



DHI MARKET AREA: COAST AND MARINE

## ESTUARINE AND SEDIMENT ENGINEERING

Effective solutions for complex environments

The world's coastline is being exploited and modified as never before. Land reclamation, construction of harbours and navigation channels as well as industrial developments requiring access to water are just a few examples. Such man-made changes to the dynamic coastal environment must be planned and designed carefully in order to avoid undesirable and costly side effects such as land loss due to erosion, flooding, degrading water quality and sedimentation.

To develop shoreline infrastructure projects successfully, it's necessary to predict the hydrodynamic regime, impact on water circulation, sediment transport pattern and the resulting morphological changes — early on in the project. Also, it's necessary to ensure the environmental sustainability of the development. Shoreline and estuary management requires reliable prediction of effects. This is possible only by using numerical models based on the latest scientific methods and knowledge of coastlines and estuaries.

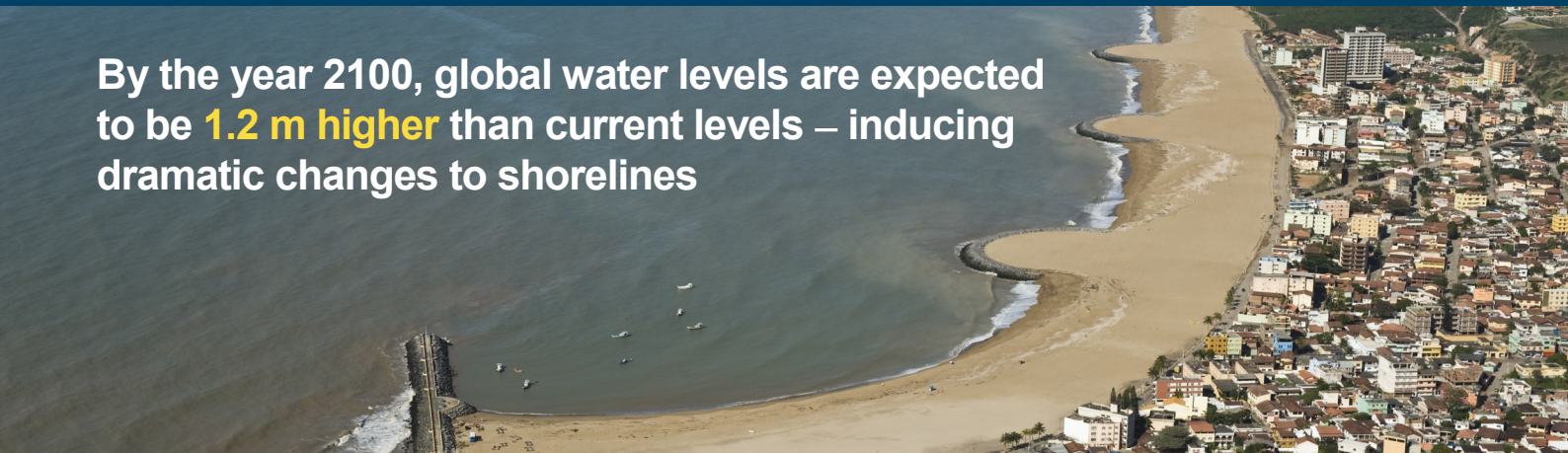
- THE CHALLENGES**
- Predicting morphological impacts caused by growing demand for coastal resources
  - Mitigating morphological impacts and reducing maintenance costs
  - Forecasting environmental impacts of dredging and land reclamation activities
  - Optimising intake and outfall systems to secure clean and cool water for power and desalination
  - Limiting the environmental impact of the industrial use of seawater

**OUR APPROACH** At DHI, we use all the knowledge and experience of our MIKE Powered by DHI family of numerical models. Our clients benefit from our in-depth knowledge of these numerical modelling tools and our comprehensive experience in integrating our clients' projects into the virtual world of numerical models. We always emphasise the importance of calibrating and verifying model results against real measurements. We also have access to worldwide data and are capable of sampling our own data when needed.

- OUR SOLUTIONS** We offer solutions in the following areas:
- Coastal and estuarine circulation
  - Sediment transport and morphology
  - Spreading and accumulation of sediment, oil or other components
  - Recirculation and spreading of effluents in the marine environment
  - Forecast, nowcast and hindcast of coastal and estuarine processes

**THE ULTIMATE GOAL** A SUSTAINABLE DEVELOPMENT OF THE COASTLINE

By the year 2100, global water levels are expected to be **1.2 m higher** than current levels – inducing dramatic changes to shorelines



## OUR TOOLS AND SERVICES

We provide the expertise and tools to effectively overcome complex estuarine and sediment challenges. Our tools and services include:

- survey and monitoring of:
  - sediment spill
  - sediment bed material
  - conductivity, temperature, depth, Optical Backscatter (OBS) profiles
  - Suspended Sediment Concentrations (SSCs)
  - current patterns, sediment transport and discharges with Acoustic Doppler Current Profiler (ADCP), Aqua Vision VISEA Data Acquisition and Plume Detection Toolbox
  - water quality
- physical characterisation of sediments (state-of-the-art laboratory)
- physical model testing (in-house facilities)
- current and tide forecasts
- advanced numerical modelling with our MIKE software suite, including:
  - MIKE 21 – the ultimate Swiss army knife for coastal modelling
  - MIKE 3 – 3D modelling of coast and sea
- capacity building and training by THE ACADEMY by DHI

Contact us: [info@dhigroup.com](mailto:info@dhigroup.com)  
For more information, visit: [www.dhigroup.com](http://www.dhigroup.com)