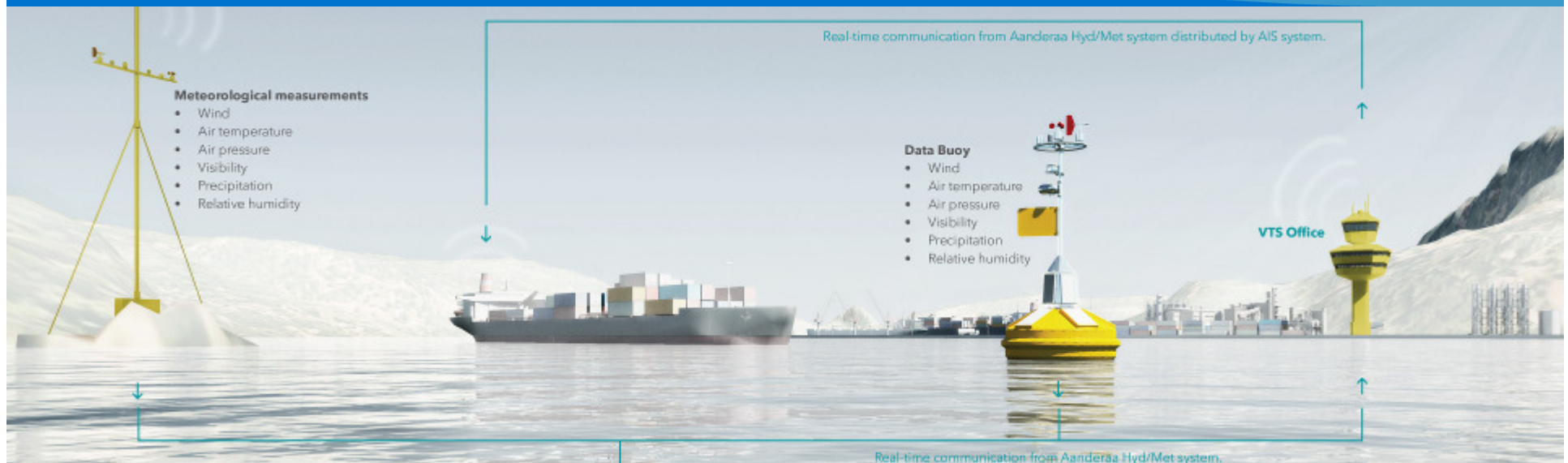


# Xylem Worldwide Virtual Show

## Coastal Data Buoy for Real-Time Observations

November 29<sup>th</sup>, 2012



# Key messages from this presentation

- The introduction of the SmartGuard DCP opens new possibilities for a multidisciplinary approach to marine environment monitoring
- The use of Aanderaa real-time communication protocols and web-based data display program GeoView allow for immediate access to the data from any place in the world with an Internet connection
- The customer has been provided with a cost-effective but comprehensive solution to its needs for environmental information from an isolated and otherwise inaccessible location

# Coastal Data Buoy for Real-Time Observations

## Background

The Mexican National Commission for Use and Protection of Biodiversity (CONABIO), needed a real-time system capable of measuring meteorological, oceanographic and water quality parameters.

Depth in the area: 20m

Distance from shore: 20NM

Due to the distance to shore, radio telemetry was not an option. AADI implemented an interface to a GOES satellite modem on the SmartGuard data collection platform.



# Coastal Data Buoy for Real-Time Observations

## Study area



Oceanographic interest:

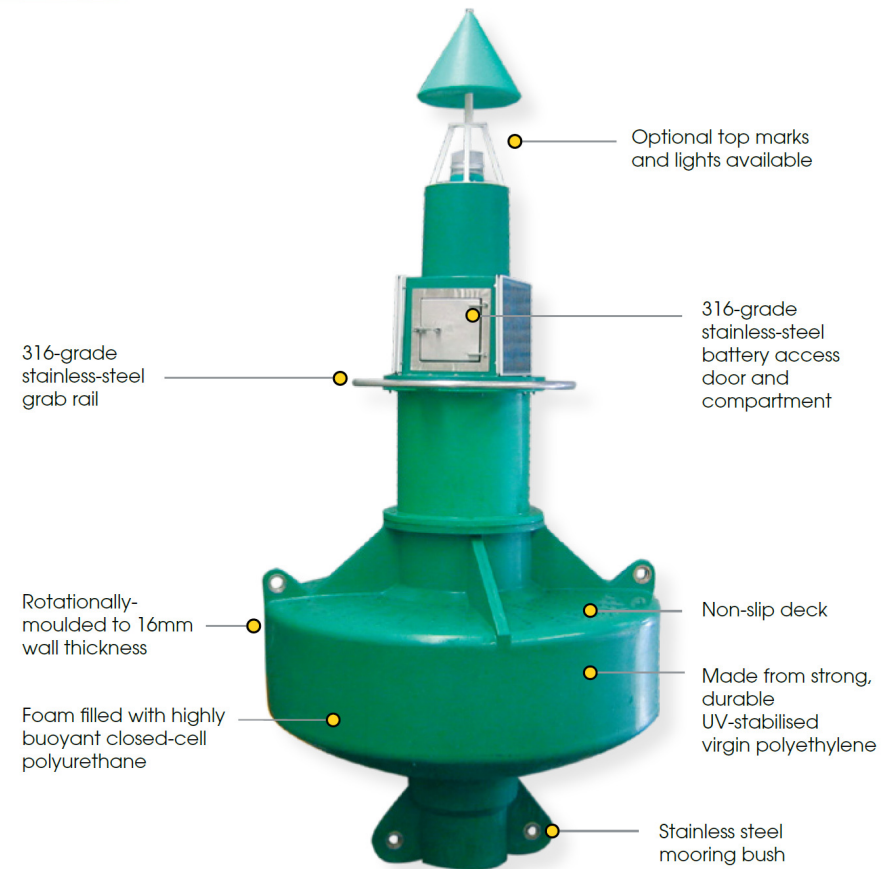
- Frontogenetical and upwelling processes
- Algal blooms
- Proximity to protected ecosystems

# Coastal Data Buoy for Real-Time Observations

For a supporting platform, a cost effective navigation buoy was selected.

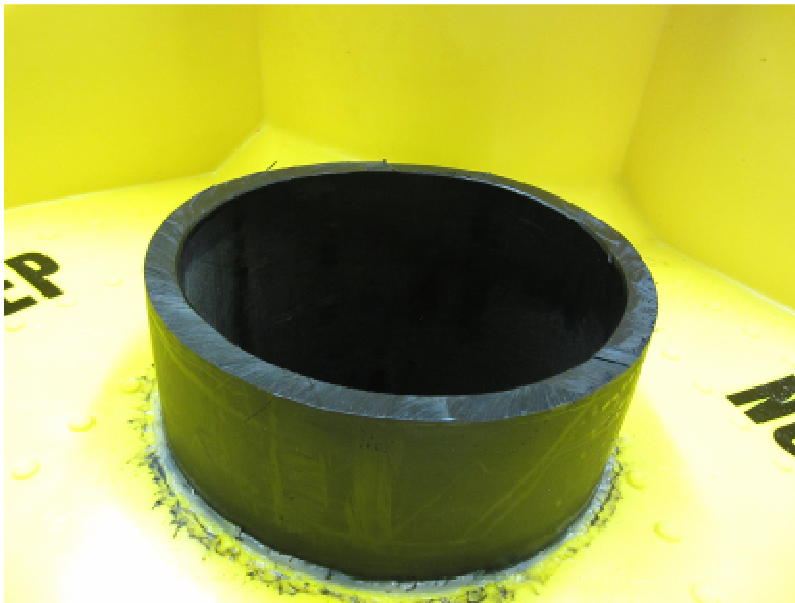
It is a polyethylene rotationally molded buoy with a 1,75m diameter. The lower section is filled with polyurethane foam and 150 kg concrete ballast. The two upper sections are usable for equipment. A 120W solar power pack accompanies the buoy.

The reserve buoyancy of the buoy is 600kg and the buoy has a life expectancy of 20 years.



# Coastal Data Buoy for Real-Time Observations

The buoy manufacturer custom-built a hatch in the mid section of the buoy and an internally welded moon pool for underwater sensors. The moon pool was modified in-house to accommodate our specially made instrument frame



# Coastal Data Buoy for Real-Time observations



Wind direction



Wind speed



Solar radiation



Net radiation



Atmospheric pressure



Temperature and relative humidity



GPS antenna



Satellite antenna



Buoy orientation



Charging regulator



Satellite transmitter



Solar panels



SmartGuard DCP



2 12V DC batteries



Chlorophyll  
CDOM  
blue-green algae



Conductivity



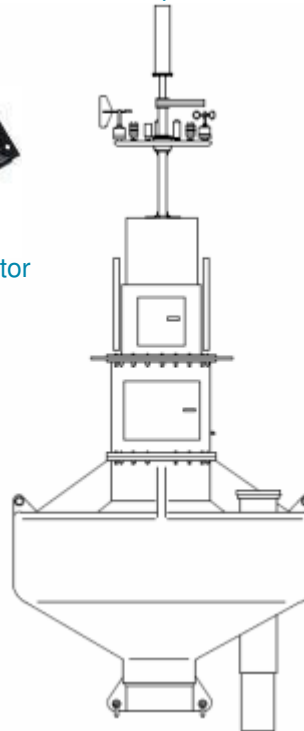
Dissolved oxygen and temperature



Turbidity



Current speed and direction



# Coastal Data Buoy for Real-Time observations

## The Data Collection Platform

- Full integration with Aanderaa smart and legacy sensors and third party devices:
  - Over 20 AiCaP sensors
  - Up to 10 SR10 sensors
  - Up to 6 analog sensors
  - Up to 5 serial sensors
  - Up to 4 digital sensors
- Individual power control of sensors
- USB, Ethernet and serial communications
- Easy setup in the field or remotely
- Large data storage capacity (2GB)
- Low power consumption
- Telemetry options include Ethernet, radio, GPRS, satellite



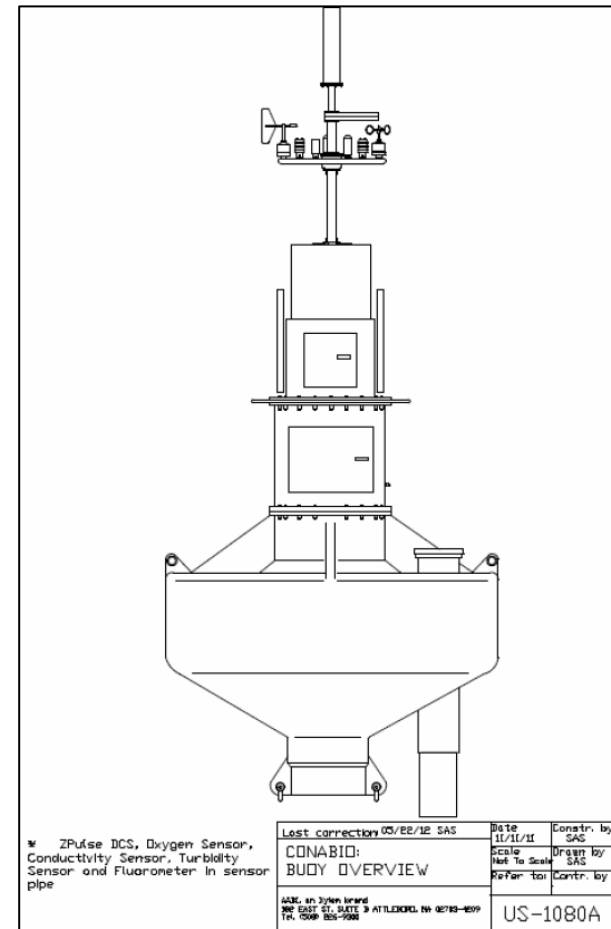
# Coastal Data Buoy for Real-Time Observations



Assembled mid and top sections



Electronics in mid and top sections



General view of the Data Buoy

# Coastal Data Buoy for Real-Time Observations

## Construction details

Internal mast for structure reinforcement



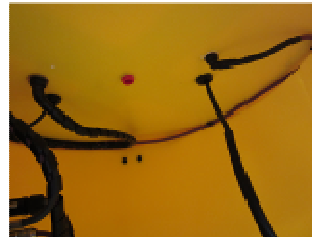
Custom-built instrument well



# Coastal Data Buoy for Real-Time Observations

## Construction details

Water protected connections  
and enclosures



DCP and batteries in watertight  
section of the buoy



# Coastal Data Buoy for Real-Time Observations

## Construction details



High quality water-resistant decals as per customer supplied design

# Coastal Data Buoy for Real-Time observations



Buoy packed and ready for shipment.  
The white pipe contains the submersible  
instruments to be inserted in moon pool.



# Coastal Data Buoy for Real-Time Observations

## Deployment



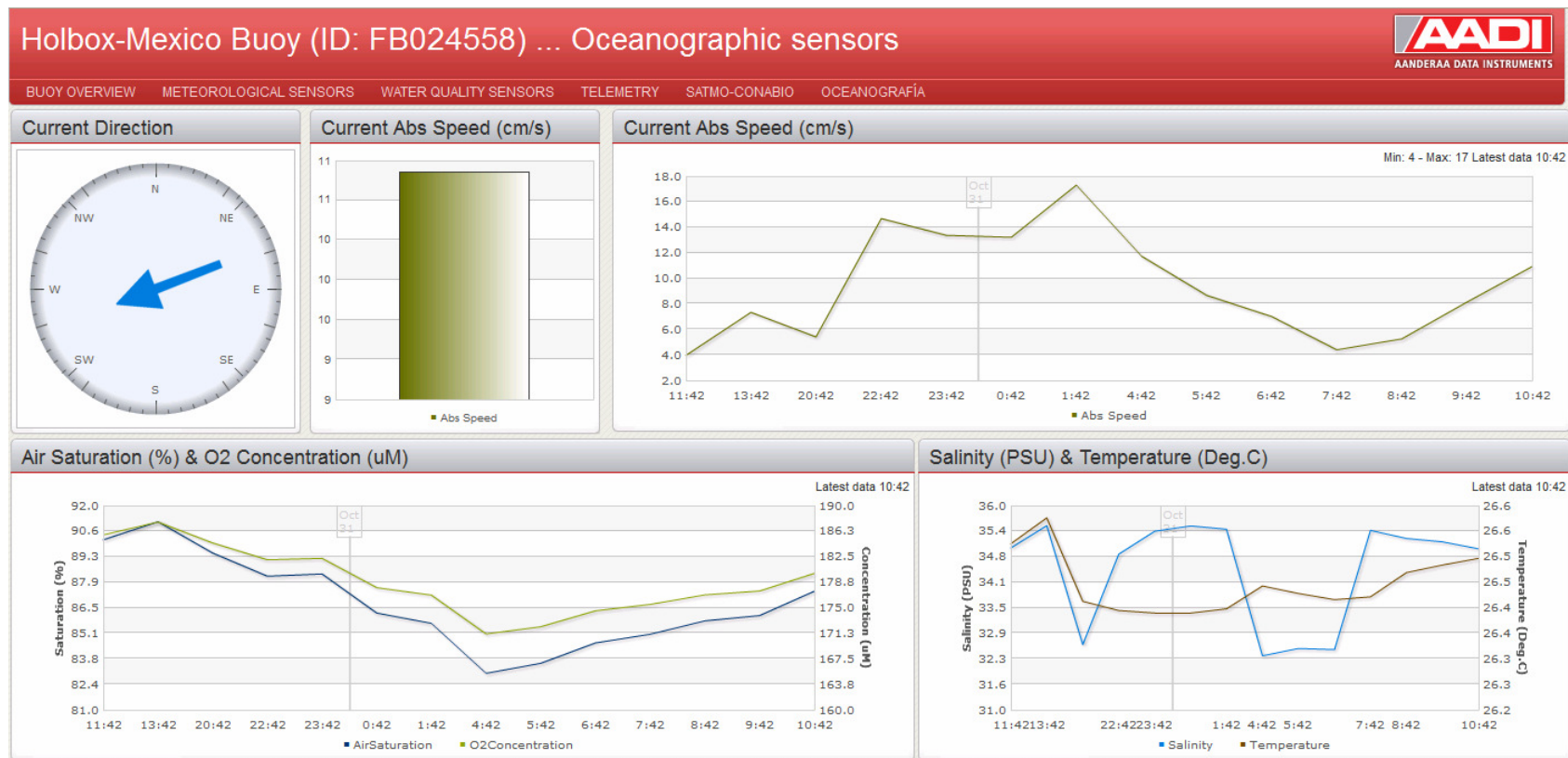
The size of the buoy allowed for easy deployment from small vessel (36x8m)



Final adjustments and underwater views

# Coastal Data Buoy for Real-Time Observations

## Data display



The data is transmitted hourly via GOES and received at the servers of the Mexican Navy. The data can be seen at:

[http://201.116.59.83:8084/AADI\\_DisplayProgram/setups/BuoyMet/default.aspx](http://201.116.59.83:8084/AADI_DisplayProgram/setups/BuoyMet/default.aspx)

**Thank you**

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