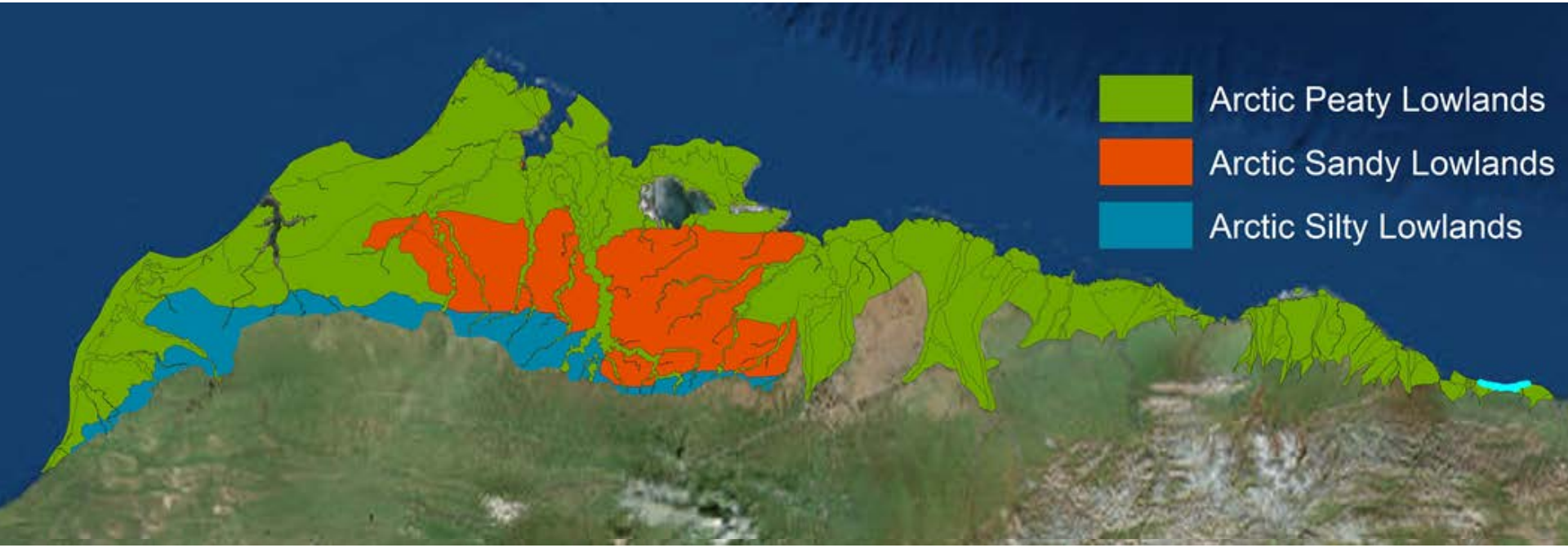
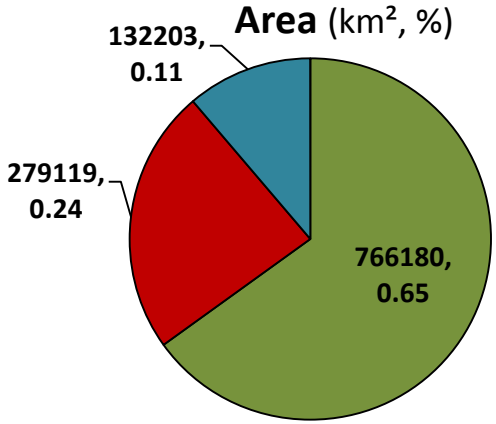
Alaskan Arctic Coastal Plain

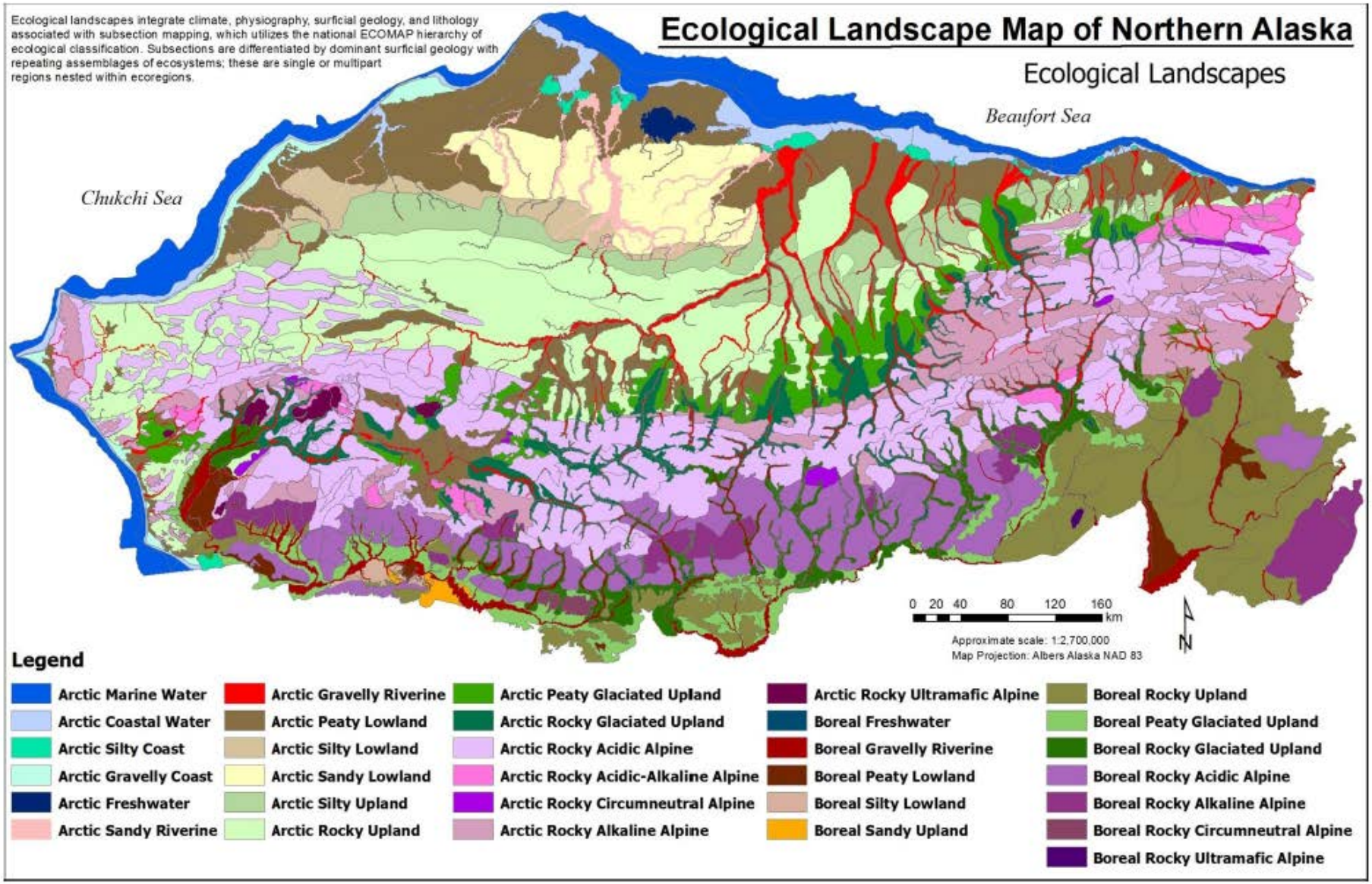




This mapping initiative will focus on Ecological Landscapes "Arctic Peaty & Sandy Lowlands" ~89%

Peaty, Sandy, Silty are ~28, 45, 100 m. a. s. l., respectively

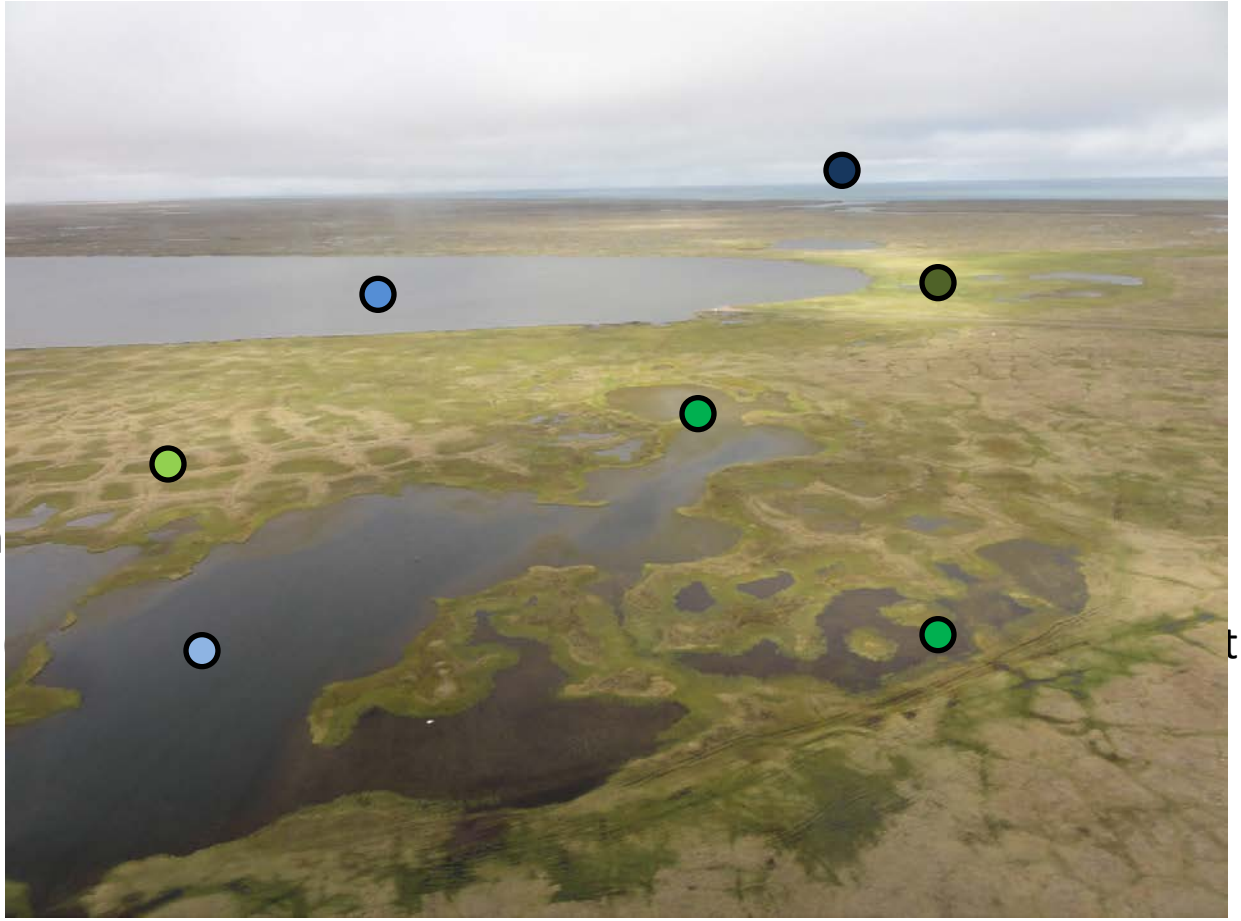
Jorgenson et al., (2011)



Jorgenson et al., (2011)

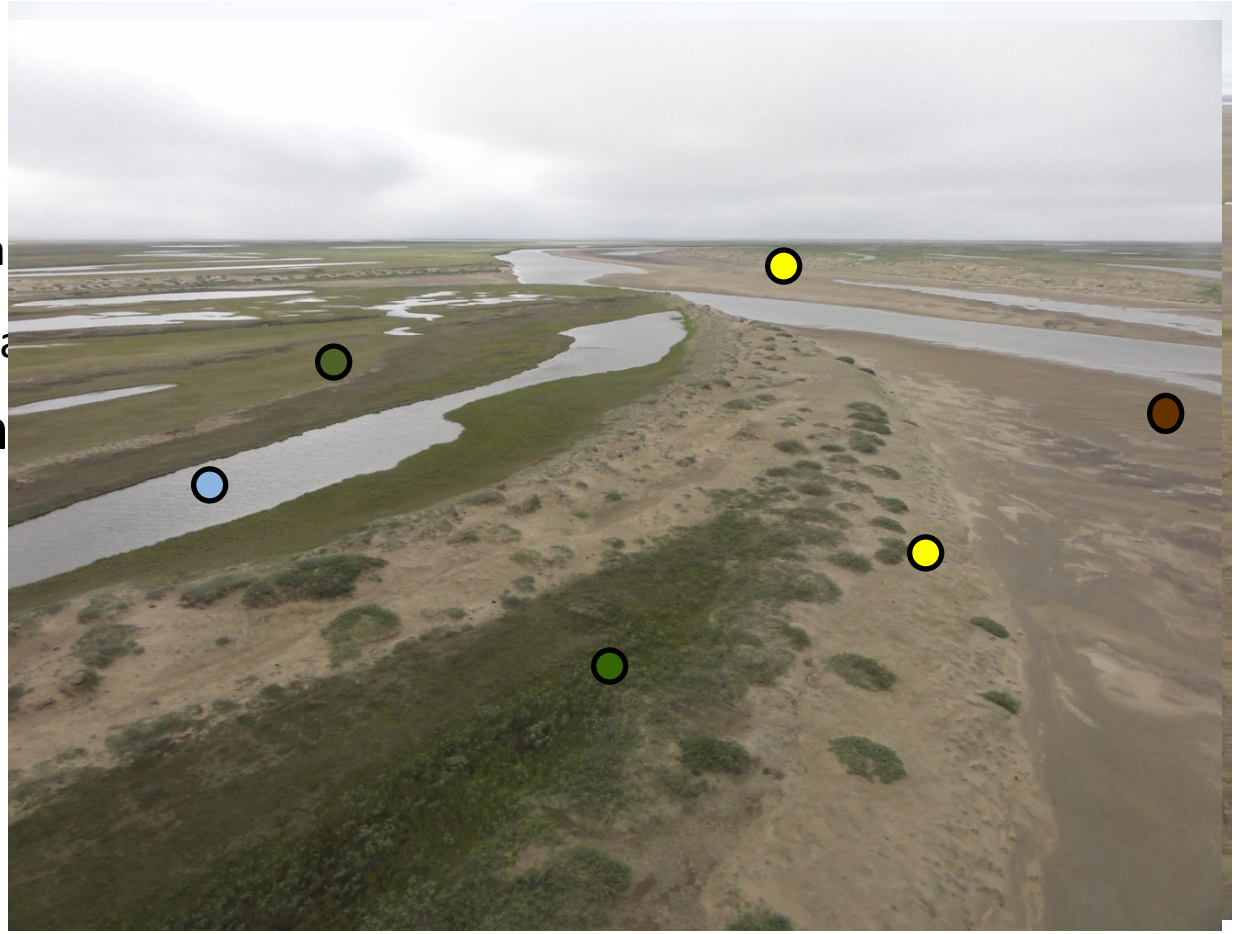
Aquatic-wet land cover classes

1. Coastal Water
2. Lake
3. Pond
4. River
5. Meadow (aka: n
6. Coalescent LC t
   Polygons)
7. Low Center



Moist-Dry land cover classes

8. Flat Center (aka:
9. High Center (aka
10. Drained Slope (a
11. Riverine Barren
12. Sand Dunes
13. Shrub



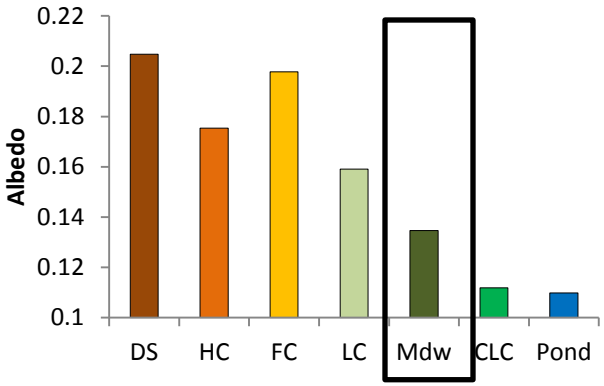
“Miscellaneous” land cover classes

○ 14. Ice

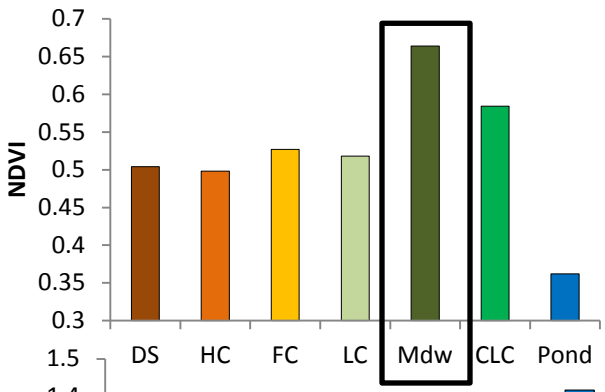
● 15. Urban

Differences in spectral and environmental conditions by LCT

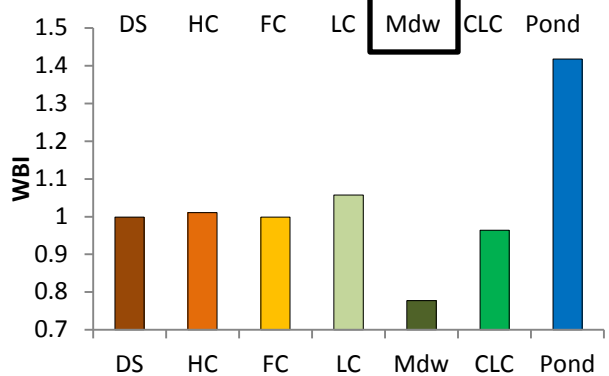
Surface Reflectivity



Vegetation Greenness



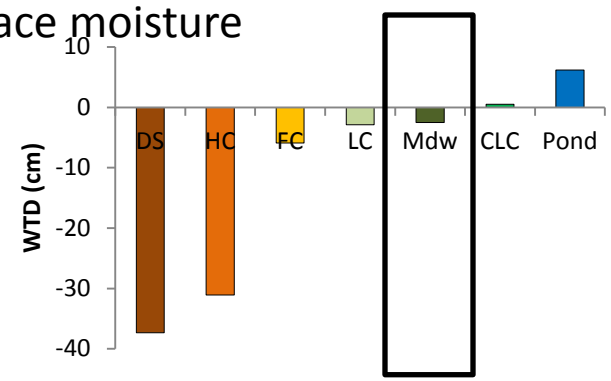
Water in Vegetation



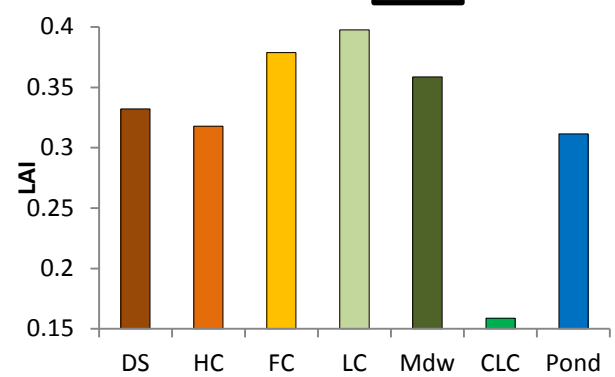
For land cover characterization,
I find unique identifiers for LCTs
Example: Meadows

- High productivity
- Low albedo
- High surface moisture

Water Table Depth

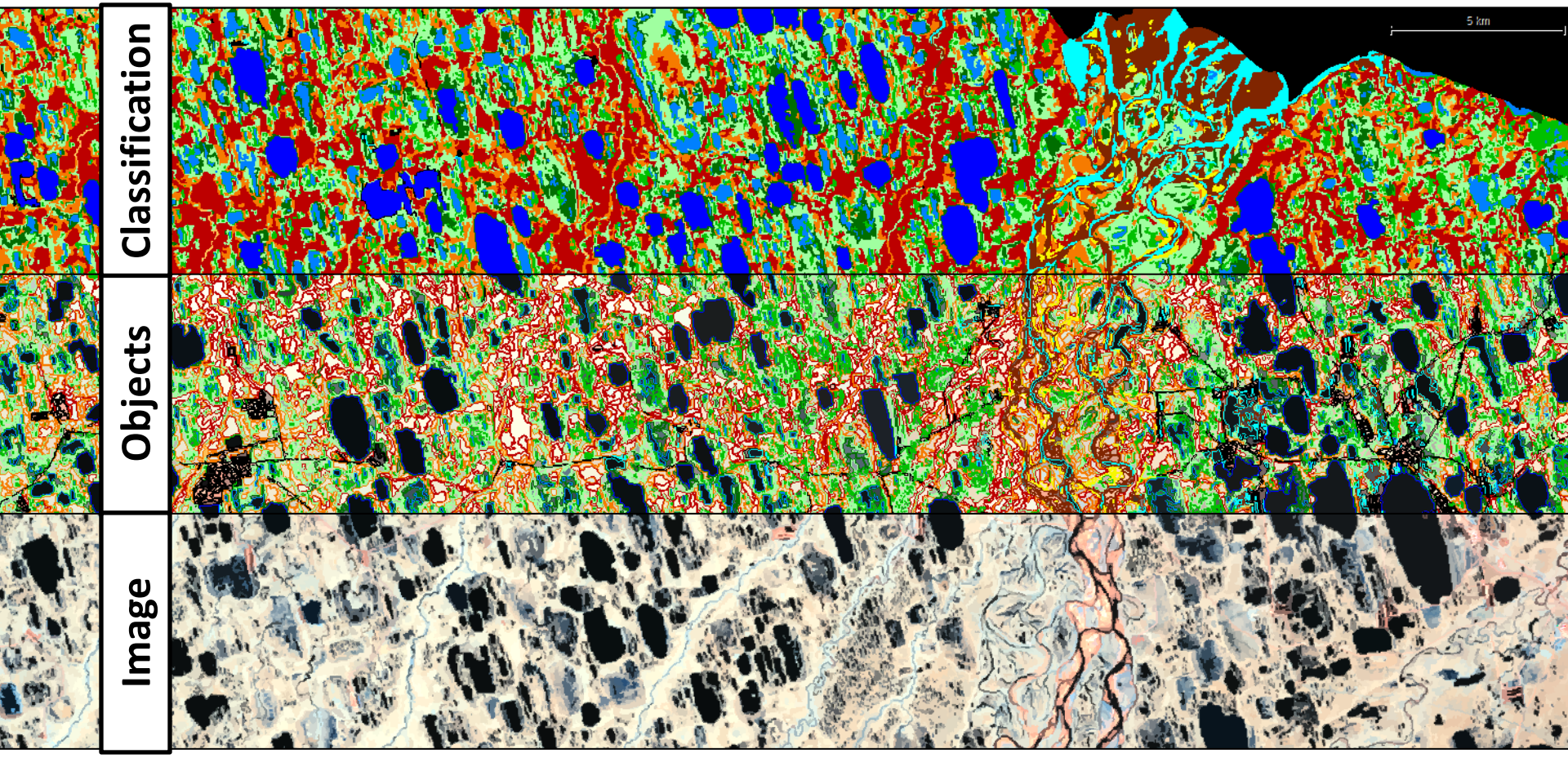


Leaf Area Index



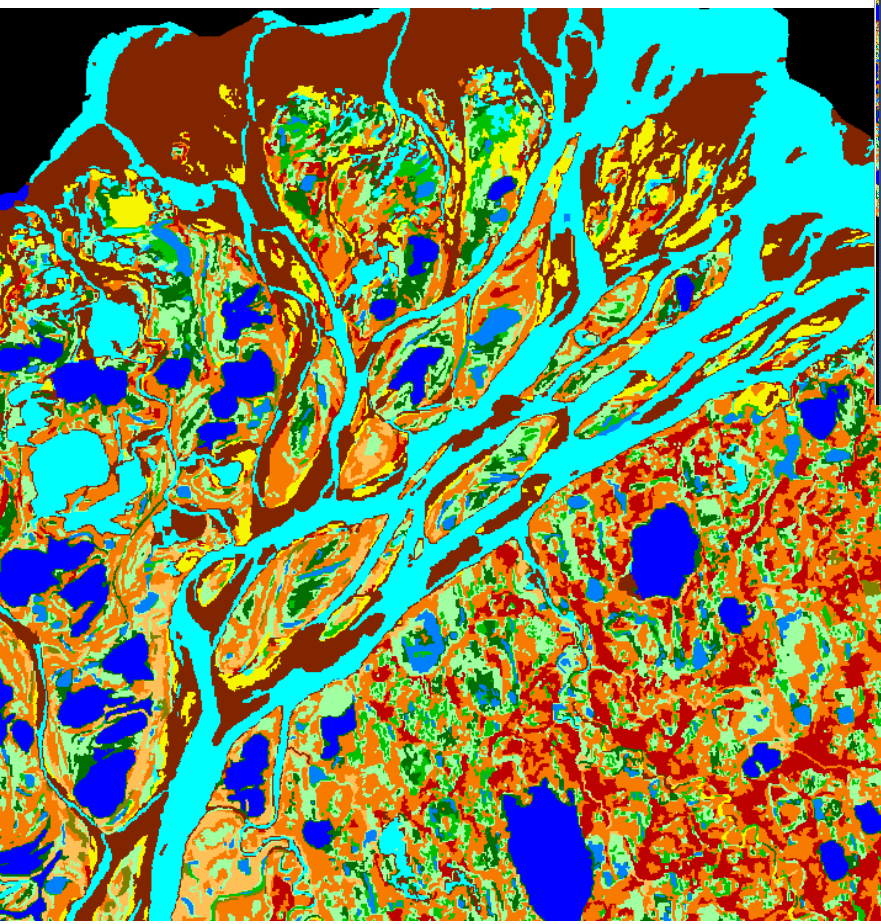
Lara et al., 2012, 2015

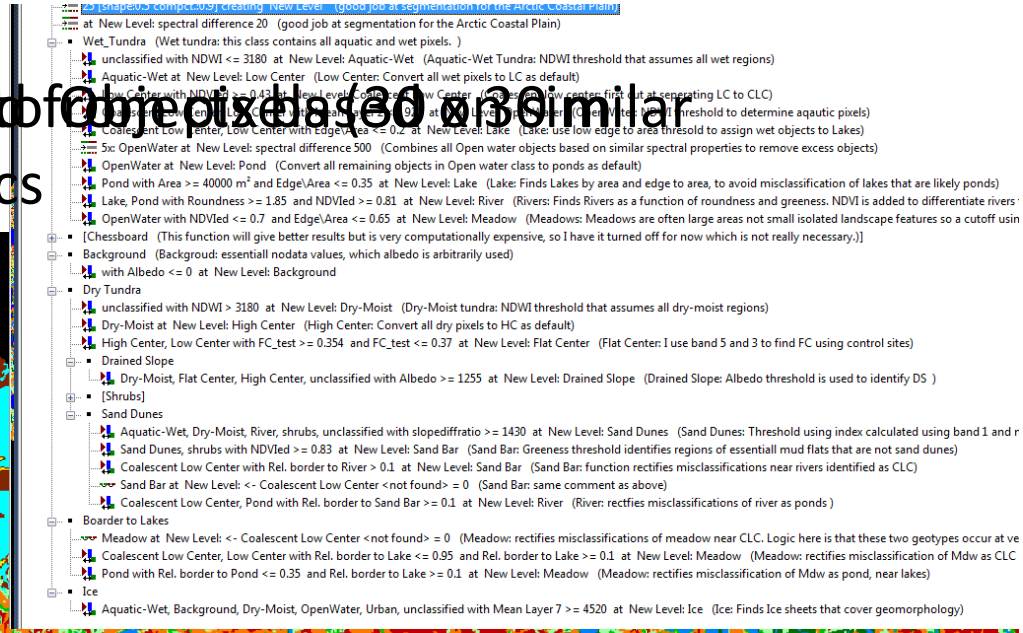
Object Based Image Analysis



Neighborhood 8 pixel, transformed to Object based 360 x 30 similar spectral properties "Objects"

Neighborhood 8 pixel, transformed to Object based 360 x 30 similar spectral properties "Objects"

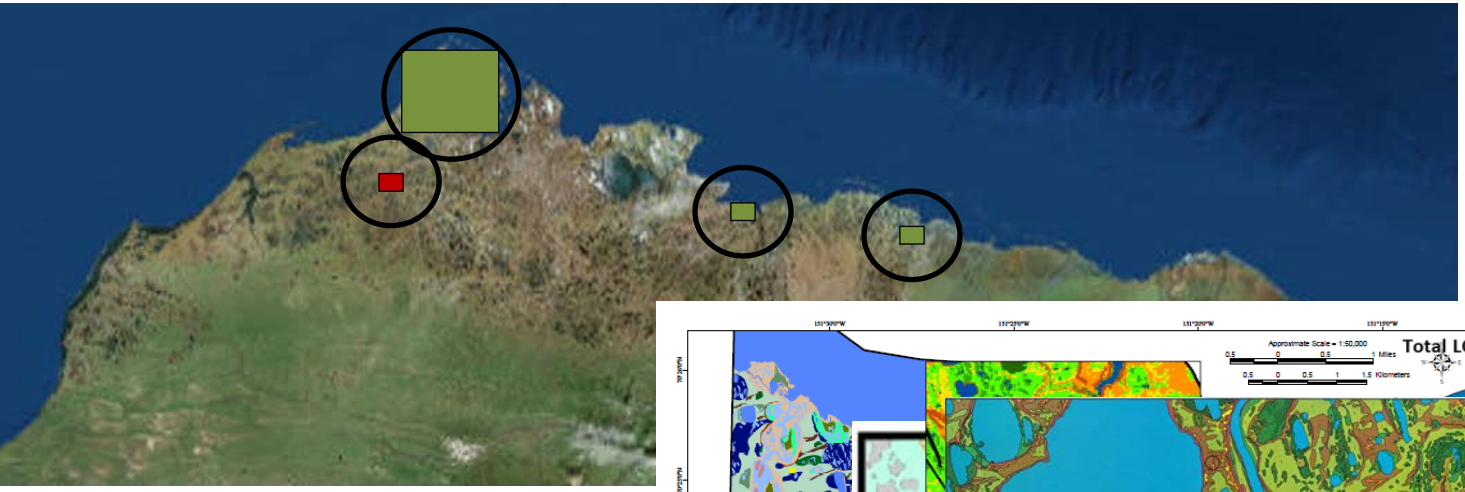




Rules/thresholds/algorithms for classification of Objects

Final Product

Map Verification Sites



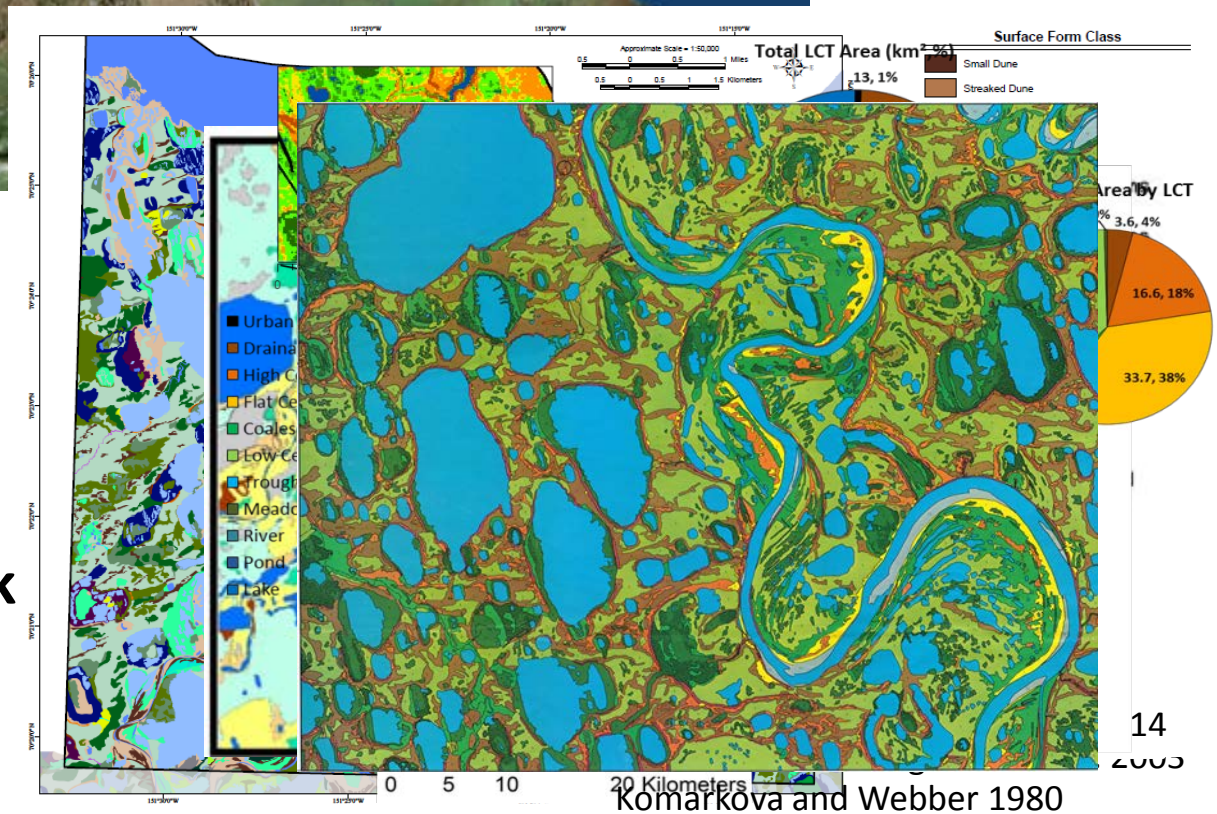
Peaty Lowlands
Sandy Lowlands

Fish Creek

Prudhoe Bay

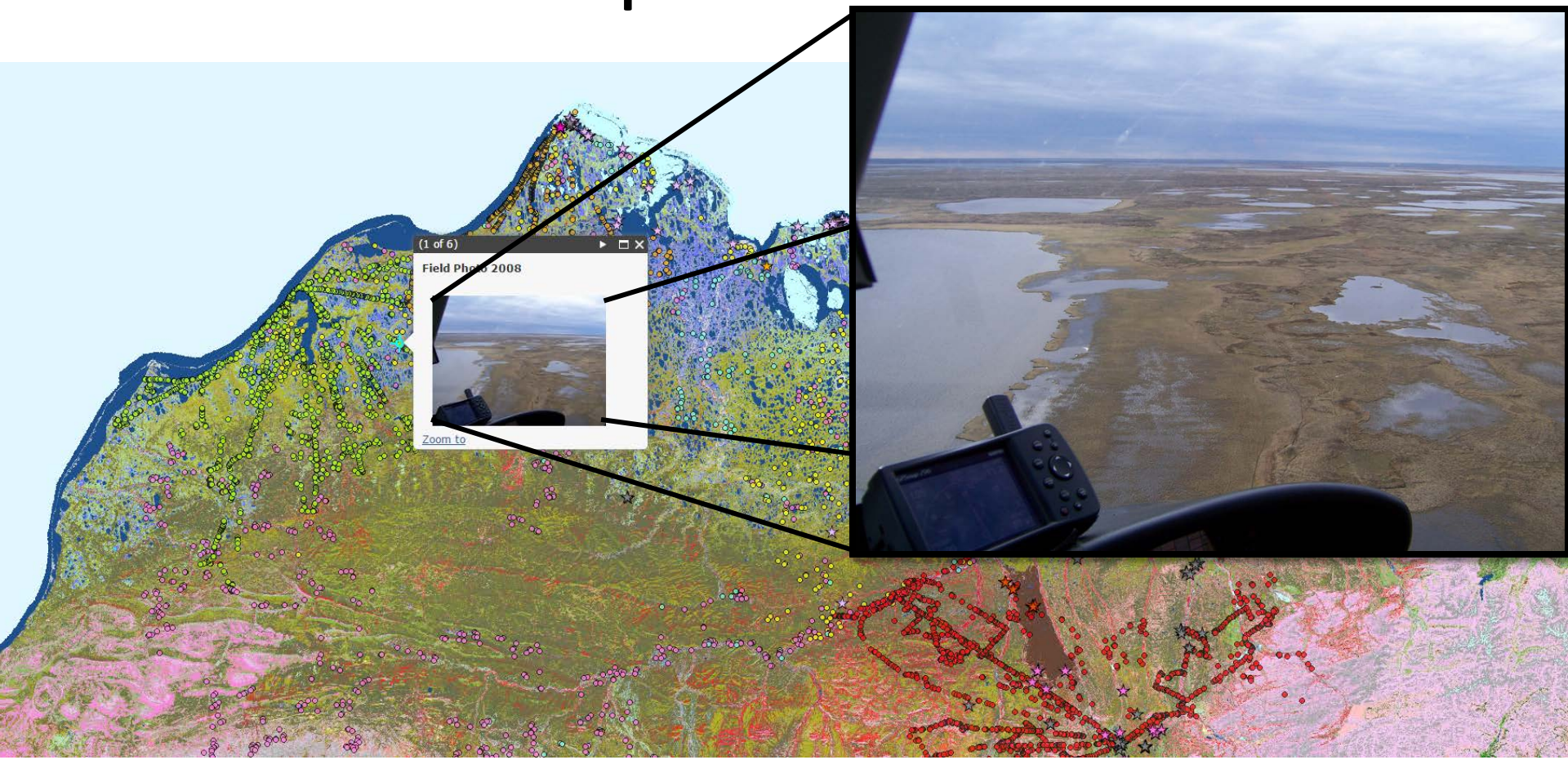
Barrow Peninsula

Aquasuk aka Atkasook



Komarkova and Webber 1980

Map Validation

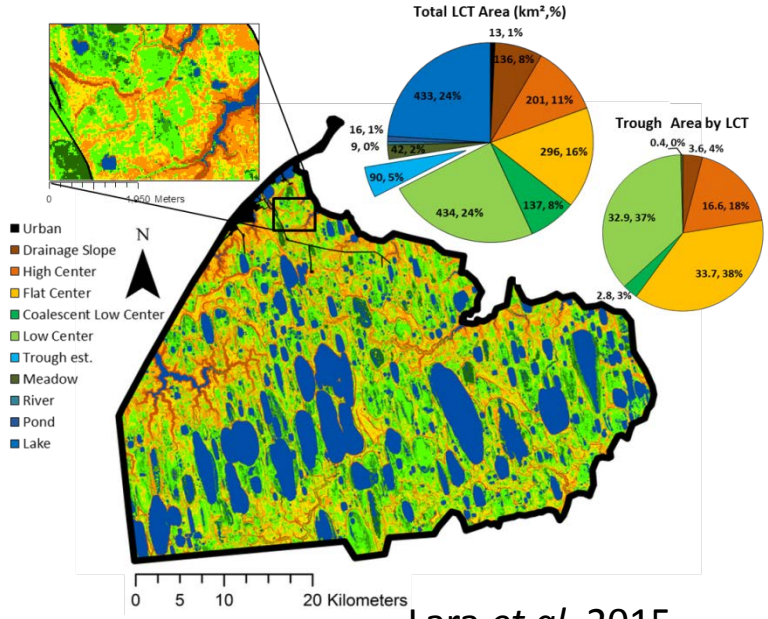


Available through the Arctic LCC website or http://arc-sctc.gina.alaska.edu/NSEcoLandscape/

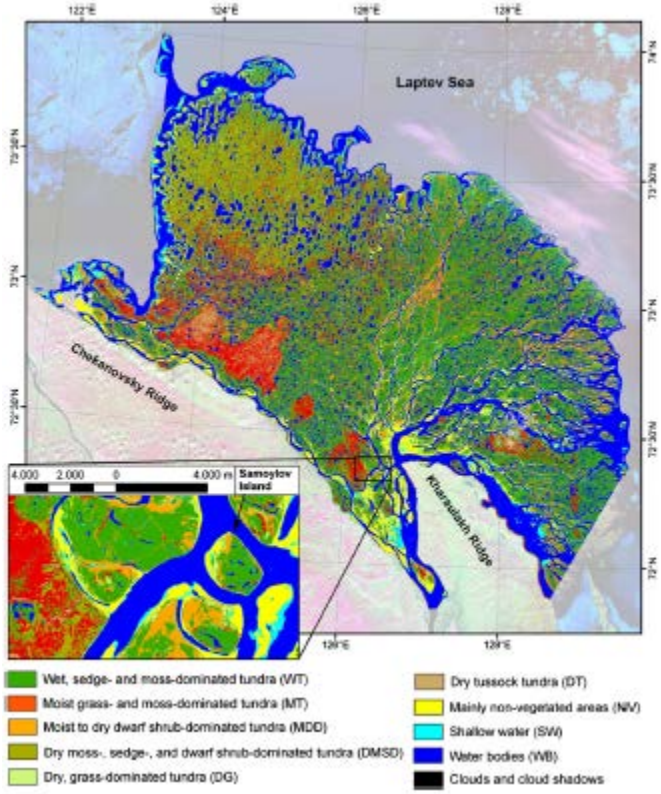
Jorgenson et al., (2011)

Map Validation

- High resolution satellite Imagery (0.6-2.5 m resolution)
  - SPOT-5
  - Quickbird
  - World View 2
  - Aerial Photos

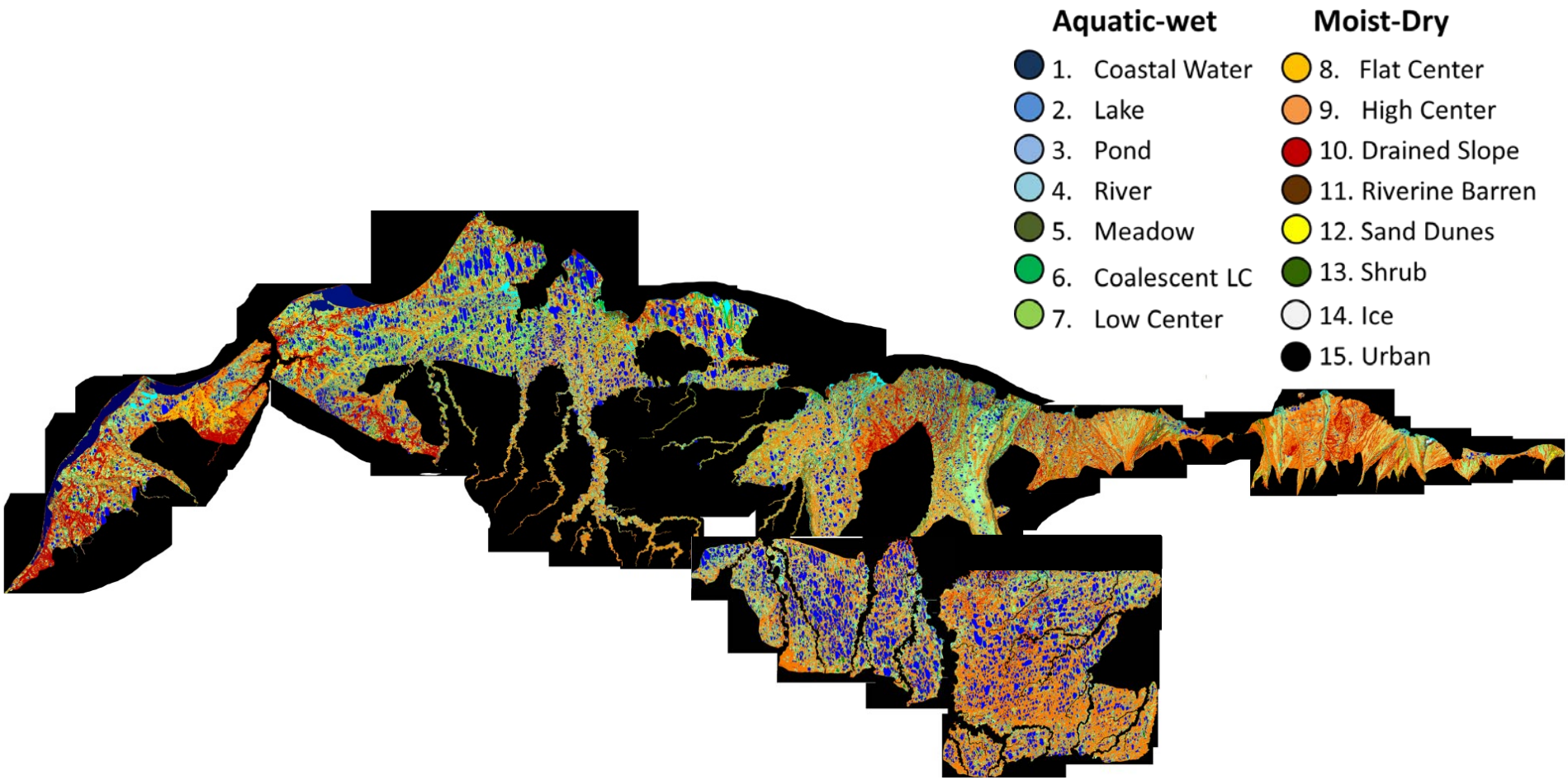


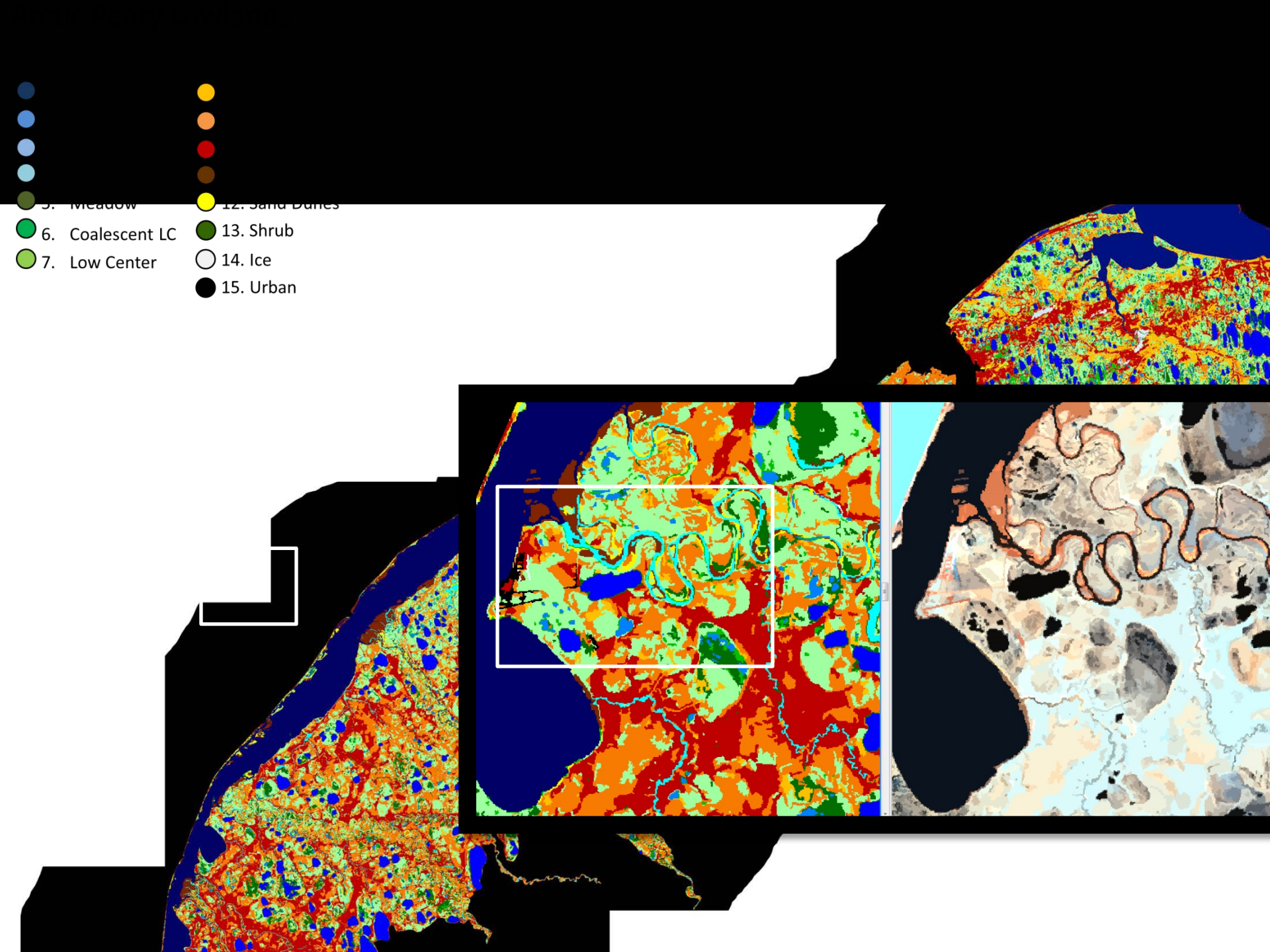
Lara *et al*. 2015



Schneider *et al*. 2009

Alaskan Arctic Coastal Plain Map




6. Coalescent LC
7. Low Center
13. Shrub
14. Ice
15. Urban

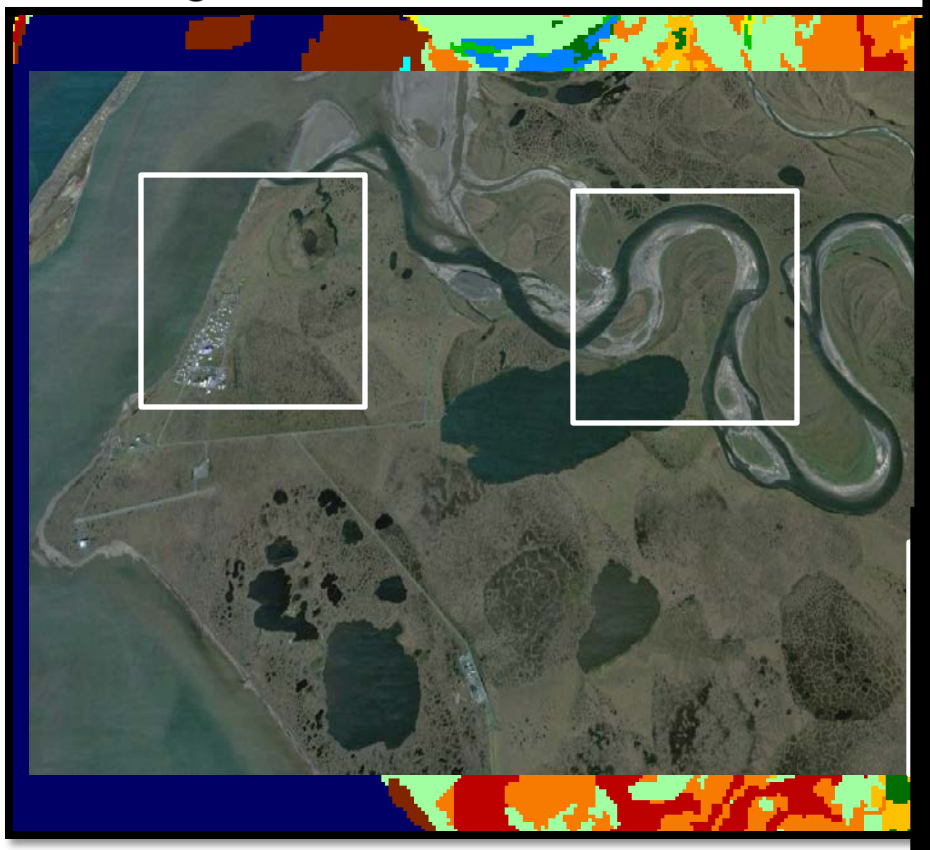
Arctic Peaty Lowlands

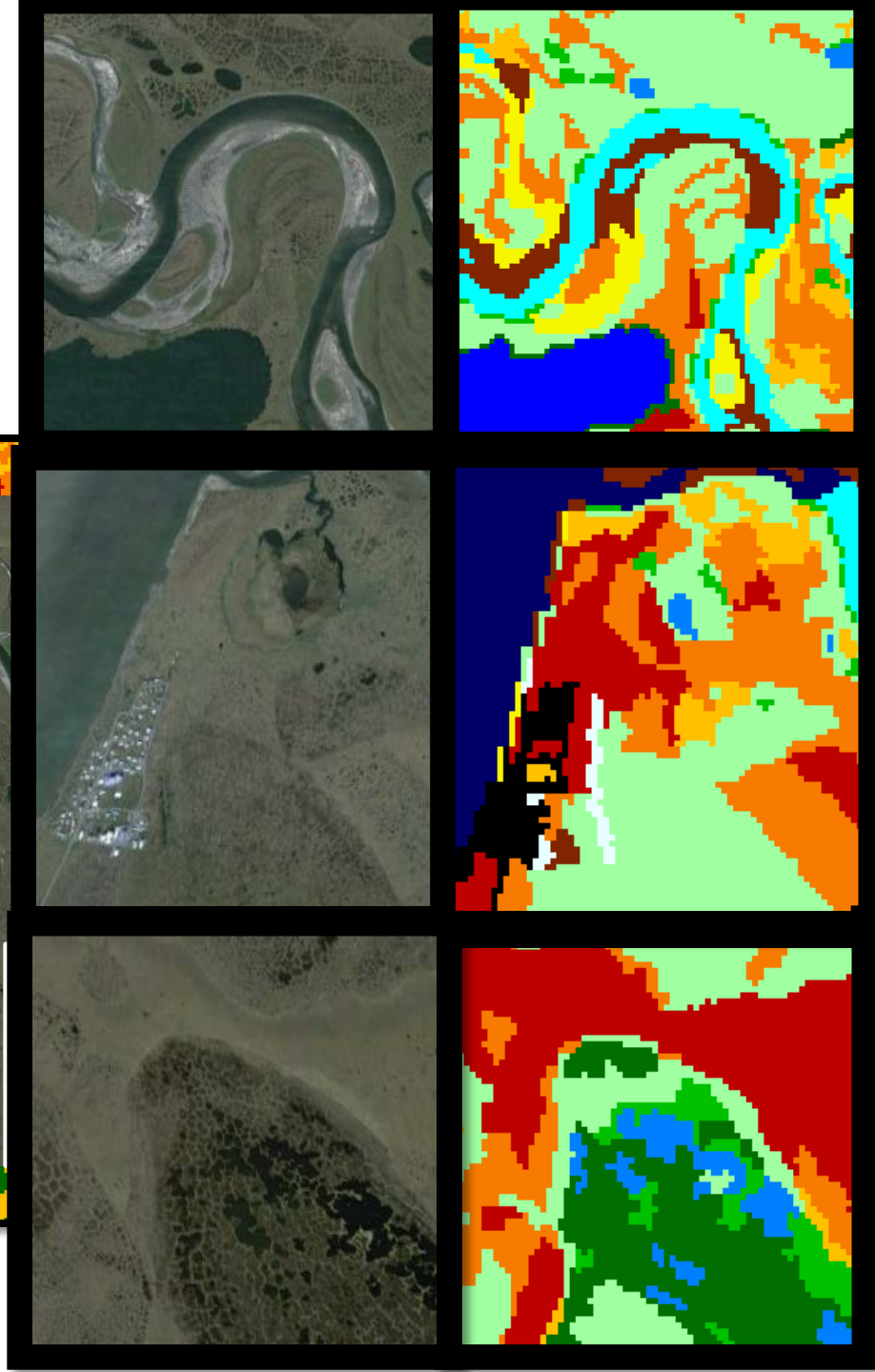
Aquatic-wet

1. Coastal Water
2. Lake
3. Pond
4. River
5. Meadow
6. Coalescent LC
7. Low Center

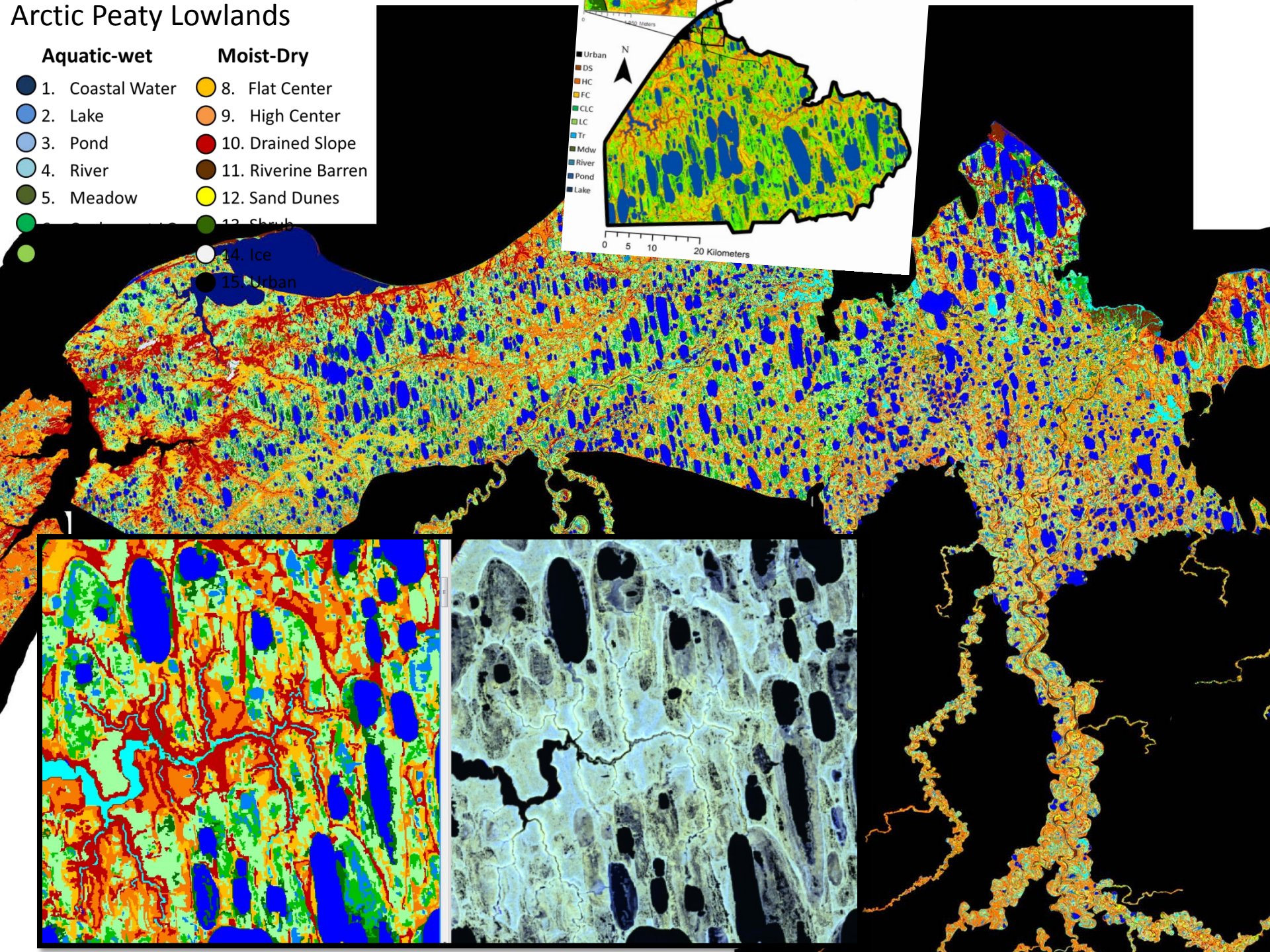
Moist-Dry

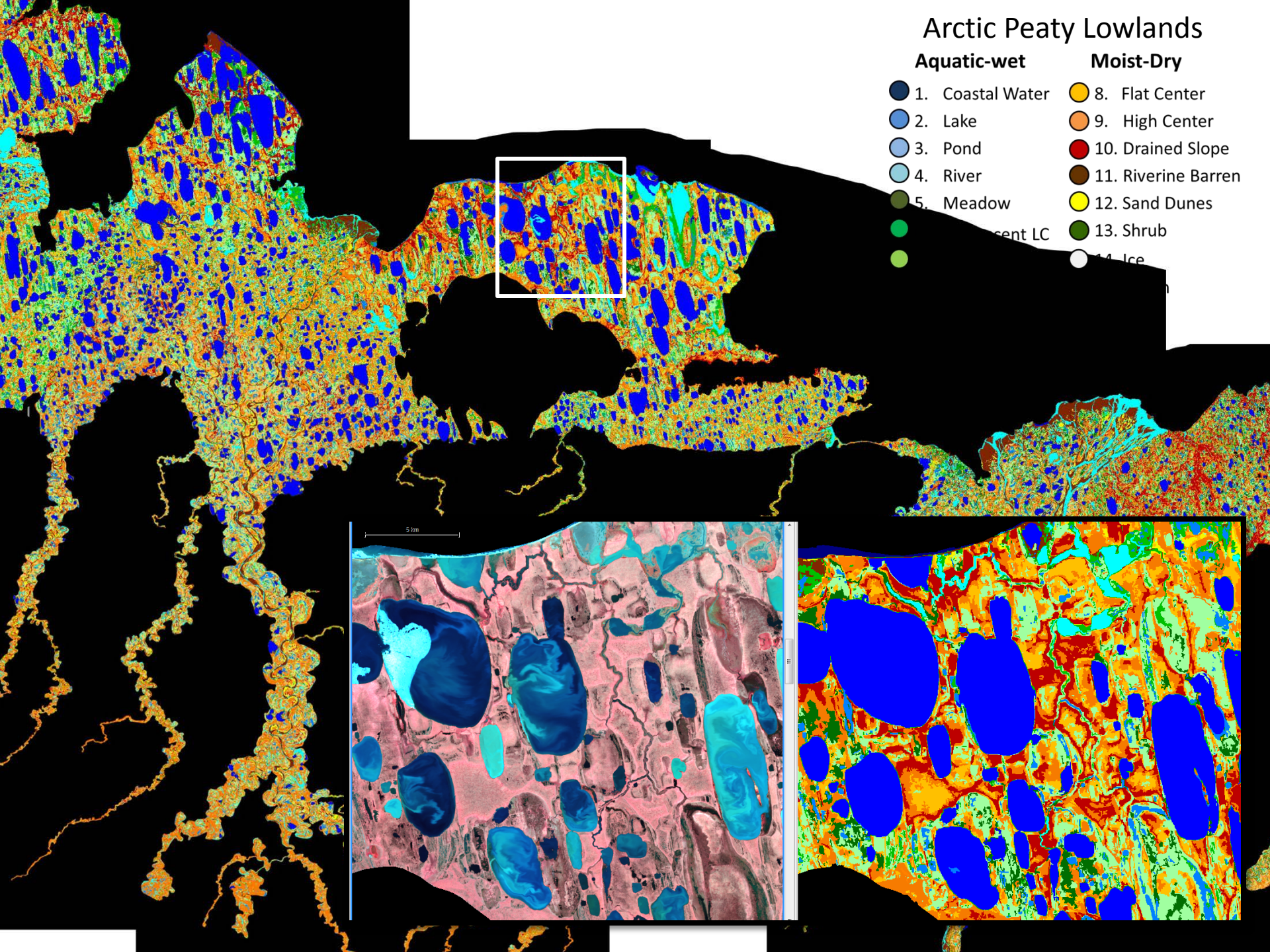
8. Flat Center
9. High Center
10. Drained Slope
11. Riverine Barren
12. Sand Dunes
13. Shrub
14. Ice
15. Urban

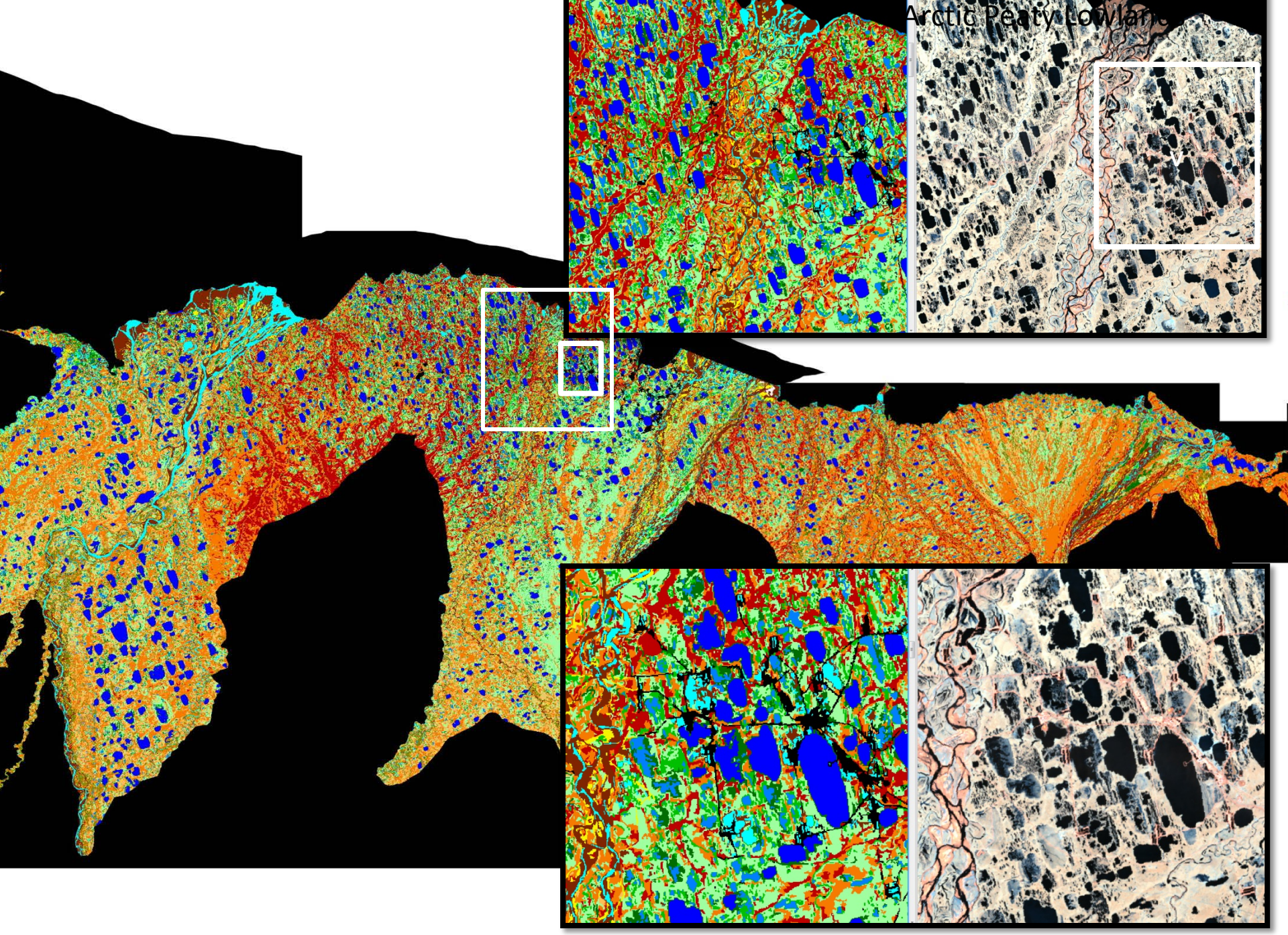




Arctic Peaty Lowlands




Arctic Peaty Lowlands
Aquatic-wet
1. Coastal Water
2. Lake
3. Pond
4. River
5. Meadow
Moist-Dry
8. Flat Center
9. High Center
10. Drained Slope
11. Riverine Barren
12. Sand Dunes
13. Shrub
5 km


Arctic Peaty Lowland

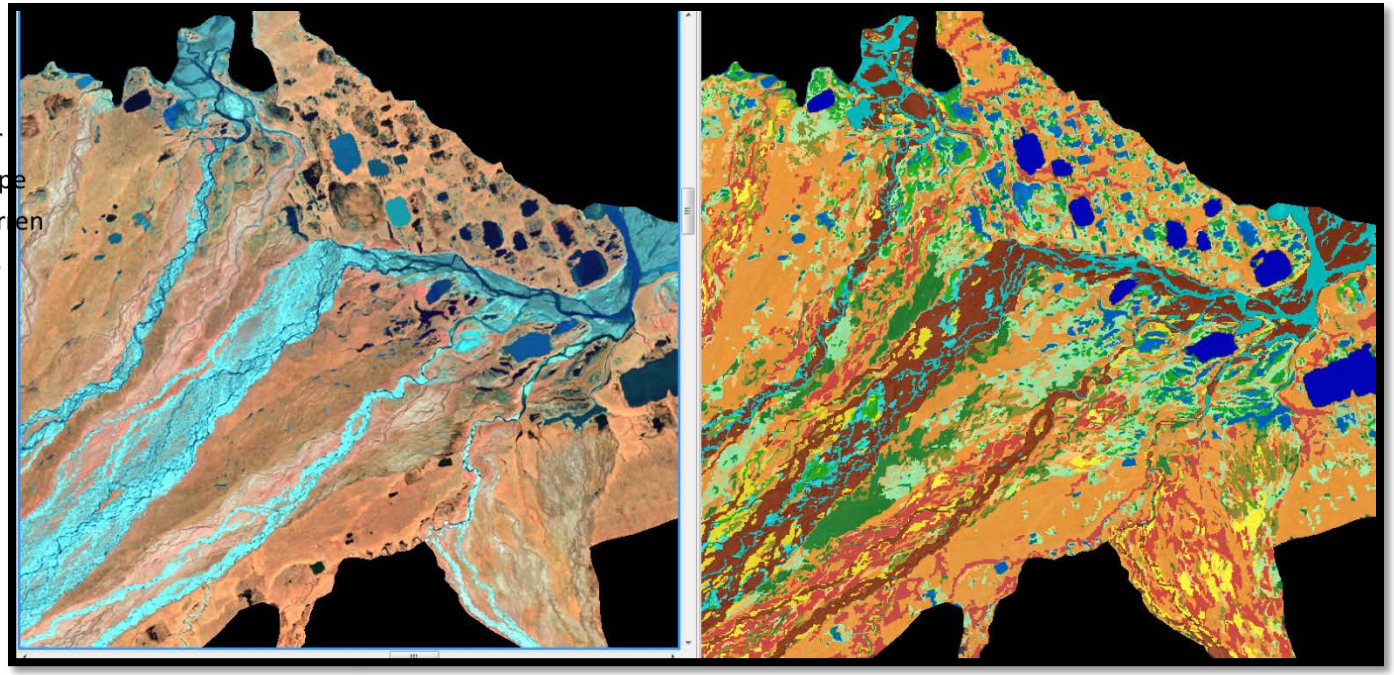
Arctic Peaty Lowlands

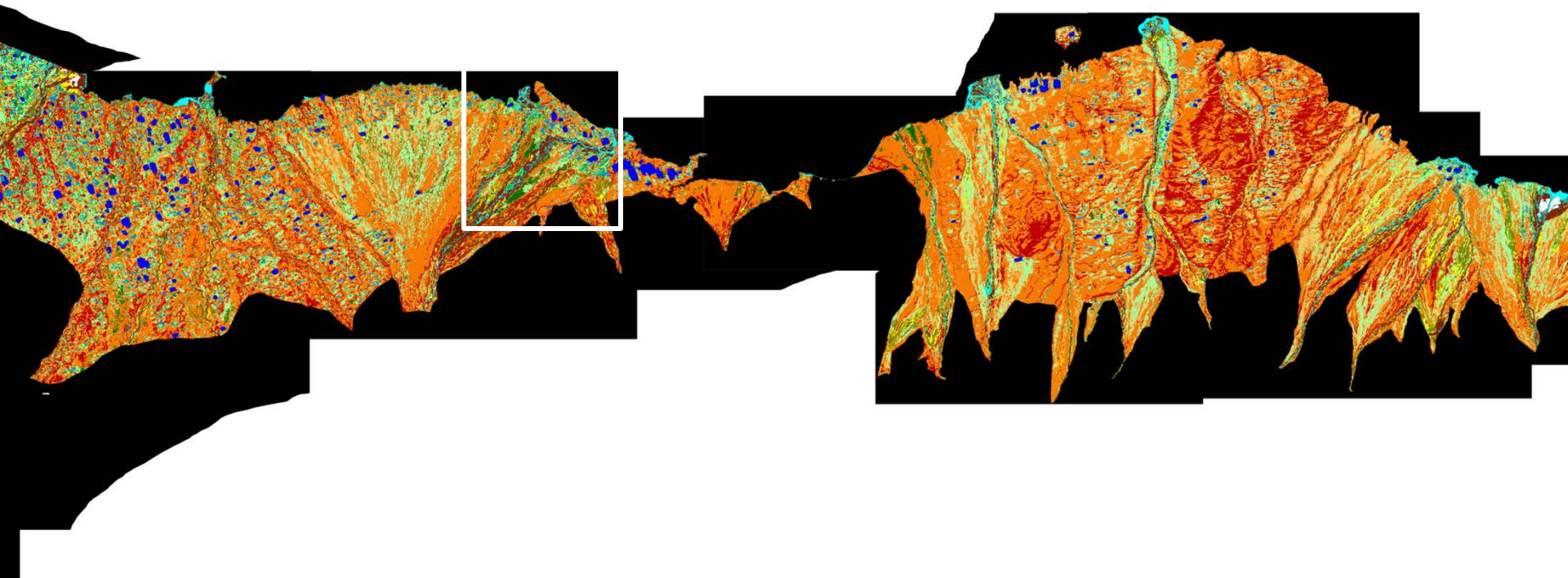
Aquatic-wet

1. Coastal Water
2. Lake
3. Pond
4. River
5. Meadow
6. Coalescent LC
7. Low Center

Moist-Dry

8. Flat Center
9. High Center
10. Drained Slope
11. Riverine Barren
12. Sand Dunes
13. Shrub
14. Ice
15. Urban





Arctic Peaty Lowlands

Aquatic-wet

1. Coastal Water
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Moist-Dry

8. Flat Cen
9. High Ce
10. Drained
11. Riverine
12. Sand Du
13. Shrub
14. Ice
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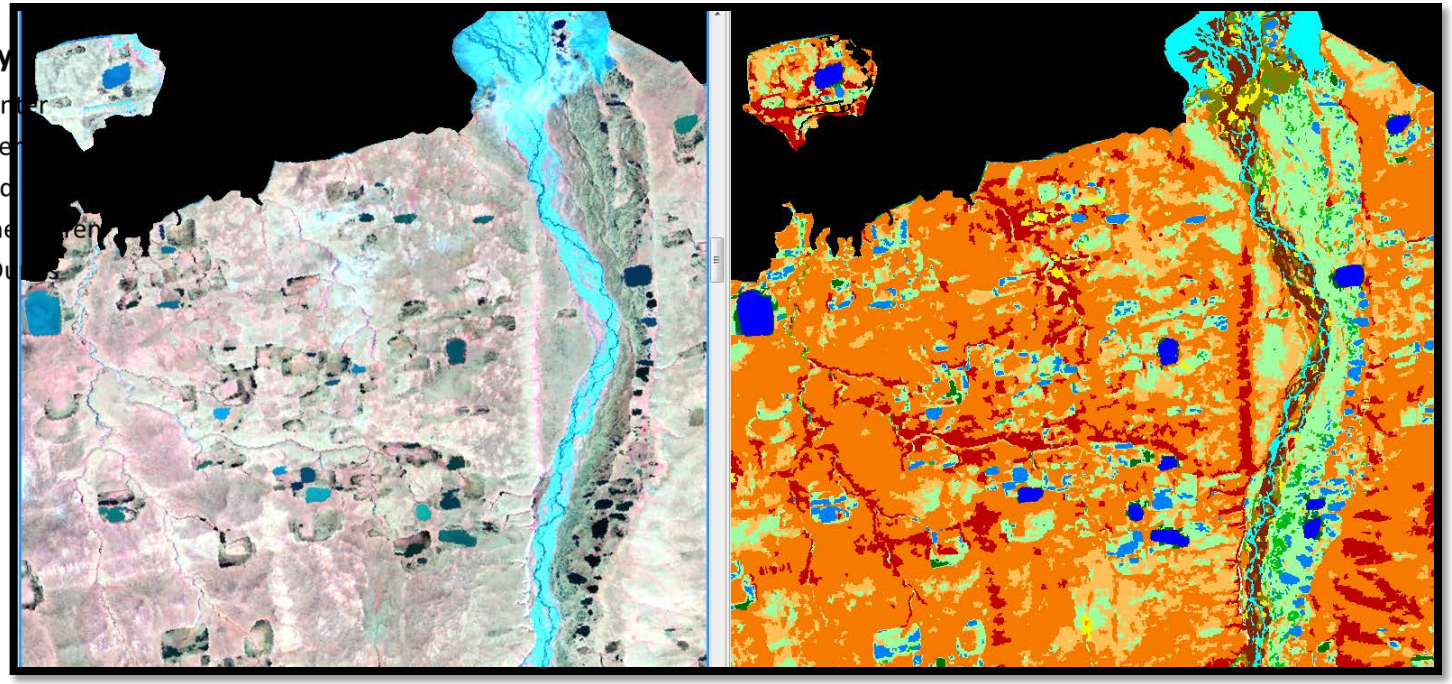
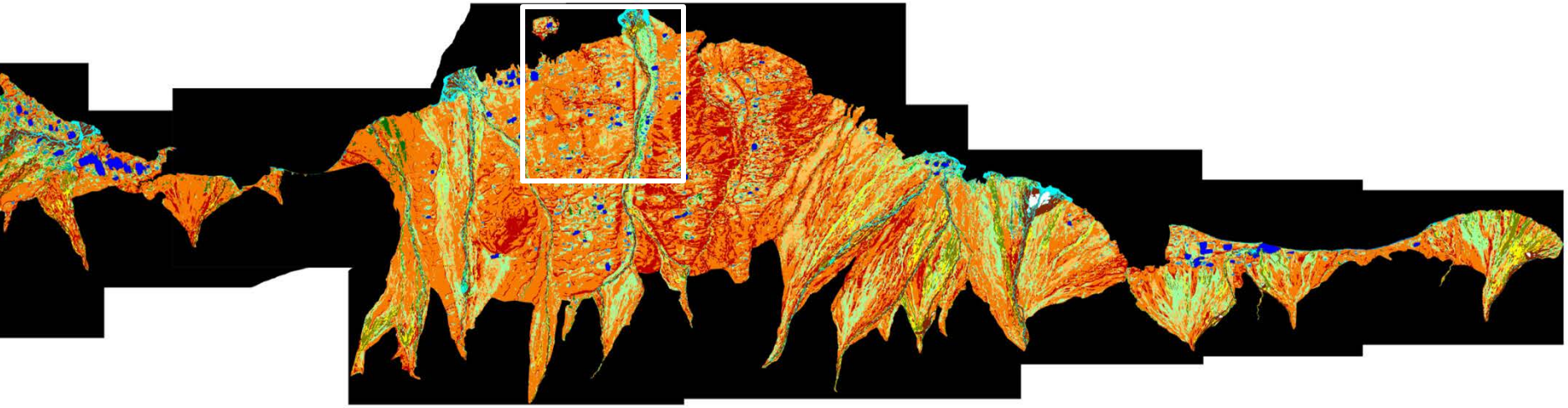
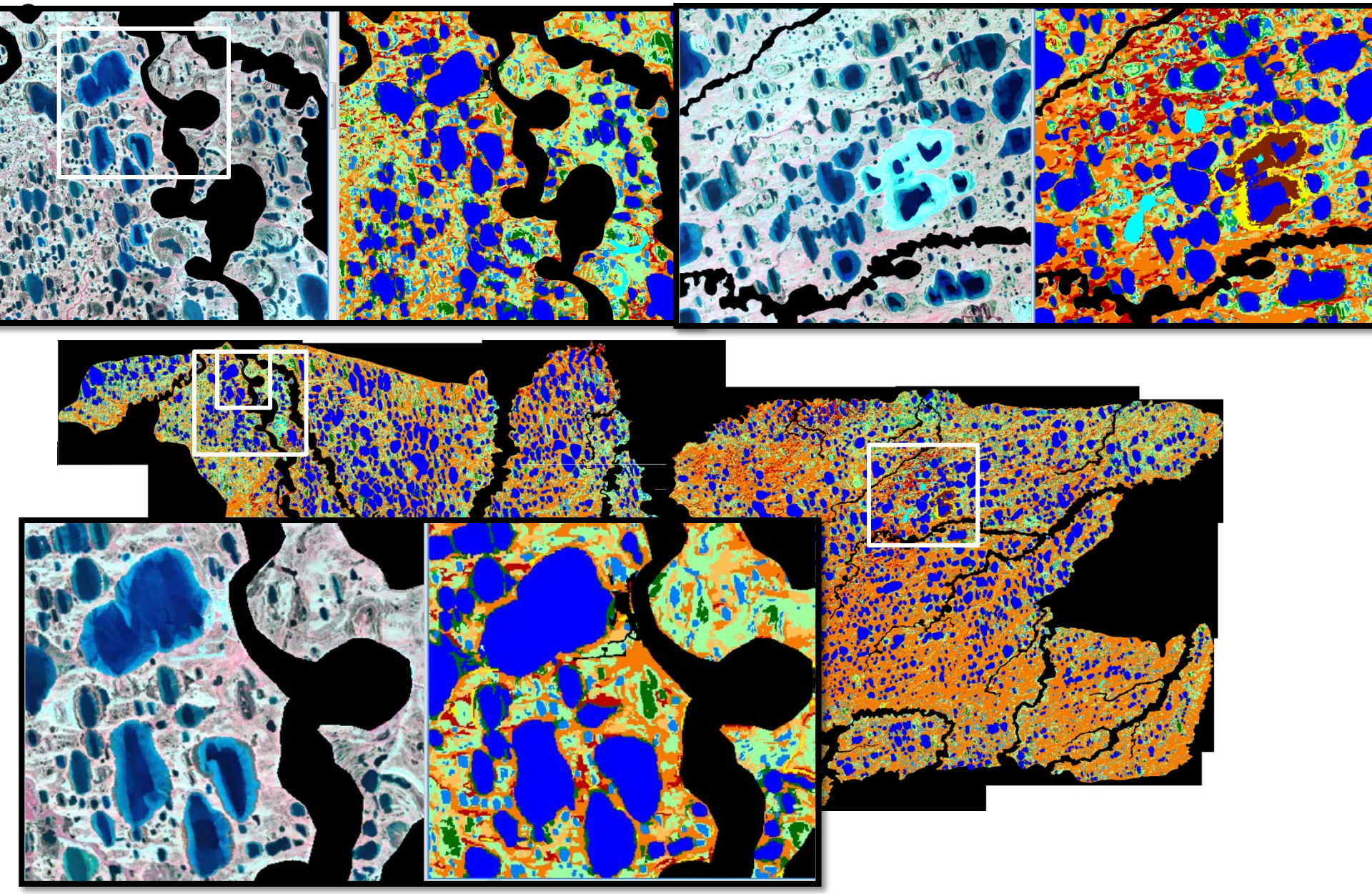
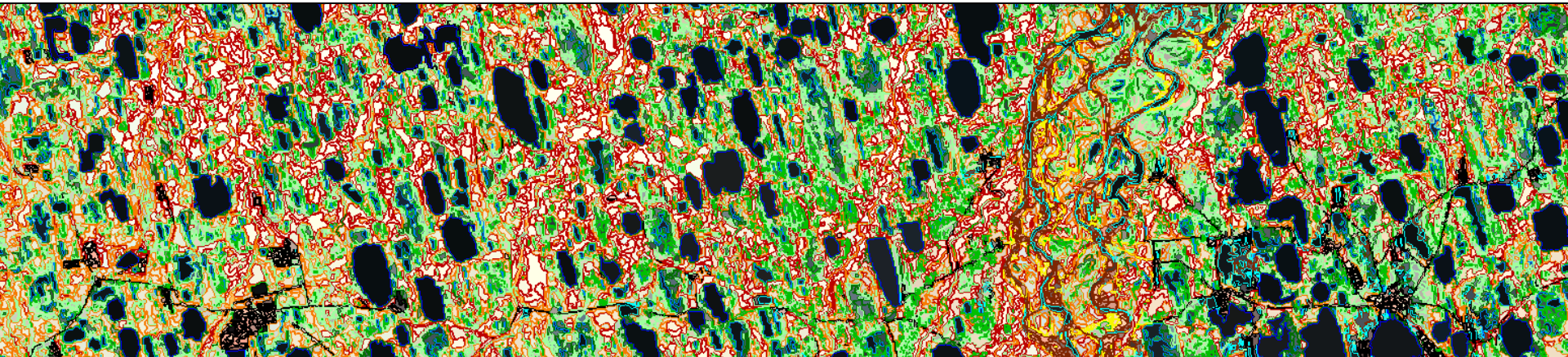




Arctic Sandy Lowlands

Aquatic-wet **Moist-Dry**



Important Dates

- Mapping Arctic Peaty/Sandy Lowlands complete ~mid Nov
- ACP map Verification Statistics ~mid Dec
- ACP map Accuracy Assessment ~ mid Jan
- email: mjlara@alaska.edu