Sea level rise in New Zealand: certainty and uncertainty

Climate Change and Business Conference
Auckland

Carl Walrond

21 October 2015
Changing climate and rising seas: Understanding the science

November 2014
Carbon dioxide concentration (ppm)

Year

1830 1850 1870 1890 1910 1930 1950 1970 1990 2010

Mauna Loa data

Ice core data
Sea level

Year

Sea level rise (cm)

-5 0 5 10 15 20 25

1880 1900 1920 1940 1960 1980 2000

Satellite altimetry data
Tide gauge data
Why is the sea rising?

- Expanding water
- Retreating glaciers
- Melting ice sheets
Larsen Ice Shelves

Antarctic Peninsula

Pine Island Ice Shelf

Ross Ice Shelf

EAST ANTARCTICA

WEST ANTARCTICA

TRANSANTARCTIC MOUNTAINS
31 January 2002
17 February 2002
IPCC

Intergovernmental Panel on Climate Change

Four scenarios

RCP 2.6  Low emissions
RCP 4.5
RCP 6.0
RCP 8.5  Business as usual
Projections of sea level rise by middle of century
Projections of sea level rise by end of century

![Graph showing projections of sea level rise by end of century for different RCP scenarios.]
PCE 2015 report

- Coastal erosion
- Coastal flooding
- Groundwater
2015 report

• Commissioned report NIWA - elevation maps and infrastructure

• Coastal flooding frequency - changes as sea rises - NIWA & University of Tasmania

• Government policy - recommendations
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