BOYAS DE MONITOREO AMBIENTAL COSTERO

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BOYAS DE MONITOREO AMBIENTAL COSTERO

Es un sistema de monitoreo integral y de bajo costo destinado al ambiente continental y marino en Argentina.

TODAS las partes tanto electrónicas, como mecánicas de la boya de monitoreo ambiental fueron desarrolladas y construidas por un equipo de investigadores del Instituto Argentino de Oceanografía (IADO-CONICET, Bahía Blanca, Argentina), con mas de 10 años experiencia.

Es un sistema modular de bajo costo que permite el acceso por conexión remota.

Además del bajo costo, la independencia y estandarización del diseño conlleva a la flexibilidad del funcionamiento y la configuración del sistema (por ejemplo, frecuencia de muestreo, selección de parámetros, etc.) de acuerdo a las necesidades.

- El sistema se adapta al usuario y no el usuario al sistema. -
- Desarrollado por investigadores para investigadores. -

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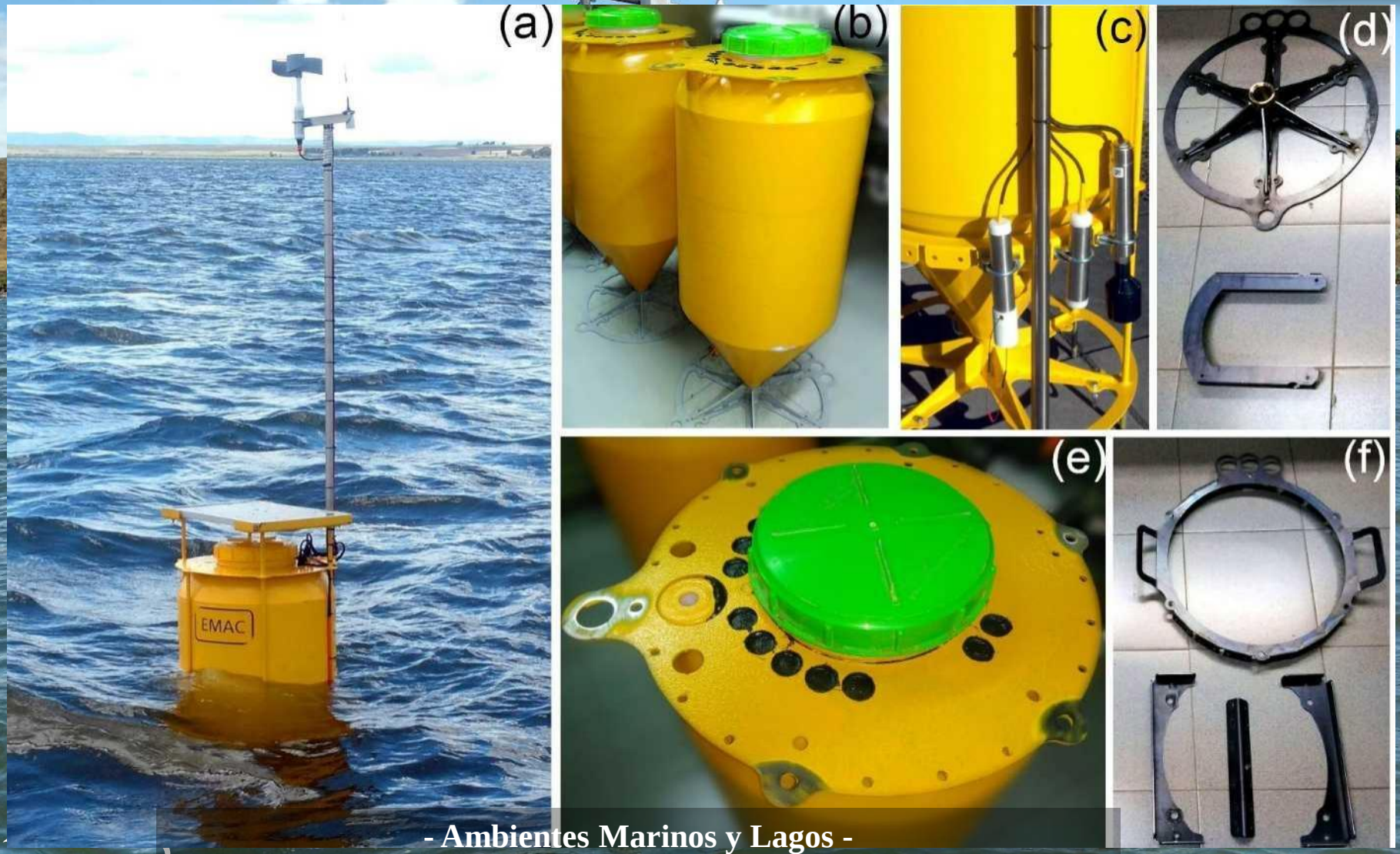

- Ambientes Marinos y Lagos -

- Optimizada para Medicion de Olas y Capacidad de Carga -

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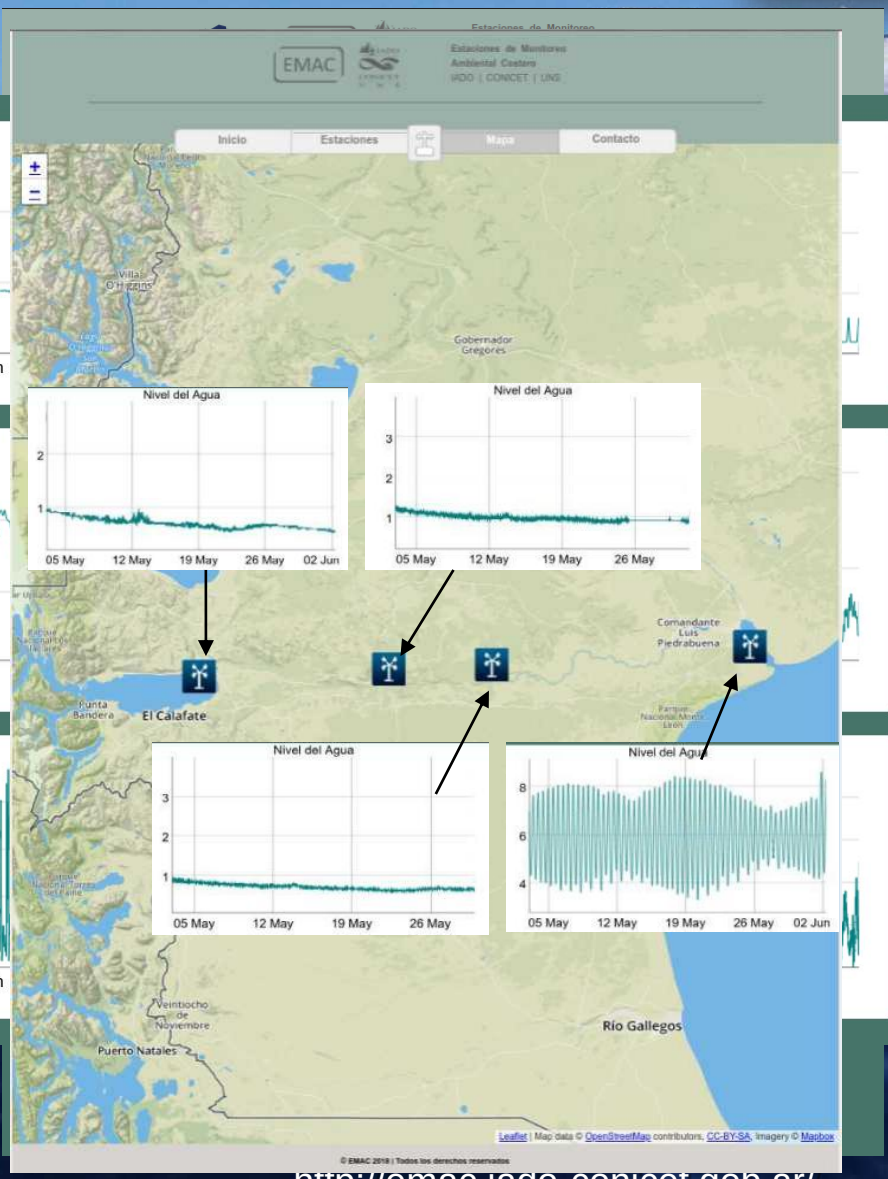
BOYAS DE MONITOREO AMBIENTAL COSTEROS EN EL PUERTO DE BAHÍA BLANCA

Sistema de detección y alerta temprana de presencia de hidrocarburo en el agua

BOYAS DE MONITOREO AMBIENTAL COSTERO

ACCESO MOVIL Y WEB DE LOS DATOS DEL CGPBB



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CONTROL LOCAL Y REMOTO DE LA RED EMAC

DESARROLLADO Y CONSTRUIDO POR INVESTIGADORES

ADQUISIDOR DE DATOS (DATALOGGER)

- El sistema se adapta al usuario y no el usuario al sistema. -

- Sumamente simple de operar local o remoto -

- Desarrollado por investigadores para investigadores. -

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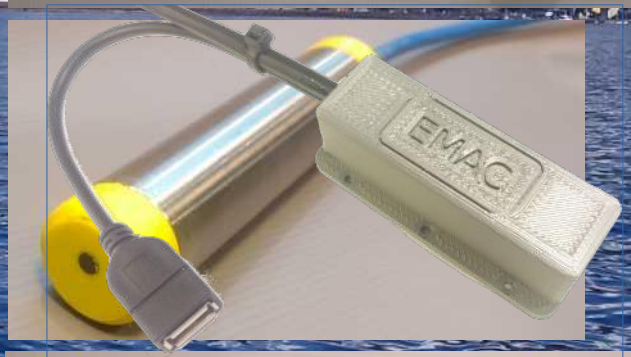
RED DE BOYAS DE BAJO COSTO PARA EL MONITOREO MAR-ATMÓSFERA

SENSORES DESARROLLADOS

- CONDUCTIVIDAD + TEMPERATURA
- OPTICAL BACKSCATTER SENSOR
- NIVEL DEL AGUA (PRESIÓN & ACÚSTICO)
- CORRENTOMETROS (HÉLICE)
- SENSOR DE OLAS (ACELERACIÓN & PRESION)
- DIR Y VELOCIDAD DEL VIENTO (COMPASS CORR,)
- RADIACIÓN SOLAR (PIRANOMETRO)
- TEMPERATURA (AIRE + AGUA + SUELO > CADENAS)
- PLUVIÓMETROS (ACERO INOXIDABLE)
- PROFUNDIDAD (ACÚSTICO – PARA BOYAS)
- PERFILADOR ACÚSTICO DE LA COLUMNA DE AGUA – 115 KHZ (test fase)



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NUEVO DISEÑO PARA EL PAMPA AZUL

DISEÑO ULTRA COMPACTO

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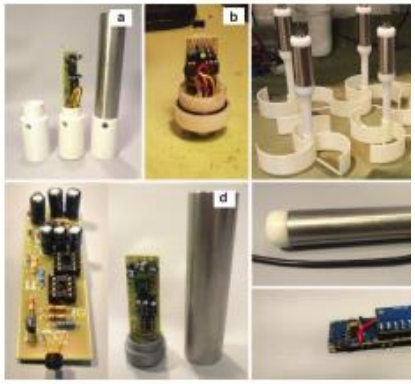

Fig. 5: General view of the conductivity sensor (a), wind speed sensor (b, c), suspended
and wave sensor (f).

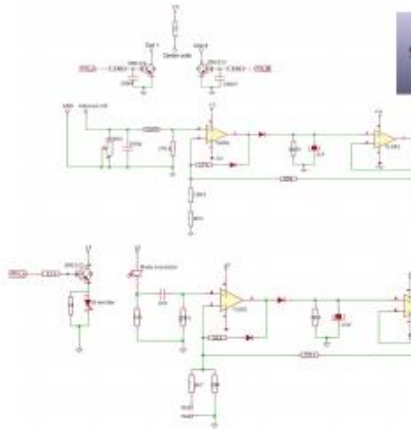

Fig. 6: Schematic circuit of the conductivity sensor (a) and suspended solids sensor (b).

Table 3: Comparative characteristics of buoy

Characteristics
Max. draft
Material
Dimension
Weight (fully load)
Reserve buoyancy
Max. power
Battery bank
Mooring attachment
Max. number of data loggers
Max. number of sensors
Designed for
Beacon

Fig. 7: Different views of the SW version.

antenna and a light-emitting beacon
approximately of 2 m above the water
supported in a stainless steel tube of 1
can be adjustable from 0.25 to 1 m. Th
(if needed; Fig. 7a, c, d); the rear box c
addition, the design can also support
temperature at seven depth levels was

The remaining version (CMW) was
payload capability (Fig. 8a). At the sa
period by using an acceleration sensor
structure (Fig. 8a–c). All elements are

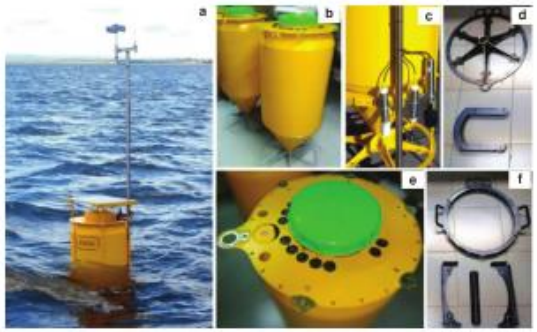

Fig. 8: Different views of the CMW version.

the buoy and keep it upright, the inside of the body is filled with concrete (50 kg) and polyurethane foam. Usually, the CMW is anchored using only one 150 kg concrete block attached to its central mooring point.

The upper part of CMW version is the same as in the SW version. The water sensors are placed all around the buoy over a specially designed structure (Fig. 8c). The depth of the sensors is fixed at 0.5 m. The data loggers, the compass (if needed), the wave sensor and the batteries are located inside the buoy. This version can also support a vertical chain of sensors for profiling.

The proposed buoy version for marine environments was firstly tested in the Paso Piedras reservoir (Buenos Aires Province) since October 2017 (Fig. 1). The design, which was funded by the Ministry of Education of Argentina under the project called "Universidad Agregando Valor", was deployed in the coastal zone of Monte Hermoso (Buenos Aires Province) (Fig. 1). The reservoir (33 500 m^3) has a maximum depth of approximately 30 m, with waves generated by local winds ranging from 0.30 to 2 m of height and a mean period of 2 s. It should be mentioned that the wave period in the reservoir implies a major structural requirement than in the coastal zone, which has typical periods of 5–8 s.

Results and discussion

Operability of the MBN

At present, the total sum of the operating time of the MBN equals 20 years. However, the MBN exhibits high-performance variability (Table 4). The data indicate that the expected useful life of the buoy should exceed 5 years useful, as can be seen in the case of the buoy installed in La Salada Lake, which accumulates a useful life of more than 5 years and it continues to work effectively.

The goal of any measurement system is to provide reliable data without costly frequent maintenance. Table 5 summarizes the performance of the sampled parameters after QA/QC procedures for all buoys network. Usually, water sensors require more maintenance than meteorological ones, as is expected. Among the former, optical sensors (i.e. suspended solids, chlorophyll-a) showed the most highest levels of maintenance requirement; here, the decrease in the water level of these shallow lakes is usually accompanied by an

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Gracias!

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