



## Voyage ss2013\_v01

### Submarine landslides offshore northern New South Wales and southern Queensland: their geomechanical characteristics, timing and triggers

Associate Professor Tom Hubble (Chief Scientist), School of Geosciences, The University of Sydney

#### Contribution to Australia's national benefit:

This voyage mapped approximately five thousand square kilometres of the seafloor located offshore Fraser Island and collected geological samples from fifty-four sites located on the eastern Australian continental margin between Yamba in northern New South Wales and Indian Head on Fraser Island in southern Queensland. The initial interpretation of this work confirms that the eastern Australian continental margin is in an erosional phase dominated by large-scale canyon incision; down-slope movements of fluidised sediment; and down-slope sliding of large sediment blocks. The majority of the material eroded from the margin by these processes has probably been transported to the abyssal plain sea-floor of the adjacent Tasman Sea. Several of the submarine landslide features sampled during the cruise are geologically young and were potentially capable of generating problematic tsunamis. The geological samples collected will greatly advance the investigation of all the identified erosional processes and should enable calculation of the frequency of submarine landslide occurrence in the region such that the associated tsunami hazard can then be assessed.

#### As a result of this voyage:

1. We have a better understanding of the geological processes operating on the eastern Australian continental margin, the characteristics of the sediments deposited there, and the size and distribution of the submarine landslides that removed some of these sediments and transported them downslope.
2. We have collected samples of continental slope and continental shelf materials for geological analysis and geotechnical testing from fifty-four separate sites – thirty-two gravity cores and twenty-two dredge hauls (54 successful sample stations from 65 attempts).
3. We have mapped the morphology of the continental slope offshore Fraser Island and Yamba. This data will be contextualised and interpreted using regional seismic reflection surveys lines acquired by Geoscience Australia in the 1970's and the high-quality seismic surveys undertaken in the 1990's.
4. We have commenced a program of geological and geotechnical investigations aimed at determining the trigger mechanism for, and the causes of submarine landsliding on the eastern Australian continental margin.

#### Itinerary

Departed Brisbane

08:00 Friday 18 January 2013

Arrived Brisbane

13:00 Monday 4 February 2013

#### > Voyage track ss2013\_v01

