SETTING A NEW STANDARD FOR WAVE MEASUREMENTS

Ocean wave measurements are an indispensable part of any MetOcean project. The Obscape **OBS**-*BUOY7*[W] is based on cutting edge sensor and data technology, ensuring a lightweight, rugged, reliable and affordable wave buoy.

The **OBS**-*BUOY7*[W] will suit your wave observation needs on any project, regardless of location and budget. Accurate real time wave data makes its way to your desktop through a robust telemetry solution to the free to use and powerful DataPortal. The **OBS**-*BUOY7*[W] was designed to make your life easy: no receiver station needed, solar-powered, a simple mooring solution, deployable by hand and transportable as check-in luggage.

KEY FEATURES

- Real-time data (4G with 2G fallback & Satellite).
- Bulk wave parameters.
- Directional wave spectrum.
- GPS position & watch circle.
- Diagnostic temp, humidity, atmospheric pressure.
- Wireless and solar powered.
- Rugged UV protected hull.
- Compact & light weight.
- Easy to deploy & service.
- Versatile data portal included.
- Low purchase & operational costs.
- Amber visibility flashing light

MAIN APPLICATION AREAS

- Marine & Coastal engineering
- Oceanographic research
- Environmental monitoring
- Work compliance monitoring

ACCURATE, FULLY DIRECTIONAL WAVE DATA

The **OBS**-*BUOY7*[W] uses a combination of motion sensors and an electronic compass to measure the directional wave field with high accuracy. This yields the directional wave spectrum and all parameters that can be derived from it, such as the 1-dimensional energy-density spectrum and a range of bulk wave parameters (significant wave height, peak wave period, peak wave direction, etc.).

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REAL-TIME ACCESSIBILITY

Wave data is sent to the Obscape servers in real-time. The secure Obscape Data Portal enables you to view and download the data or forward them to your own server. Key settings, such as the real-time output interval and the location of the GPS fence, can be adjusted on the fly. The **OBS**-*BUOY7*^{W} offers two main modes of communication: the GSM network (4G) and a satellite network (Iridium). While the GSM network offers low-cost data transfer in coastal waters, satellite communication ensures global data coverage. A FIFO queue is able to close connectivity gaps up to 50 days. Additionally, it is possible to work with a hybrid data transfer mode that will attempt to send data over the GSM network first, before switching to satellite communication.

RELIABLE

While satellite communication ensures a stable real-time data connection, the use of GPS positioning combined with automated status notifications emails make the system reliable. The GPS position reported by the buoy is continuously compared to the user-specified deployment location. If the distance between the actual and intended position of the buoy exceeds a pre-defined threshold (the watch circle), an email notification is sent to the user. Similar notifications are sent in case of a data gap, low battery level or exceedance of a user-specified wave height threshold.

EASY TO DEPLOY

Deployment of the **OBS**-*BUOY7*^{W} at sea is a simple operation. A mooring can be constructed using low-cost, easy-to-source materials in accordance with Obscape's mooring guideline. In low-current environments, the buoy can be anchored with a relatively light-weight ship anchor (ship crane not needed).

TECHNICAL SPECIFICATIONS

DATA SPECIFICATIONS

WAVE SPECTRUM	Fully directional (Maximum Entropy Method)
BULK WAVE PARAMETERS	H_{m0}, H_{max}, T_p, T_{m01}, T_{m02}, T_{m-10}, T_{max}, Dir_p, Dir_m, σ_p, σ_m
DIAGNOSTIC PARAMETERS	Latitude, Longitude, Battery voltage, Solar panel voltage, Internal temperature, Signal strength
SAMPLE FREQUENCY	6.25 Hz
FILTERED FREQUENCY RANGE	0.05 Hz – 1.00 Hz (20 sec – 1 sec)
BURST DURATION	30 minutes
STORAGE	Data Portal & on-board micro SD card

PHYSICAL CHARACTERISTICS

BUOY DIAMETER	500 mm
BUOY HEIGHT	350 mm
MOORING EYE INNER DIAMETER	15 mm
WEIGHT	15 kg
SAFETY SYSTEMS	Navigation light, GPS watch circle

ELECTRICAL CHARACTERISTICS

SOLAR PANEL CAPACITY	7 W
BATTERY	18650 lithium battery
NOMINAL VOLTAGE	3.7 V

WEB-PORTAL SPECIFICATIONS

ONLINE GRAPHS	Bulk wave parameters, interior temperature, humidity and atmospheric pressure, diagnostic parameters
DOWNLOADS	Bulk wave parameters, diagnostic parameters, 1D wave spectra, directional wave spectra (text files, png or pdf report)
FORWARDERS	JSON API or HTTP post
STATUS NOTIFICATION EMAILS	Online/offline, GPS watch circle, battery level, wave height threshold

TELEMETRY SPECIFICATIONS

COMMUNICATION MODES	GSM (4G with 2G fallback), Satellite (Iridium), Hybrid (GSM with Satellite fallback)
REAL-TIME DATA INTERVAL	30 minutes – 24 hours (user selectable)
REAL-TIME DATA	Full wave spectrum, interior temperature, humidity and atmospheric pressure, diagnostic battery and solar voltage, GSM signal strength.
GSM DATA LOAD	8 kB per message (bulk parameters only) or 14 kB per message (bulk parameters & spectra)
SATELLITE DATA LOAD	1 credit per message (bulk parameters only) or 6 credits per message (bulk parameters & compressed spectra)

FACTORS ADVERSELY AFFECTING OPERATION

BREAKING WAVES	Reduced accuracy in impact conditions
STRONG CURRENTS > 1 M/S	Any small-sized buoy will suffer from mooring line tension in strong ambient currents. The disturbance expresses itself as artificial energy in the low-frequency band and grows progressively stronger as the current gets stronger and mooring line tension increases.
WATER DEPTH < 4 M	Reduced accuracy, risk of excessive mooring wear

PURCHASE SPECIFICATIONS

OBS-*BUOY7*^{W}	Purchase includes free: SD card, web-portal license, 3 months free line rental and 5,000 satellite communication credits
GSM COMMUNICATION	Optional GSM Global SIM card with 100 EUR of data credit available for purchase. Alternatively Micro SIM card and sufficient data credit to be arranged by user. **OBS**-*BUOY7*^{W} can also be run in offline mode (data saved to SD card).
SATELLITE COMMUNICATION	€0,05 per credit, line rental €16 per month (invoiced to user every 3 months)
MOORING	Mooring system designed for the Obscape Buoy; consisting of s/schain, Dyneema line, s/s in-line weights and Floats. Suitable for depths up to 50m. Baseline lengths: 10m, 20m, 30m,40,50m.

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