Meta-analysis of North American Arctic and Boreal Aboveground Biomass Datasets

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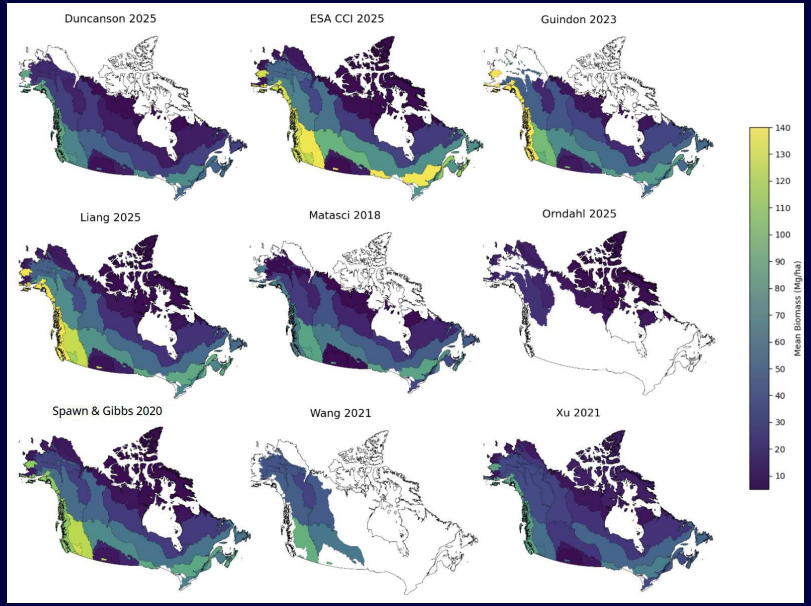
Key Research Result: Meta-analysis of nine aboveground biomass (AGB) datasets across Alaska and Canada reveals substantial accuracy variation (R^2 = 0.25 to 0.62; Bias = -47.8% to 69.9%), with regional maps outperforming global products.

Significance: First comprehensive evaluation of North American Arctic-Boreal AGB products provides critical guidance for dataset selection and identifies urgent needs to reduce regional bias and improve temporal change detection.

NASA assets and data: Study leveraged NASA's Arctic-Boreal Vulnerability Experiment (ABoVE) datasets, including 30m resolution products spanning 40 years. ABoVE's extensive airborne LiDAR and field measurements enabled high-quality regional datasets with superior accuracy versus global products, demonstrating the value of dedicated field campaigns.

Reference publication: Liang, W., et al. 2026. Meta-analysis of North American Arctic and Boreal Aboveground Biomass Datasets: Assessing Accuracy, Dynamics, and Similarities. Environmental Research Letters.https://doi.org/10.1088/1748-9326/ae481a



Caption: Mean AGB density estimates vary substantially across nine datasets, with percent uncertainty ranging from 20.6-53.3% in boreal regions and up to 130.3% in tundra regions.