GM OPSIM

## Operational Simulation to inform decision making

GM OPSIM is a strategic operational planning tool for tailored project analysis. It provides the ability to model, simulate and test the stages, schedule, resources and limiting criteria of your operation. The results of the simulation identify the critical stages, availability and delay, resource pinch points and potential savings of time and effort.

GM OPSIM can be custom developed for a variety of different projects. Two examples of project types are outlined in this brochure.

Operational Planning

GM OPSIM is a discrete event simulation package designed to establish disruption, and delays and resource utilization in marine and offshore operations. The applications include spells analysis, weather windows, drilling, production and resource availability and uptime, transportation and storage.

GM OPSIM combines the resources and schedule distribution with criteria, priorities, resource capabilities and environmental limits, and tests them against time envelopes and time series metocean data.
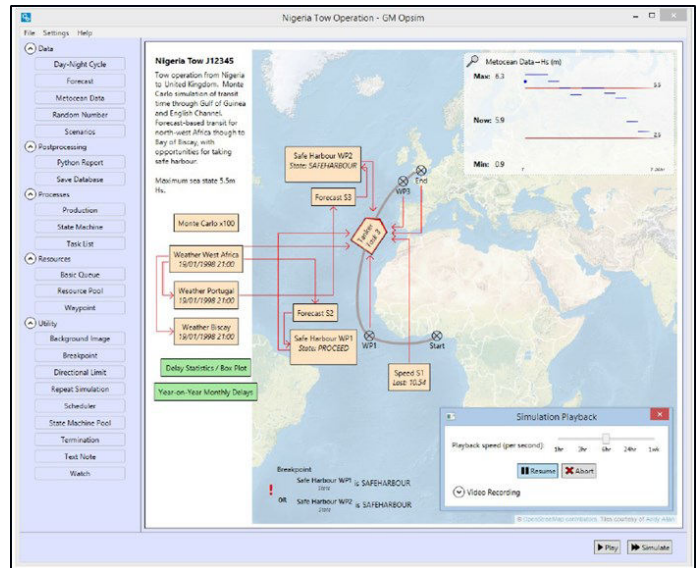
GM OPSIM screen capture
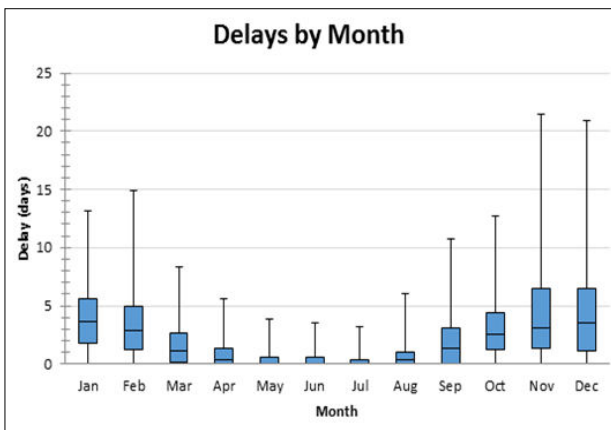
Example Box Plot Output

Our software is able to simulate the operation tens of thousands of times to develop a sound statistical database.

We use GM OPSIM for simulations from simple to complex including:

- Weather window and spells analysis
- Drilling availability
- Pipe-lay uptime
- Offshore towage and transport
- FPSO storage and off-take
- Onshore storage and SPM export
- Tanker and export vessel fleet requirements

Simulation modules

Each model is constructed using analysis modules to develop bespoke solutions. These modules include:

- Scheduling
- Resource numbers and capabilities
- Production, storage and export

- Priorities and queuing
- Limit levels and directionality
- Metocean data and forecasting

- Time series weather analysis
- Spread start date
- Multiple simulation with sensitivities
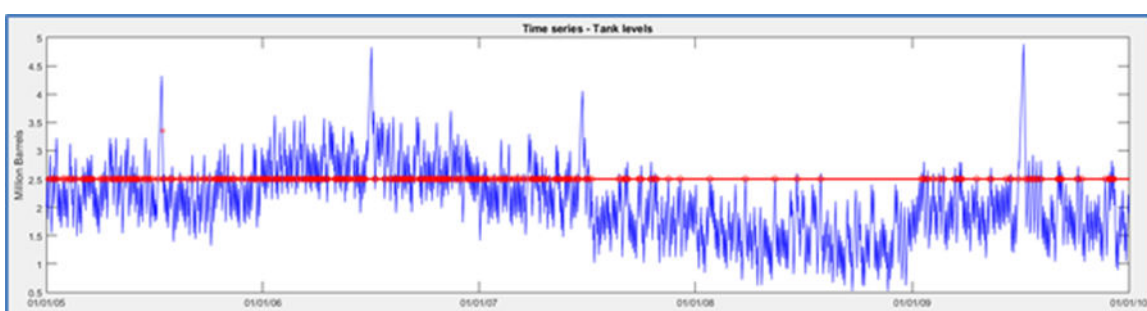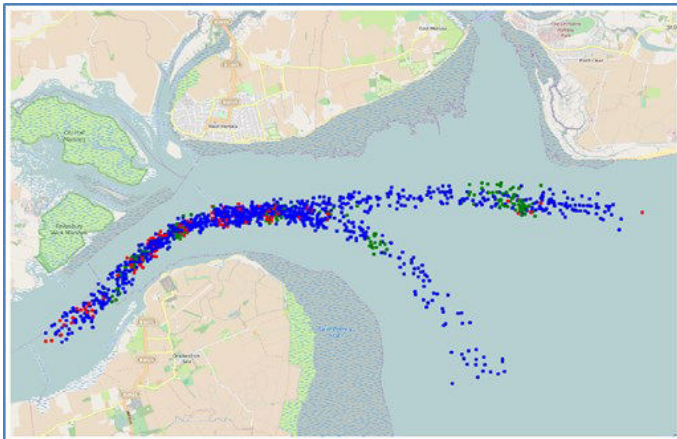
Vessel Traffic Analysis

GM OPSIM includes a Vessel Traffic Module which has been written specifically for marine traffic analysis. In addition to the discrete event simulation of transits, the Traffic Module incorporates collision detection, i.e. vessels are simulated as physical objects in the simulation environment enabling for interactions to be monitored. This allows for consolidated models to be created where both operational performances and vessel encounters can be calculated.

GM OPSIM screen capture

Various categories of vessels can be defined to reflect the different sizes and speeds within given study parameters. Ship-to-ship encounters and traffic densities are measured by area and by traffic route through a given period of time to demonstrate the effects of peak periods of activity and risk of collision. It enables vessel movements to be viewed dynamically on-screen and encounters are then plotted as they occur.
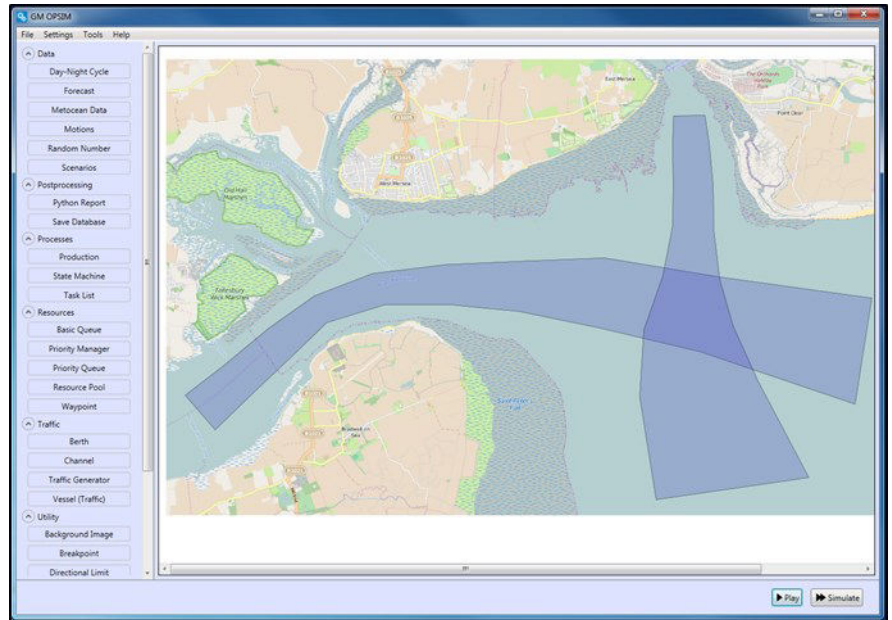
GM OPSIM allows for traffic routes to be easily defined together with characteristics of vessels using the route.
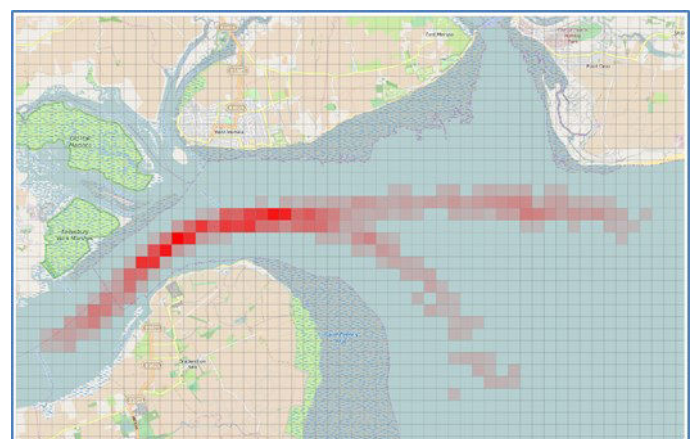

Types of encounters plot

Traffic rules such as traffic separation rules, one-way traffic, crossing traffic and vessel specific priorities can also be modelled.
The Traffic Module is used to assess:

- Congestion
- Vessel traffic rule
- Impact of traffic diversions
- Impact of new development on marine traffic
- Risk of vessel to vessel collisions

Different types of encounters (meetings, crossings and overtakes) can be plotted and provide useful insight into the risks involved.

GM OPSIM creates heat maps which provides us with essential information about congestion areas to support decision making.

Heat Map