Subject: WindMasterPro Buoy Mounted of Slovenia

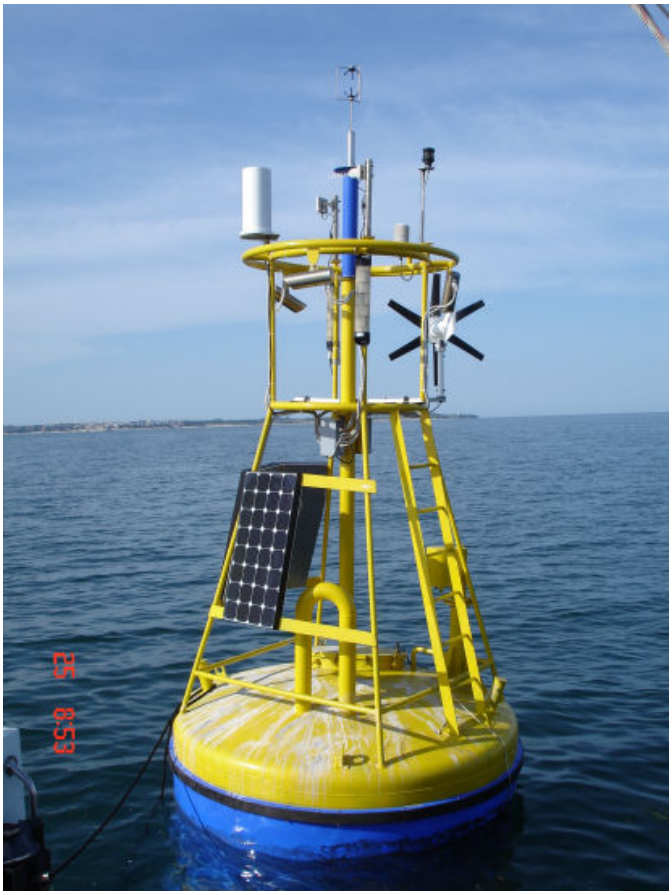
Reference AN0002

Introduction

Buoy based measurements in remote locations are used to compliment land and vessel based observations. The Buoy Vida was provided to Marine Biology Station of the National Institute of Biology, Piran, Slovenia

Application

The buoy continuously records oceanographic data at a site off of the coast near Piran, which is thought to be typical of the southern half of the Gulf of Trieste. Buoy can record rapid changes in oceanographic and environmental parameters, for example such as might arise from southerly excursions of water masses originating in the Northern Adriatic. Complimentary measurements taken from the research vessel allows the spatial extent of such events to be estimated.



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Construction

The buoys hull is made of stainless steel 6 mm thick. It is 2.5 m in diameter and the height of the upper-most sensor (the anemometer) is 5 m. The buoy is fixed with three chains, which are attached to the buoys hull at points separated by 120 degrees around the hull's perimeter. The chains connect the buoy to three concrete anchors on the seafloor at a depth of 22 m.

Instrumentation fitted to the buoy

An acoustic Gill's Instruments 3D anemometer (height 5 m), a Vaisala air temperature and humidity sensor (height 3.5 m), a Seacat of Seabird T and C probe (depth 3 m) with a Wetlab fluorometer for chl-a measurements, an oxygen sensor 'Optode' of Aanderra, also at a depth of 3 m. An Xsens motion sensor (accelerometer/compass-tilt sensor) is placed in the buoys hull just below the top-cover of the hull and under the mast. An AWAC current meter from Nortek As is mounted at the seafloor, at a depth of 22 m. There are three surveillance web cameras. One underwater camera is mounted at the bottom of the buoy at about 2 m depth. The buoy is also equipped with three solar panels and a wind generator.

Manufacturer, instrument	Quantity	Height above/below the sea-surface (m)	Sampling period (s)	Number of measurements / time unit	Quality control
VAISALA, HMP 45A	Air temperature and humidity	5,0	10	6 / minute	YES
Gill Instruments, WindMaster Pro Ultrasonic Anemometer	Wind speed and direction	5,0	0,1	10 / s	YES
Xsens Technologies, MTI XSENS KOMPAS	3D compass	5,0	10	10 / s	NO
VAISALA, GMP343	CO2 in the air	4,0	120	1 / 2 minutes	NO
LICOR, LI-190SL-50	PAR	4,4	0,23	4,26 / s	NO
SeaBird , SeaBird 16plus SEACAT	Salinity and temperature	-2,5 ± 0.2	300	1 / 5 minutes	NO
Wet labs, ECO Chlorophyll Fluorometer Chlorophyll-a (FL-CHL)	Chlorophyll concentration	-2,0 ± 0.2	300	1 / 5 minutes	NO
AANDERAA DATA INSTRUMENTS, Oxygen optode 3835	Oxygen	-2,2 ± 0.2	60	1 / minuto	Control
AANDERAA DATA INSTRUMENTS, Oxygen optode 4835	Oxygen	-22,5 ± 0,5	60	1 / minute	NO
Nortek, Acoustic currentmeter AWAC 600kHz z NIP	Currents	-2,5 ± 0,5	1	600 in the first 10 minutes in half-hour interval	NO
Nortek, Acoustic currentmeter AWAC 600kHz z NIP	Waves	-22,5 ± 0,5	1	1024 in next 1024 seconds in half-hour interval	NO
Nortek, Acoustic currentmeter AWAC 600kHz z NIP	Temperature	-22,5 ± 0,5	1	600 in the first 10 minutes in half-hour interval	NO

Data

The buoy has been operational for many years and users can contact the Institute directly to discuss for full access to the data, however, a dataset can be seen below:

Online data from Oceanographic buoy

Date and time: 2015-05-19 09:15:00 (local time)

Air:
Temperature: 19.1 ° C
Humidity: 70.8 %

Wind:
Wind speed: 2.3 m/s
Wind direction: 0.7 °
Wind gust up to: 2.7 m/s
Beaufort: 2

Sea (2015-05-19 09:15:00):
Temperature at the sea surface (depth 2.5 m): 19.3 ° C
Salinity at the sea surface (depth 2.5 m): 36.0
O2 concentration (sea floor): N/A ml/l

Sea (2015-05-19 09:00:00):
Temperature at the sea floor (depth ca. 23 m): 14.4 ° C
Pressure at the sea floor: 22.0 dBar

Waves (2015-05-19 09:00:00):
Wave height: 0.1 m
Maximum height: 0.2 m
Mean direction (azimouth): 202.6 °
Mean period: 2.5 s

Further details can be found at:

http://www.nib.si/mbp/en/buoy/general

Why Gill?

WindMasterPro was chosen as the base wind measurement as it uses our proven ultrasonic technology, which provides one of the most accurate ways of measuring wind speed and direction. Our solid-state wind sensor is built with no moving parts, is maintenance free and features a stainless steel exterior, making it well suited to most applications.