

Mapping plant biomass distribution, composition, and recent changes across the Arctic

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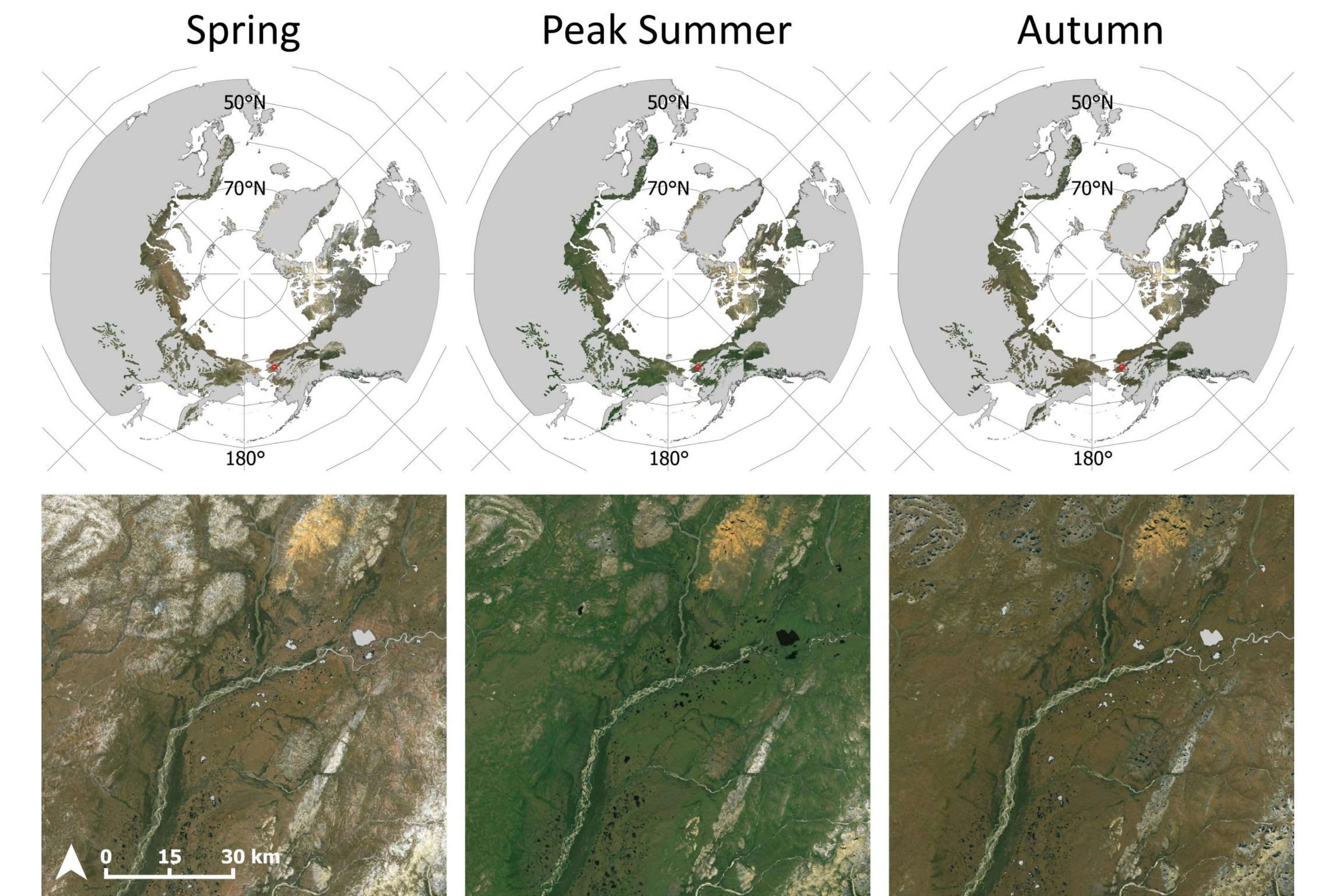
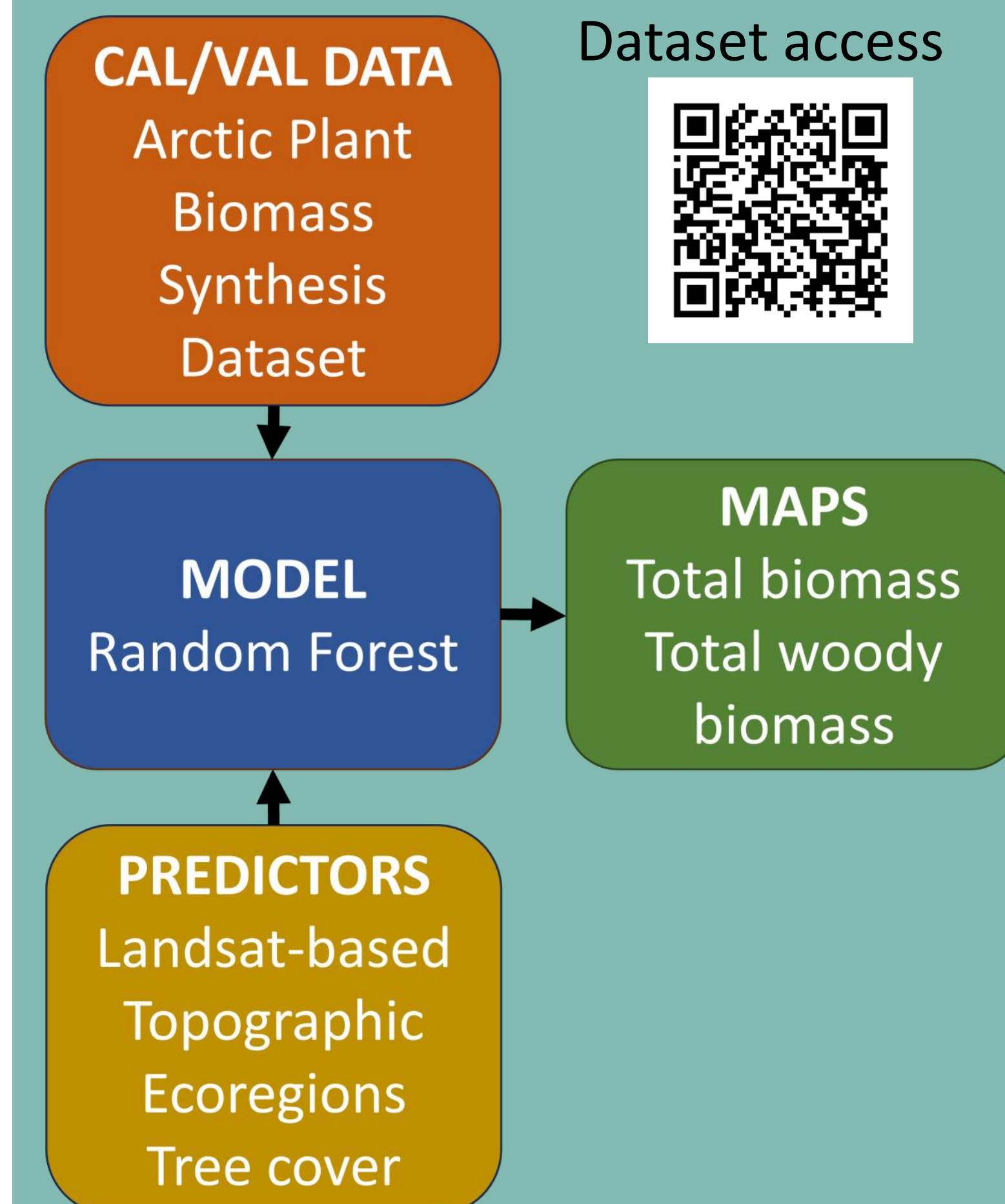
Projects: Berner NIP 2020 & Goetz TE 2021



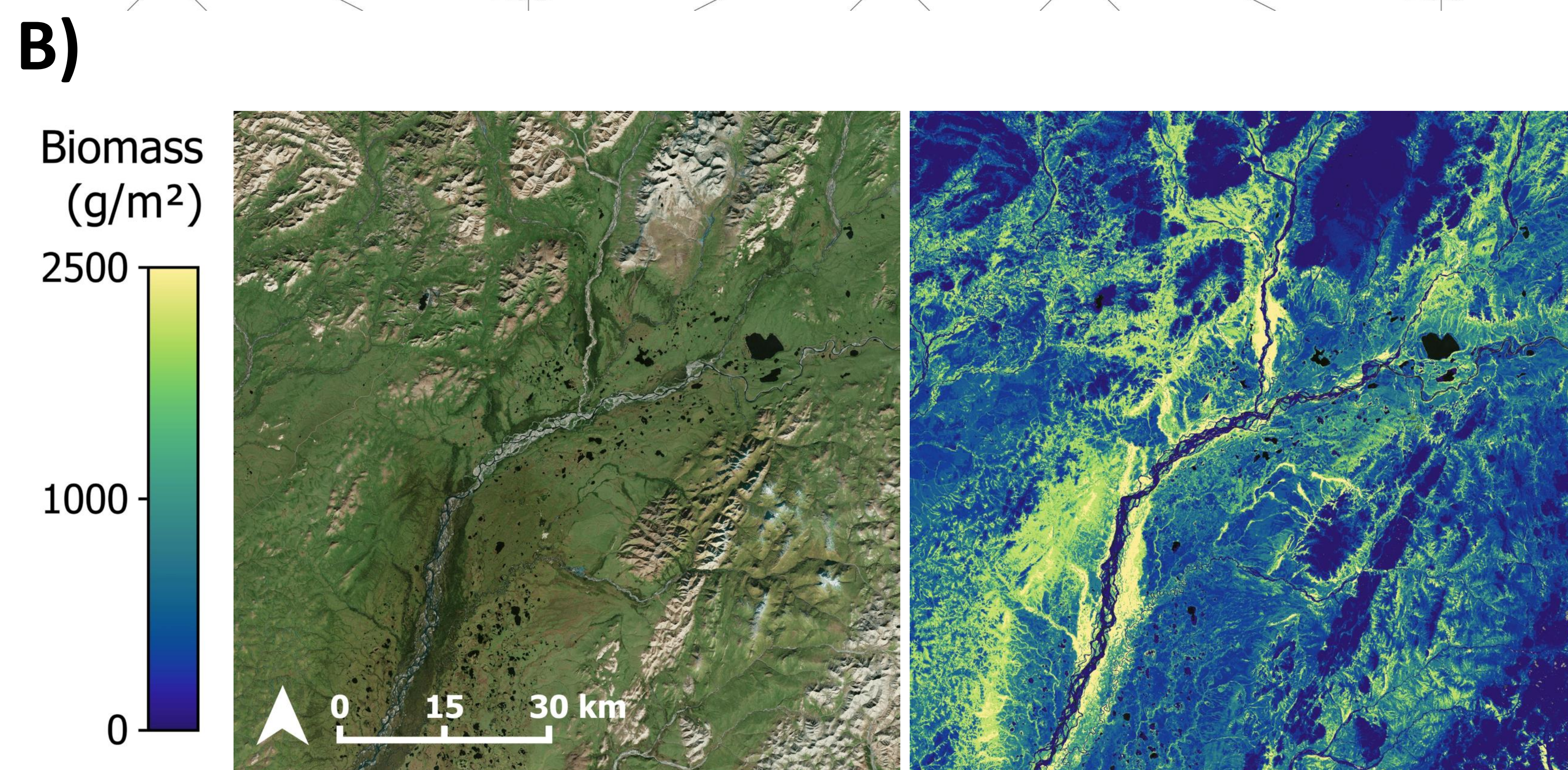
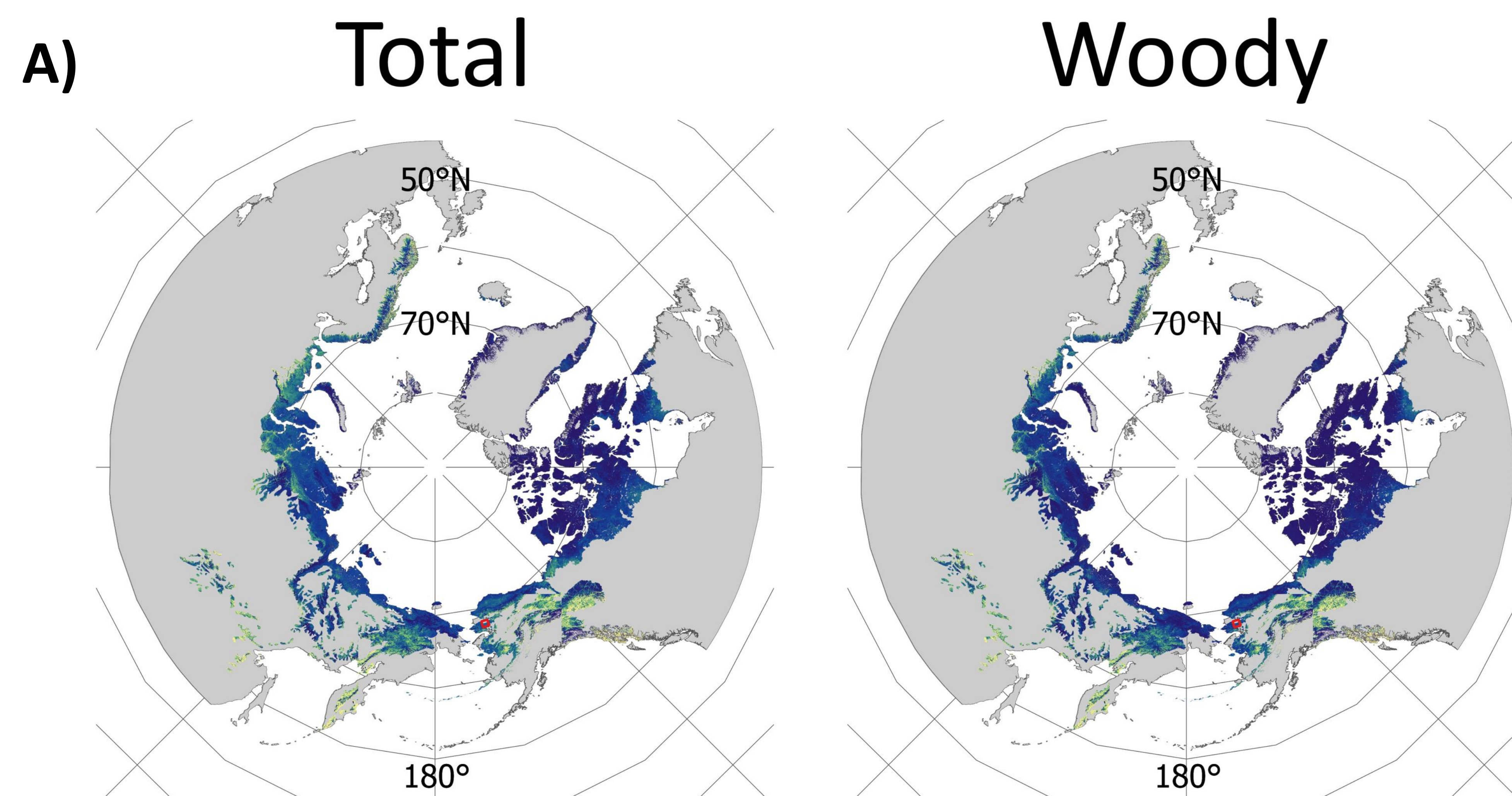
Why?

- The Arctic is warming 2-4 faster than the rest of the planet
- Biomass is a fundamental ecosystem property
- Existing maps are coarse resolution
- Applications: carbon accounting, ecosystem modeling, wildlife research etc.

How?



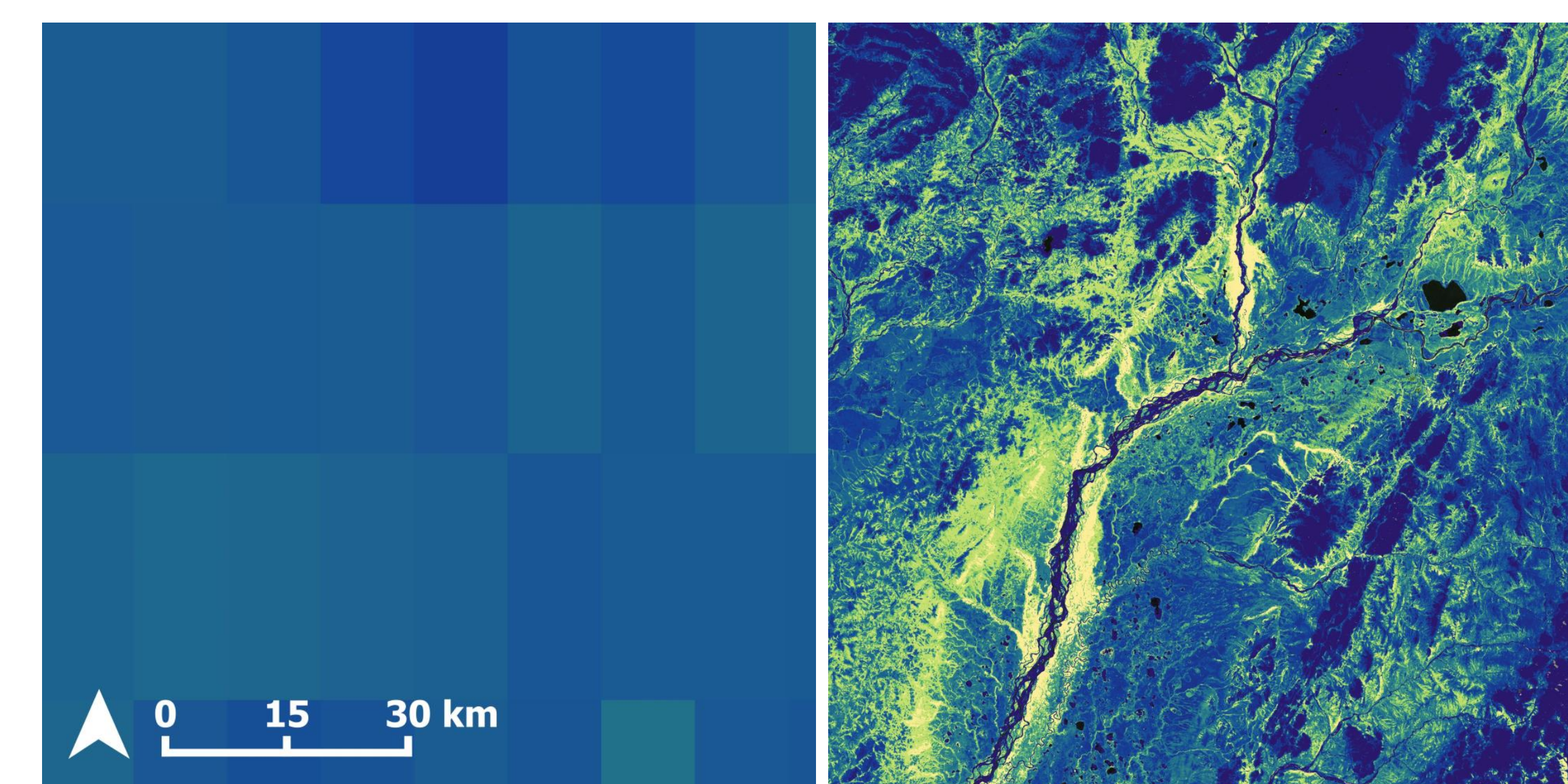
Landsat 5, 7 and 8 imagery were used in conjunction with the Continuous Change Detection and Classification algorithm (CCDC) to produce modeled seasonal reflectance images across the pan-Arctic region. These images form the backbone of the predictor data used for modeling.



A) Total and woody aboveground biomass mapped across the pan-Arctic for 2020

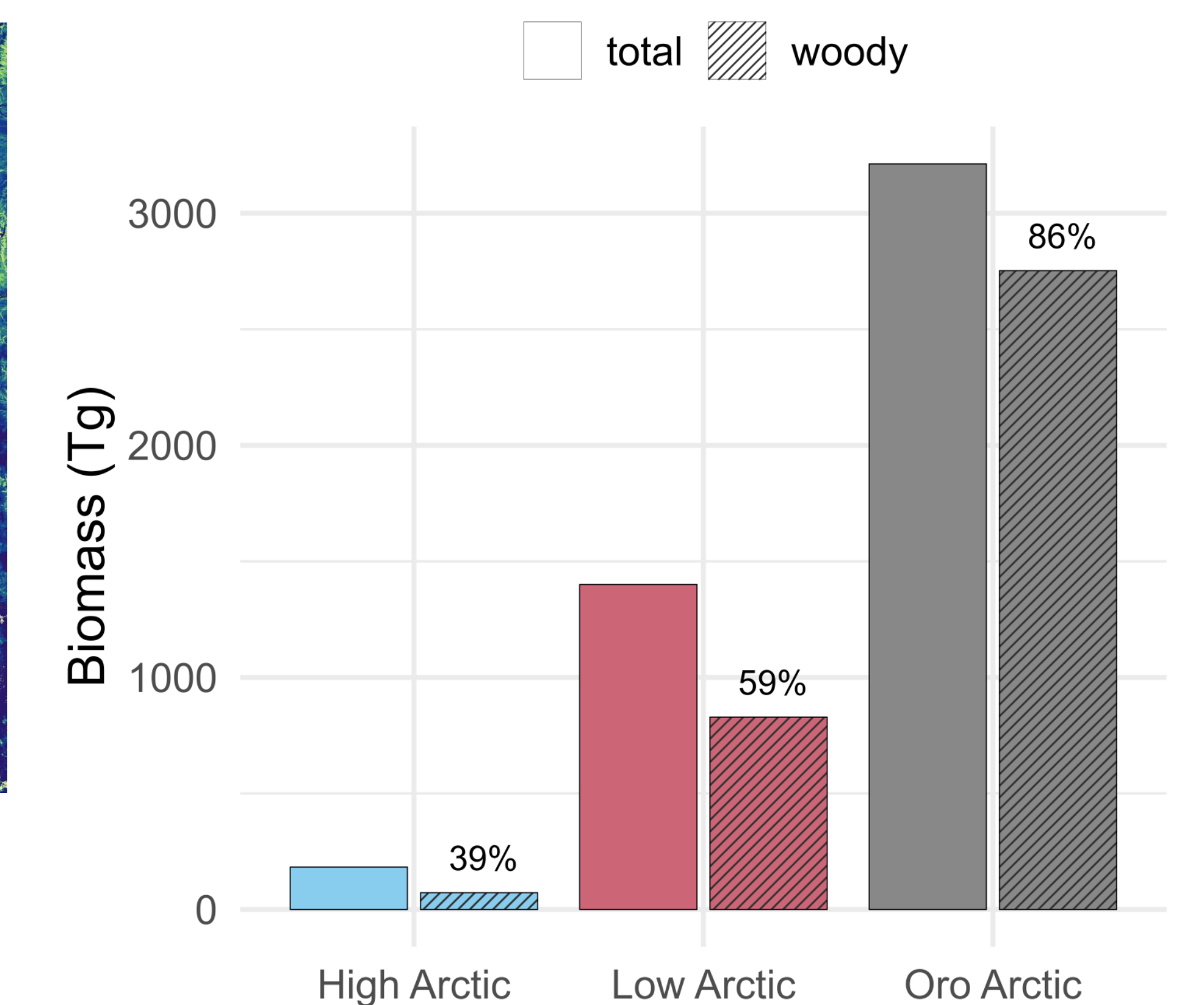
B) Comparison of mapped total biomass to very high resolution imagery near Noatak, Alaska

What? Pan-Arctic, 30m resolution maps of total and total woody biomass



Biomass (g/m²) 0 1000 2500

Inset of a region near Noatak, Alaska comparing mapped total biomass from this work (30m resolution, right) to the first pan-Arctic biomass map, produced by Reynolds et al. 2012 (8km resolution, left)



Total and woody biomass summed across the pan-Arctic by bioclimate zone. Percentages indicate the percent woody biomass.