

EXPANDING YOUR HORIZONS

WITH REAL-TIME WIND DATA

Maintaining the safety and efficiency of maritime operations year-round has never been more imperative. Whilst the oceans and coastal seas are being utilised in ever more ways, maritime operators now have to contend with increasingly extreme and unpredictable environmental conditions.

As vessel sizes and the quantity of marine traffic continues to increase, accurate real-time metocean (meteorological and oceanographic) data is vital to ensure efficient cargo loading and unloading, the safe berthing of commercial ships and subsequently maintaining project deadlines and the global transportation of goods throughout the World's ports, preventing backlogs and shortages.

The Value of Wind Data

When it comes to wind data, it's common practice for ports to deploy one or multiple meteorological sensors around the port area to observe and monitor real-time data. We can also view and disseminate historic data, but how about future data? What's happening elsewhere right now, and how can we use that data to predict what might happen in the near future and how will this impact operations?

Weather forecast data services are often used to gain a perspective of conditions in the coming hours/days, however these forecasts can often change, as do the weather systems they are predicting. When operating under fine timescales, having a good understanding of the speed and intensity of local weather fronts and how these may impact on operations is key.

Alongside this forecast data, if ports could see what real-time wind speed, direction and gusts were at other locations further up the coast, out at sea etc., would that help in guiding them on what might be coming and how might that help?

Pilots and other port users can use this data, alongside forecasts and real-time/historic data to build up an accurate picture of the wind climate and give foresight into conditions, expanding their horizons with real-time wind data. Imagine if you could get alerts from other wind sensors in your chosen locality to warn you of incoming strong gusts, or would observing a declining trend in a wind strength in a nearby area during a storm event give you confidence in improving conditions? The technology is already there so it comes down to encouraging data sharing, changing mindsets and expanding networks.

OCEANWISE PROVIDES APPLICATIONS, SERVICES AND TOOLS THAT ENABLE SAFER AND SMARTER MANAGEMENT OF MARINE OPERATIONS



How Might it Help You?

Benefits would arise through data assimilation of a wider network of observed wind data, alongside forecasts and knowledge of how the wind interacts and behaves locally. This gives greater spatial awareness of conditions surrounding your port and how these might impact marine and landside operations at present and in the next few hours. Having a wider appreciation of the wind climate makes for improved, educated decision-making which brings safer, more efficient operations.

Being able to compare a wide network of observed wind data with forecast data provides a platform for critical evaluation and feedback into the models for improved forecasting under different conditions and for different forecast horizons.

With improved confidence in the forecasts and increased data availability, an 'Early Warning System' can be produced to flag concerning wind conditions based on operational and risk tolerances. The system could provide a 'countdown' of when significant gusts/prolonged high winds will arrive at your location, enabling you to plan operations accordingly. For example, deploy additional tugs for vessels or cease crane operations. Additionally, by expanding your horizon of wind data, this would also give a better idea of when a port can recommence operations following a storm event through enhanced wind tracking.

How Can We Make it Possible?

First step is to identify where additional wind data is needed or could add value. This requires the expertise of Pilots and Marine Operatives who have a wealth of local knowledge of the prevailing and dangerous environmental conditions, not just wind in isolation but also how different directions interact with local currents and tidal effects.

Surrounding most ports is a network of predominantly land based weather stations of differing accuracy and reliability. Where sensors exist in a desired location and are considered reliable enough for port operations, relationships for data sharing opportunities should be explored. If there's a gap in data

coverage then the sensor network and infrastructure may need to be widened. In either circumstances OceanWise can help you, we can facilitate and promote data sharing – essentially collation of all the data in real-time, in one place which is easily viewed, shared and disseminated.

Gaps in data coverage are likely to be in remote locations either on land or offshore and these are often key to building the wider wind picture. Sensor deployment in these scenarios can be achieved through low power, smart telemetry systems (like the OceanWise ip.buffer) which provide connectivity to locations without any power or network infrastructure.

Where is it Happening Already?

Data sharing is not a new concept and many are already making their data available to others, which strengthens the ethos of 'collect once, use many times'.

The Channel Coastal Observatory for example have already deployed and successfully maintain a network of Wave Buoys along the South Coast which are in the vicinity of the Port of Southampton's Pilot Boarding Areas. Associated British Ports (ABP) Southampton use this publicly available data alongside their own sensor network to enhance their situational awareness of current wave conditions.

It's not just commercial activities which benefit from networks of sensors and data sharing. Real-time and historic data from sensors deployed around The Solent have been made available through SolentMet for use by commercial entities, as well as being used extensively by the vast array of leisure users. All stakeholders benefit from the same reliable, accurate environmental data but in many different ways.

By Becky Conway / Oceanwise

CONCLUSION

If you are interested in expanding your horizon or want to discuss how OceanWise can help improve the data you have available, please do get in touch.

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