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

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The downward trend in the amount of Arctic sea ice is a key factor determining the pace and intensity of future global climate change. Diminished sea ice also has a wide range of other environmental and economic consequences. Based on several decades of satellite data, we provide statistical forecasts of Arctic sea ice extent during the rest of this century. The best fitting statistical model indicates that overall sea ice coverage is declining at an increasing rate. By contrast, average projections from the CMIP5 global climate models foresee a gradual slowing of Arctic sea ice loss even in scenarios with high carbon emissions. Our long-range statistical projections also deliver probability assessments of the timing of an ice-free Arctic. These results indicate almost a 60 percent chance of an effectively ice-free Arctic Ocean during some summer in the 2030s -- much earlier than the average projection from global climate models.