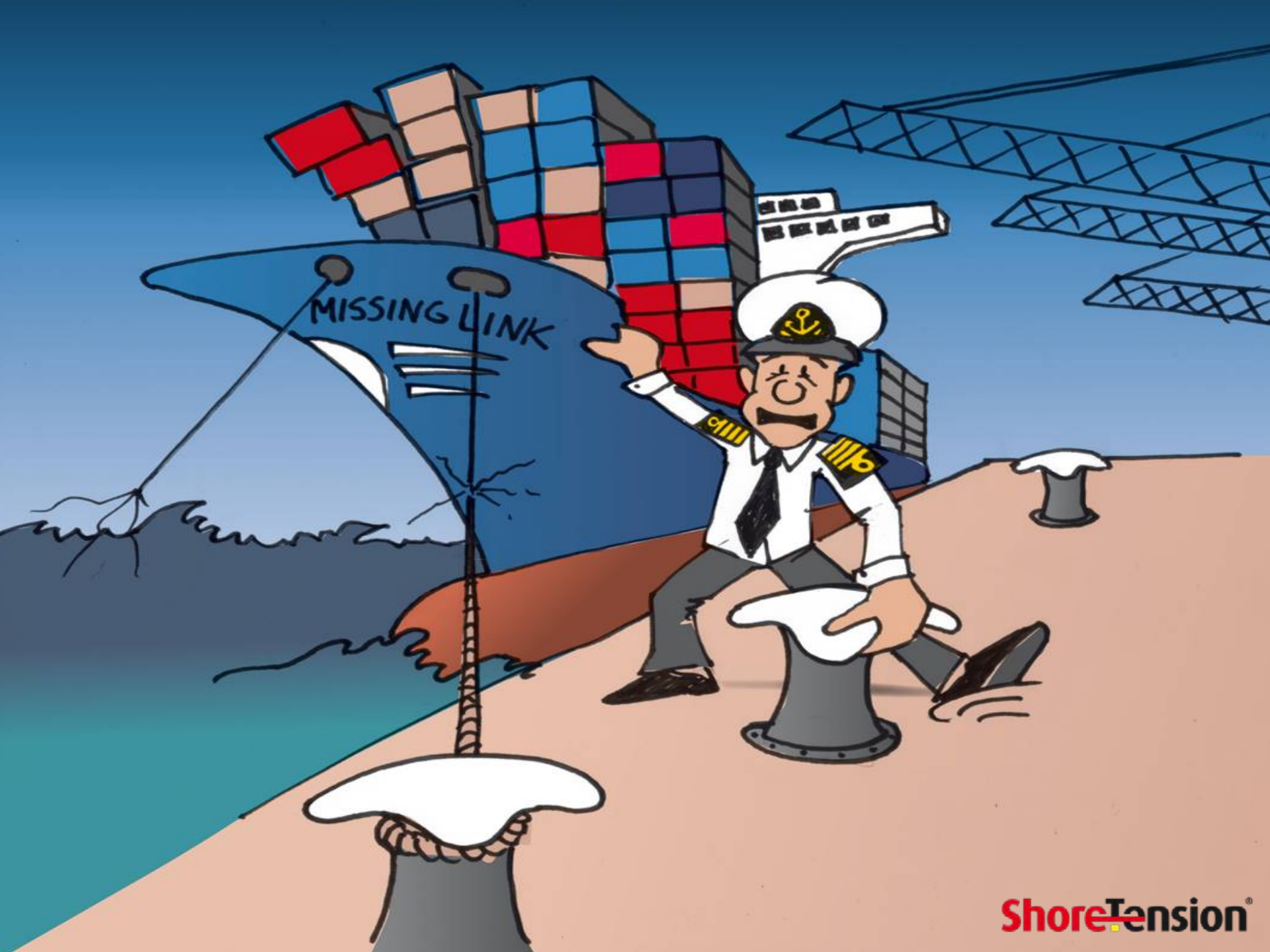
Real-time Information Needs for Ports and Shipping:

Capt. Allan Gray
Harbourmaster / GM Port Operations Fremantle Ports
Vice President International Harbourmasters' Association
Life Member Company of Master Mariners Australia

Does this remain true?

"A ship in port is safe, but that's not what ships are built for"

Rear Admiral Grace Hopper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Overview

- Introduction to Port of Fremantle
- Defining the issue for Ports
- Managing deep draft vessels (DUKC)
- Managing severe weather
- What do we need?

FREMANTLE PORTS

Inner Harbour

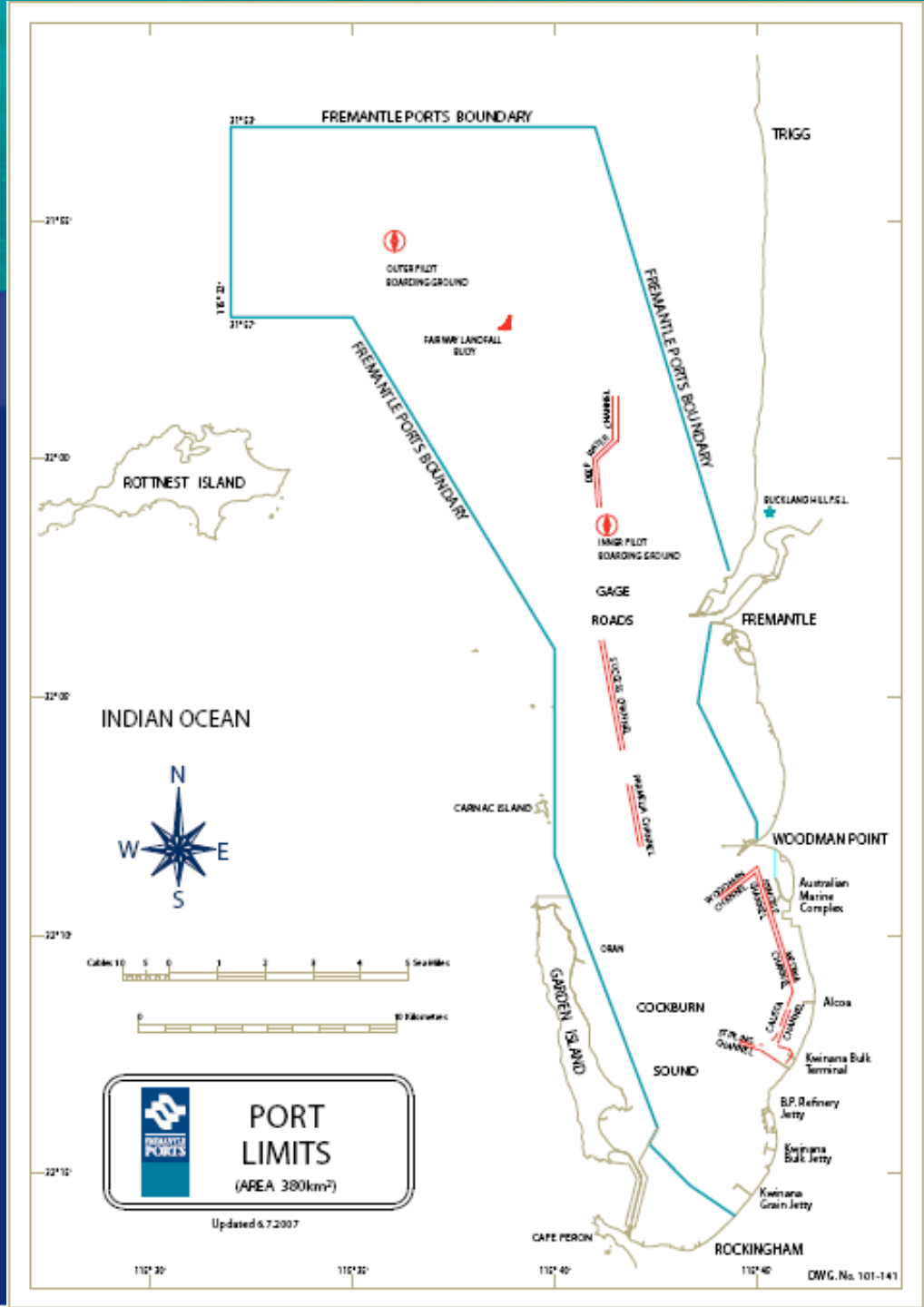
FREMANTLE

Outer Harbour

KWINANA

383 square kilometres of water

212 ha of land



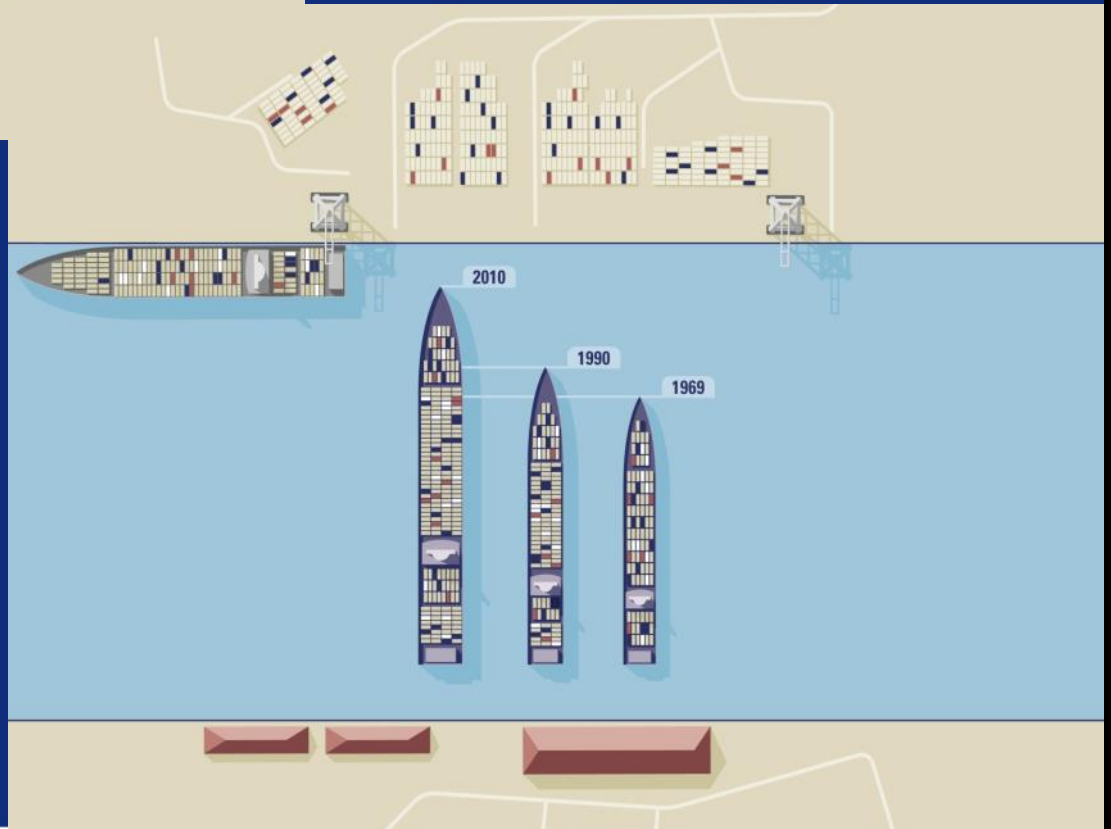
Western Australia's largest general cargo port

Total trade 2014/15

- 35.7million mass tonnes

Total value of trade 2013/14

- $28 billion



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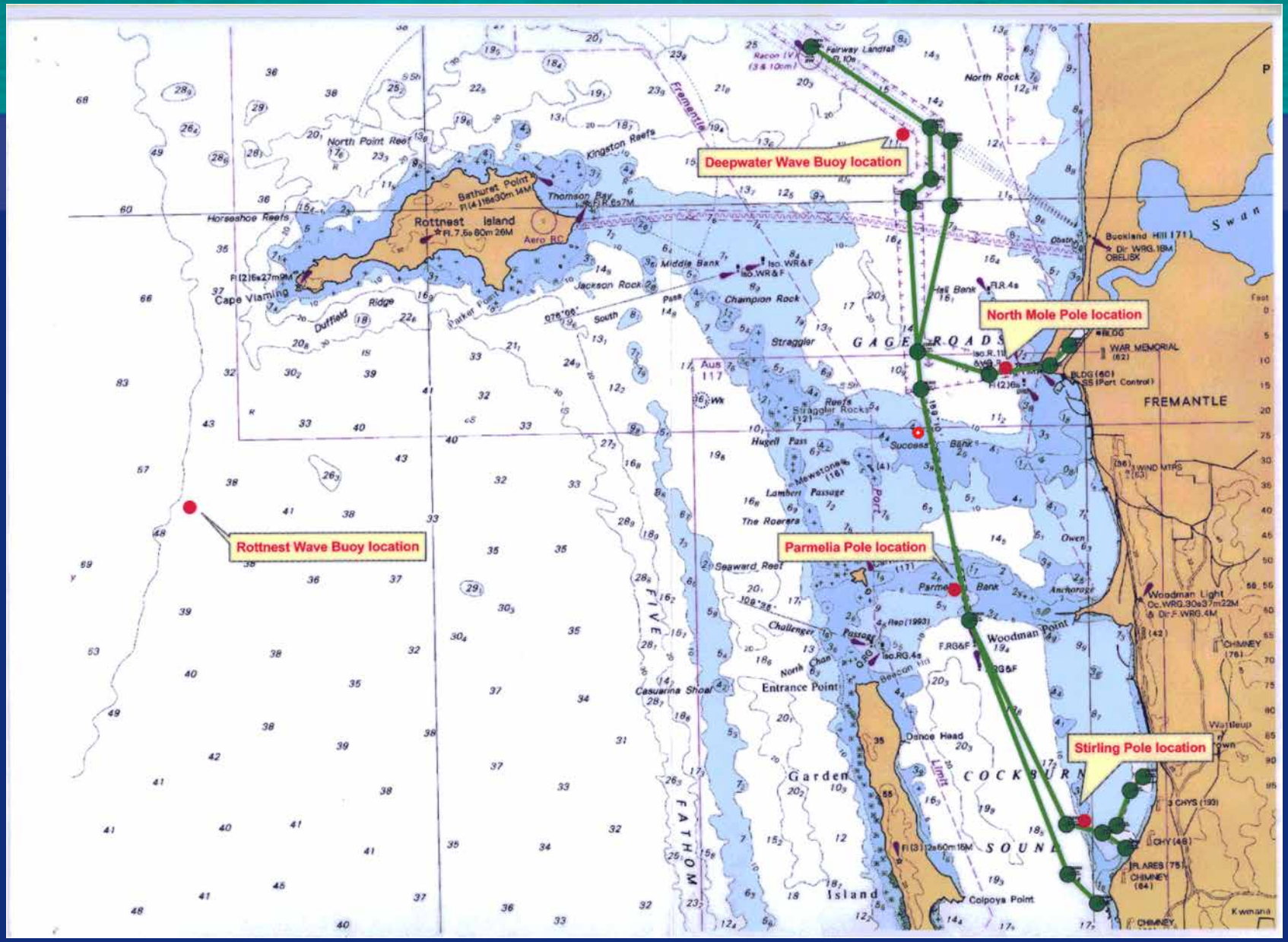
Real Time Sensors



Static Methodology

measured waves

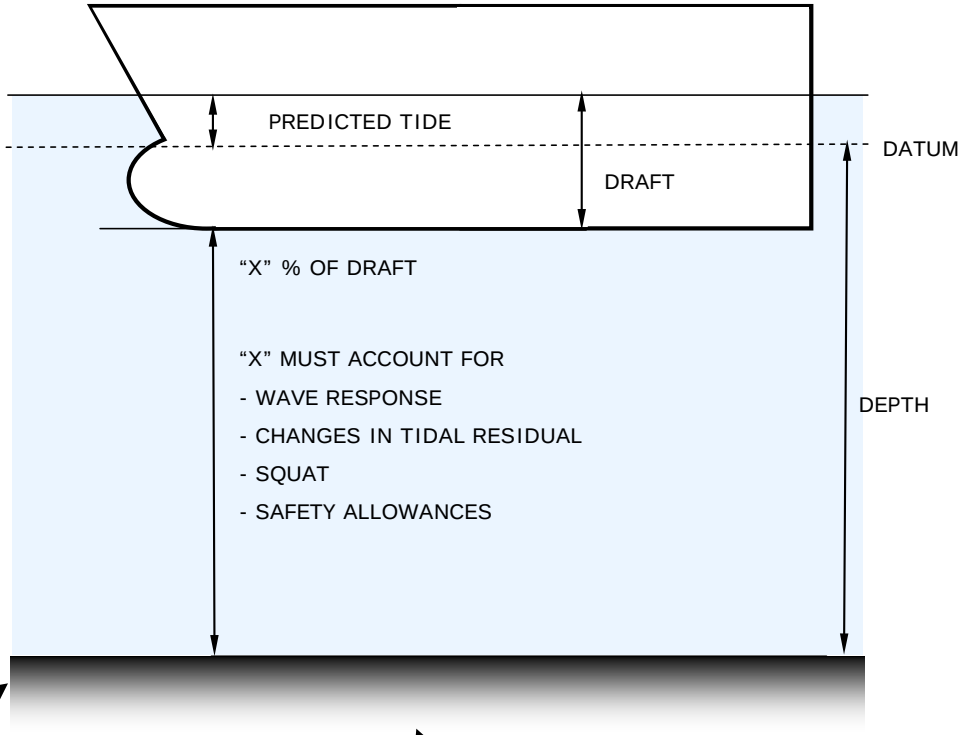
measured tides and currents

measured wind and pressure

latest sounded depths

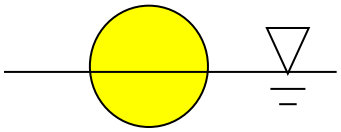
astronomical tides

ship in given load state

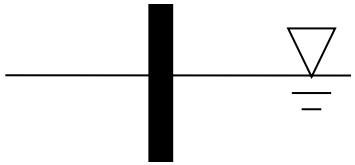


ship speed envelopes

DUKC® Methodology

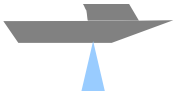


measured waves



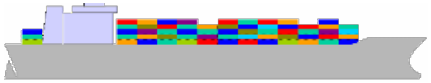
measured tide and currents

measured wind and pressure



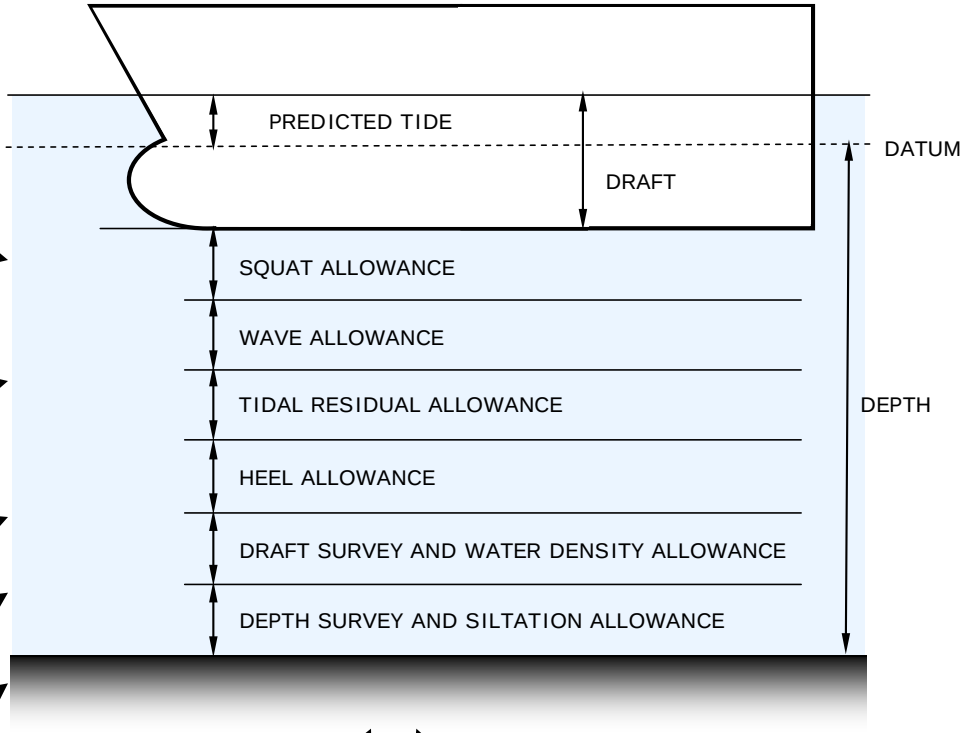
latest sounded depths

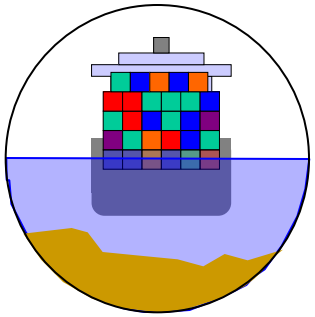
astronomical tides



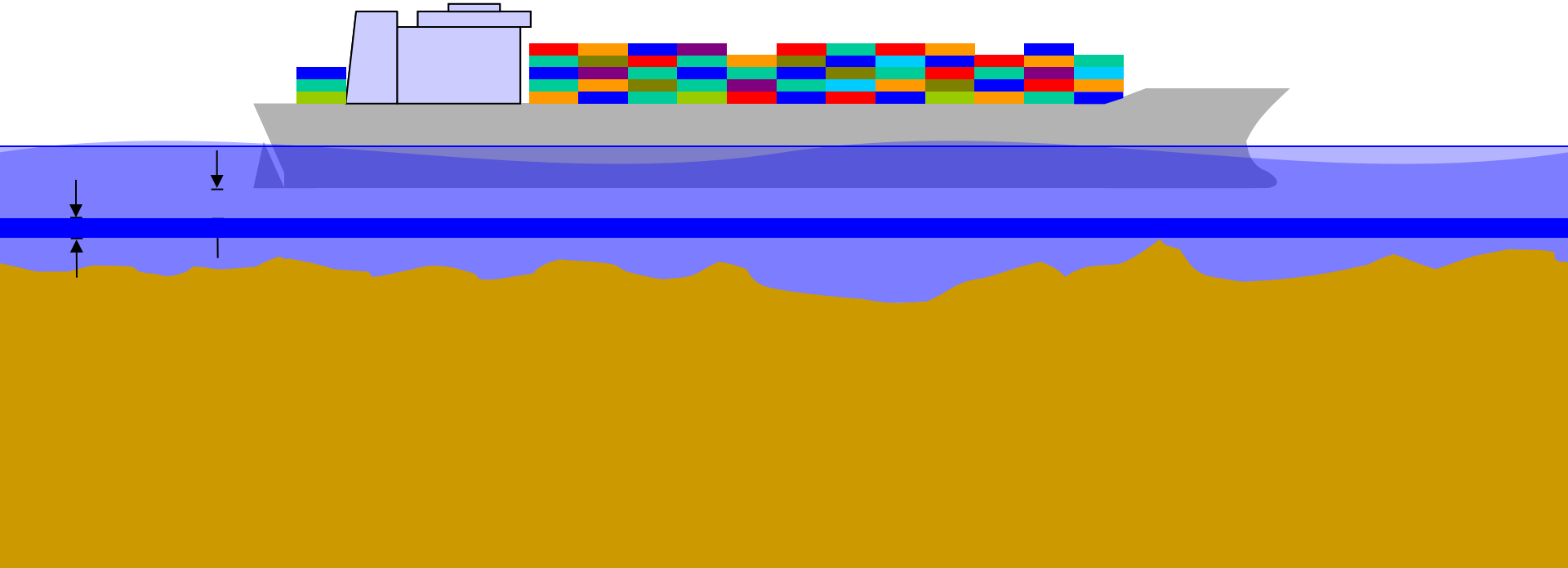
ship in given load state

ship speed envelopes





- IMPROVED PREDICTIVE MODEL UTILISING FORECASTED WEATHER TO 7 DAYS
- UTILISIATION OF DIFFERENT MM TO ENSURE ADEQUATE SHIPHANDLING RESPONSE
- INPUT OF LIVE WIND DIRECTION AND STRENGTH TO ALLOW FOR WINDAGE OF NEW GENERATION CONTAINER SHIPS
- FURTHER IMPROVEMENT ON SENSORS AND THEIR RELIABILITY
- SPEED PROFILE OPTIMISATION

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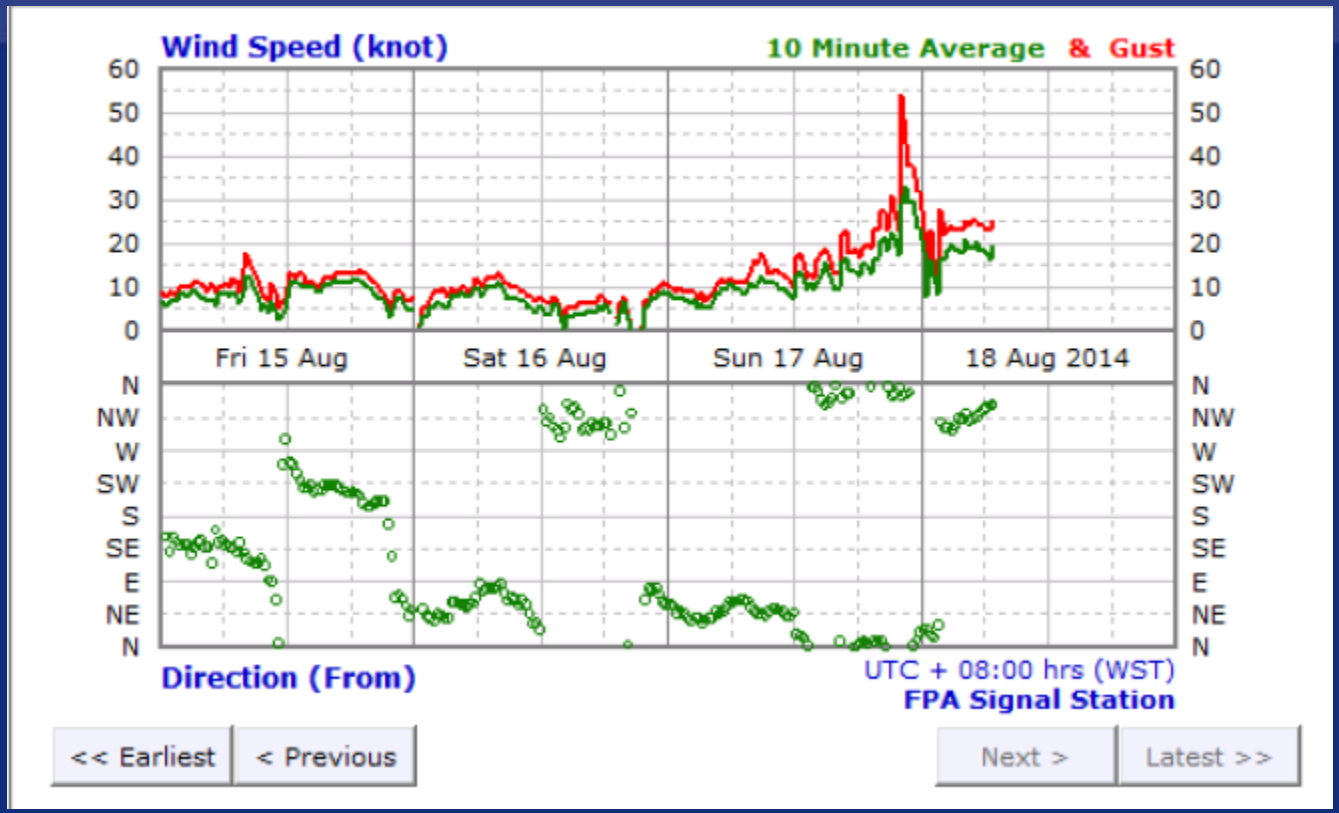
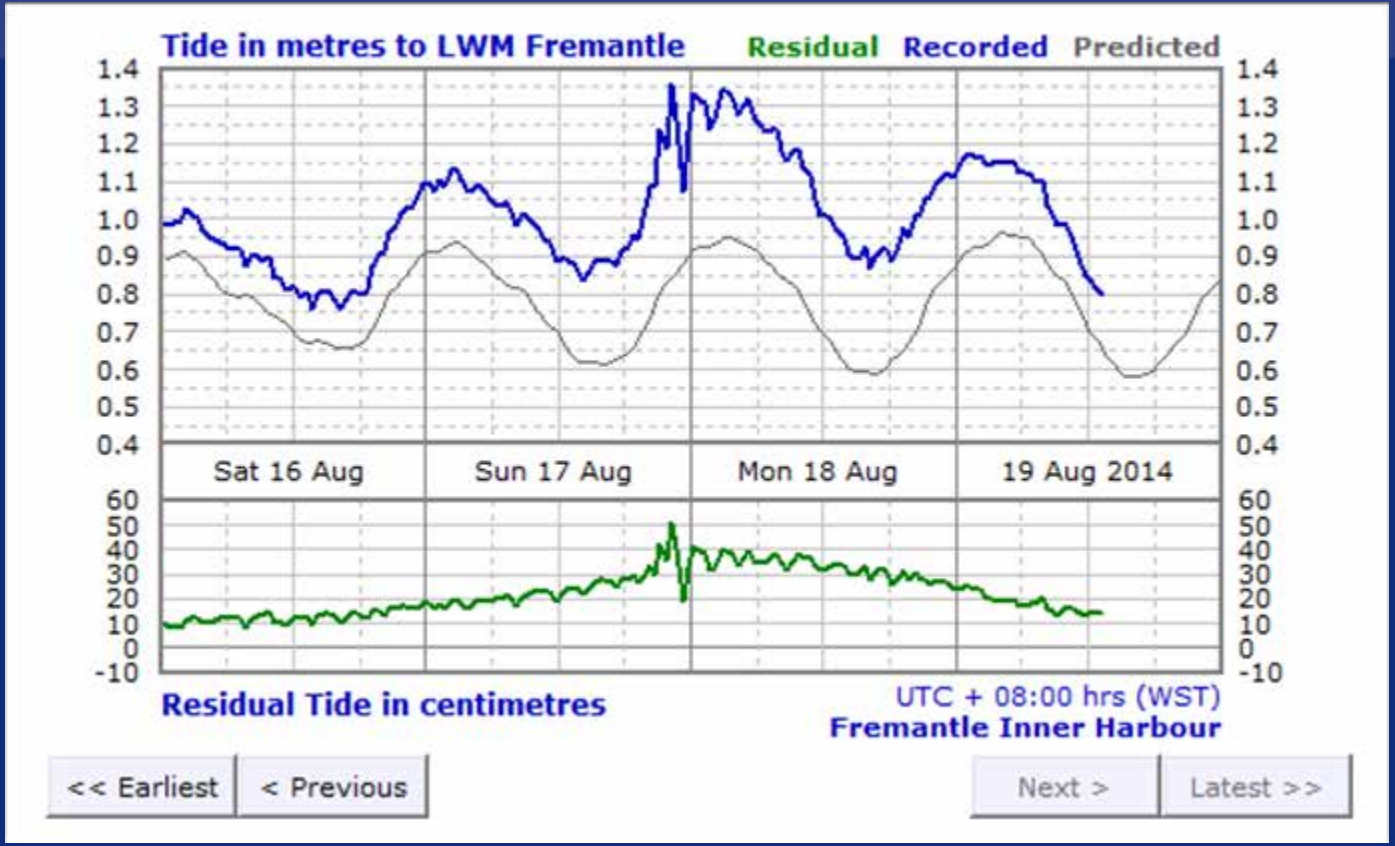
17th August 2014

Sudden Wind Gusts of 55-60kts

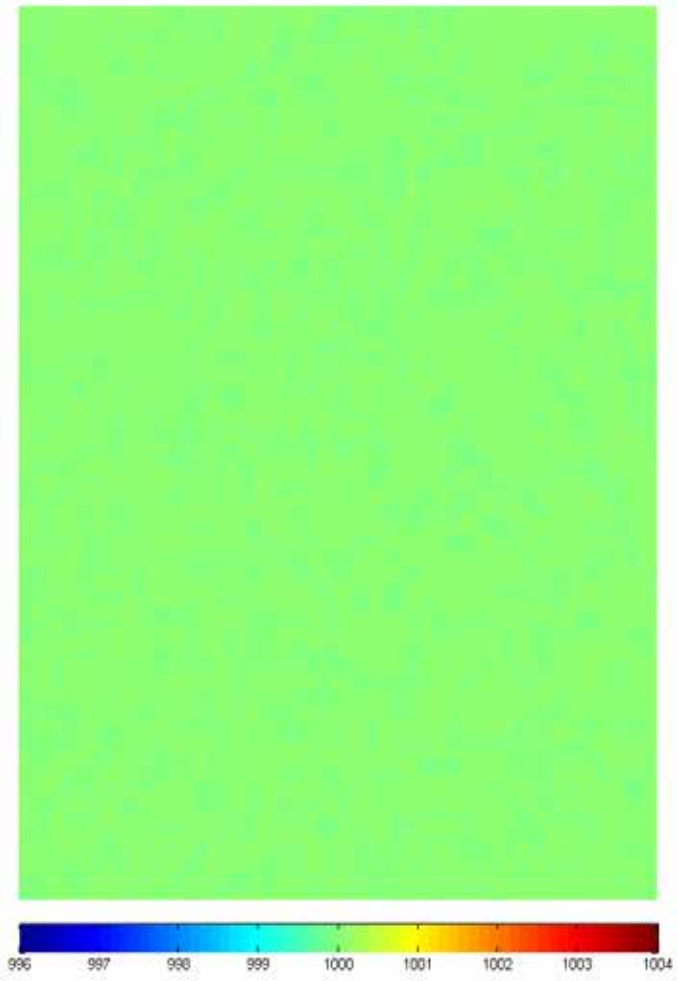


Recording of Meteo-Tsunami

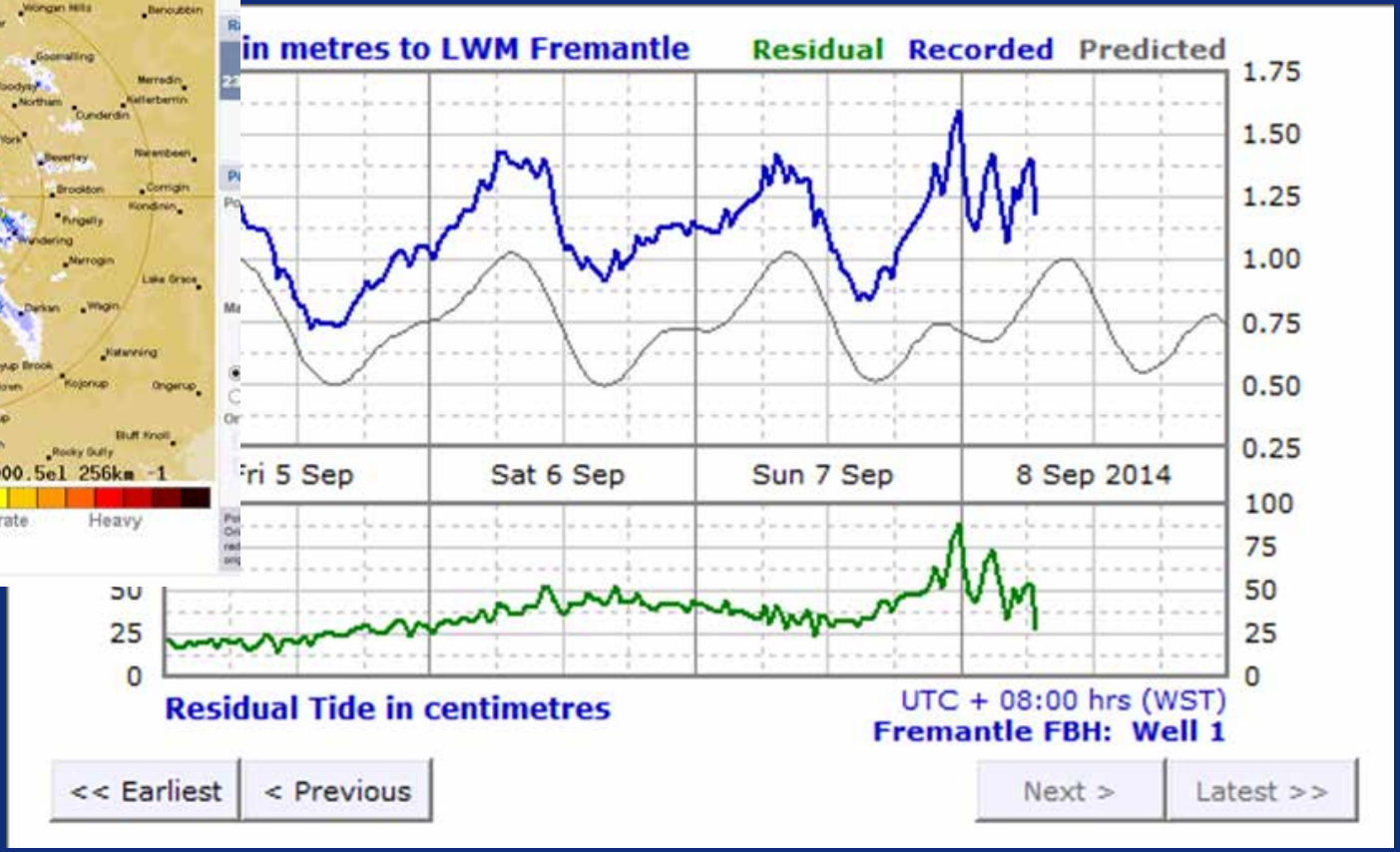


AAL Fremantle Impacts Rail Bridge

Meteo-Tsunami *(Prof Chari Pattiaratchi; UWA)*



Sunday 7th September 2014



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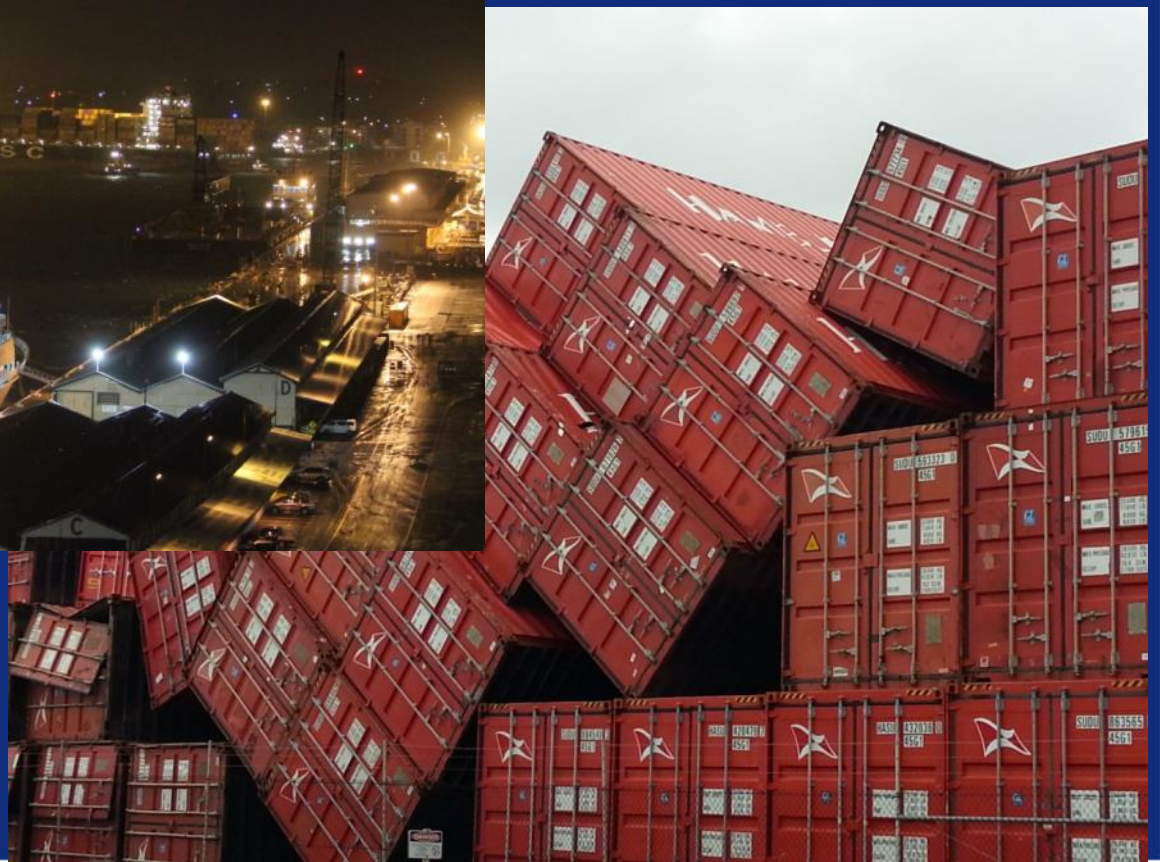

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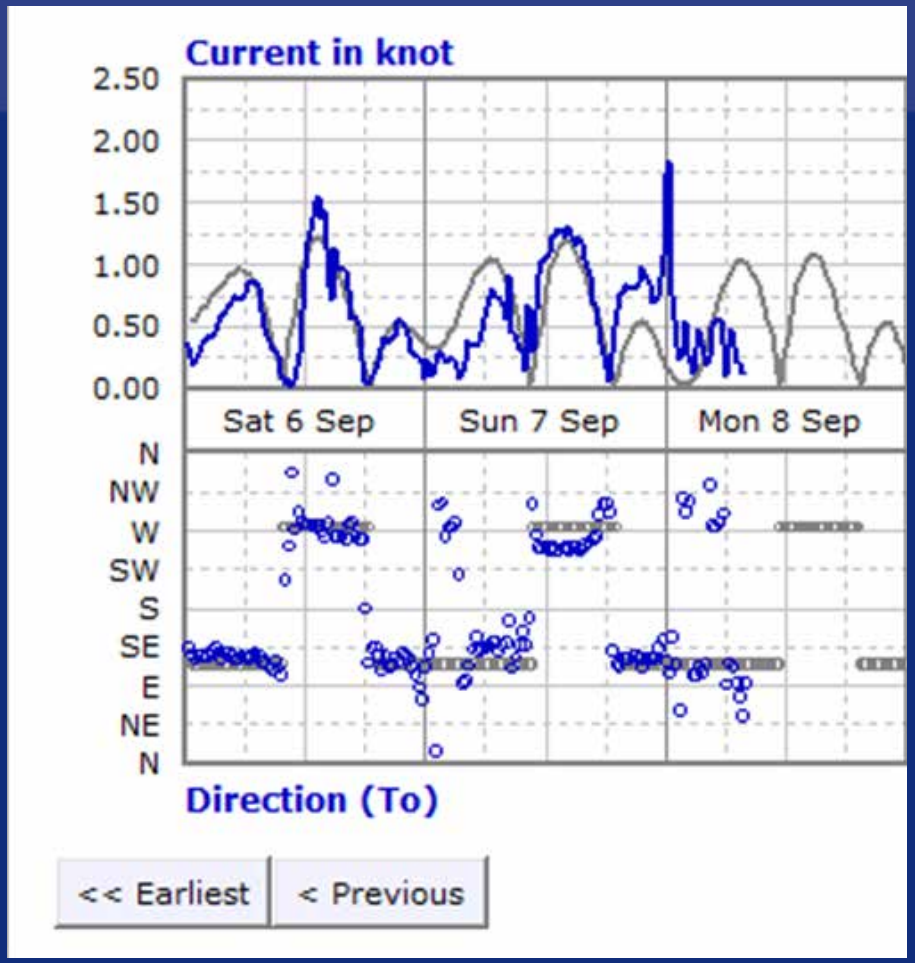

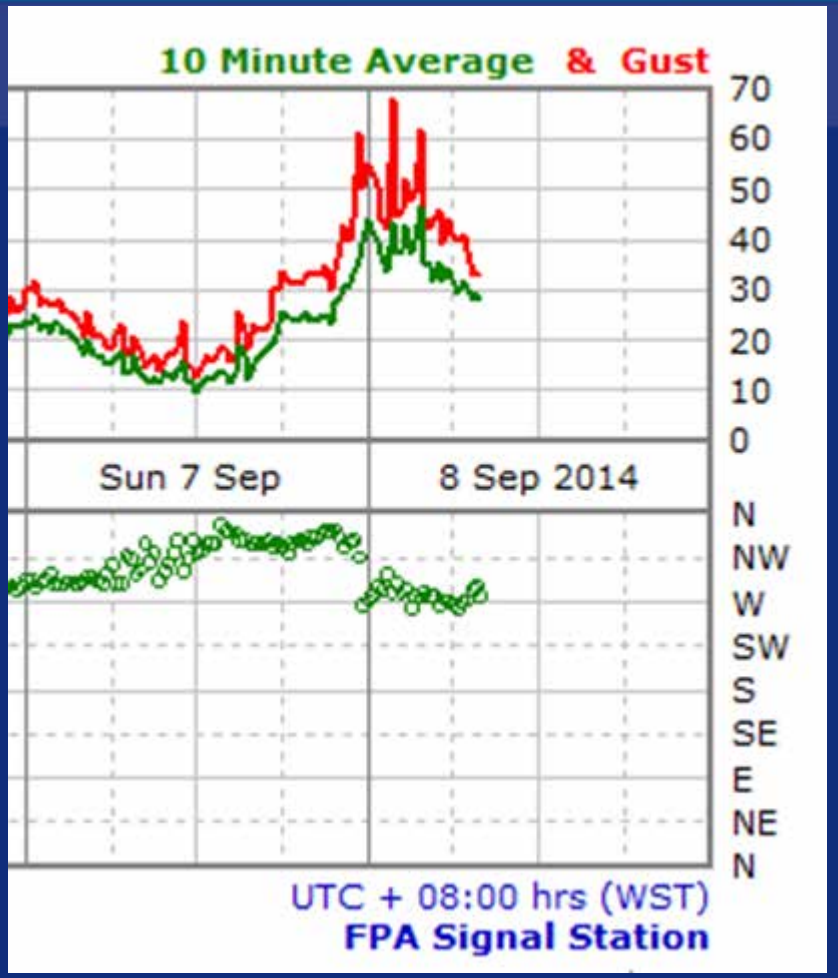

What do we need

- Long range forecasting both from a meteorological and oceanographical point
  - Swell
  - Long period wave penetration
  - Impact of pressure cells on predicted tides
  - Squall and storm fronts
  - Risk of meteo-tsunami
  - Current mapping and changes in current patterns
- Greater knowledge / education / training


ShoreTension
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