



Metocean Services



Oceanography and meteorology (Metocean) is the study of atmospheric and physical ocean conditions, including ocean currents, waves, tides, wind and other atmospheric parameters.

Keeping one step ahead of the elements

A good understanding of metocean conditions reduces uncertainty in engineering specifications, provides help in operational planning, leads to reduced costs, and enhances safety and operational efficiency. The provision of high quality regional oceanographic and meteorological (metocean) data is the first step in the development of any offshore, coastal engineering or renewable energy project.

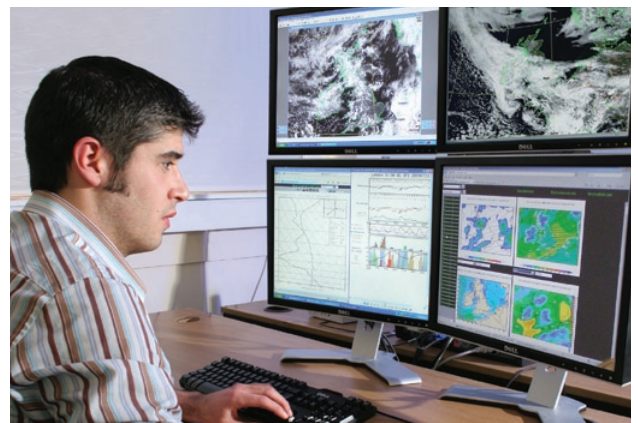
Global solutions from Fugro

Fugro is a global leader in the provision of commercial metocean services and systems, these are provided on a fully integrated world-wide basis to meet and support specific client needs. The broad spectrum of metocean services and systems we offer includes:

- Initial desktop and feasibility studies
- Measurement services covering a full range of metocean parameters
- Real-time ocean current profiling
- Real-time environmental monitoring systems
- Integrated real-time buoy monitoring systems
- Structural monitoring and riser management systems
- Weather forecasting
- Wave resource mapping
- Regional metocean expertise
- Data analysis, data management and data modelling
- Web based solutions



Informing and collaborating through project development phases



Ensuring customers are fully up-to-date with changing conditions



Providing round-the-clock production-critical metocean data



Metocean Services

ADVANCED TECHNOLOGY
SUPERIOR QUALITY
UNRIVALLED EXPERIENCE
'FIT FOR PURPOSE' SOLUTIONS

Metocean Measurement

Measured metocean data provides the basis for the verification of environmental conditions, the derivation of operational and extreme criteria, and the engineering characterisation of complex oceanographic and meteorological phenomena that can have a significant affect on marine structures and offshore operations.

Fugro provides metocean measurement services covering the entire range of metocean parameters, including: physical oceanographic measurements, such as currents, waves, water levels, and meteorological measurements such as wind, pressure, air temperature, etc.

To meet clients' requirements, we combine:

- State-of-the-art metocean equipment
- Experienced field personnel
- Proven methods of deployment and recovery
- Strong emphasis on safety and quality
- High data return statistics

Collected data adheres to strict quality control and technical review procedures, ensuring that data integrity, data presentation and report content are maintained to consistently high standards.

Fugro's metocean measurement activities draw on the world's largest commercial inventory of oceanographic equipment and are supported through Fugro's global office network.



Metocean Monitoring

Fugro designs, delivers and installs reliable and secure real-time metocean monitoring and information systems tailored to meet any offshore requirements.

Each system combines flexible displays and data management software with state-of-the-art sensors.

Systems include:

- SBM Monitoring - integrated environment and mooring load monitoring
- Floating Vessels Monitoring - waves, currents, winds, motions, stresses, DGPS
- Platform Monitoring - waves, currents, motions, stresses
- Environmental Motion Monitoring - helideck operations (CAP 437 compliant)
- CCTV - monitoring and surveillance systems

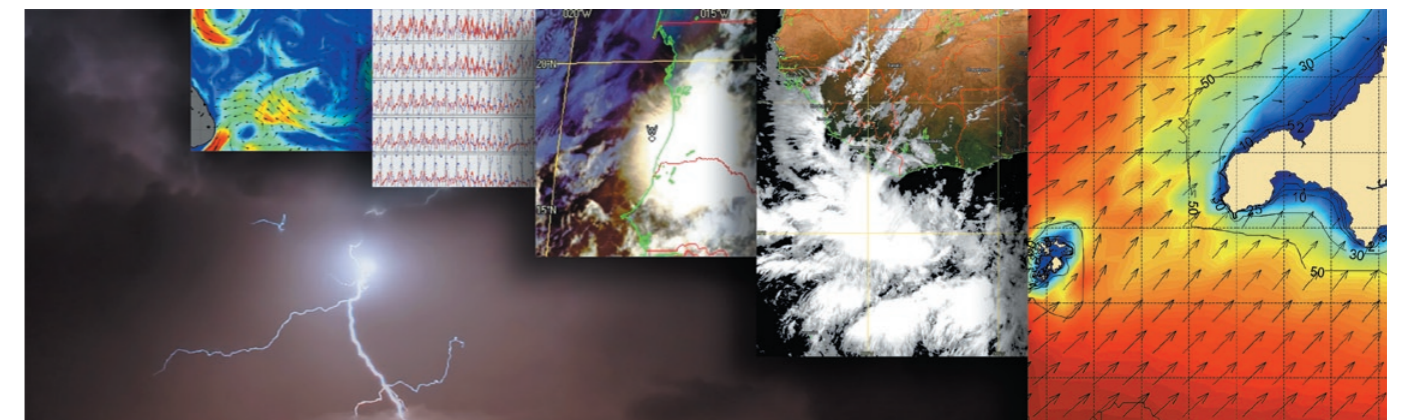
Weather Forecasting

Advanced and reliable weather forecast information allows efficient day-to-day planning and enables offshore project teams to make decisions on an informed basis.

Fugro provides experienced meteorologists and offshore forecasters who work closely with operational personnel to supply on-site weather forecasting services for any global location.

Weather forecasting services include:

- 3-day or 5-day site-specific or route specific weather forecasts - once or twice daily in a range of formats
- Regional wave model data for weather sensitive areas
- Hurricane forecasts for tropical latitude operations, to minimise the impact and loss of valuable assets
- Squall warning service utilising colour enhanced satellite imagery
- Hindcast studies of weather events for insurance purposes
- Provision of extensive climatology data from global meteorological observations for a range of business sectors from offshore to onshore construction, film and leisure industries



Metocean Consultancy

The understanding of metocean conditions, gained from analysis and interpretation, allows the derivation of realistic design and operating criteria.

Fugro provides a full range of metocean consultancy services to support a broad spectrum of marine industries:

- Desk studies for preliminary understanding of metocean conditions
- Detailed analyses to derive design conditions
- Operational statistics for safe and efficient marine activities
- Management of metocean data sets

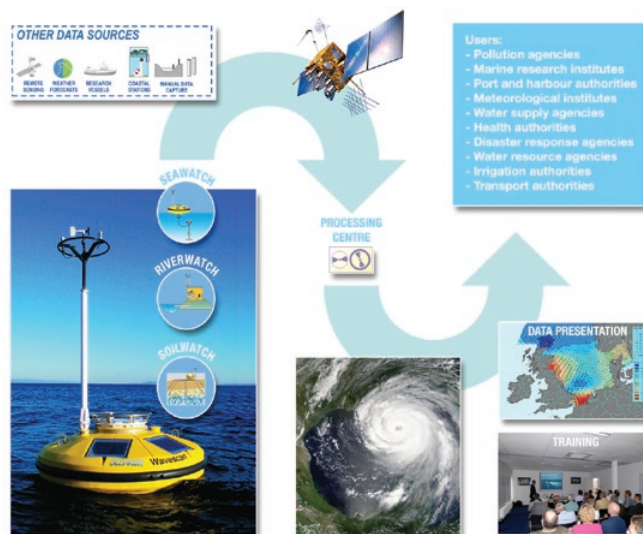
Fugro's key strength is the experience of its staff in defining appropriate solutions to the characterisation of metocean conditions for clients' activities. Their regional knowledge, with global reach and understanding of client requirements including design codes and legislative requirements ensures appropriate solutions are provided.

Metocean Services

SEAWATCH Monitoring

Fugro develops and manufactures innovative technical solutions for the collection of environmental data to suit its clients' requirements.

The SEAWATCH real-time ocean network system is an integrated, real-time marine monitoring, forecasting and information system for oceans, coastal areas, rivers and lakes, groundwater and soil. This multi-parameter system uses wave directional buoys, integrated with a variety of sensors, to collect a full range of oceanographic, meteorological, water quality parameters and tsunami modules for tsunami wave detection. SEAWATCH is a well-proven technology operating successfully in various global locations.



Structural Monitoring

Fugro's monitoring activities also include the measurement of the dynamic responses of fixed and floating structures, pipelines, risers, etc, compared with the input loadings from the environment.

Fugro's structural measurement services are performed for design verification, construction and operational phases of a structure's life. Specialist services include OLM (On Line Monitoring) of ageing jackets and the Optima® system for deep-water drilling riser operations planning and management. Other services include:

- Monitoring during float over, heavy lift, transportation and other construction activities
- Measurement of stress and fatigue in structures and pipelines
- Riser and pipeline load and Vortex Induced Vibrations (VIV) monitoring
- Monitoring of bridges and other civil engineering structures



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