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The GRACE and GRACE-FO missions have transformed our understanding of ice-sheet mass balance, but their monthly resolution and noise limitations restrict the detection of critical processes. Using simulations, we evaluate future gravimetry concepts—GRACE-C–like, NGGM, and the combined MAGIC constellation—for their ability to capture both short-term SMB variability and long-term ice-dynamic accelerations in Greenland and Antarctica. Results show that MAGIC offers a decisive improvement, enabling detection of rapid melt and accumulation events as well as dynamic discharge accelerations in key outlet glaciers. By constraining these processes, future gravimetry missions can significantly improve projections of sea-level rise.
Meeting homepage
GRACE-FO 2025 Science Team Meeting
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