

Research Article

Regional Quantitative Cover Mapping of Tundra Plant Functional Types in Arctic Alaska

Supplementary Materials

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Table S1. Five most important predictors for cover models by plant functional type (PFT) and abiotic cover group, North Slope, Alaska. Importance measures from the conditional random forest algorithm are shown in parentheses.

Plant functional type or abiotic group	Cover metric	Top predictors
Tall deciduous shrubs	Total	NDVI Magnitude (7.8) Early June NBR (4.5) Spring Snow-free NBR (2.3) Late June EVI2 (0.9) Midsummer EVI2 (0.6)
Low deciduous shrubs	Total	Early July SWIR2 (8.5) Early July NDVI (7.0) Early July EVI2 (6.8) Early July Green (5.5) Early July Blue (4.8)
Low and tall deciduous shrub	Total	Early July NDVI (12.6) Early July EVI2 (10.9) Early July Red (10.1) Early July SWIR2 (8.3) Midsummer EVI2 (7.1)
Dwarf deciduous shrubs	Total	Early July SWIR2 (8.5) Early July NDVI (7.0) Early July EVI2 (6.8) Early July Green (5.5) Early July Red (4.8)
Total deciduous shrubs	Total	Early July NDVI (20.1) Early July EVI2 (12.8) Early July Red (9.7) Early July NBR (6.3) Midsummer EVI2 (6.2)
Dwarf evergreen	Total	Spring Snow-free EVI2 (25.0)

shrubs		Spring Snow-free NIR (9.1) Early June EVI2 (8.5) Spring Snow-free NDVI (2.9) Early June SWIR2 (2.0)
Total shrub	Total	Late June EVI2 (29.4) Late June NBR (17.4) Early July EVI2 (13.4) Spring Snow-free EVI2 (10.7) Early June EVI2 (5.8)
Sedges	Total	Late June Blue (8.0) Late August NDWI (6.1) Early June NBR (4.6) Late June NDVI (4.1) Spring Snow-free Red (2.7)
Grasses	Total	NDVI Magnitude (4.9) Rest < 1.0
Forbs	Total	Early July EVI2 (2.6) Early June NBR (1.0) Rest < 1.0
Total herbaceous	Total	Late August NDVI (13.5) NDVI Magnitude (11.6) Late August EVI2 (9.8) Spring Snow-free NDVI (6.2) Late August Blue (3.4)
Total vascular plants	Total	Late August EVI2 (53.5) Early July EVI2 (37.8) Midsummer EVI2 (15.8) Late August NIR (14.0) Early July NIR (11.4)
Bryophytes	Total	Early July EVI2 (21.2) Late August EVI2 (13.8) Midsummer EVI2 (8.2) Early July NBR (5.7) Early July NDVI (3.7)
Lichens	Total	Spring Snow-free SWIR1 (2.0) Late August NDSI (1.5) Spring Snow-free EVI2 (1.4) Spring Snow-free NIR (1.4) Midsummer NDSI (1.2)
Nonvascular plants	Total	Spring Snow-free EVI2 (17.2) Early June NDVI (12.9) Early June EVI2 (11.5) Midsummer Red (7.7)

		NDVI Magnitude (6.1)
Total vascular plants	Top	Early July EVI2 (21.2) Late August EVI2 (13.8) Midsummer EVI2 (8.2) Early July NBR (5.7) Early July NDVI (3.7)
Nonvascular plants	Top	NDVI Magnitude (2.1) Spring Snow-free EVI2 (1.3) Spring Snow-free NDVI (1.2) Rest < 1.0
Litter	Top	Early July NDSI (10.5) Early July NDMI (5.3) Early July NBR (4.6) Midsummer NDSI (3.9) Late June NDSI (3.7)
Bare ground	Top	Early July Green (30.3) Late August Blue (23.4) Early July Red (11.4) Late August Green (11.0) Early July Blue (5.7)
Water	Top	Seasonal Water Frequency (67.1) Late June NDSI (26.2) Early July NDSI (17.9) Late August NDSI (11.2) Early July SWIR1 (8.3)

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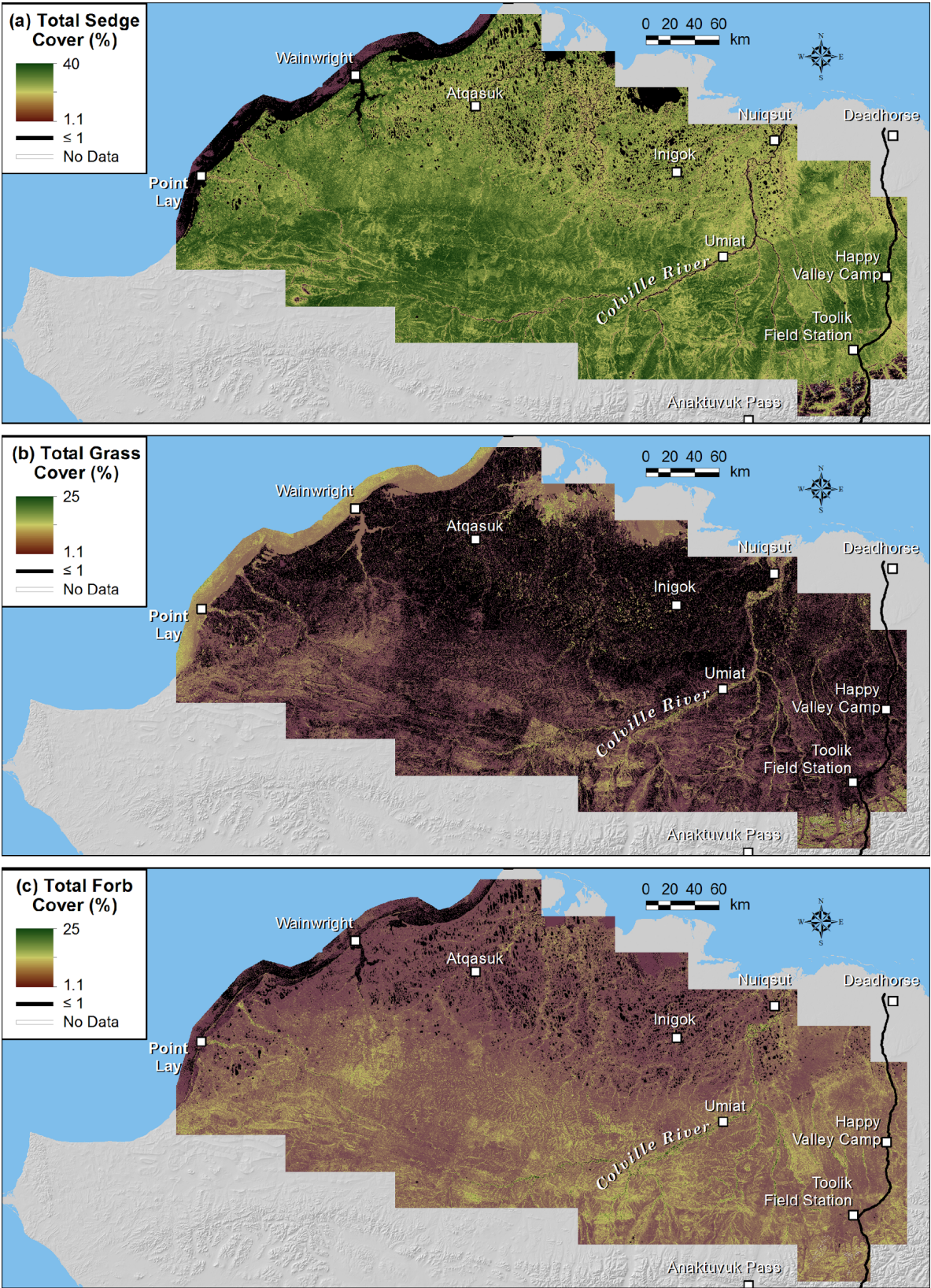


Figure S1. Maps of total cover of (a) Sedge, (b) Grass, and (c) Forb based on random forest model with 78 predictors, North Slope, Alaska.

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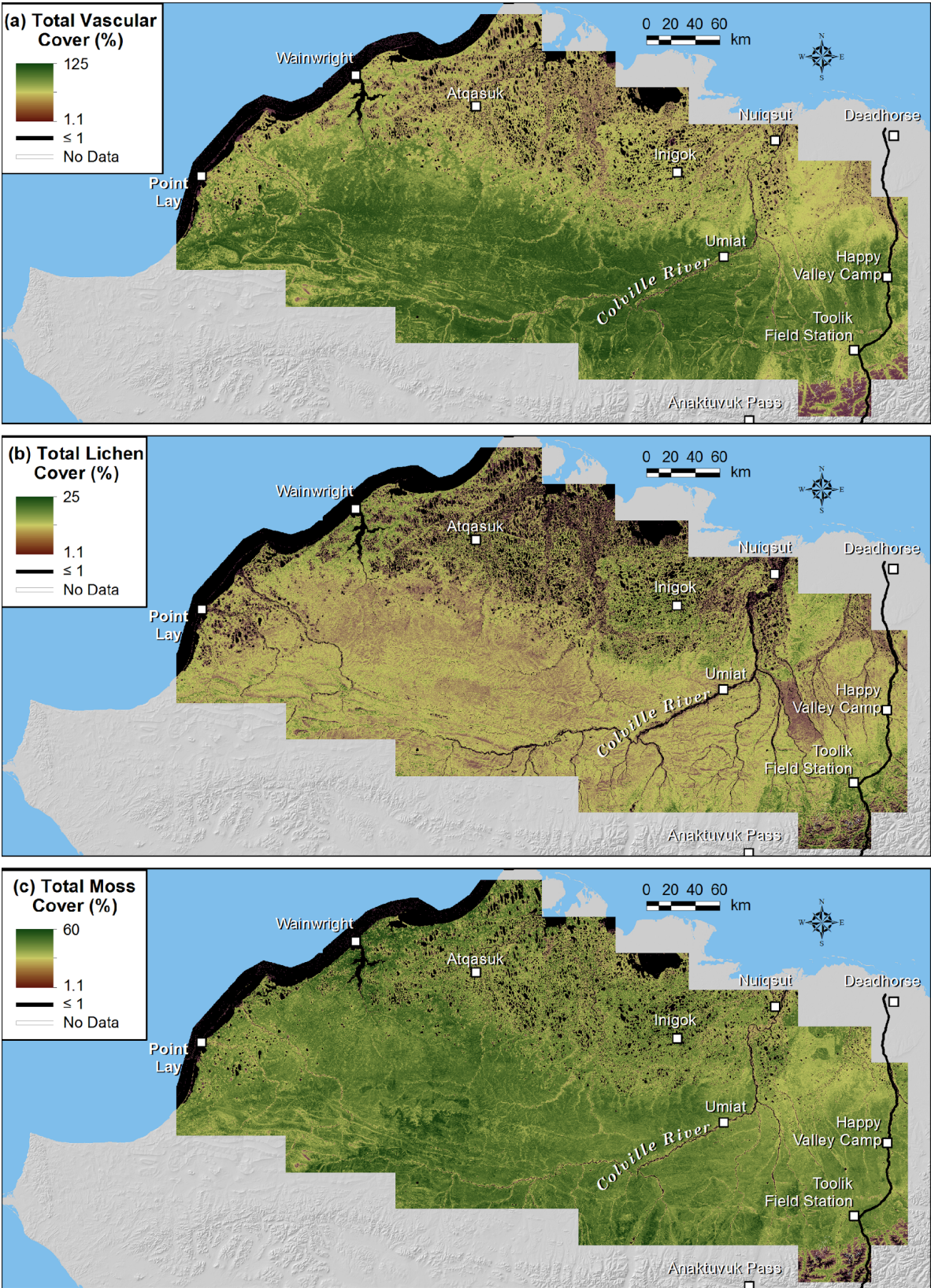


Figure S2. Maps of total cover of (a) Total Vascular, (b) Lichen, and (c) Bryophytes based on random forest model with 78 predictors, North Slope, Alaska.

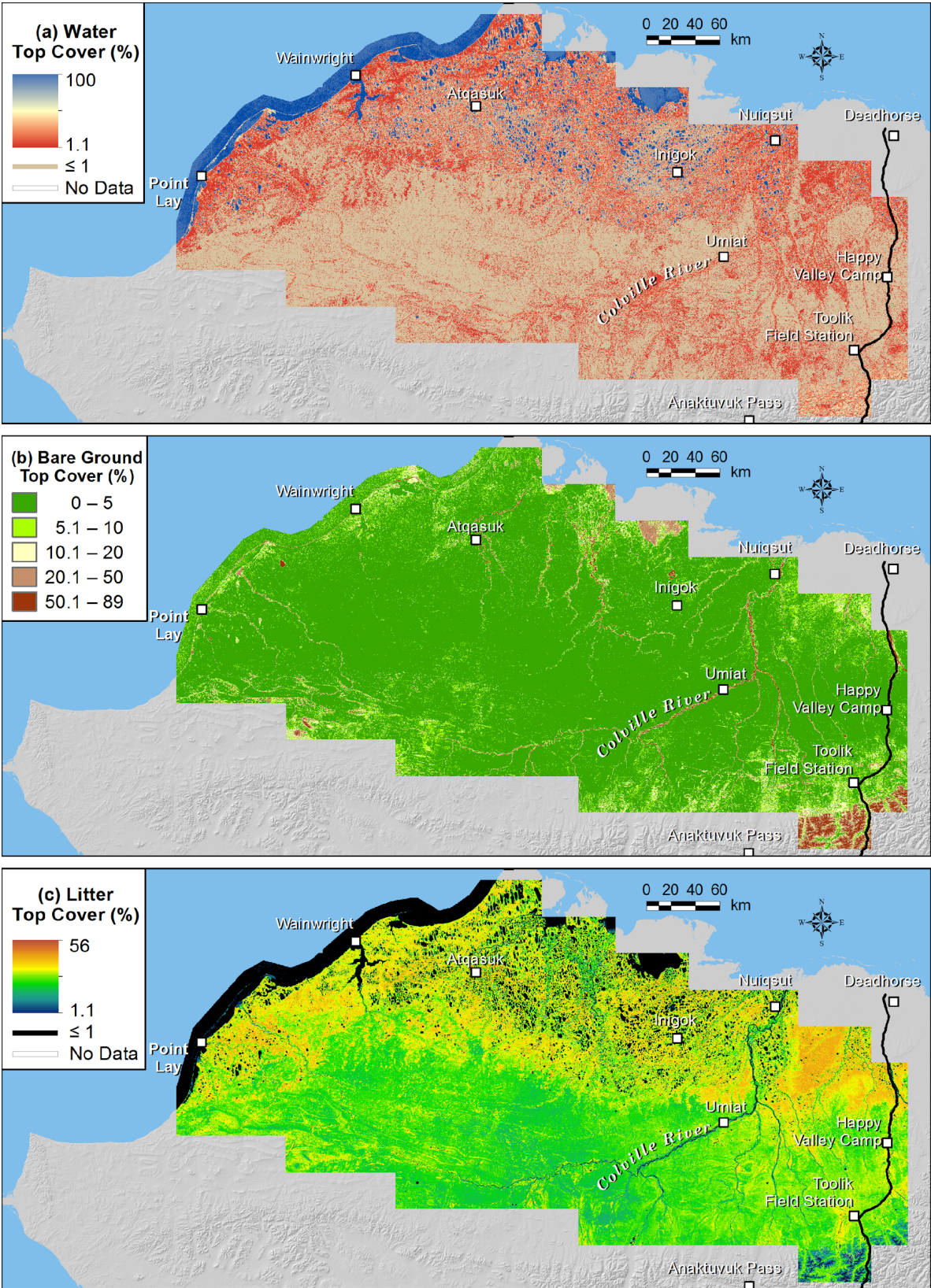


Figure S3. Maps of top cover of (a) Open Water, (b) Bare Ground, and (c) Litter based on random forest model with 78 predictors, North Slope, Alaska.