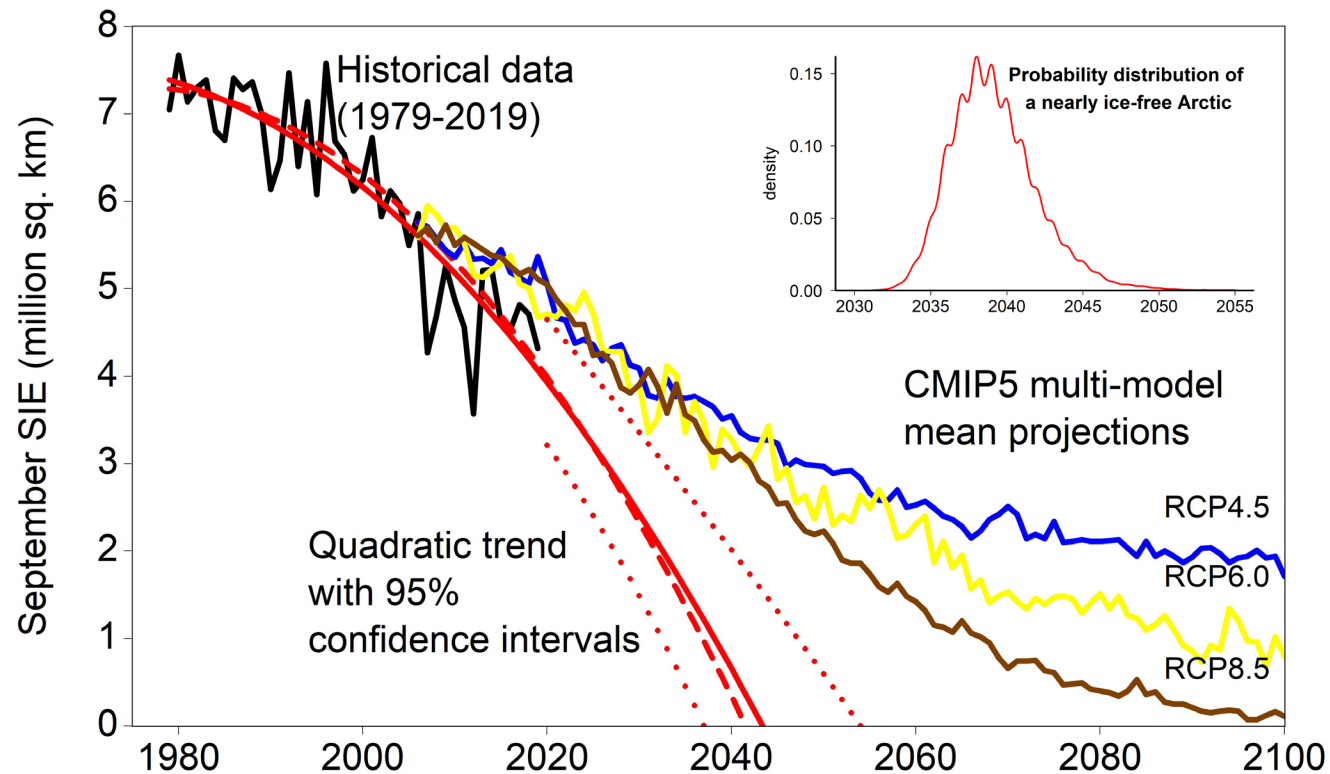


Probability Assessments of an Ice-Free Arctic: Comparing Statistical and Climate Model Projections

Francis X. Diebold (UPenn) and Glenn D. Rudebusch (San Francisco Federal Reserve Bank)
In press, *Journal of Econometrics*, available at <https://glennrudebusch.com/>

September Arctic Sea Ice Extent



Research design: Compare statistical point and density forecasts for Arctic sea ice to CMIP5 mean model projections.

Empirical Results

- Sea ice is decreasing at increasing rate.
- First ice-free Sept Arctic occurs around 2039.
- A 60% chance of ice-free Arctic in 2030s.
- An ice-free Arctic is projected to occur much sooner than in climate model simulations.

Future extensions

- Individual CMIP5 and CMIP6 models
- Carbon and sea ice linear relationship
- Sea ice area, extent, thickness, volume