environmental Research Infrastructures System
(D.D. n. 130/2022 - CUP B53C22002150006) Funded by EU - Next Generation EU PNRR-
Mission 4 “Education and Research” - Component 2: “From research to business” - Investment
3.1: “Fund for the realisation of an integrated system of research and innovation infrastructures”



MARINE OBSERVATORIES

The term “observatory” appeared for the first time in the marine sector in 1921



LETTERS TO EDITOR

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IMPERIAL MARINE OBSERVATORY AT KOBE, JAPAN.

I have great pleasure in stating that this new government observatory was opened on August 26, 1920. The principal aims of the observatory are to make researches on meteorological, oceanographic, and magnetic subjects. We have to repair and test marine chronometers, magnetic compasses, and other measuring instruments for navigation. Funds for the buildings have been contributed by various shipowners at Kobe.

As far as magnetic work is concerned, we make a complete set of absolute measurements of the three elements by means of a magnetometer of the Indian survey pattern and an inclinorium in the middle of each month. We further have a project to build a variation-house in the neighborhood of this port.

We hope to be able to publish Archives and Bulletins in European languages. We should be very much obliged if interested institutions will exchange publications with us.

T. OKADA, *Director.*

Marine Observatory, Kobe, Japan, Oct. 15, 1920.

MARINE OBSERVATORIES



Marine Observatories (MOs) are globally widespread: they consist mainly of **observing, monitoring and experimenting infrastructures conceived to monitor oceanographic variables and to assess the state and modifications** of coastal and offshore sea in response to anthropogenic alterations and to the changing global climate.

coastal
integrated
data operational
floor transmission sea-ice
cabled observatory
sea ecosystem
borehole



FixO³
FIXED-POINT
OPEN OCEAN
OBSERVATORIES

Source JERICO

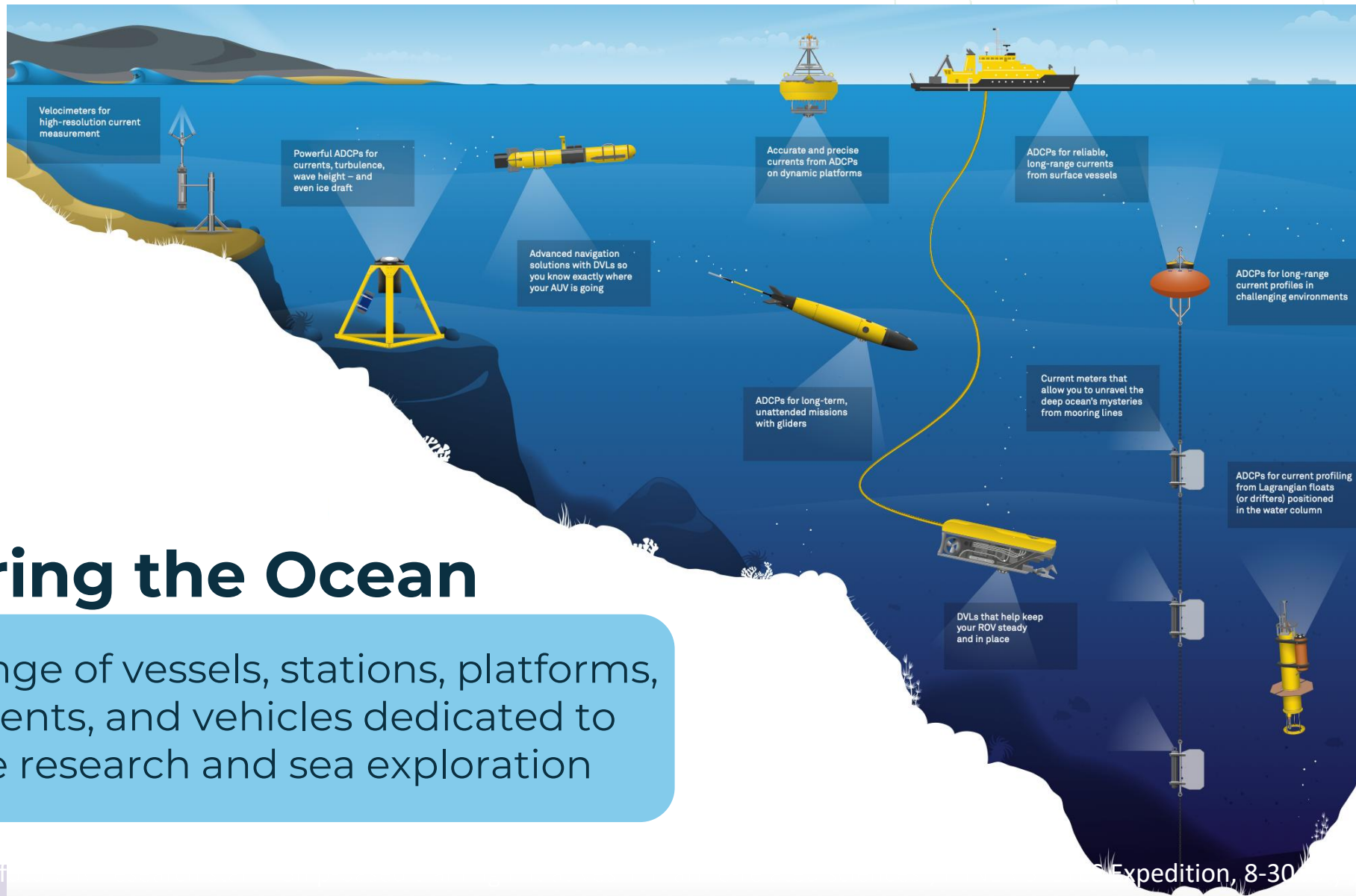
- Ferrybox MS Trollfjord
- Ferrybox MS Norona
- NIVA Research Station
- FA Ferrybox MS Color Fantasy
- COSYNA_FB Ferrybox
- SmartBay Cabled Buoy, Ocean Energy Test Site, SmartBay Glider
- Smartbuoy Warp
- Ifremer Metrology Laboratory
- SCENES platform
- SMILE buoy
- Glider National Facility
- SEADROME
- OBSEA Seafloor Observatory
- SOCIB glider
- MONIZEE buoys
- Plocan HF radar platform
- Plocan Test Site
- CGOF Autonomous observing system
- CGOF, Profiler
- Ferrybox at m/s Serenade
- Uta Research Station
- Ferrybox at m/s Finnmaid
- COSYNA glider
- Underwater Node Helsingland
- Stationary Ferrybox
- Smartbuoy West Gabbard
- VIZ coastal observatory Installations
- HF Marek platform
- Miramare Buoy
- Acqua Alta Oceanographic Tower
- Meteorological site
- Conica Channel Mooring
- Athos buoy
- Saronikos buoy
- Poseidon Calibration Lab
- Ferrybox Heraklion - Piraeus
- Sicily Channel Observatory
- Heraklion Coastal Buoy

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Exploring the Ocean

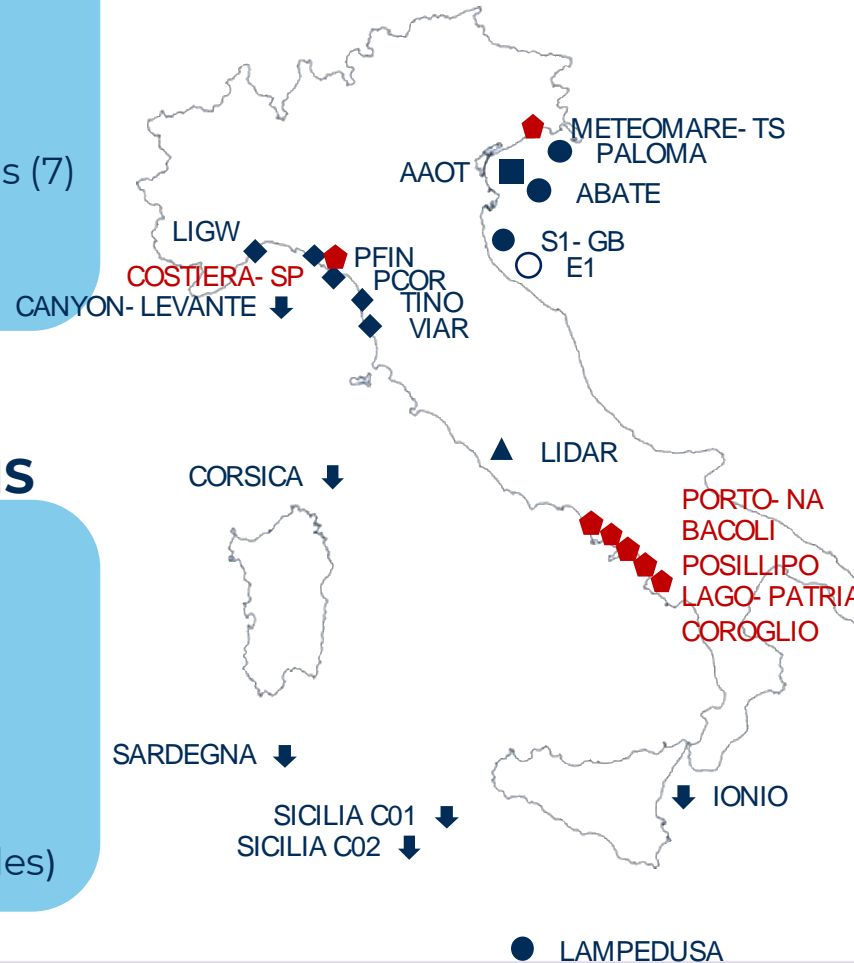
A wide range of vessels, stations, platforms, instruments, and vehicles dedicated to marine research and sea exploration

Observing network of ISMAR

OBSERVING STATIONS



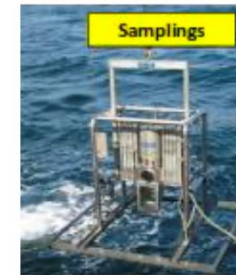
- Sea Stations (1)
- Seamarks (4)
- Buoys (1)
- ↓ Mooring (6)
- ◆ Coastal Stations (7)
- ◆ Hf-Radar (5)
- ▲ Lidar (1)



AUTONOMOUS SYSTEMS



- GLIDER “Teresa”
- EURO-ARGO
- OpenSWAP (Bologna)
- SWAMP (Venice)
- Drifters
- OpenSWAP (Naples)



Observing systems in Northern Adriatic Sea

Geographic

Zoom to site boundaries
Zoom to related location(s)
Zoom to related site(s)

Centroid/Representative Coordinates: Latitude: 44.7505 Longitude: 12.46897
Size: ca. 1.00ha
Elevation (average): -10.00msl
Elevation (min): -20.00msl
Elevation (max): 0.00msl
Related location(s)

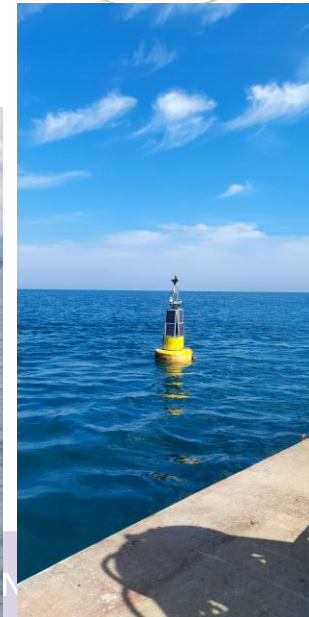
- E1 meteoceanographic buoy (Sampling Location)
- S1-GB dynamic pylon (Sampling Location)



S1-GB dynamic pylon



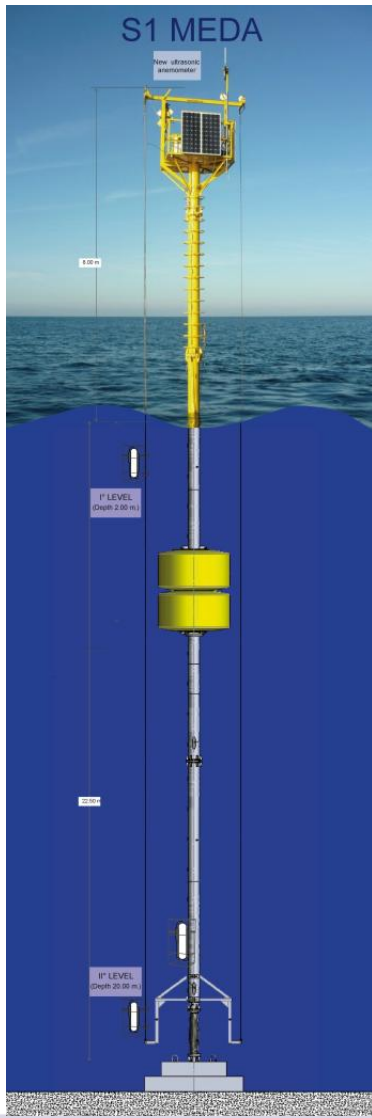
E1 meteoceanographic buoy



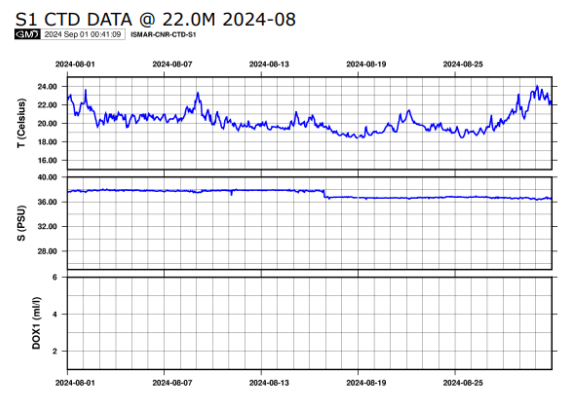
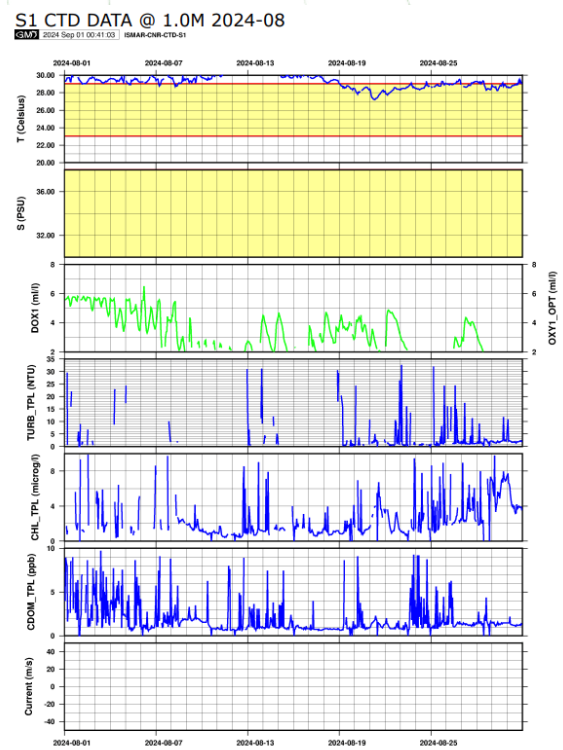
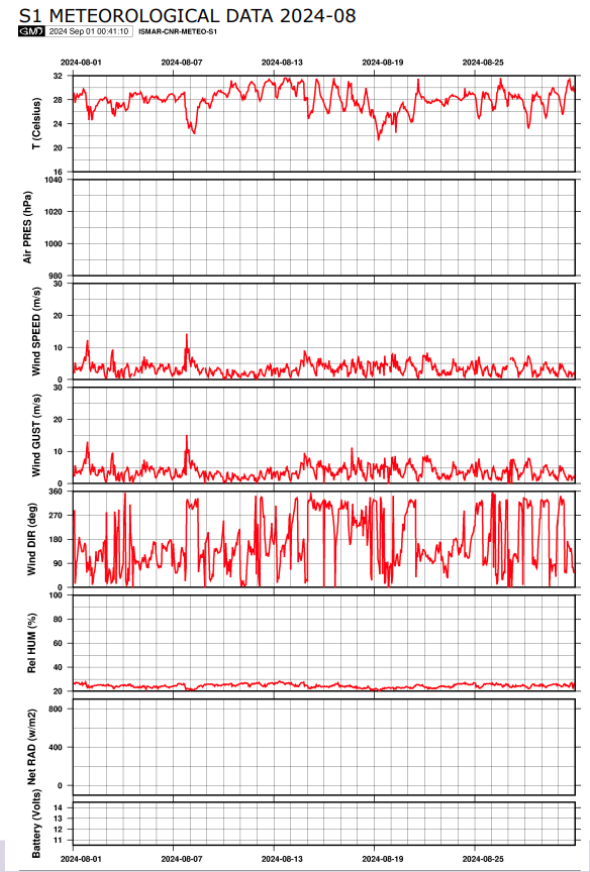
S1-GB Pylon



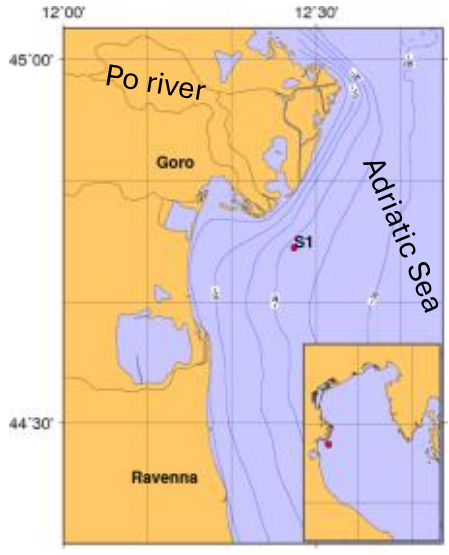
LOCATION: Northern Adriatic
 (south of the Po River Delta)
 Operative since April 2004
 Max Depth: 22.5 m
 Distance from the coast: 6 km
 Frequency data acquisition:
 30 minutes
 Frequency data transmission:
 1 hour
 Web site:
<http://s1.bo.ismar.cnr.it>



| | |
|--------------------|-----------------|
| Meteo LEVEL | + 8.0 mt |
| Ocean LEVEL | -2.5 mt |
| Ocean LEVEL | -18.0 mt |



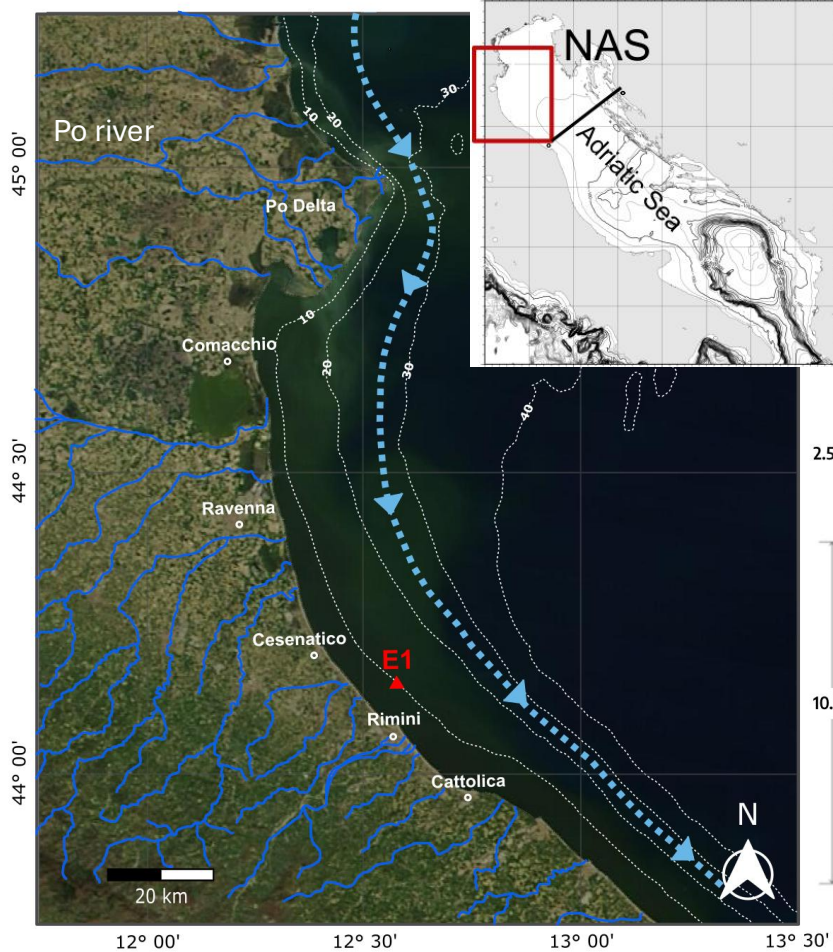
| Parameter | Sensor |
|------------------------------|-------------------|
| Atm Pressure | Gill GMX 501 |
| Air Temperature | Gill GMX 501 |
| Wind Speed, Direction & Gust | Gill GMX 501 |
| Relative humidity | Gill GMX 501 |
| Water temperature | SBE 37 |
| Salinity | SBE 37 |
| Dissolved Oxygen | SBE63 |
| Turbidity | Wetlabs Triplet |
| Fluorescence (Chl) | Wetlabs Triplet |
| CDOM | Wetlabs Triplet |
| Current speed and direction | Aanderaa DCS 4100 |
| Water temperature | SBE 37 |
| Salinity | SBE 37 |
| Dissolved Oxygen | SBE 63 |



E1 OCEANOGRAPHIC BUOY

GPS Coordinates: 44.14325 N, - 12.5701 E

Website:
<http://e1.bo.ismar.cnr.it>



Buoy E1 location



E1 meteo-oceanographic buoy, operative since 2006, is located at the **Delta del Po and Costa Romagnola** site in the Northern Adriatic Sea (Mediterranean Sea)

| Parameter | Updated at May-2023 | Parameter | Sensor |
|-----------------------------|---------------------|------------------------------|-------------------|
| Atm pressure | Operating | Atm Pressure | Gill GMX 501 |
| Air Temperature | Operating | Air Temperature | Gill GMX 501 |
| Wind speed and direction | Operating | Wind Speed, Direction & Gust | Gill GMX 501 |
| Humidity | Operating | Humidity | Gill GMX 501 |
| Solar radiation | Operating | Solar radiation | Gill GMX 501 |
| Wave height and direction | Operating | Wave height and direction | Brizo-X |
| Temperature | Operating | Water temperature | SBE 37 |
| Salinity | Operating | Salinity | SBE 37 |
| Dissolved oxygen | Operating | Dissolved Oxygen | SBE63 |
| Turbidity | Operating | Turbidity | Wetlabs Triplet |
| Fluorescence (Chl) | Operating | Fluorescence (Chl) | Wetlabs Triplet |
| CDOM | Operating | CDOM | Wetlabs Triplet |
| Current speed and direction | Operating | Current speed and direction | Aanderaa DCS 4100 |
| Temperature | Operating | Water temperature | SBE 37 |
| Salinity | Operating | Salinity | SBE 37 |
| Dissolved oxygen | Operating | Dissolved Oxygen | SBE 63 |
| Meteo LEVEL | + 2.5 mt | | |
| Ocean LEVEL | -1.6 mt | | |
| Ocean LEVEL | -8.0 mt | | |

Overview of the E1 Buoy System

Observing systems in Northern Adriatic Sea



Observing systems in Northern Adriatic Sea





THANKS!

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