

Kaikōura Canyon

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Kaikōura Earthquake Marine Research
Public Presentation
Co-hosted KMG and Fisheries NZ

National and International Team of Researchers

NIWA: Phil Barnes, David Bowden, Max Gibbs, Brittany Graham, Tim Kane, Andrew Kingston, Geoffroy Lamarche (also University of Auckland), Daniel Leduc, Joshu Mountjoy, Scott Nodder, Alan Orpin, Arne Pallentin, Ashley Rowden (also Victoria University), Alexandre Schimel, Andrew Swales

Victoria University of Wellington : Huw Horgan, Jamie Howarth, Danielle McCleery

GNS Science: Matthew Gerstenberger, Caroline Holden

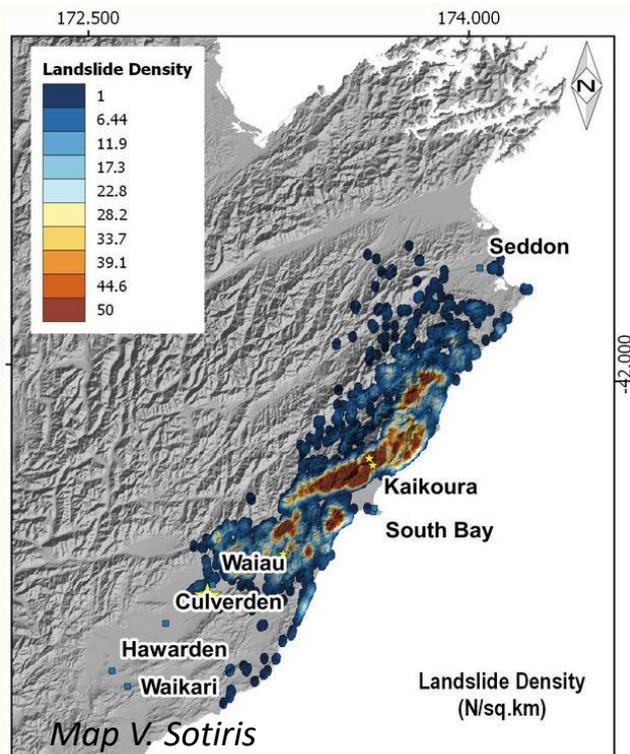
University of Auckland: Lorna Strachan

International: Aaron Micallef (University of Malta), Jason Patton (Humboldt State University)

Funding

- MBIE – Internal funding (NIWA), Strategic Science Investment Fund (to NIWA and GNS – including to Natural Hazards Research Platform), Endeavour Fund (to NIWA and GNS), Sustainable Seas National Science Challenge (to NIWA)
- MPI – ZBD201611 (to NIWA for 1 day ship-time)
- Tangaroa Reference Group
- European Research Council (to University of Malta)
- NOAA Ocean Exploration (to NIWA and others)

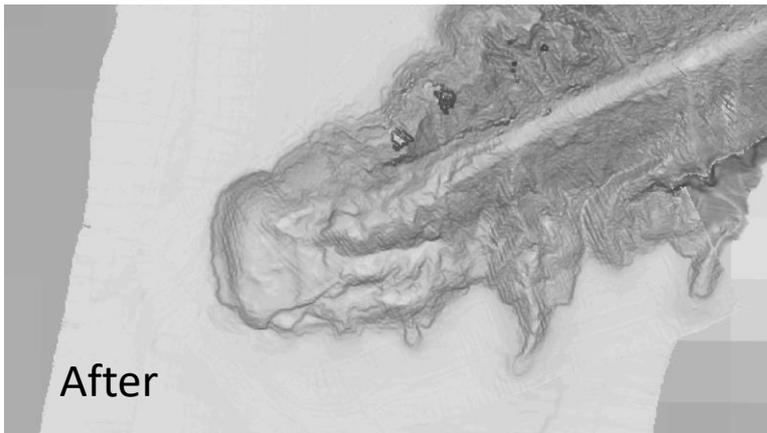
The Kaikōura Earthquake



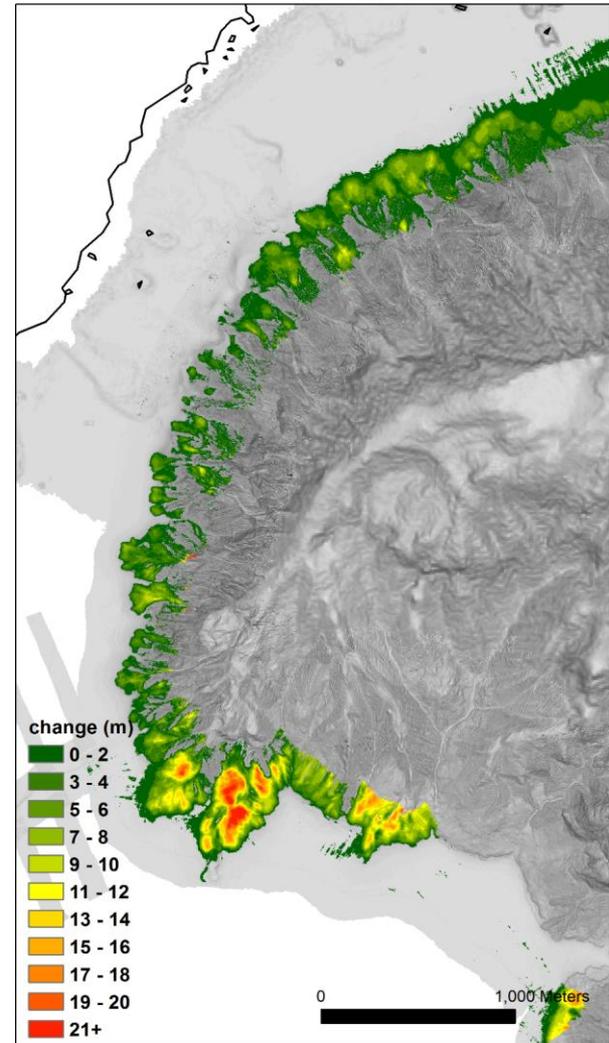
Submarine Landslides



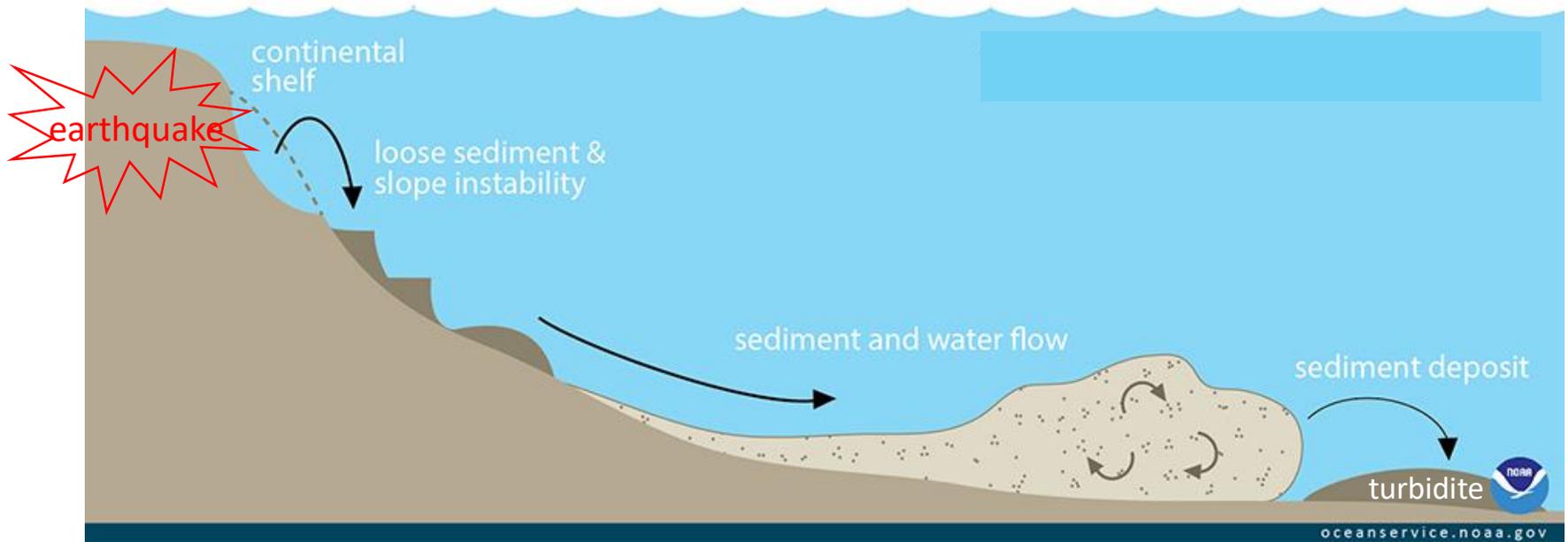
Before



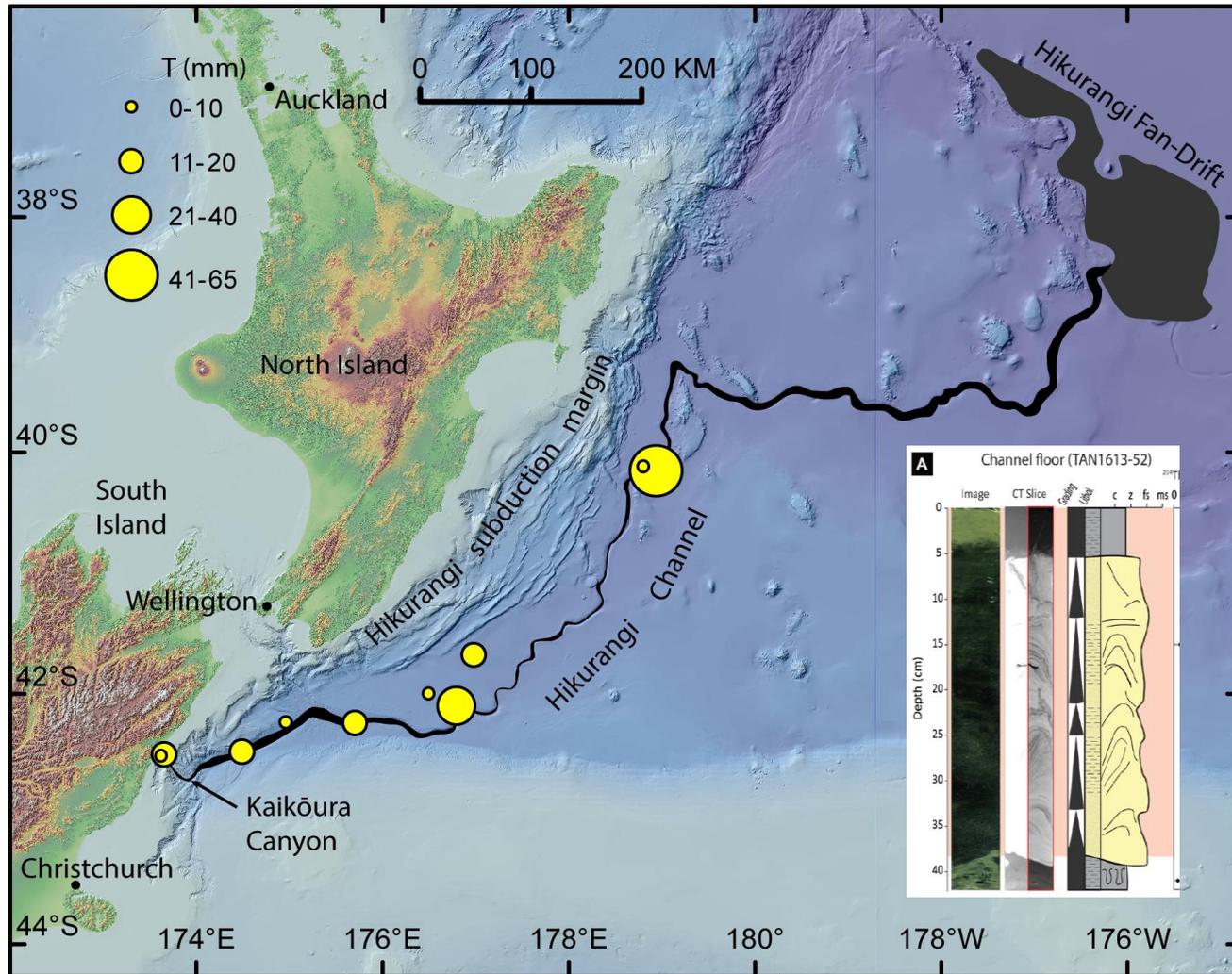
After



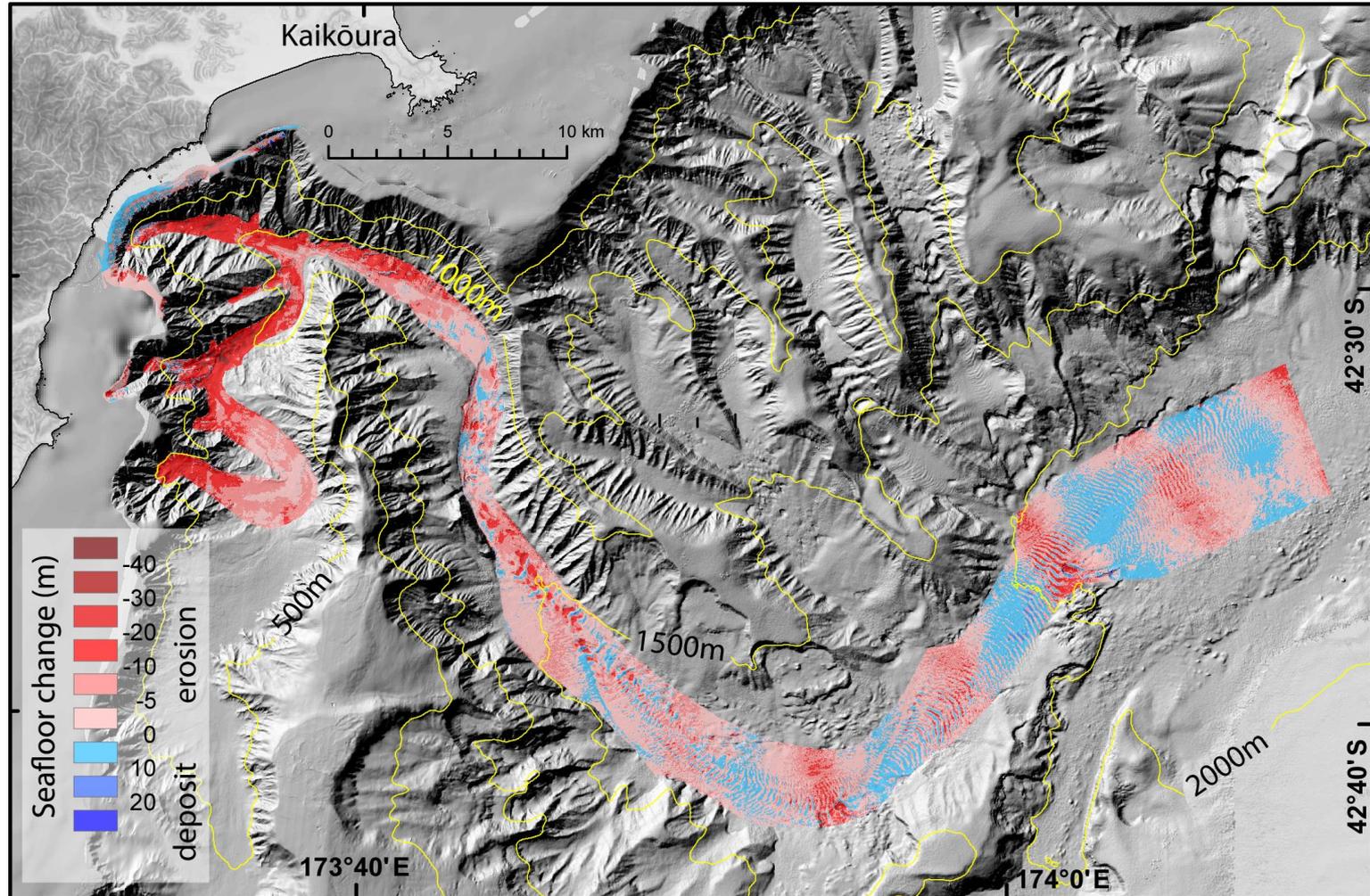
Slope Failure and Turbidity Current



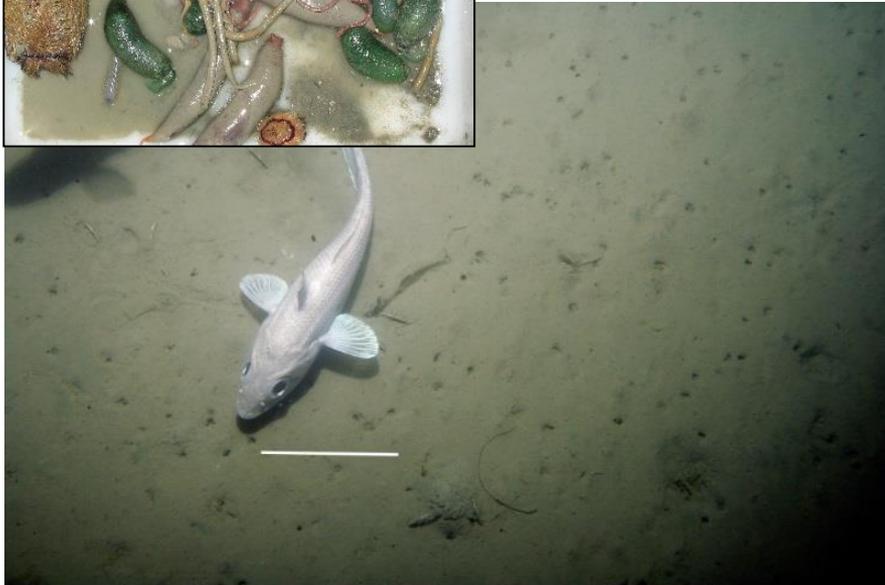
Turbidity current and Turbidites



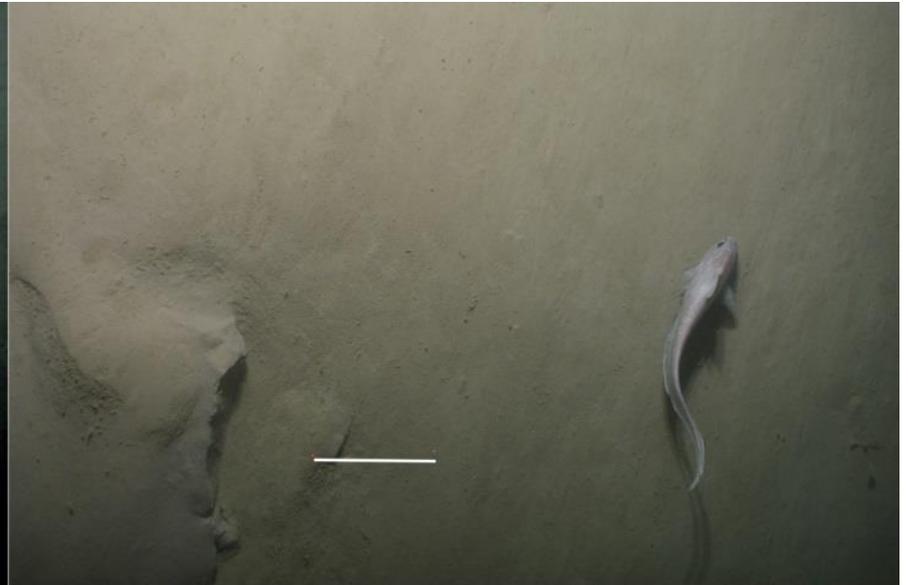
Sediment Erosion and Deposition in the Canyon



Impact on Seafloor Communities

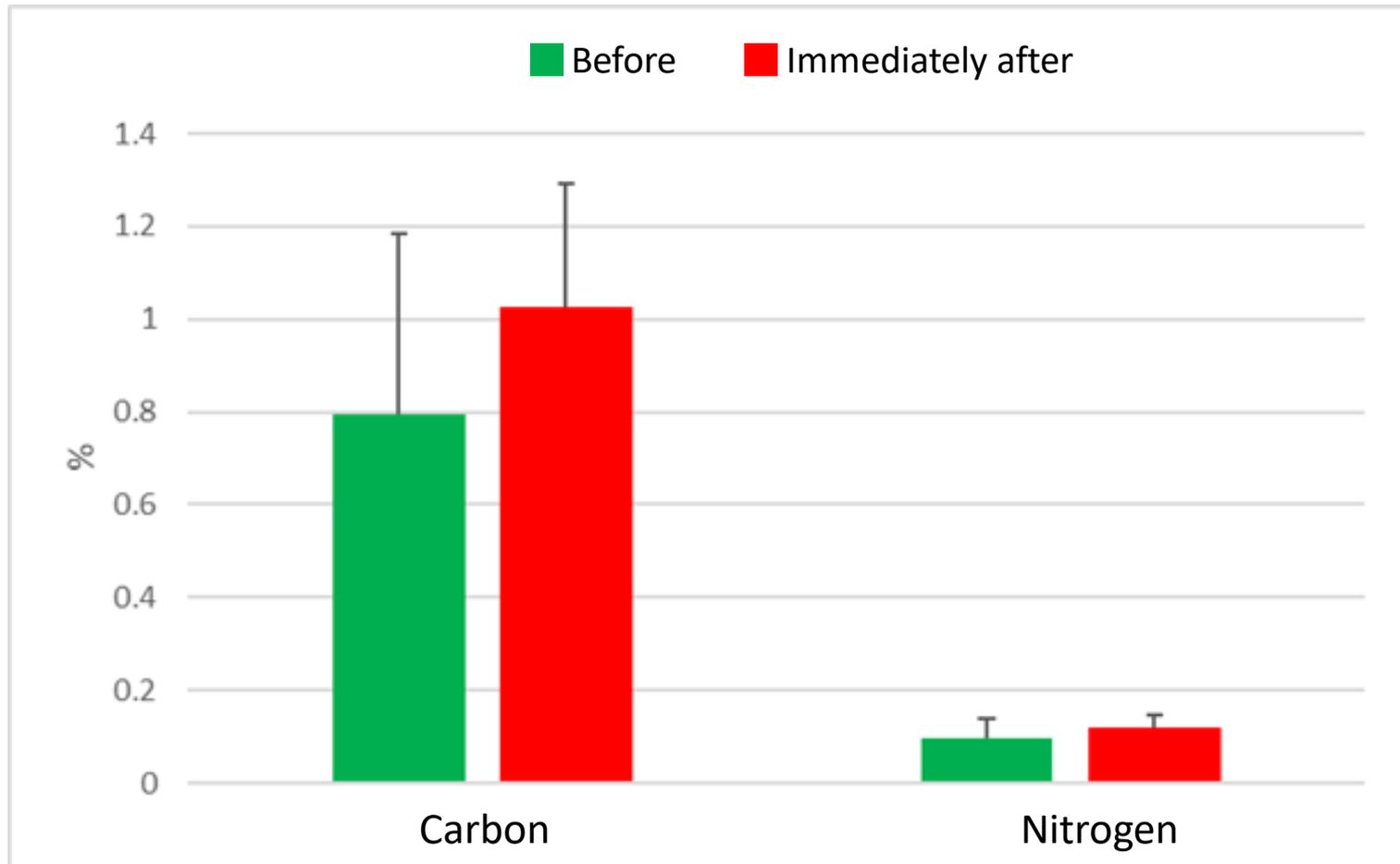


Before

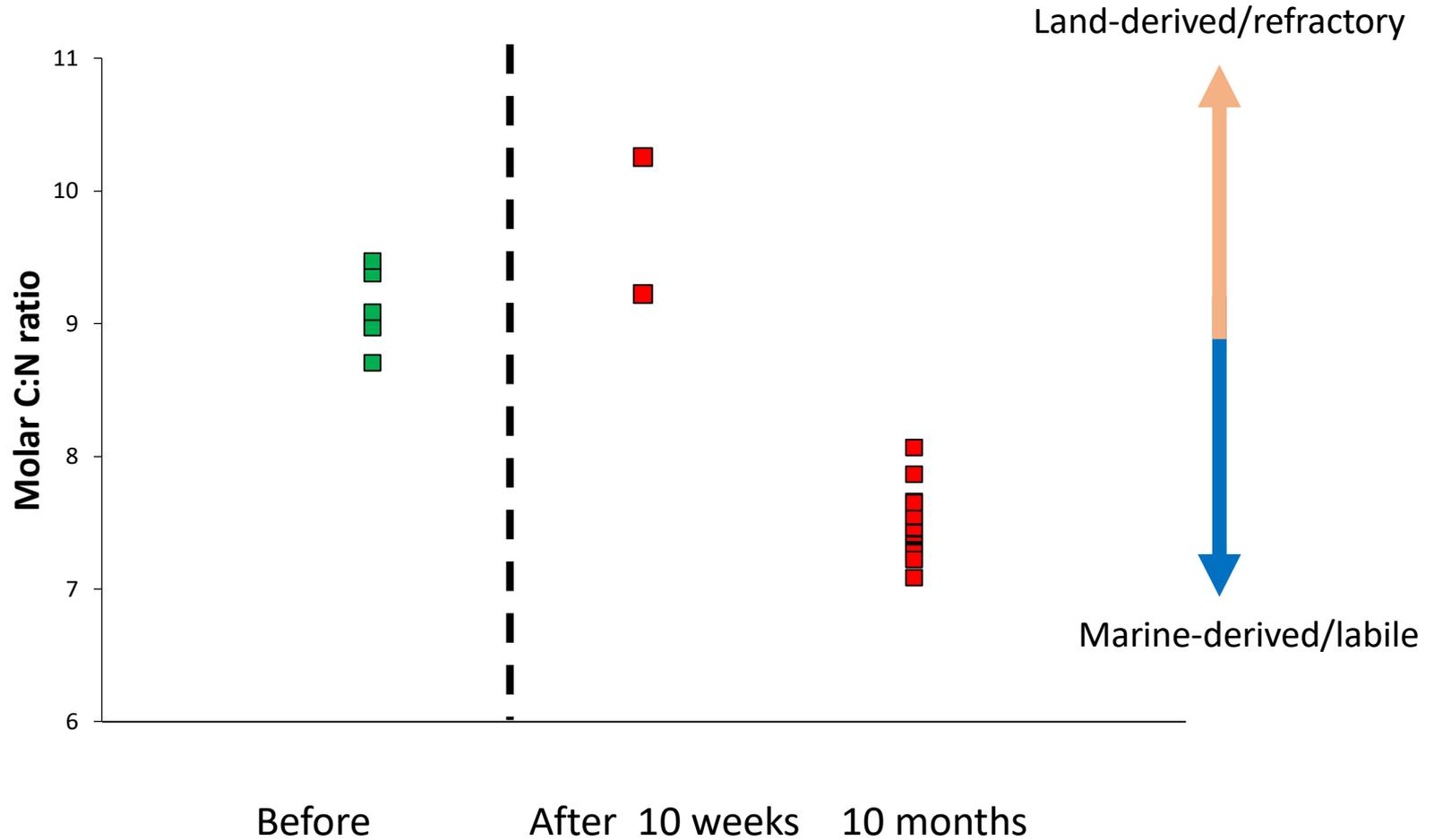


10 weeks after

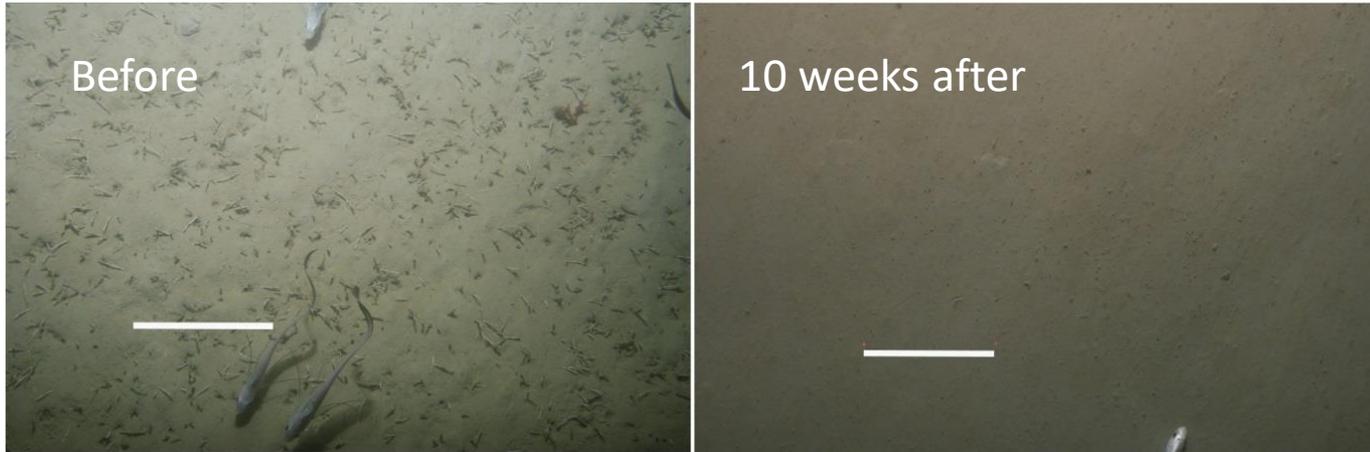
Organic Matter Transfer



Organic Matter Transfer



Recovery of Seafloor Communities



Key points

- The Kaikōura Earthquake triggered submarine landslides and a turbidity current that travelled more than 600 km
- 850 Mt sediment and 7 Mt carbon were exported to the deep ocean
- Some seafloor animal communities were initially wiped out
- These communities showed signs of recovery after 10 months, other communities might not recover to their original state, while others are apparently unaffected
- Earthquake-triggered canyon ‘flushing events’ are important natural structuring agents that can occur at intervals of approximately 140 years in the Kaikōura region

Future research

- Sampling processing
- Data analysis
- Repeat surveys and sampling
- Funding?

Thank you