

2022 July Sea Ice Outlook Submission
Supporting Materials

by

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**RASM Ensemble Daily Ice Extent: September 2022
(1st July-initialized; no ice when SIC<=15% & SIT<=20cm)**

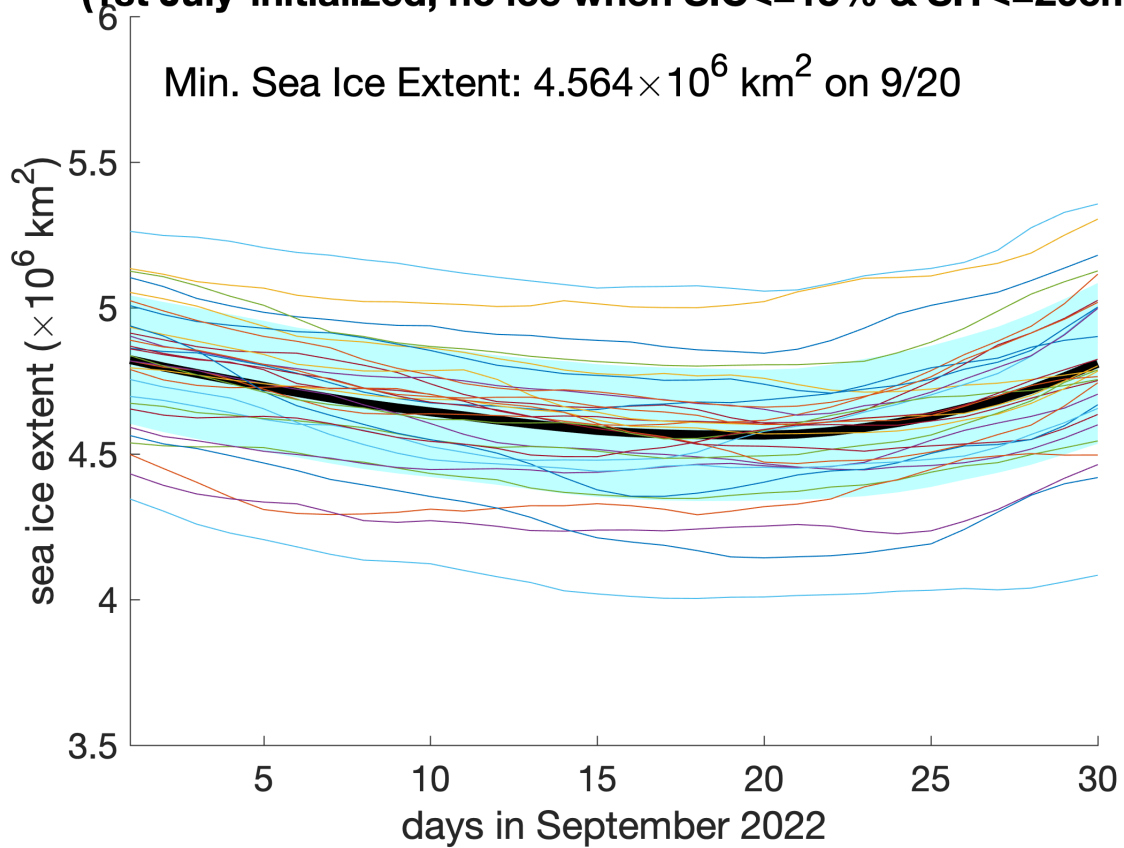


Figure 1. The RASM June-initialized ensemble forecast of daily pan-Arctic sea ice extent for the September 2022 Sea Ice Outlook in contribution to the Sea Ice Prediction Network. The thick black line is the daily ensemble mean sea ice extent for September 2022, color lines are for 31 individual ensemble members and the blue shading represents ± 1 standard deviation from the ensemble mean. Minimum daily ensemble mean sea ice extent (4.564 million km^2) is predicted on 9/20/2022.

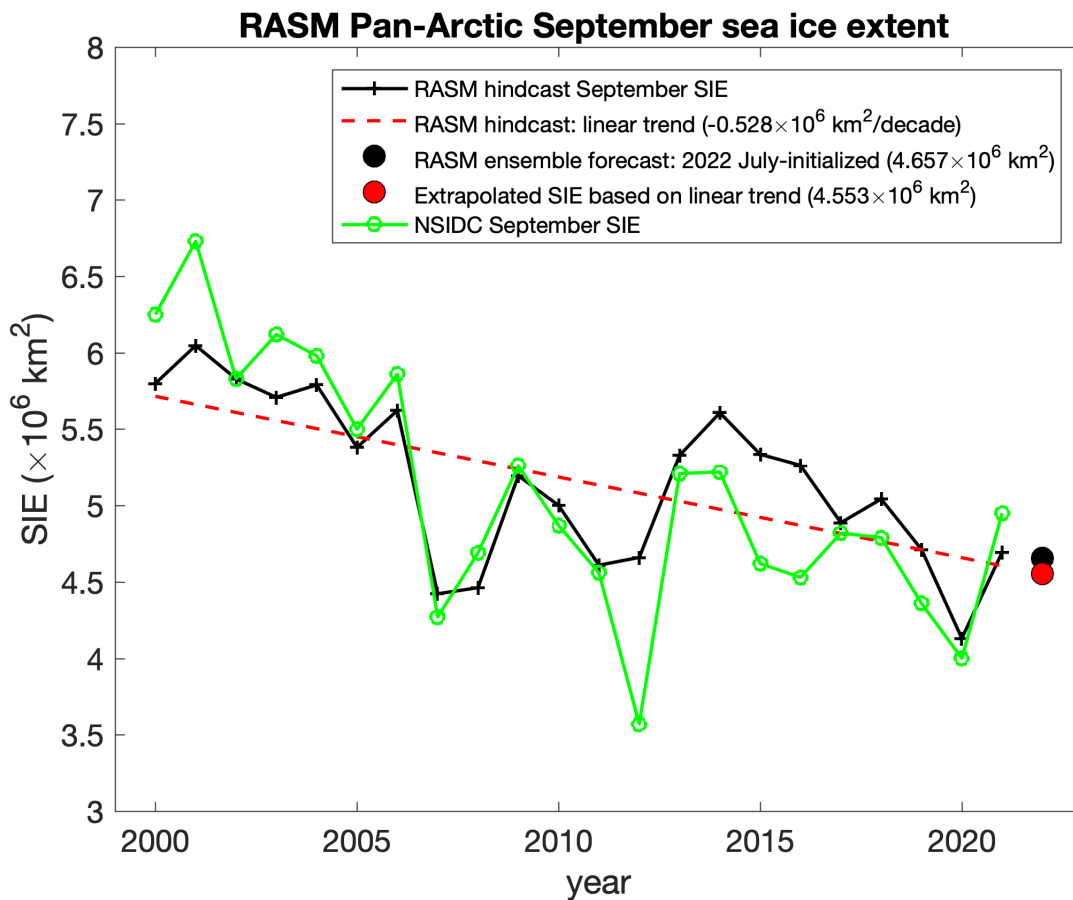


Figure 2. The linear trend (red dashed; $-0.528 \text{ million km}^2/\text{decade}$) of September mean sea ice extent (black solid) from the RASM hindcast simulation during the baseline period (2000-2021). The red circle is the extrapolated September 2022 sea ice extent value based on the linear trend calculated. The black circle is the RASM ensemble forecast for September 2022 reported to 2022 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 $-0.104 \text{ million km}^2$.

RASM Ensemble Mean Sea-ice Thickness: 2022-09-20

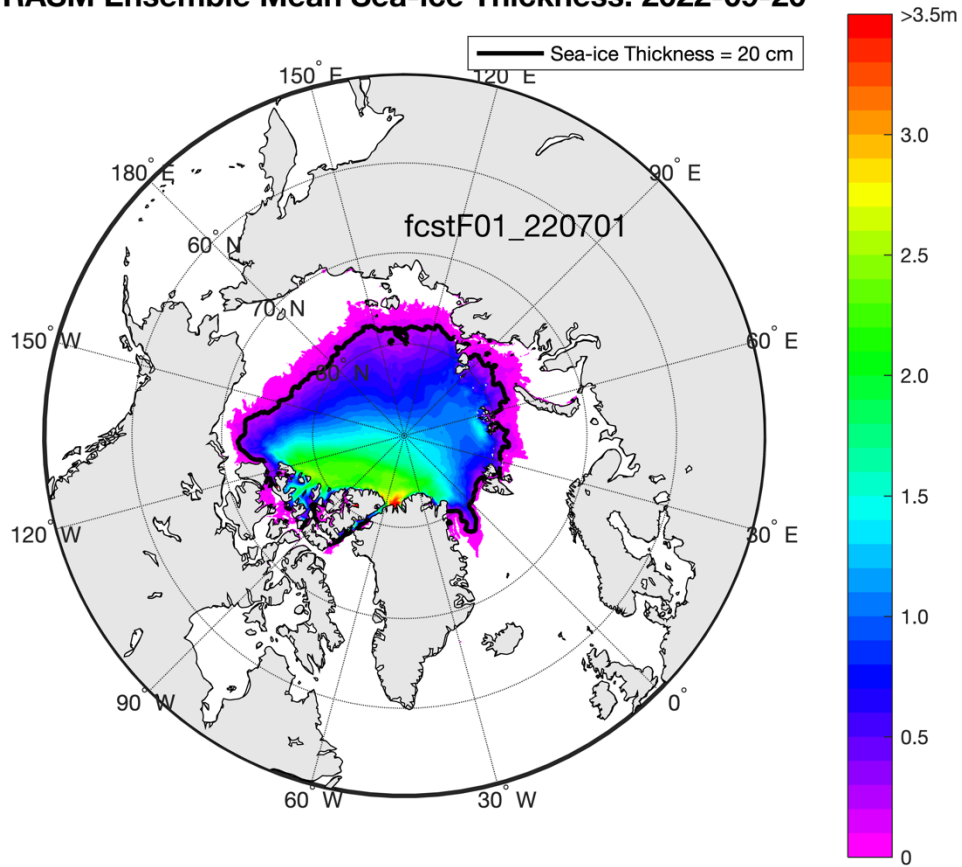


Figure 3. The RASM ensemble mean (30 members initialized on July 1, 2022) of sea ice thickness forecasted on September 20, 2022.

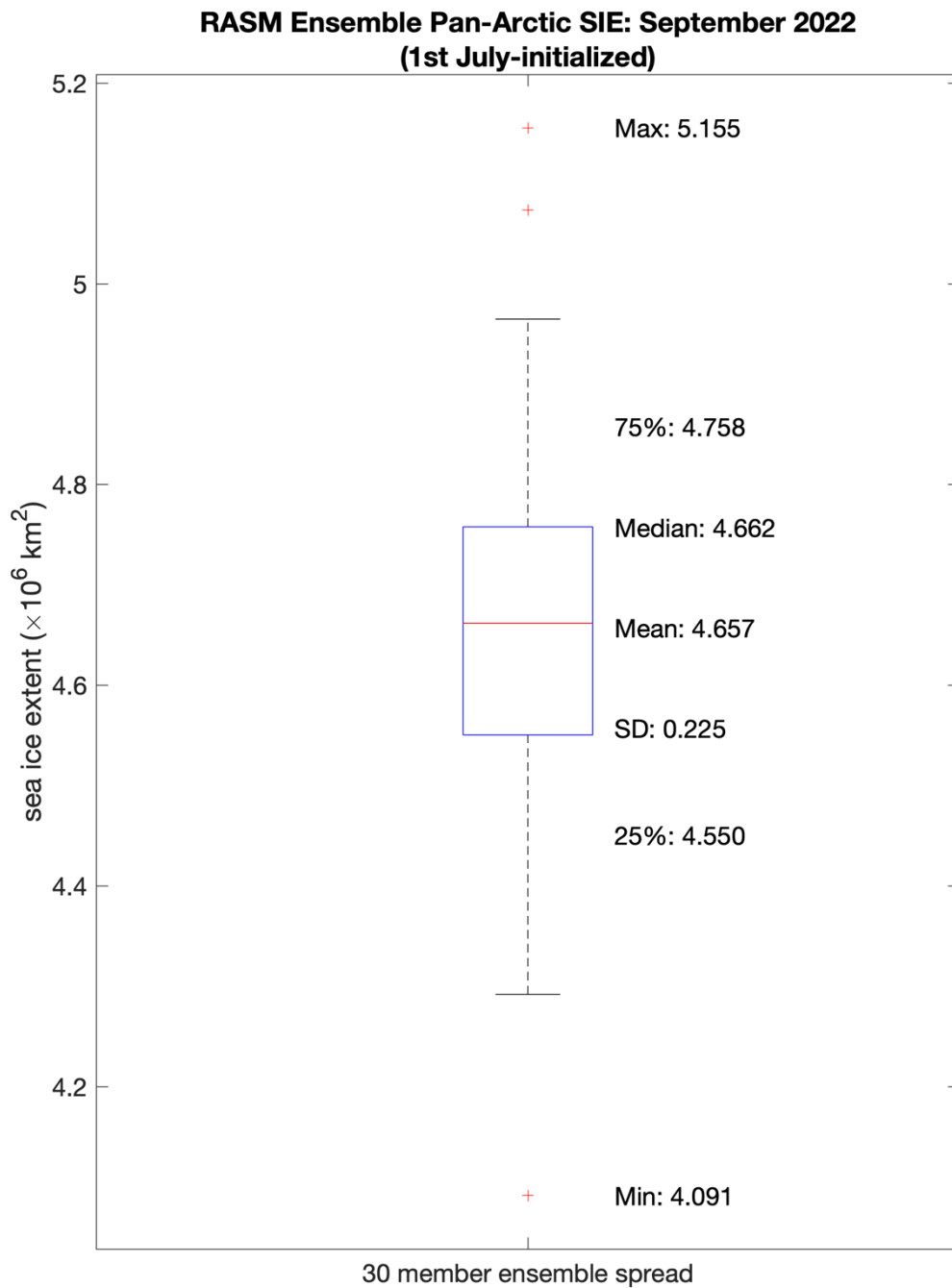


Figure 4. The ensemble spread of the RASM forecast (30 members) for September 2022 sea ice extent. On a box, the central mark (red) is the median, the edges of the box (blue) are the 25th and 75th percentiles (4.550 and 4.662 million km^2 , respectively), and the whiskers extend to the most extreme (minimum and maximum) data points. Mean and standard deviation (SD) are also shown.