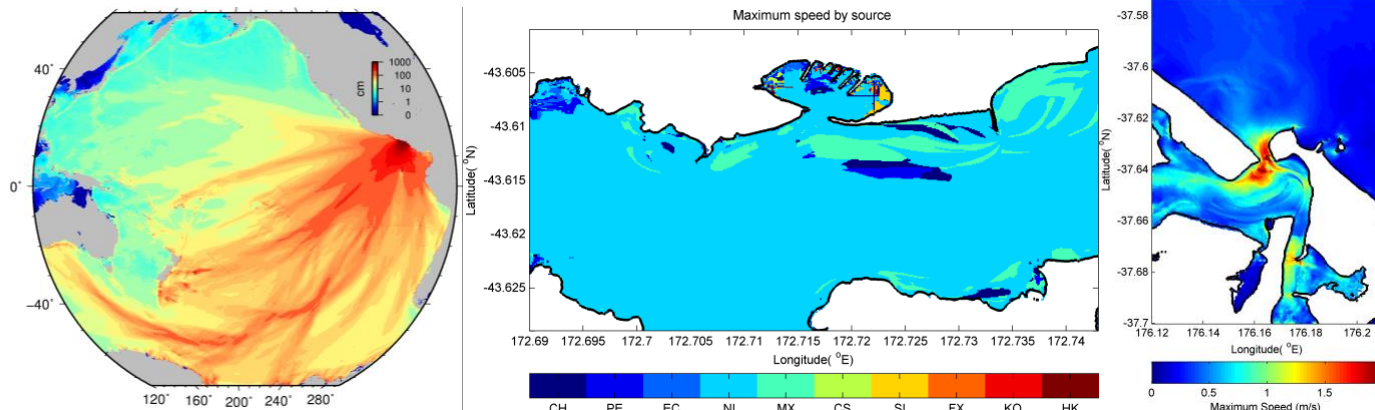


FAR-FIELD TSUNAMI HAZARDS IN NEW ZEALAND PORTS AND HARBOURS

NEW ZEALAND



INFO:

Location: New Zealand wide

Client: Natural Hazards Platform of the Ministry of Business, Innovation and Employment

Project Date: 2013-2014

SCOPE OF WORK:

- Historical assessment of tsunamis in New Zealand
- Description of potential tsunami sources
- Numerical modelling of tsunami inundation and currents
- Multi-scenario sensitivity testing
- Development of mitigation strategies and response plans.

PROJECT DESCRIPTION:

ORCAS Director Dr. Jose Borrero led a study funded by the New Zealand Ministry of Business, Innovation and Employment (MBIE) to investigate tsunami hazards in ports and harbours. The study was motivated by the desire to reduce damage and operational losses that far-field tsunami can cause; particularly after unexpectedly strong currents and surges resulting from the 2010 Chile and 2011 Japan tsunamis. The study focuses on four ports: Marsden Point, Port of Tauranga, Port Taranaki and Lyttelton Port; study sites were selected based on factors such as historical vulnerability to tsunami, availability of data for analysis and the economic importance of the port.

The study combined analyses of historical data, as well as numerical and analytical modelling to determine the relative severity of far-field tsunami originating from different sections of the Pacific Rim and to understand the duration, magnitude and likely location of potentially damaging currents. Important results so far suggest that tsunami originating from Central America produce the strongest response at east coast ports. Another important result is that strong currents affecting vessel movements can be expected for more than 20 hours after tsunami arrival. The analysis also investigated 'safe evacuation depths' for ships, i.e. the depth to which a vessel should be moved to be free from potentially damaging currents.