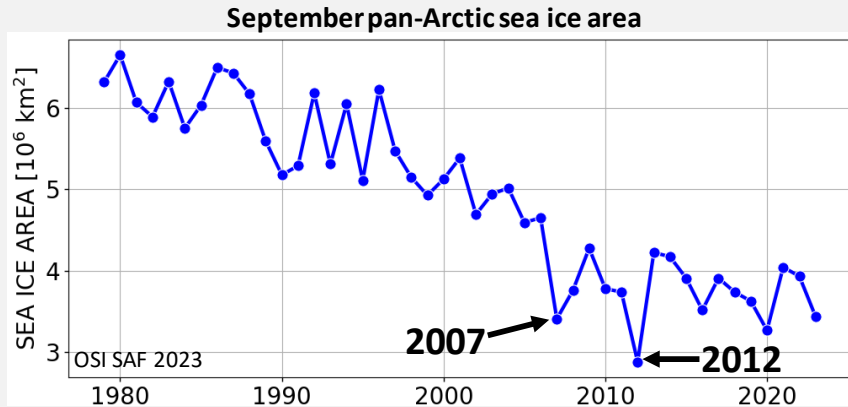
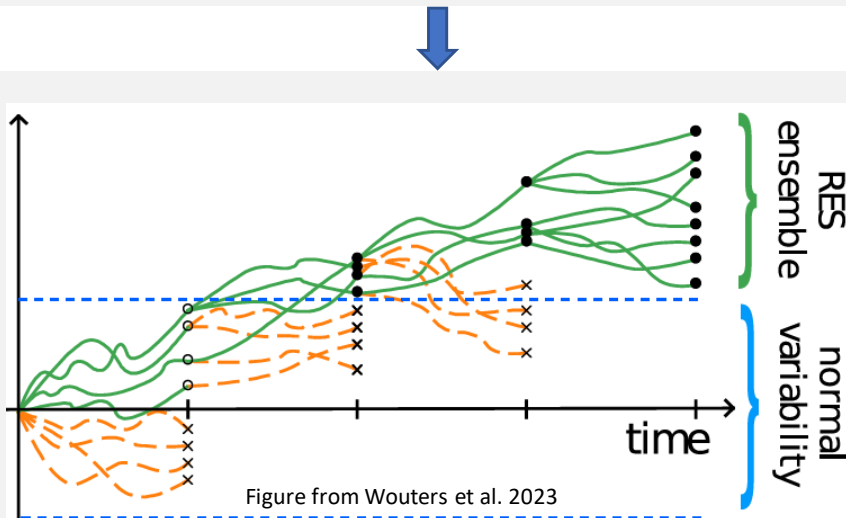


Studying extreme Arctic sea ice lows with rare event simulation techniques

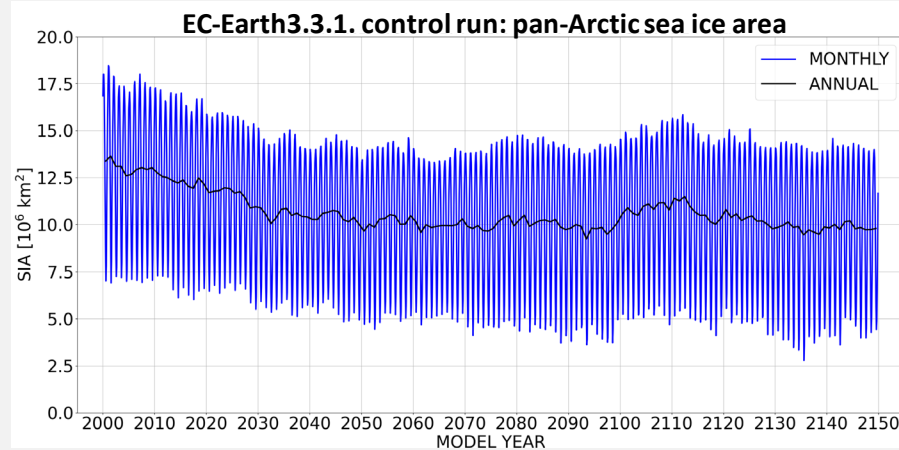
Jerome Sauer, Francesco Ragone, François Massonnet, Giuseppe Zappa, Jonathan Demaeyer
jerome.sauer@uclouvain.be



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



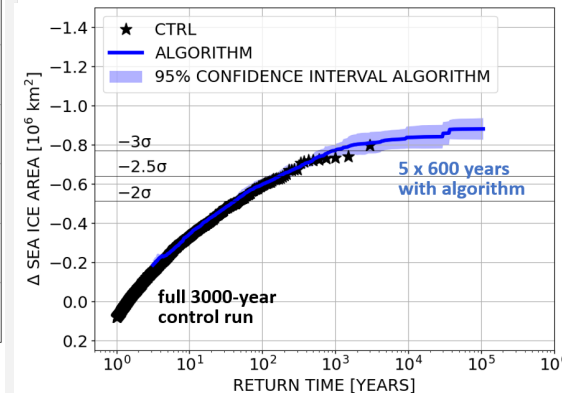
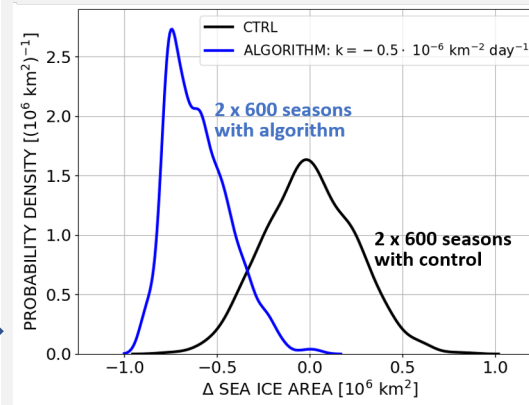
Possible solution: oversample **extremes** in climate model simulations with a **rare event algorithm**



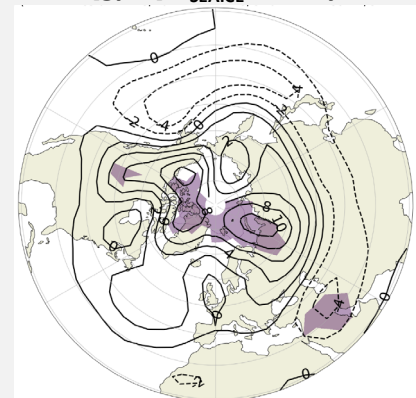
Near-future:

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

Pan-Arctic sea ice area anomalies



Z500 [gpm]: $r_{\text{SEAICE}} > 200 \text{ years}$



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