

Brazilian Port chooses MOTUS Wave Buoy

THE MOTUS WAVE BUOYS IMPROVE NAVIGATION TO PARANAGUA PORT

SISMO PARANAGUA

Paranaguá Port - Background

Located in the Southern region of Brazil, Paranaguá port is one of the three most important ports in the country.

The region is affected by strong winds, waves, frequent fog, intense tide currents, and river discharge. There are sand banks around the estuary's inlet due to the high sediment input in the area, narrowing the access channel and causing refraction of incident waves. These factors provoke changes in the local hydrodynamic conditions and create complex and challenging navigation.

The port's navigation channel extends to a long-unprotected area off the coast, which is affected by the incidences of waves from all directions.

SISMO® is the information system used to improve navigation safety with real-time monitoring of meteorological and oceanographic parameters. It provides a better understanding of hydrodynamical variables that can affect ships when entering or leaving the port's complex.

"The Aanderaa MOTUS Wave Buoy is particularly important for the Paranaguá port with regards to the wave current fluctuations."

Client: Paranaguá Pilots

The Pilots' association is strong in Brazil and around the world, providing safe navigation and maneuvers inside port areas. With real-time monitoring, pilots are more confident in making important decisions during critical situations.

System Configuration

SISMO® is the Real Time Met-Ocean Information System developed by HidroMares, the representative of Aanderaa in Brazil. The [MOTUS Wave Buoy](#) is a crucial component of the Paranaguá project. The solution is made of a Tideland SB-138P Buoy equipped with Aanderaa sensors to provide real-time measurement of wave height, period and direction, current speed and direction as well as weather parameters, such as visibility and wind speed.

The real-time directional wave spectrum data obtained with the Aanderaa MOTUS Wave Buoy is particularly important for the Paranaguá port because of the wave current fluctuations.

HidroMares provides a turnkey solution with system integration, sensors maintenance, data transmission and quality analysis, together with Aanderaa's experience and support.



Figure 1. Location of Paranaguá Port, Brazil



Figure 2. MOTUS Wave Buoy at Paranaguá Port

Key Factors in the Paranaguá project

The actors' reputation (HidroMares in Brazil and Aanderaa worldwide)
 Previous successful projects with other Brazilian Pilot Associations
 Real-time monitoring system to provide safe navigation
 Advantages of a buoy solution – all sensors in the same station,
 surface based station with little need of diving
 Quality proven sensors that are suitable for a buoy solution ([MOTUS](#)
 and [DCPS](#)).



Figure 3. Paranaguá nautical chart

Data

Data is transmitted to HidroMares' cloud server and quality is evaluated in real time to be displayed in the network of the Paranaguá Pilots Association through SISMO's web platform integrated with [Aanderaa GeoView](#), or through SISMO®App. This allows the pilots to access important data directly from their smartphones during maneuver.

On the right you can see coastal data on waves, currents and visibility to help navigation. Paranaguá Port Authority expects that SISMO's data will help with port efficiency, better maneuvers and less downtime due to bad weather.

“The Real-time data system allows for better operational decisions and an increase in productivity.”

Result

The Real-time data system allows for operational decisions to be planned according to sea and weather conditions, in order to ensure safe navigation, leading to shorter maneuver time, better efficiency and therefore, an increase in productivity. In the near future, the plan is to include two other stations (with currents and water level monitoring) inside the estuary and use the acquired data in a software that calculates under-keel clearance. Due to the success of this project in Paranaguá, two other ports have also acquired this buoy solution with HidroMares' real-time monitoring system, SISMO.

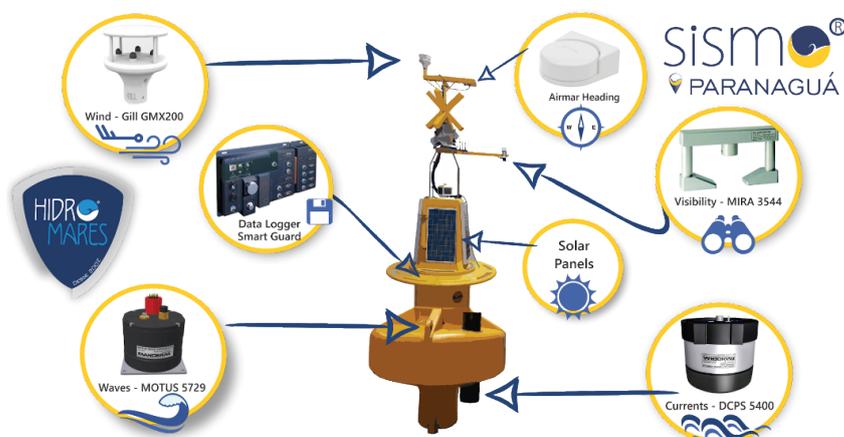


Figure 4. MOTUS Wave Buoy solution

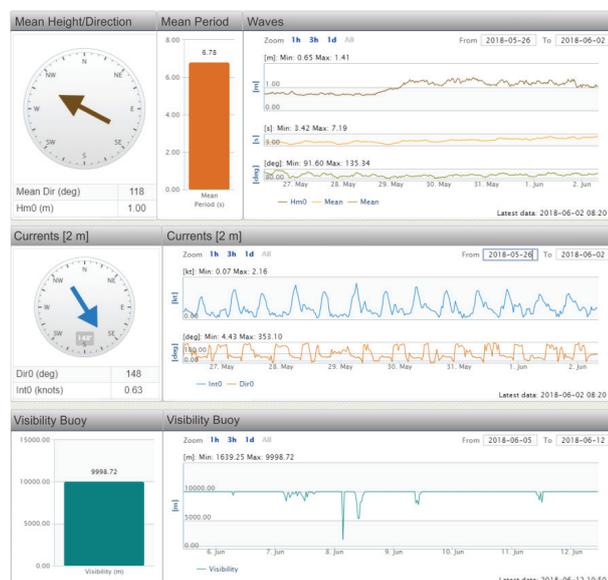


Figure 5. Real-time data from Aanderaa GeoView

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