

2023 July Sea Ice Outlook Submission  
Supporting Materials

by

RASM@NPS (Maslowski et al.)

### RASM Ensemble Daily Ice Extent: September 2023 (1st July-initialized)

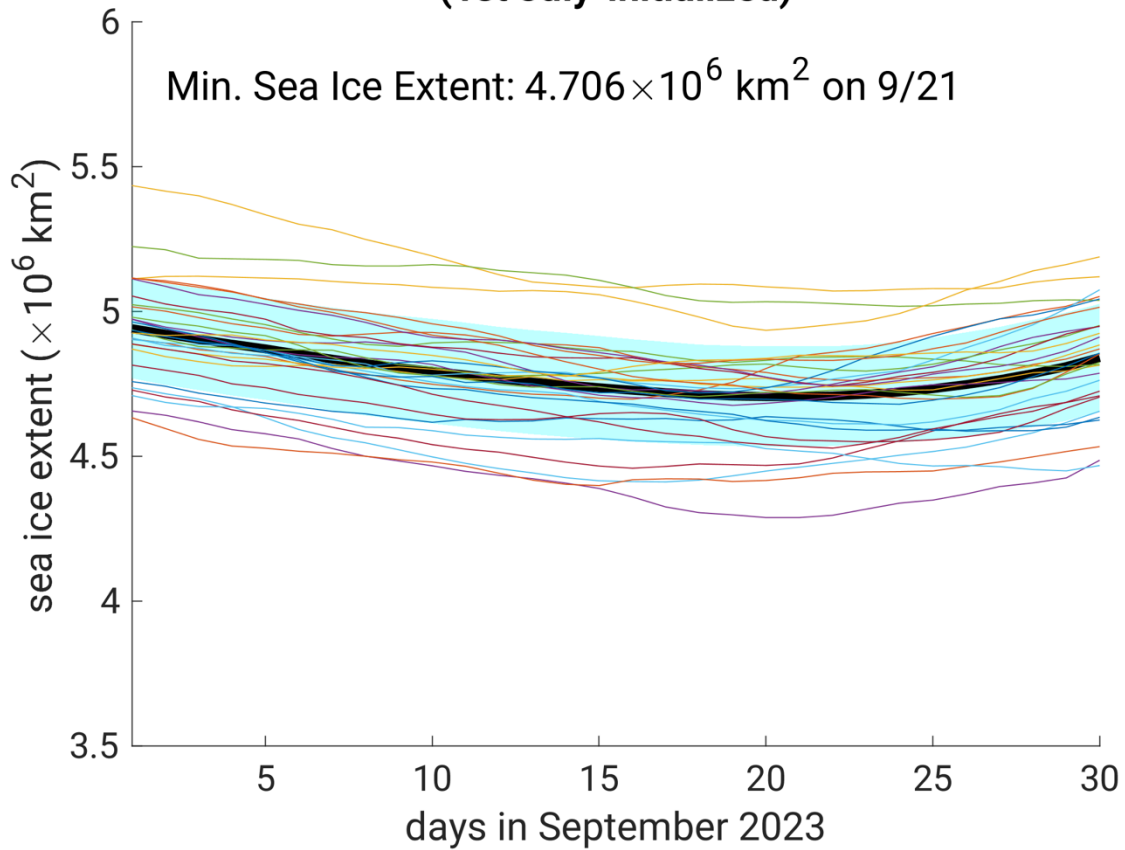


Figure 1. The RASM July-initialized ensemble forecast of daily pan-Arctic sea ice extent for the September 2023 Sea Ice Outlook in contribution to the Sea Ice Prediction Network. The thick black line is the daily ensemble mean sea ice extent for September 2023, color lines are for 30 individual ensemble members and the blue shading represents  $\pm 1$  standard deviation from the ensemble mean. Minimum daily ensemble mean sea ice extent ( $4.706$  million  $\text{km}^2$ ) is predicted on 9/21/2023.

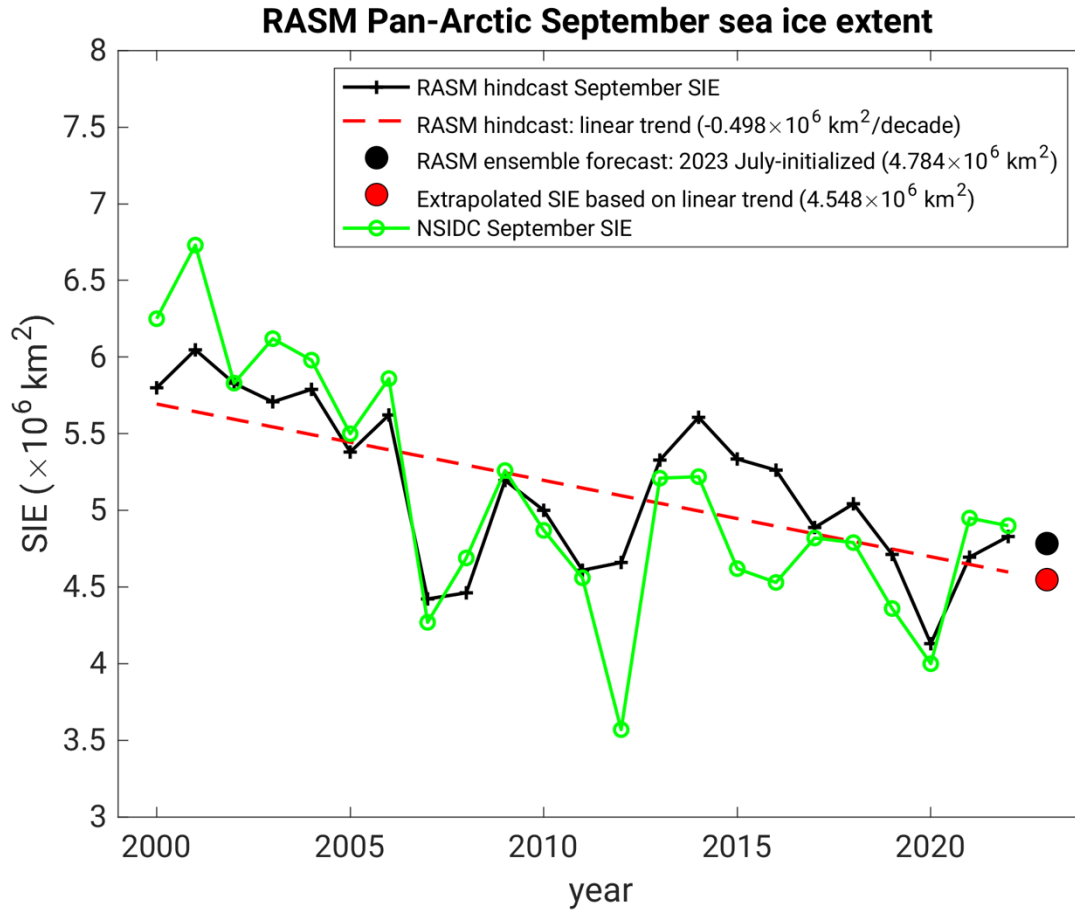


Figure 2. The linear trend (red dashed;  $-0.498 \text{ million km}^2/\text{decade}$ ) of September mean sea ice extent (black solid) from the RASM hindcast simulation during the baseline period (2000-2022). The red circle is the extrapolated September 2023 sea ice extent value based on the linear trend calculated. The black circle is the RASM ensemble forecast for September 2023 reported to 2023 July call for Sea Ice Outlook. The pan-Arctic sea ice extent anomaly (subtracting the RASM September 2022 Outlook extent from the extrapolated September 2022 value) is  $-0.236 \text{ million km}^2$ .

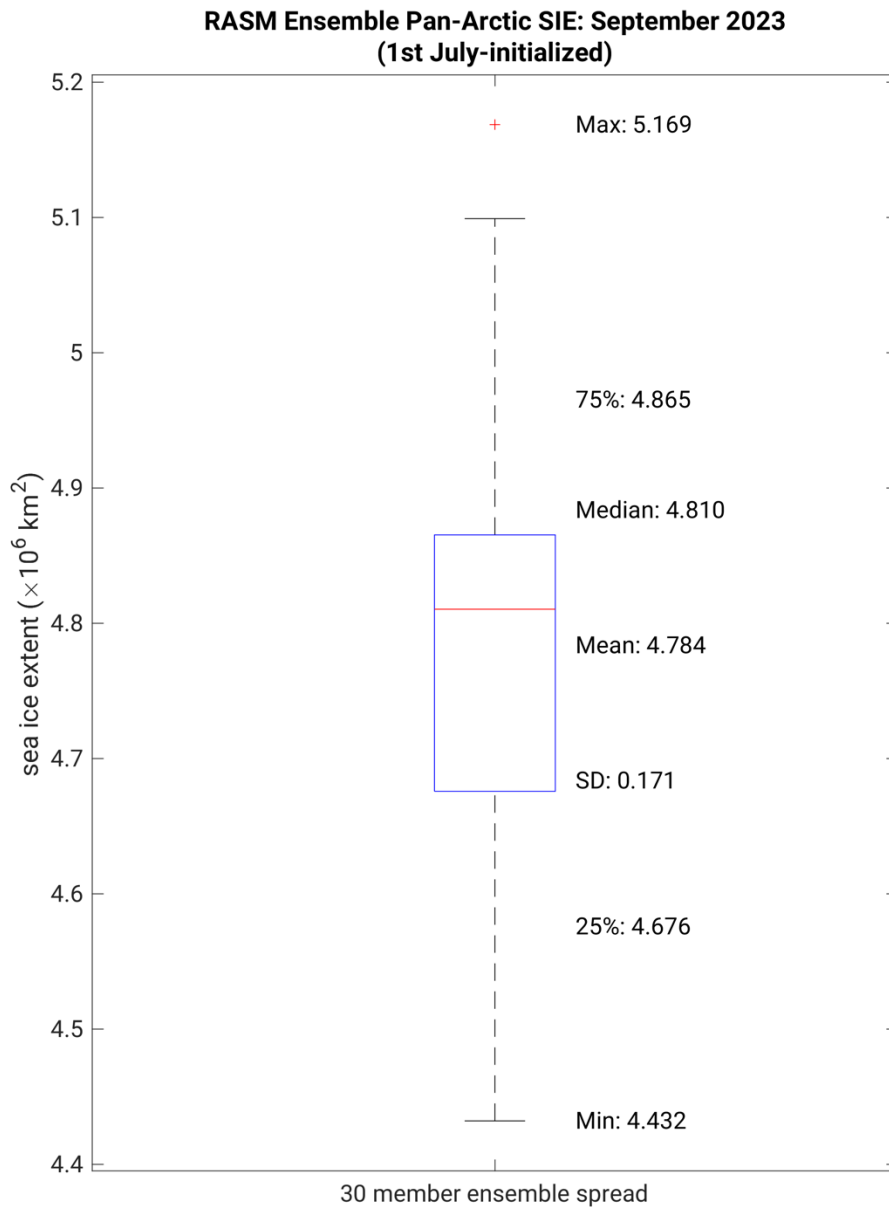


Figure 3. The ensemble spread of the RASM forecast (30 members) for September 2023 sea ice extent. On a box, the central mark (red) is the median, the edges of the box (blue) are the 25th and 75th percentiles (4.676 and 4.865 million km<sup>2</sup>, respectively), and the whiskers each cover 24.5% of the data values, excluding an outlier (indicated as +). Maximum, minimum, mean and standard deviation (SD) are also shown.