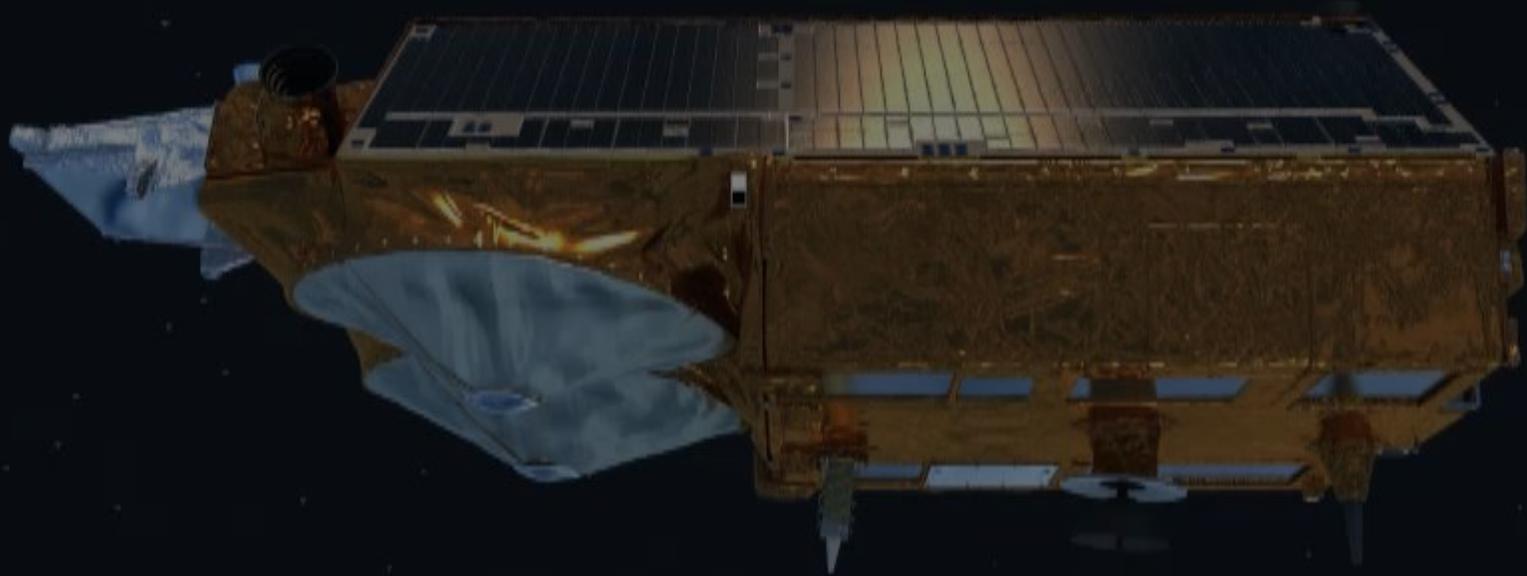




Trends and Projections in Ice Sheet Mass Balance



The IMBIE Team



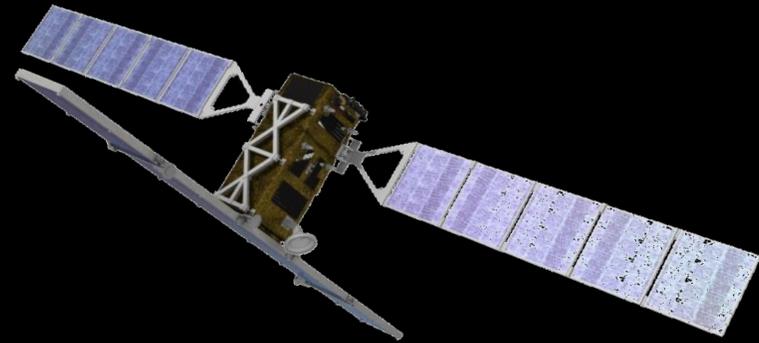
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Satellite techniques

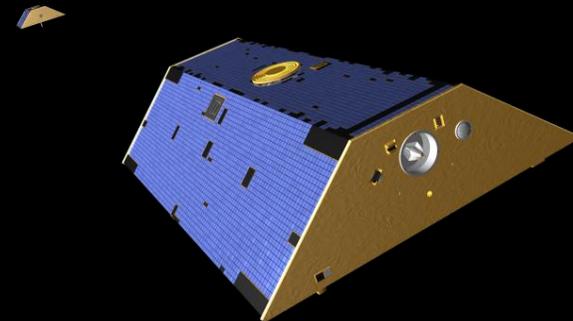
Altimetry measures changes in ice sheet shape



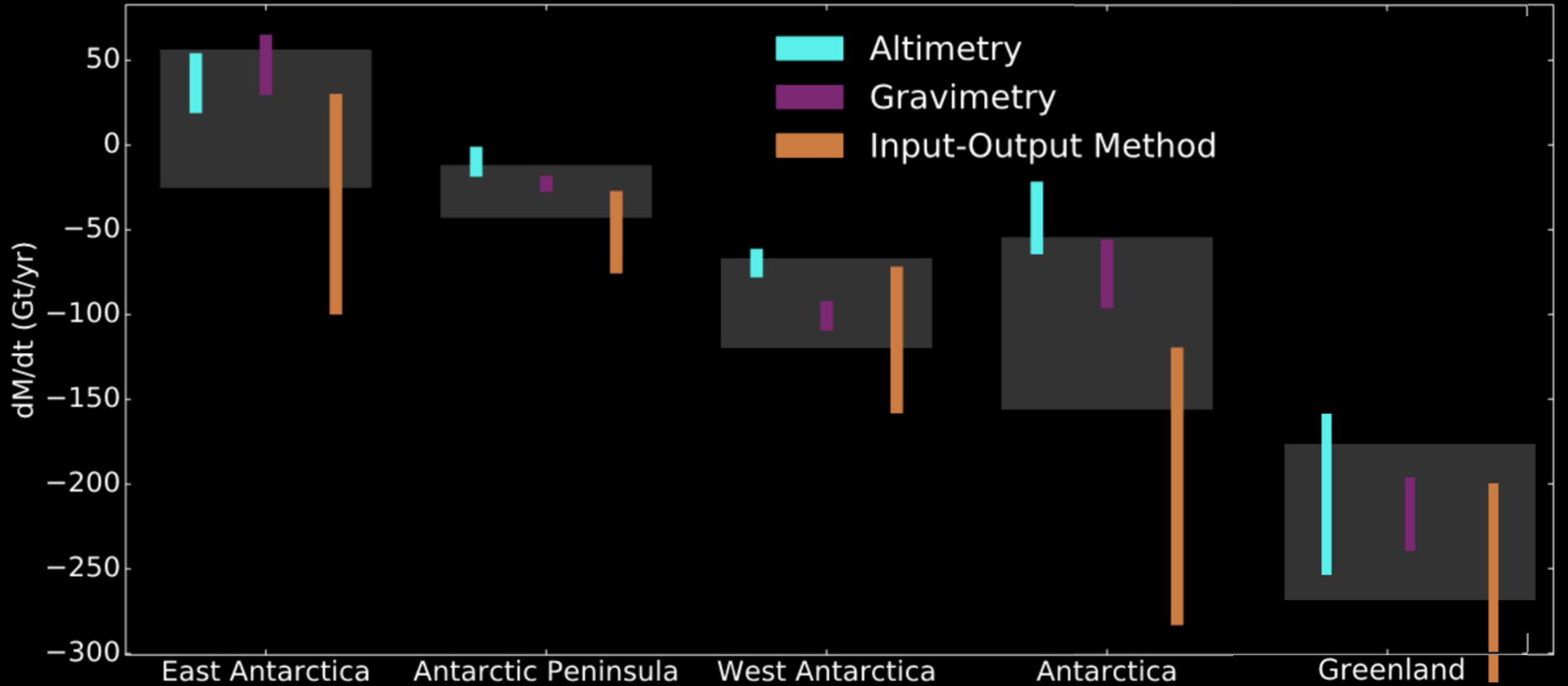
Input Output Method differences ice discharge and surface mass balance



Gravimetry measures changes in ice sheet weight

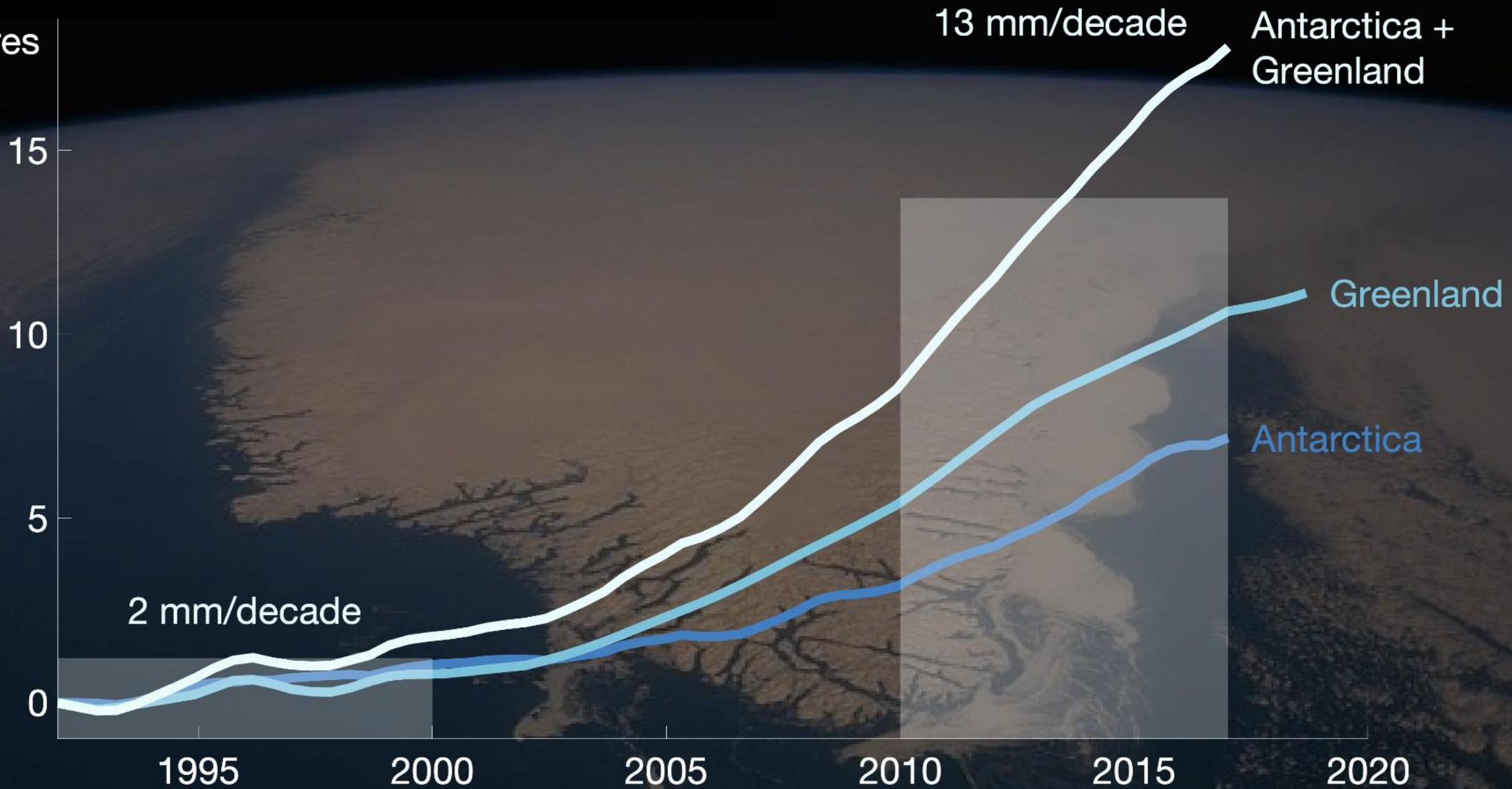


Mass balance

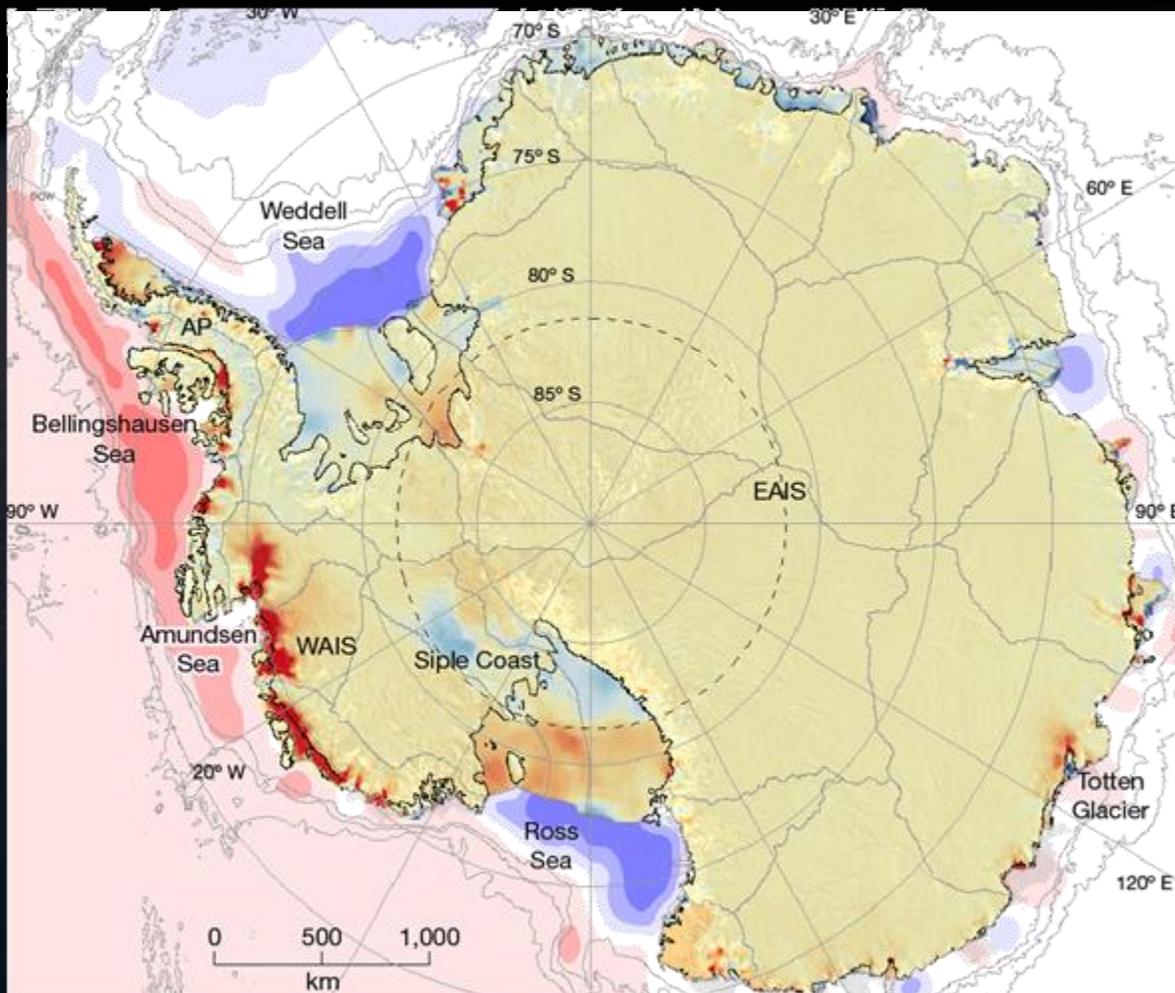


Mass balance

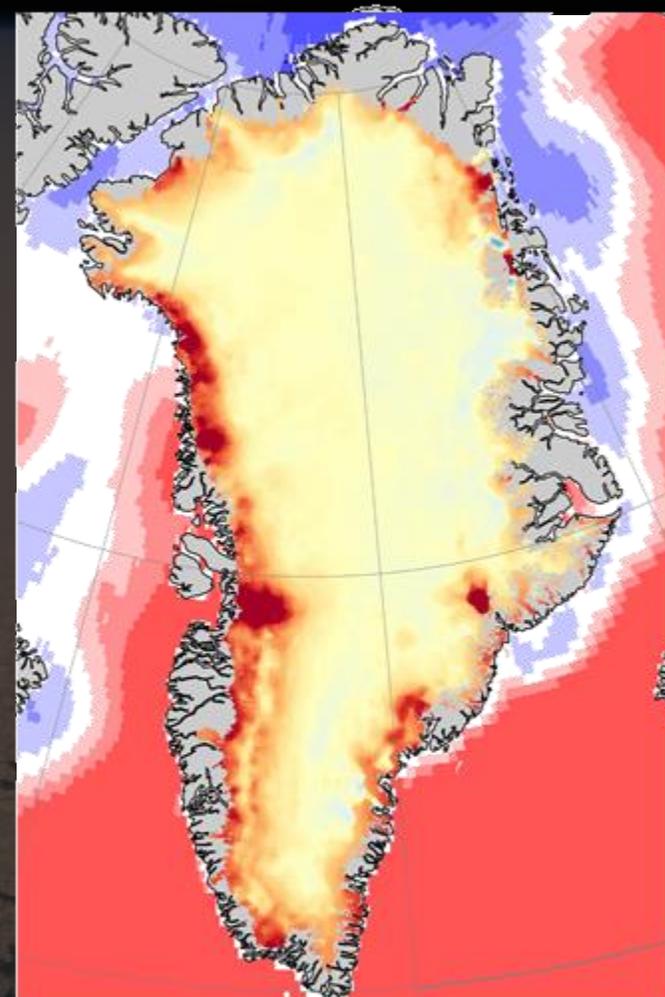
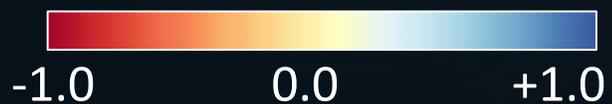
millimetres



Trend and forcing



Ice elevation change (m/yr)

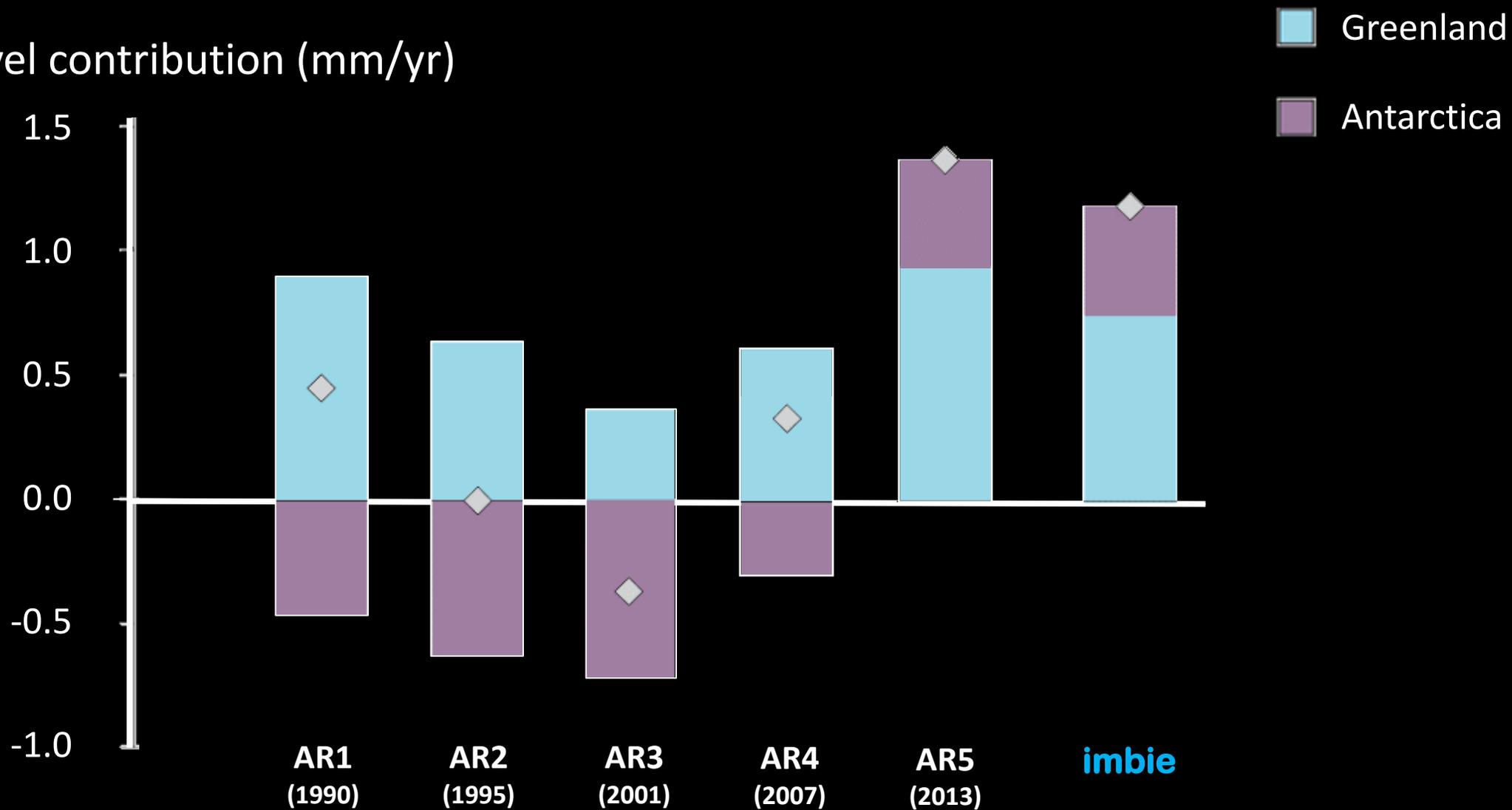


Ocean temperature (°C)

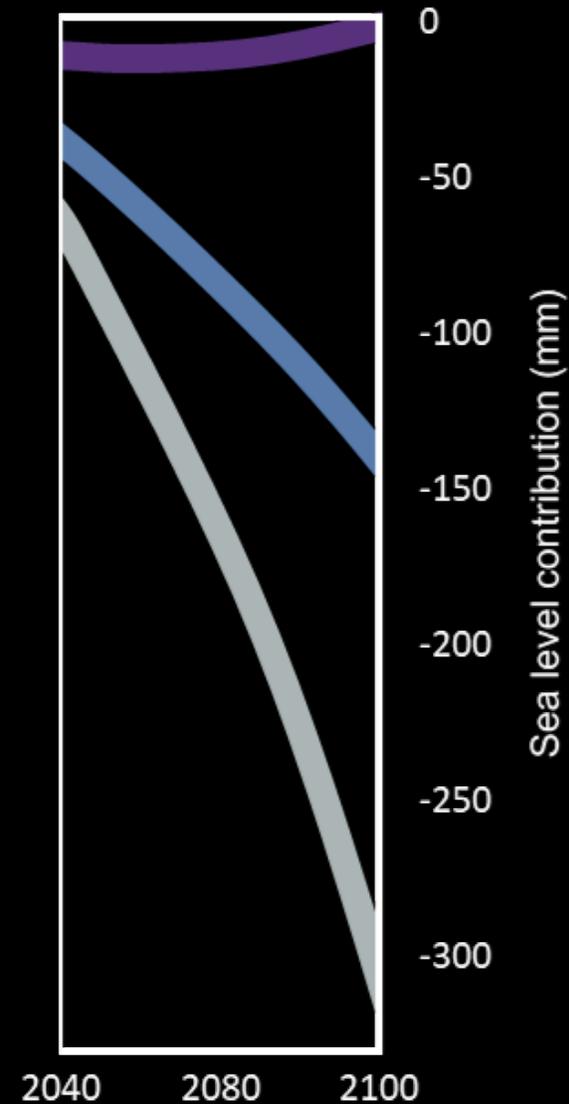
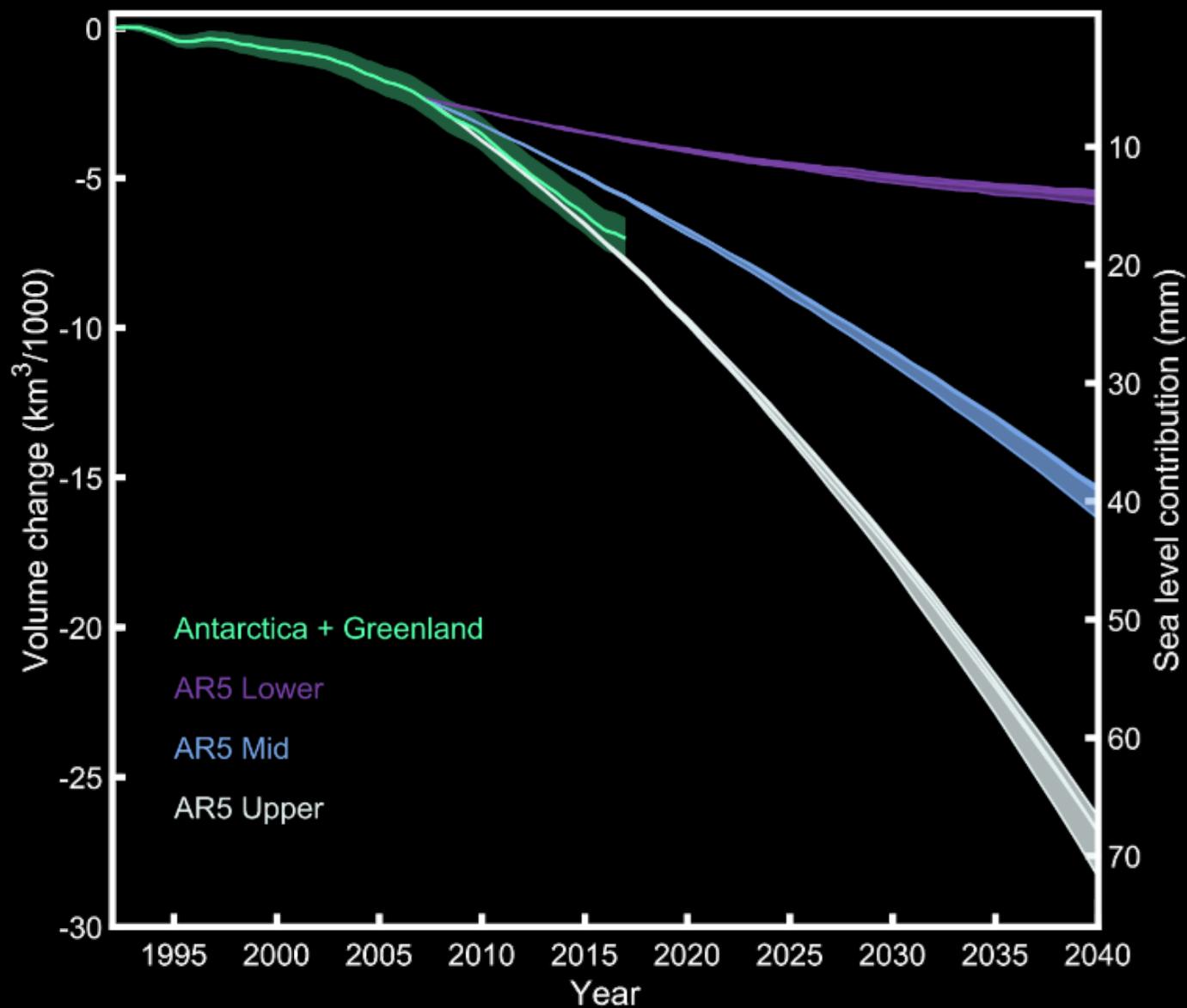


Comparison to IPCC

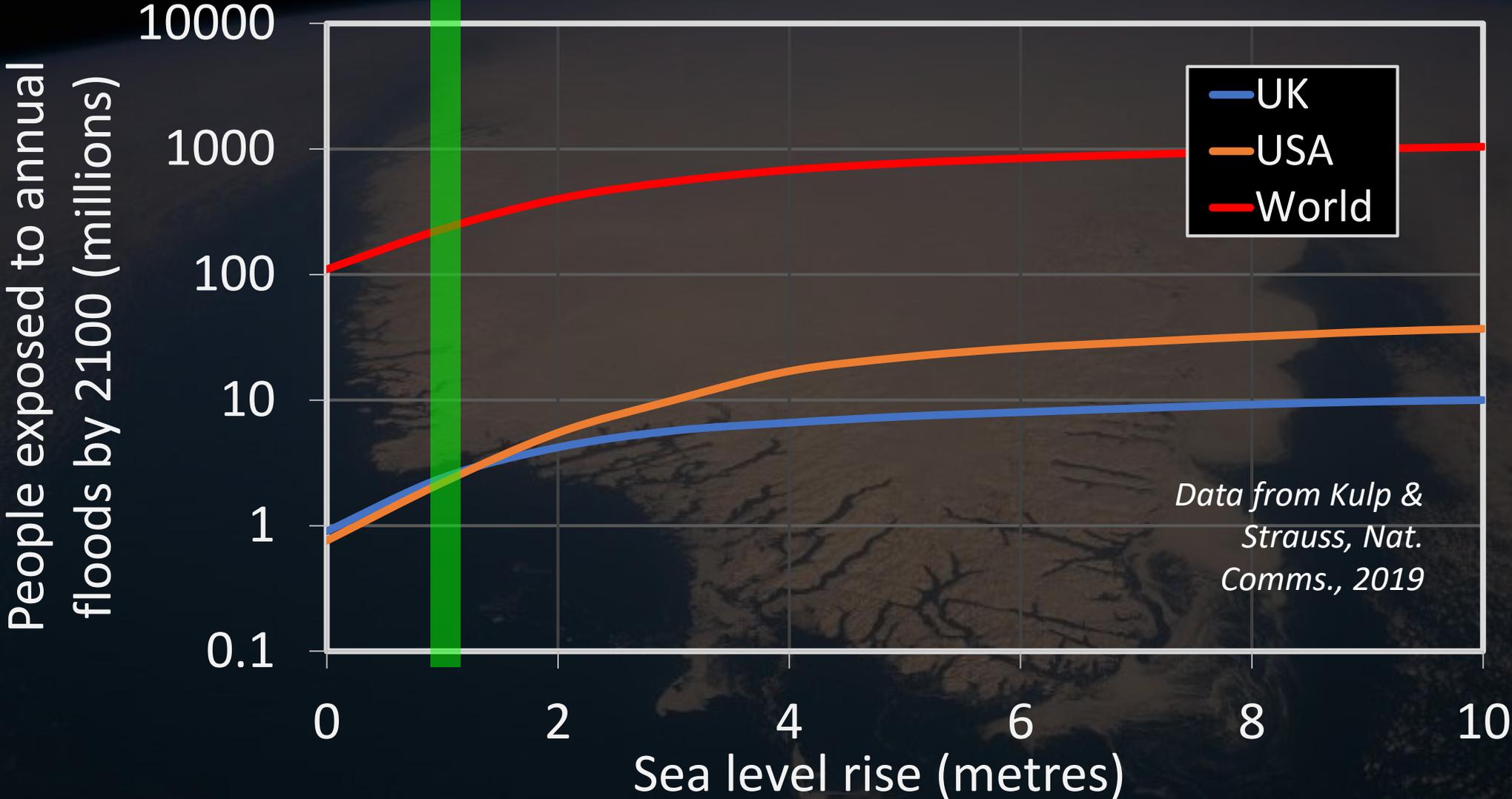
Sea level contribution (mm/yr)



Comparison to AR5



Flood exposure



Summary

- ❄️ 26 satellite surveys, 11 GIA models, 10 SMB models
- ❄️ Antarctica (41%) and Greenland (59%) have contributed 18.4 mm to sea level since 1992
- ❄️ Six-fold increase in rate of ice loss
- ❄️ Losses are tracking AR5 upper scenario, 17 cm more than mid (RCP4.5) by 2100
- ❄️ Raises annual flood risk to 400 million people
- ❄️ Need to revisit models and secure satellites post ICESat-2