Studying extreme Arctic sea ice lows with rare event simulation techniques

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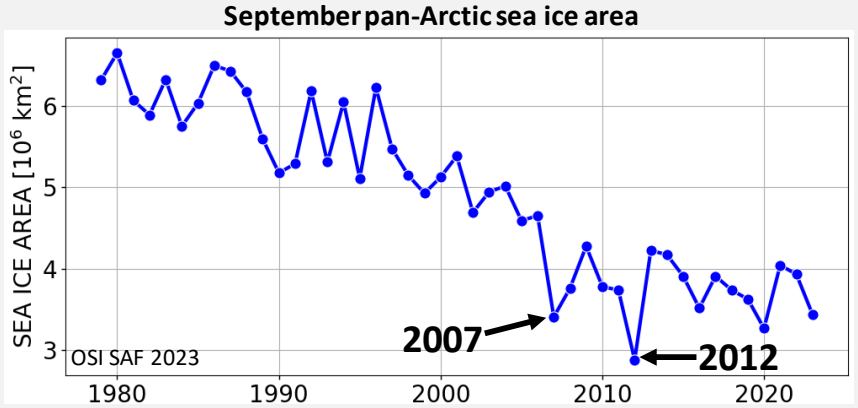
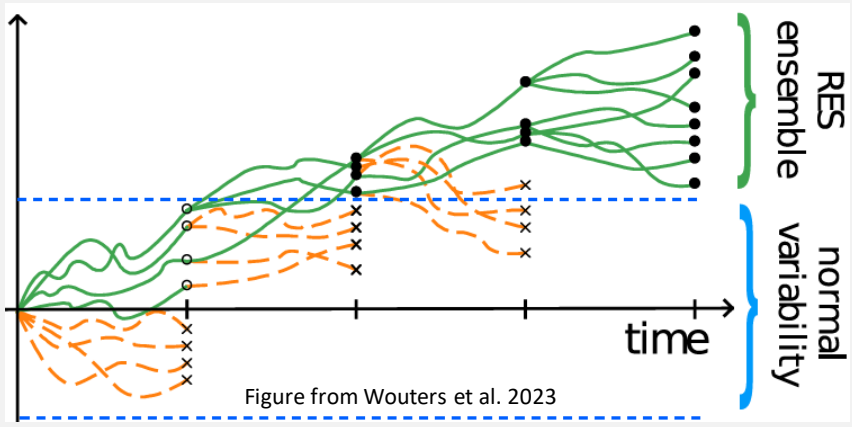
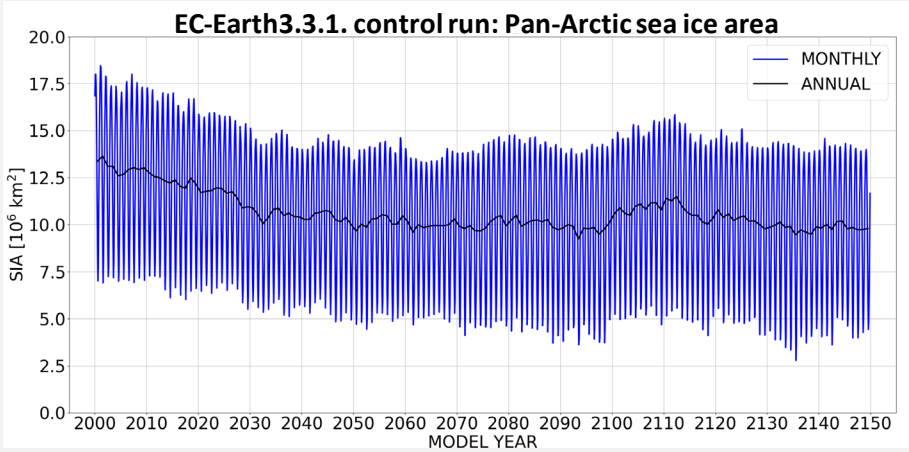


Problem: robust quantitative statistical analysis of **climate extremes** hindered by **lack of data**

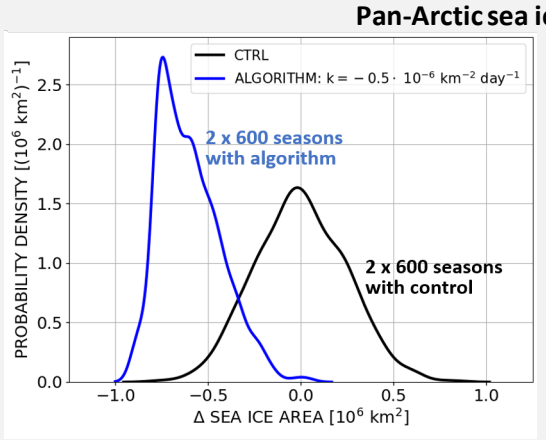


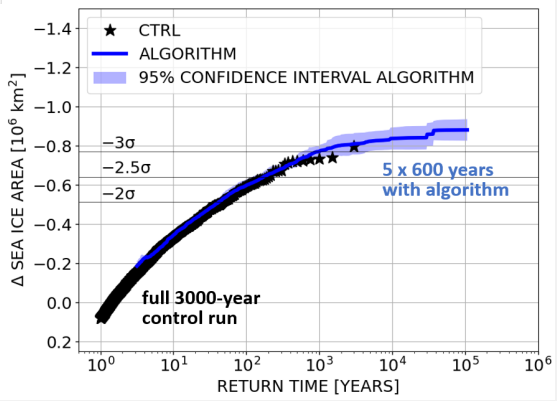
Possible solution: oversample extremes in climate model simulations with a **rare event algorithm**

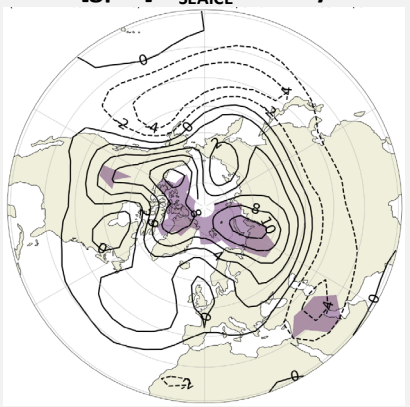


Near-future:

- Implementation of the **algorithm** to **EC-Earth3.3.1**
- Study on extreme sea ice lows under stationary year-2000 climate







Application to **PlaSim-T21-LSG** (Sauer et al. 2023):

- **Improved composite statistics** compared to control run + **ultra-rare events**
- **Ingredients:** winter preconditioning, warm/moist spring atmosphere, ice-albedo feedback