Sea level forecast

“Prediction is very difficult, especially if it's about the future.” Niels Bohr
We are tracking high end predictions

Not a Gorian 5 m, but not IPCC2007 40±20 cm
Best estimate >80 cm global; Rahmsdorf et al. (2007)
max. 1 m? 2m?? MWP1a maximum 20-40 mm/yr
Semi-empirical techniques of prediction

Vermeer and Rahmstorf: 1.4 m for A1F1 emissions scenario
New record of melting: Rignot et al. (2011)

Two independent techniques: 1) mass budget estimates; 2) GRACE

- Left: Greenland
- Right: Greenland & Antarctica

- Left: Antarctica
- Right: projection using Rignot’s rates and IPCC steric + “alpine” contribution (Miller, unpublished)

Estimate ~1 m

Acceleration of the contribution of the Greenland and Antarctic ice sheets to sea level rise

E. Rignot, I. Velicogna, M. R. van den Broeke, A. Monaghan, and J. Lenaerts
Global rise by 2050

20th century relative rise at Atlantic City

1 foot

Sea level cm

Year
Increased effects of storm surges

By 2100, the equivalent of the moderate 1/87 storm ("5-year flood") will have the flooding of a "100 year storm"

After Cooper et al. (2005) derived from Psuty
Sea-level impacts

Atlantic City: 1.0 m rise
Red/yellow = Atlantis

0.61 m: ~170 km² (1% land area)
1.22 m: ~442 km² (3% land area)