



Communicating Sea-level Change

MEOPAR ASM

Coastal Hazard and Risk Communication Forum
June 14, 2019

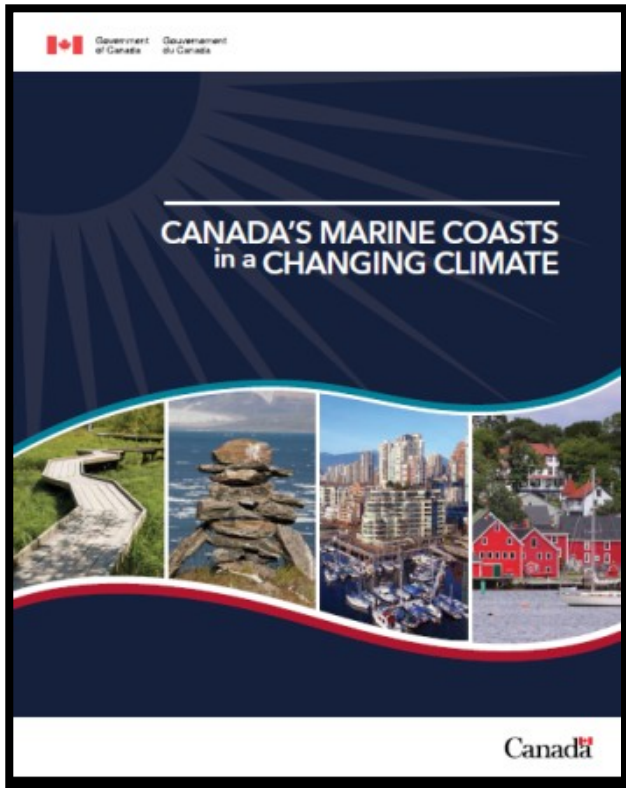
Thomas James
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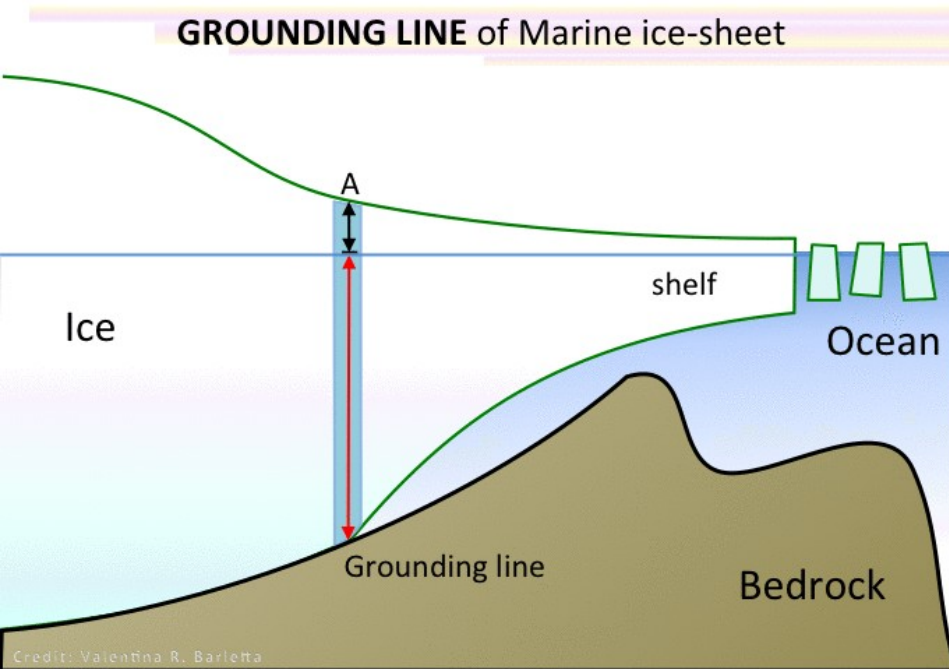


Sea-level Projections provided at specific coastal locations across Canada.



Antarctica – Why Does it Matter?

Marine Ice Sheet Instability (MISI)



Marine Ice Cliff Instability (MICI)

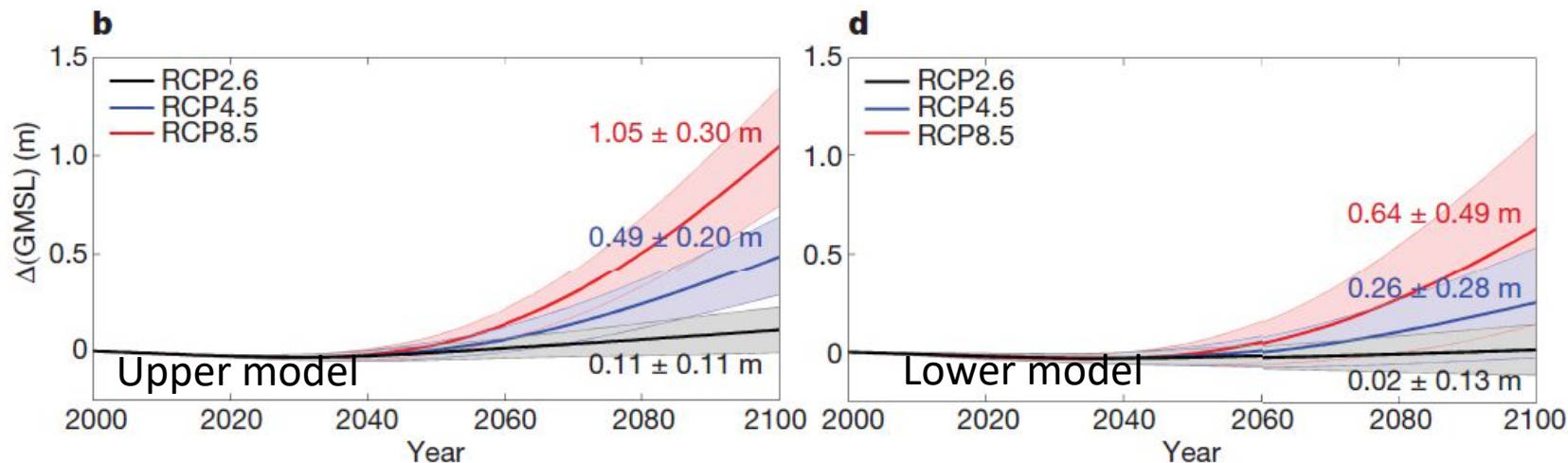


Surface meltwater penetrates cracks and hastens iceberg calving

There is a potential for Antarctica to deliver much larger amounts of water to the oceans than given in most current projections.



Antarctic Ice Sheet Projection



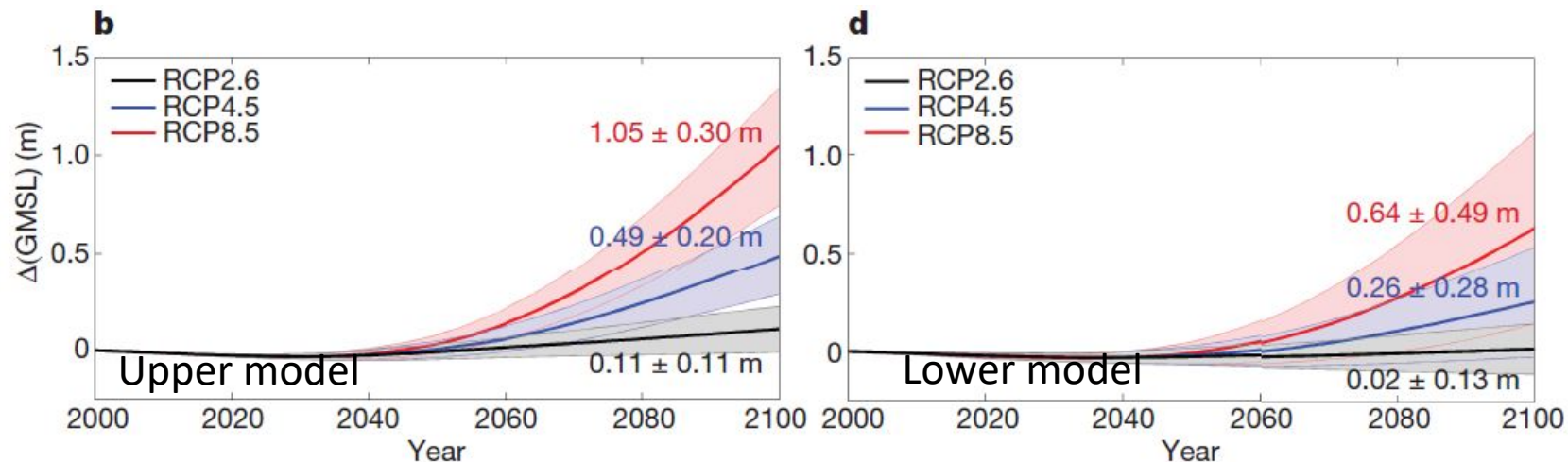
DeConto and Pollard, 2016

AR5 – a few centimeters from Antarctica

This publication – up to about a metre!



Antarctic Ice Sheet Projection



DeConto and Pollard, 2016

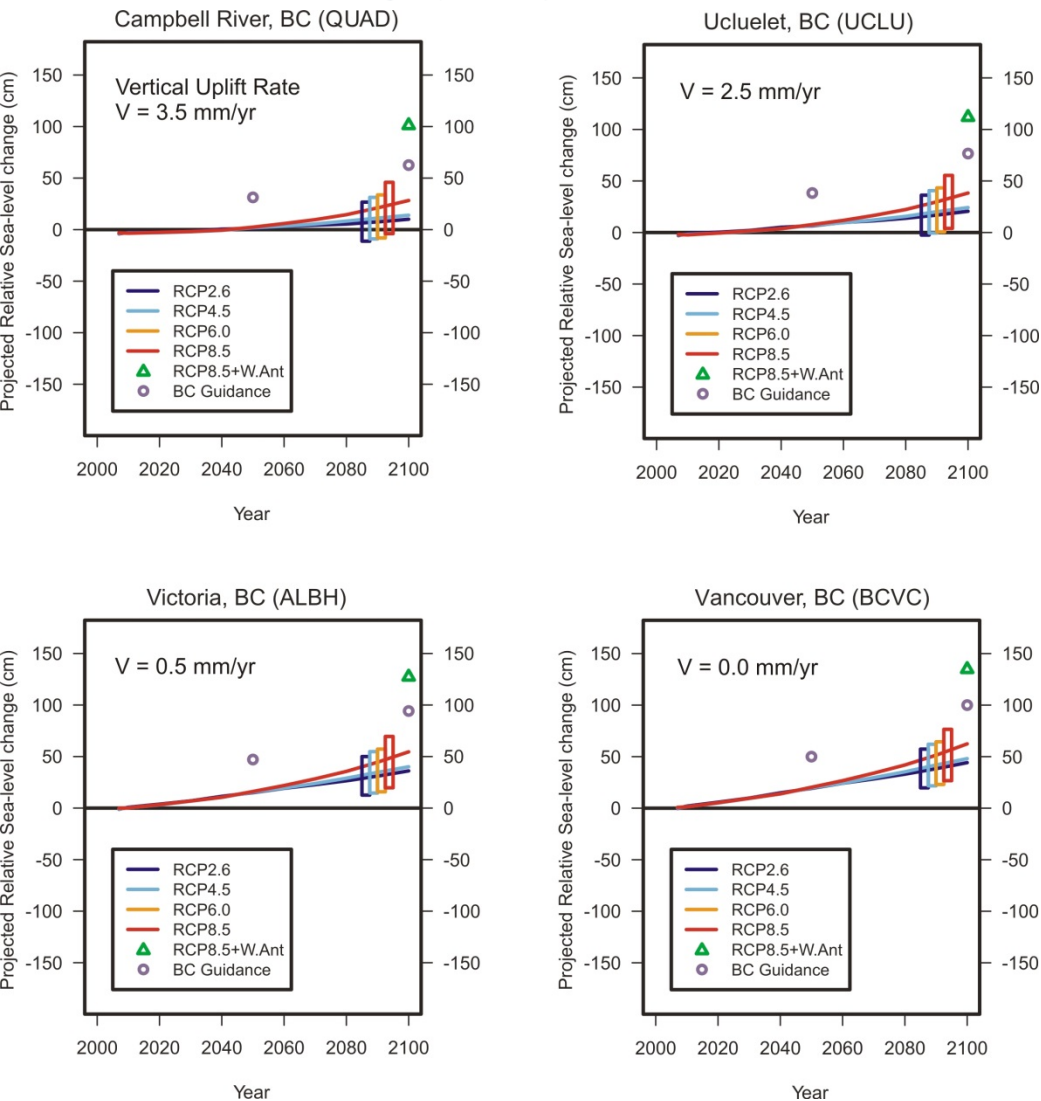
AR5 – a few centimeters from Antarctica

This publication – up to about a metre!

Now revised downwards to about 1/3
(35 cm)



What do we Know for Sure?

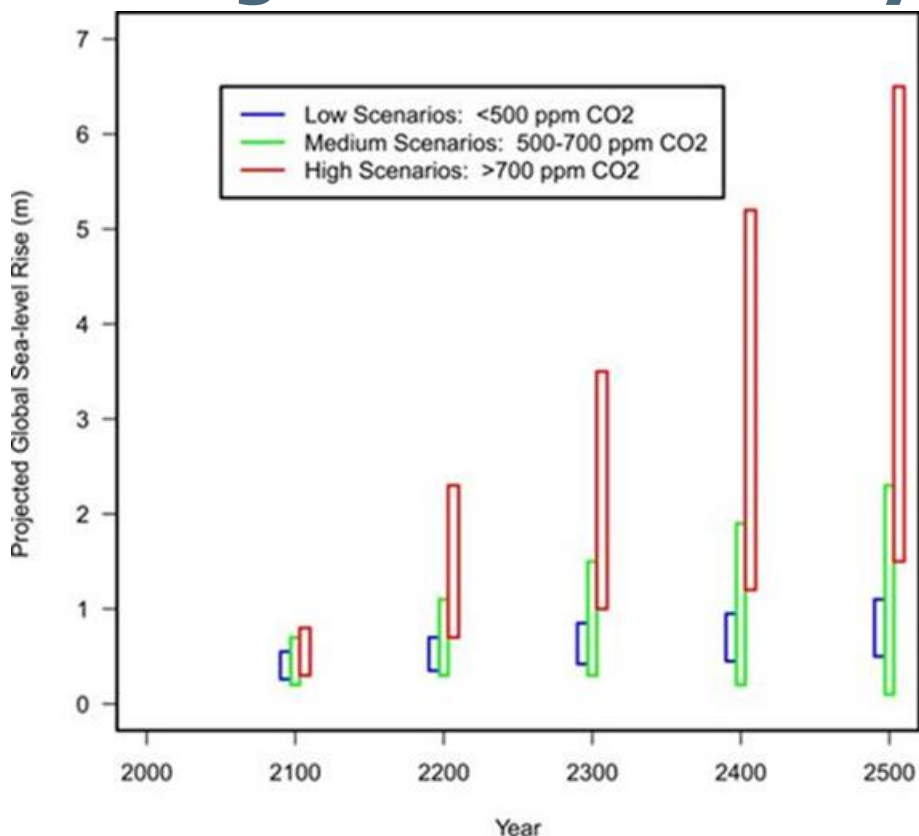


Projections are the same through to about 2050 or 2060



What do we Know for Sure?

Impacts of changes in sea level will increase throughout this century and beyond



- Global sea level will continue to rise past 2100.
- With a high emission scenario, sea level rise could reach many metres in a few hundred years.
- Low emission scenario would limit the rise to 1 metre.

James et al., 2014; after Church et al., 2013



Role of Media?

Technology & Science

Sea levels could rise by up to 2 metres by 2100, new study finds



Research looks at various climate scenarios, but the worst case could displace millions of people

[Nicole Mortillaro](#) · CBC News · Posted: May 22, 2019 2:48 PM ET | Last Updated: May 22

What we don't see:

New study indicates minor change to Antarctic contribution to sea-level

(but there are two important ones in the past year)



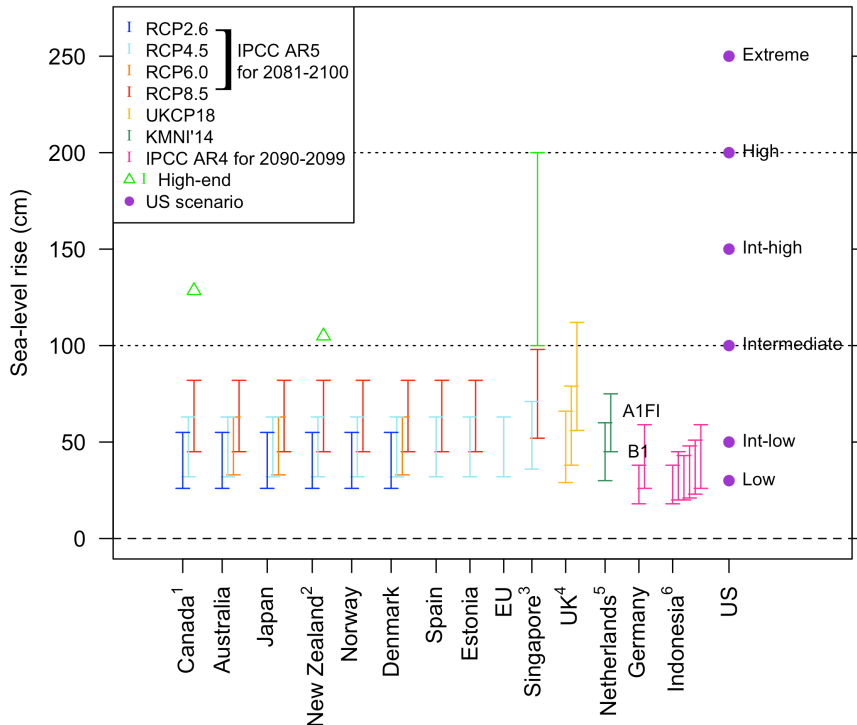
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Projected Global Sea-level Rise at 2100

Median



- (1) High-end value the sum of RCP8.5 projected rise and 65 cm from additional West Antarctic ice sheet discharge
- (2) All projections relative to a 1996-2005 baseline; high-end (H+) value represents the 83rd percentile of projections by Kopp et al. (2014)
- (3) IPCC AR5 projections at 2100; high-end (H++) range based on some semi-empirical models and Pfeffer et al. (2008)
- (4) UKCP18 projections at 2100 (Palmer et al., 2018); relative to a 1981-2000 baseline and including updated estimates of the contribution from Antarctic ice dynamics based on Levermann et al. (2014)
- (5) Low and high projections relative to 1995 (the central year in the 1985-2005 baseline)
- (6) B1, B2, A1B, A1T, A2 and A1FI scenarios

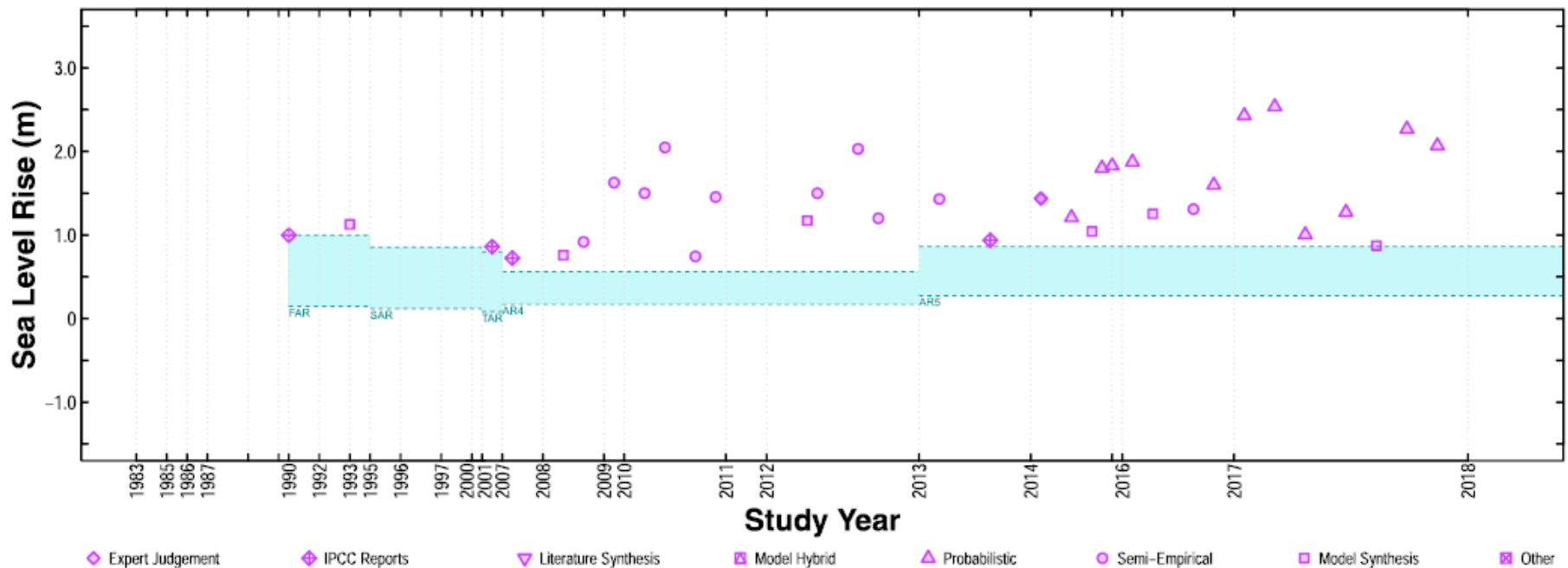
What are other countries doing?

Most follow AR5

A few countries have a high-end scenario (Canada, NZ, Singapore)

US approach differs strongly from other countries.

What is the largest value in the literature?



Garner et al., 2018

Shows all publications, including those superseded or given low confidence.
2.5 m at 2100 is a maximum.



Principles for Communicating Sea-level Change?

- State what we know for sure
- Be conservative
 - Don't hang the story on a single paper
 - Don't 'add hazard' until it is confirmed
- Need a plausible 'high-end' case (for low risk tolerance)
- Adopt the precautionary principle, but avoid being alarmist.



Principles for Communicating Sea-level Change (cont.)?

- Maintain public confidence (what can I do?)
- What's coming down the tracks?
- Probable increase of a few tens of centimeters for high-emission scenario

