



DHI SOLUTION

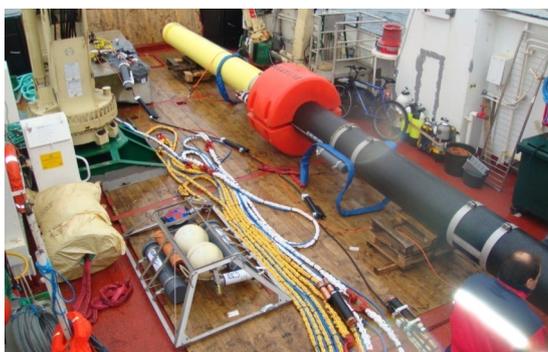
METOCEAN DATA

Analysis • Monitoring • Hindcast • Nowcast • Forecast

High quality and reliable Metocean data are fundamental to the success of any marine project. Site-specific measurements, satellite data and output from numerical models all serve as typical sources for such Metocean data. Having acquired the basic data, a thorough analysis is needed to generate the required information. We cover all these aspects, making us your ideal partner for Metocean data and related services.

MEASUREMENTS AND REMOTE SENSING

Measurement and monitoring of Metocean data at a given site are key to obtaining high quality and reliable site-specific data. We develop our own sensors and instruments where necessary, to supplement commercially available high-standard instruments.



Large ocean buoy developed by us for measurements of currents & water quality among other parameters. Device used for the Nord Stream pipe-line project connecting Russia to Germany, Baltic Sea

In areas with no existing infrastructure, it can be advantageous to use remotely sensed data from satellites. As years go by, satellite-derived data like continuous measurement programs will improve in coverage and reliability. We have direct access to state-of-the-art satellite data and interpretation via our association with GRAS (<http://www.dhi-gras.com/>).

SUMMARY

CLIENT

- Oil & gas industry
- Offshore renewable industry
- Port and terminal operators
- Consultants and contractors
- Emergency response companies

CHALLENGE

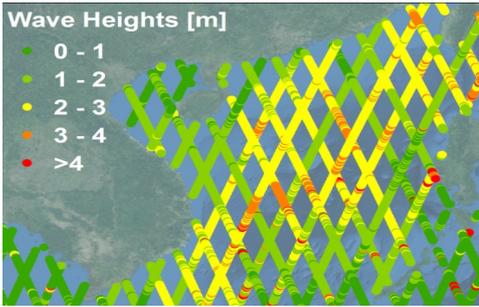
- Inadequate or inaccurate design and operational data available
- Cost-ineffective solution and uncertain safety levels

SOLUTION

- Monitoring at the site
- Supplementing with remotely sensed data
- Numerical modelling to generate short and long-term statistics
- Forecasting for actual operations
- Consistent analyses combining measurements and numerical model data

VALUE

- High quality site-specific data and accurate Metocean forecast
- Reduced risk of delayed or failed operations
- Enhanced emergency response management
- Major cost savings, reduced downtime risk and increased safety
- Cost-efficient design of marine structures enabled by customised Metocean database solutions
- Risk levels compliant with target values



Significant wave heights derived from satellite altimeters. Data from different satellite tracks are shown here.

An important application of measurement data is calibration and validation of numerical models. On-line monitored data are also assimilated into the numerical models for enhanced accuracy and applied for forecasting Metocean conditions.

NUMERICAL MODELLING

Numerical models are used to calculate meteorological and oceanic parameters-either in forecast mode or in hindcast mode using historical meteorological data. Numerical models in high spatial and temporal resolution are used partly to cover a much larger area and partly to cover a longer time span than measurements traditionally can cover. We started the development of numerical models nearly 40 years ago and our commercially available MIKE by DHI is globally recognised as state-of-the-art marine software.

When it comes to choosing between measurements and numerical model outputs as sources of Metocean data, it becomes imperative to choose both and use the different datasets optimally.

OPERATIONAL FORECAST SYSTEMS

Metocean forecast models can assist in planning delicate operations that are sensitive to the Metocean conditions. These operations include installation of structures (eg. wind, tidal or wave energy converters), offloading of oil/gas and vessel operations in ports and terminals.



We deliver forecasts of Metocean conditions as well as design and operational statistics for numerous renewable energy projects

FAST DATA DELIVERY

When the time available for dedicated site specific activities is too short, the access to existing datasets can facilitate the provision of Metocean data. We have developed datasets for the Arabian Gulf (in collaboration with Oceanweather Inc.), North Sea and South China Sea, among other regions. Data are available on commercial terms.

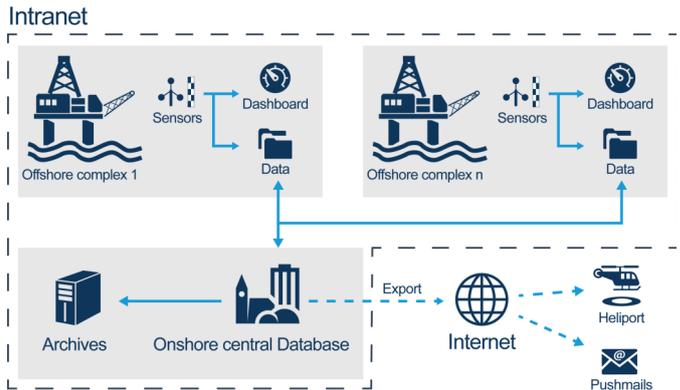
DATABASE

We have developed a database structure that not only handles terra-bytes of different types of data but also provides options for analyses and display of the data in user-defined formats. These include scatter diagrams, wind roses and extreme value statistics. The data can be easily exported for subsequent use in structural design tools.

INTEGRATED PROJECTS

For more than 35 years, we have provided services based on numerical modelling as well as on a measurement system. Today it boasts an on-line data processing and presentation system accessible both onshore and on platforms.

The work commissioned to us by Maersk Oil represents an excellent example of how we operate as a one-stop-shop for various tools dedicated to suit the client’s needs within the Metocean environment.



With our Automatic Metocean Observation System, the customer can conveniently export dedicated information for external usage

CHANGING CLIMATE – A REALITY OF THE FUTURE

We constantly endeavour to ensure that our customers are provided with the most recent and reliable data available on climate change effects for the marine world (<http://climatechange.dhigroup.com/>).

Contact: Kim P Jakobsen - kpj@dhigroup.com or Henrik Kofoed-Hansen - hkh@dhigroup.com
 For more information visit: www.dhigroup.com