

# **Risk and Robustness**

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Resources for the Future

Robustness and legitimacy of models for climate  
policy assessment” on 26-27 May 2020 in Chamonix,  
France

The Risk Prospective

**Pollyanna to Chicken Little**

# “Equilibrium Climate Sensitivity

is... *extremely unlikely* [ $<5\%$ ] less than  $1^{\circ}\text{C}$  (*high confidence*), *very unlikely* [ $< 10\%$ ] greater than  $6^{\circ}\text{C}$  (*medium confidence*).” (AR5 p.1111)

"A climate change of ...  $5\sim 6^{\circ}\text{C}$ , would be catastrophic to human civilization." David Archer (2009) *The Long Thaw*

Would you put your kids on an airplane in which authorities had medium confidence that the probability of a crash was less than  $10\%$ ??

# IPCC 5<sup>th</sup> Assessment Report

## Box 2.2 Quantifying Uncertainty

**“Natural language is not adequate for propagating and communicating uncertainty”**

**Confidence statements: “qualitative synthesis”**

“qualitative synthesis of an author team’s judgment about the validity of a finding as determined through evaluation of evidence and agreement” Box TS1

# BOGSAT

# The **BOGSAT** method for UQ (1961)

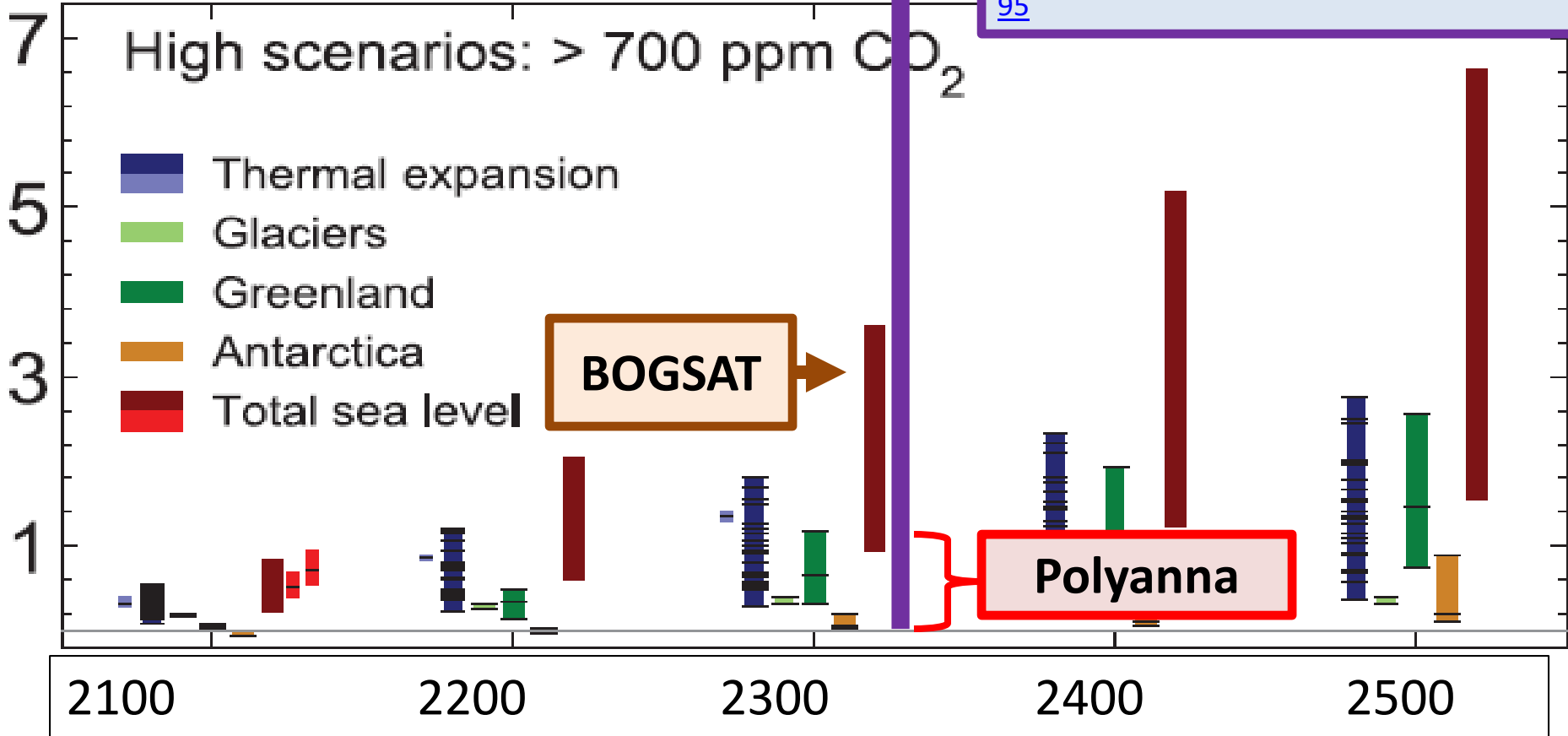
(bunch of guys/gals sitting around a table)



# IPCC AR5, "full model spread" SLR [m] Fig 13.13, p. 1188

Chicken Little

2018 SEJ with Tail Dependence  
Ice sheet contribution to SLR  
<https://www.pnas.org/content/116/23/11195>



BOGSAT

Polyanna

- Look at the tails:
- Quantify the uncertainty
- Communicate