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| **Young circumboreal forest growth hotspots identified with ICESat-2 and Landsat Stand Age** |
| Warming in the higher northern latitudes has improved conditions for forest growth, yet the fate of aboveground biomass (AGB) in the domain remains uncertain. Forest height is a strong predictor of AGB, and spatially detailed height-age relationships could improve our understanding of carbon dynamics in this ecosystem. To our knowledge site-index, defined as the capacity of land to grow trees, has not been estimated throughout the domain. We calculated it by co-locating 5,941,072 contemporary ICESat-2 canopy height observations with Landsat stand age estimates from 1985-2020. We found strong environmental gradients of height-age relationships throughout the domain when disturbance was excluded. We then selected disturbed segments and subtracted them from site-index predictions to estimate young forest growth potential. Strong departures (>5 m height) were found clustered in Southwestern Russia and sparsely distributed throughout the domain. Our results reveal the location and potential growth of young boreal forests if regeneration occurs. |