Infrastructure (short name)	CNR-Marine Platforms and Laboratories (CNR-MPL)
Installation (short name)	Acqua Alta Oceanographic Tower (ACQUA ALTA)
Location	Mediterranean Sea, Northern Adriatic, Gulf of Venice
Coordinates	45°18.83'N – 12°30.53'E
Bottom depth	16 m
Legal name of organization	Consiglio Nazionale delle Ricerche CNR
Location of organization	Rome, Italy
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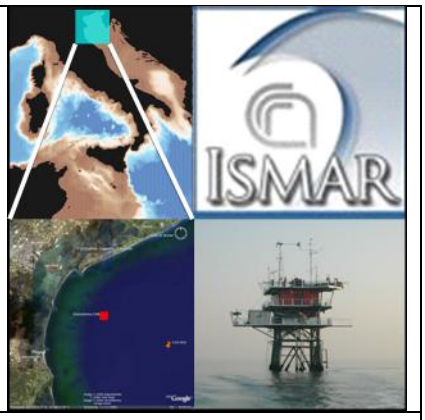
Web site address	http://www.ismar.cnr.it/infrastructures/piattaforma-acqua-alta



Description

The "Acqua Alta" research tower was installed on January 1970 15 km off the city of Venice, Italy, in 16 m of water (MLLW). This tower consists of a platform containing an instrument house, supported by a steel pipe structure, similar to that of an oil well derrick. The pipe structure is hammered 22 m into the bottom through each of its four hollow legs. Energy is supplied at 125, 220, 380 VAC (50 Hz – remote activation), along with continuous voltage 12 and 24 VDC.

The tower can host two technicians and three scientists for several days and allows specific dedicated campaigns and long-term measurements.

A broadband wireless communication system between the tower and the operating Institute allows 10 Mb/s data communication rate and real time data availability. The bridge allows the tower to be part of the Institute LAN so all the scientists on board can access internet and potentially all the instruments could be controlled remotely.

Measurements routinely acquired with periodic sampling concern biology, chemistry, physical oceanography. Autonomous instrumentations cover atmospheric and hydrological parameters with a series of meteorological stations (wind, air and water temperature, atmospheric pressure, humidity, rain) and a series of oceanographic instruments (waves, currents along the column with ADCP, temperature at surface and bottom, salinity, turbidity, oxygen, chlorophyll *a* and sea level). A direct view of the sea condition around the tower is available continuously by the three high resolution webcams installed on the roof. Two underwater webcams are installed at -3 and -12 m to observe biological populations and to monitor potentially critical phenomena such as jellyfish swarms and mucilaginous macro aggregates.

Given the high level of security on board and wide desk space, sophisticated instruments can be hosted on board reducing drastically the risk of loss (when not in service the tower is locked and a video surveillance is active). The good level of logistic support allows the setup of in situ experiments.

The wave measurements provide the longest European directional time series (29 years). The worst storm ever experienced was on December 22, 1979, when heavy damage was found up to

9 metres above the mean sea level.

The tower has been used as calibration point for instruments on board of the ERS-1 and SEAWIFS satellites.

Service offered

The “Acqua Alta” tower is a wet and dry laboratory able to host three scientists supported by one technician and two seamen. The high degree of safety (Video surveillance onboard) allows the setup and deployment of high-cost instruments; furthermore with the availability of wideband connection, instruments can be remotely controlled.

The installation is available for TransNational Access to JERICO users for specific experiments, tests of sensors and in-situ validation.

A support team formed by one technician and two sea-men, coordinated by a head scientist will assist the user group, helping during installing/uninstalling operations.

The user will have access to the infrastructure by boat, this service will be arranged by the operator.

The data will be immediately available to the user accessing the laboratory or also remotely in case of protracted installation of user’s instrumentation.

Instruments/Sensors

The following instrumentation is already onboard the tower and will be available to the JERICO users

Instrument	Measured Parameter(s)	Elevation/Depth	Sampling frequency	Frequency of data recovery
Meteo station Davis Vantage Pro2	Wind speed and direction Air temperature Humidity	+ 17 m	30 min	30 min
Nortek Awac	Current Profiles	from -1 to -15 m	30 min	30 min
Nortek Awac	Waves (high, dir period)	sea surface	30 min	30 min
SeaCAT	Temperature Oxygen Conductivity/Salinity Turbidity	- 5 m, -13 m	60 min	60 min

Additional services/data

Routine discrete samplings for long-term series

The following parameters are obtained from regular manual sampling and laboratory analysis and will be available to the JERICO users on specific request:

Parameter(s)	Elevation/Depth	Sampling frequency	Sampling Technique /Analytical method
Particulate flux	+ 13 m	30 days	Deposimeter
Phytoplankton	-1 and -15 m	30 days	Utermohl
Particulate	-1 and -15 m	30 days	Gravimetric CHN
Nutrients	-1 and -15 m	30 days	Autoanalyzer
Clorophyll	-1 and -15 m	30 days	Fluorimetric

Special owner rules

Researchers must provide an insurance statement. All lodging, meals and travel (from CNR Institute) to the tower coasts are covered by CNR, no smoking is allowed on board, safety equipment is not provided.