

An aerial photograph of a vast, forested valley. The foreground and middle ground are filled with dense, dark evergreen trees. In the background, a range of rugged mountains stretches across the horizon, with some peaks covered in snow. The sky is filled with soft, white clouds. The overall scene is a natural, mountainous landscape.

# Soil moisture change across the Gulf of Alaska region

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Hydropedology project:

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Juneau Carbon project:

<sup>1</sup>Rick Edwards, <sup>6</sup>Jason Fellman, <sup>6</sup>Eran Hood

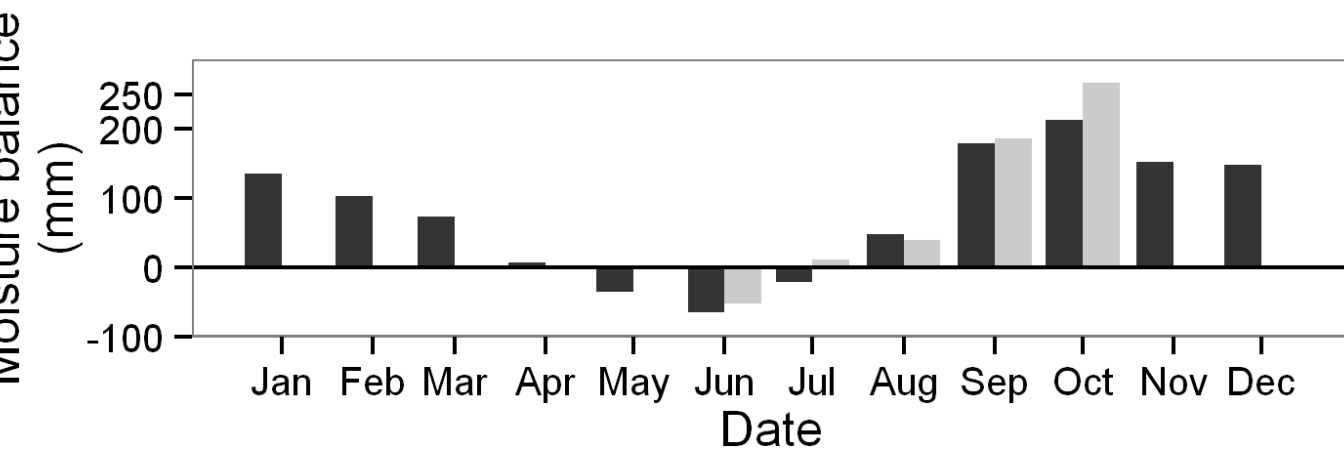
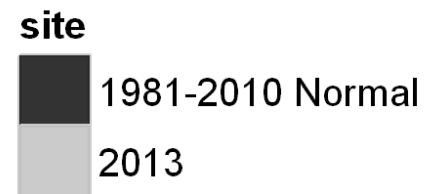
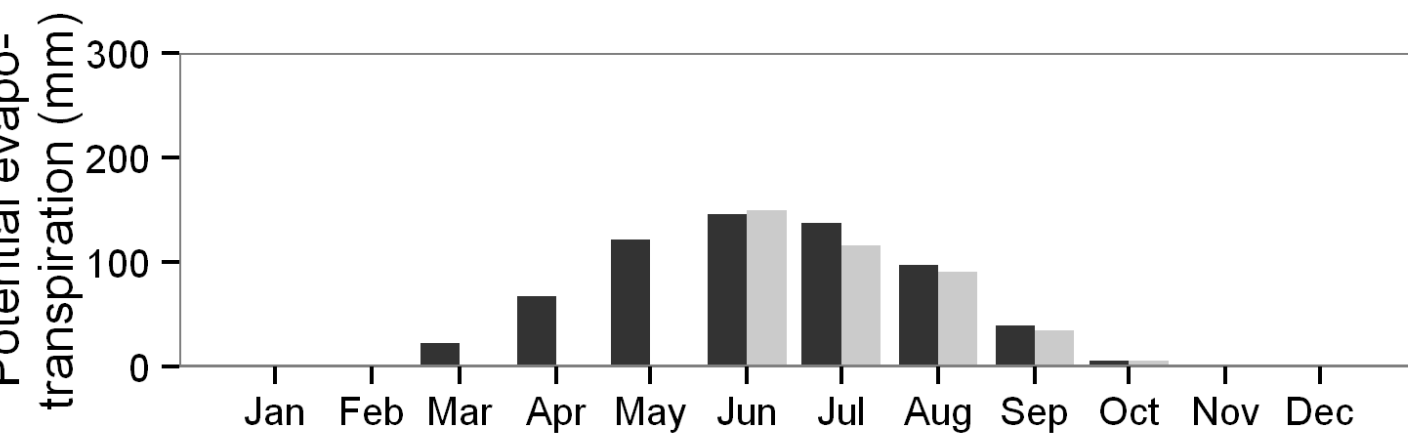
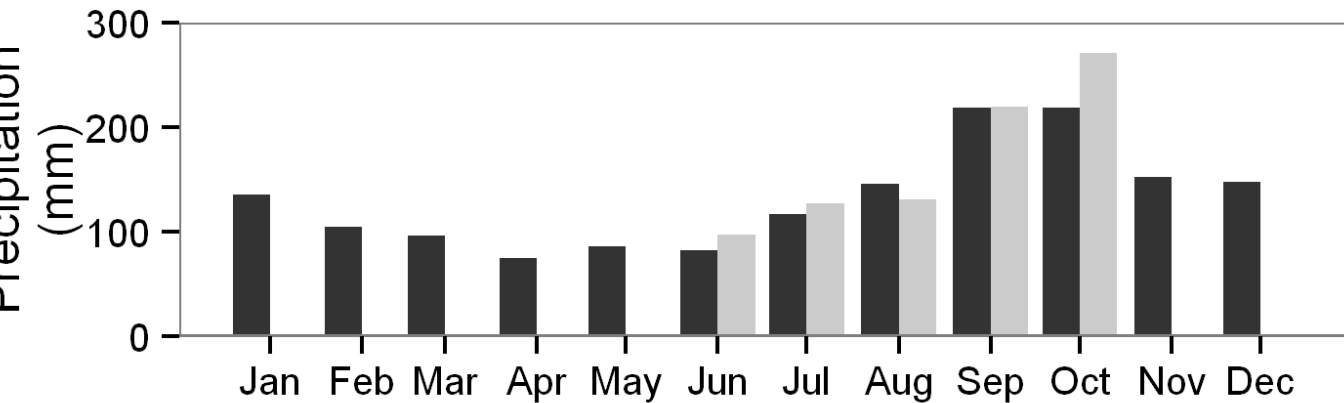
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$$Q = P - ET + / - \Delta S$$

$\Delta S$

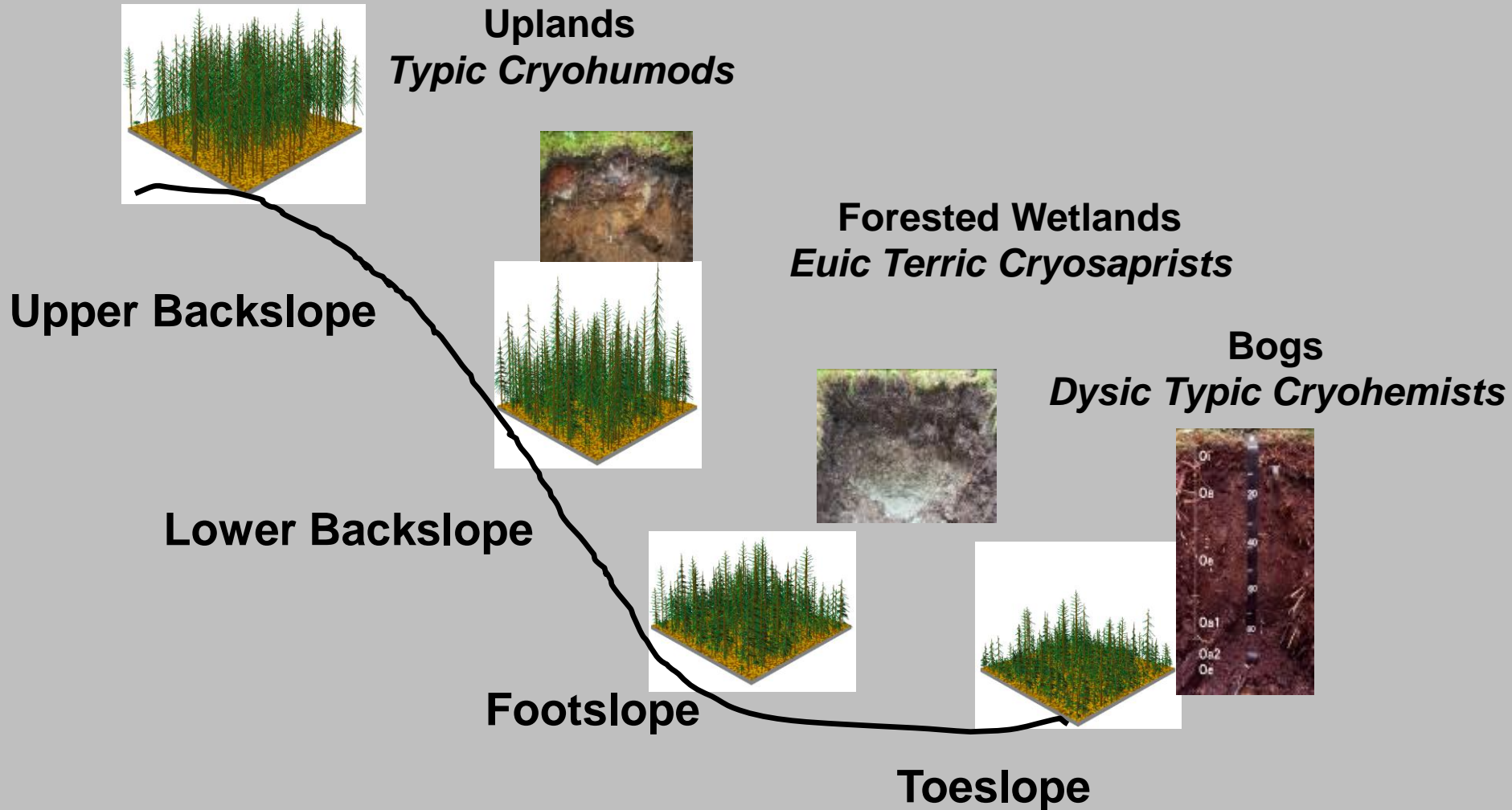
What is the relationship of soil moisture to:

- 1) Vegetation distribution;
- 2) Biogeochemical cycles;
- 3) Generation of streamflow

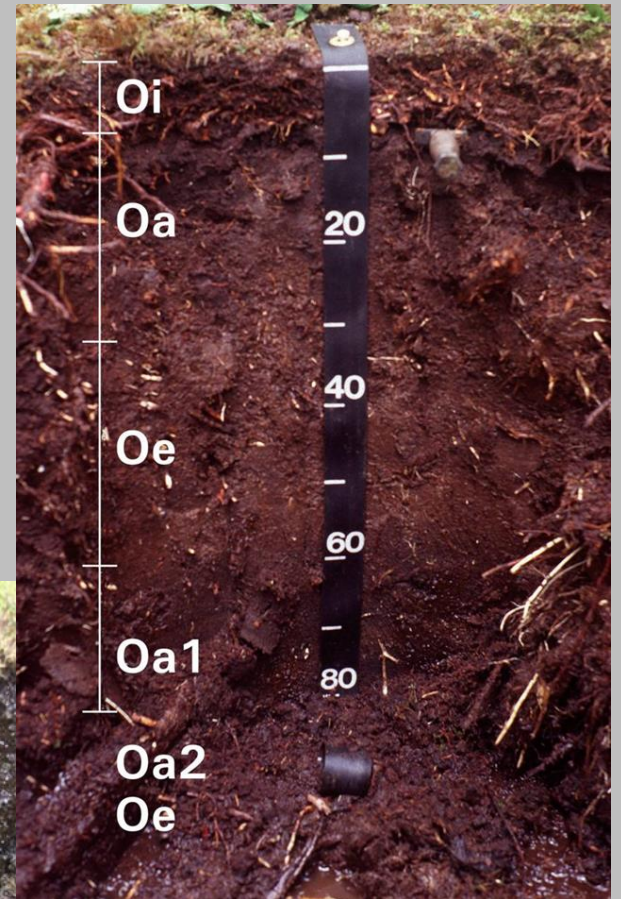


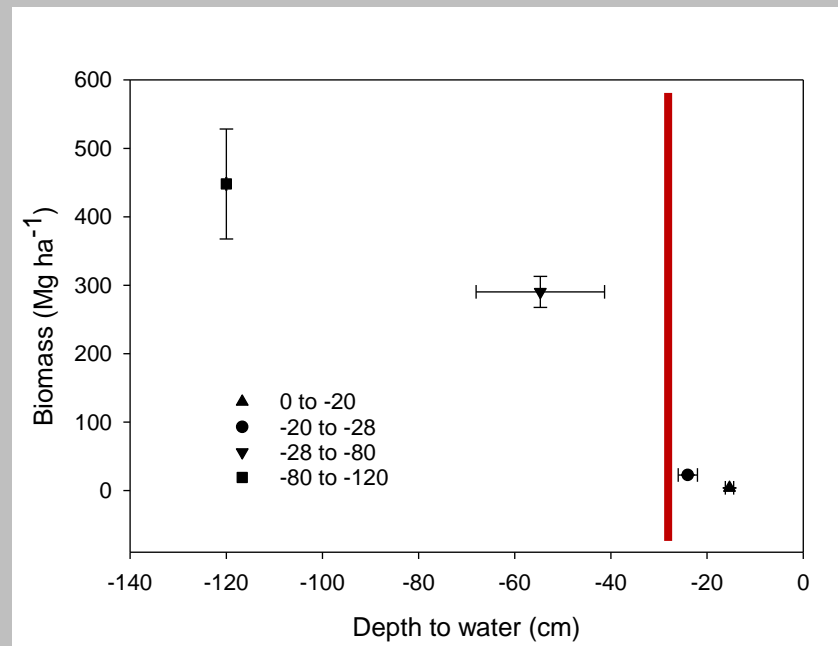
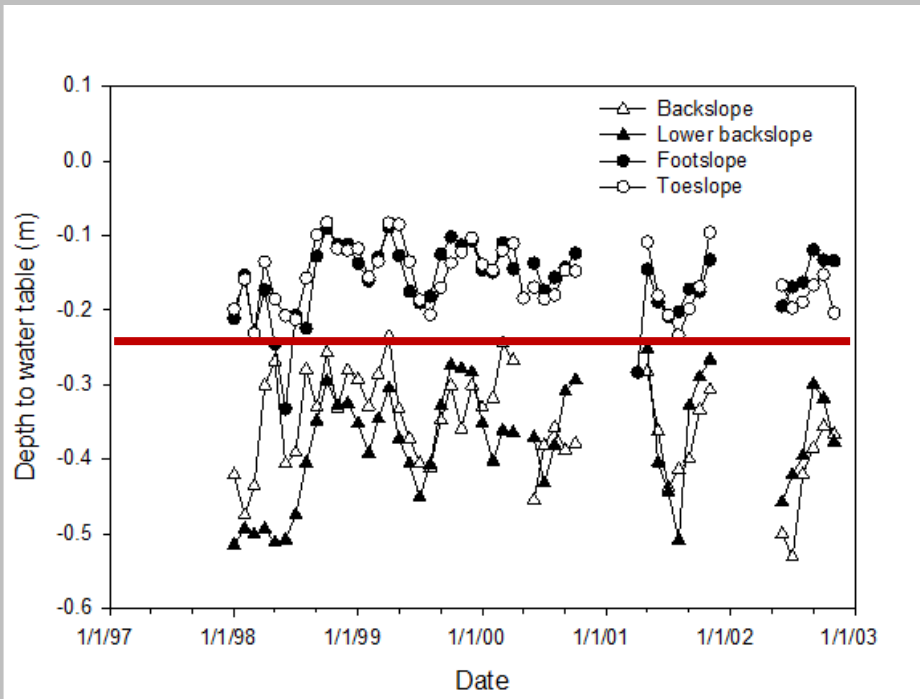


The catena provides a good model for hydrologic soil formation on hillslopes in the CTR.

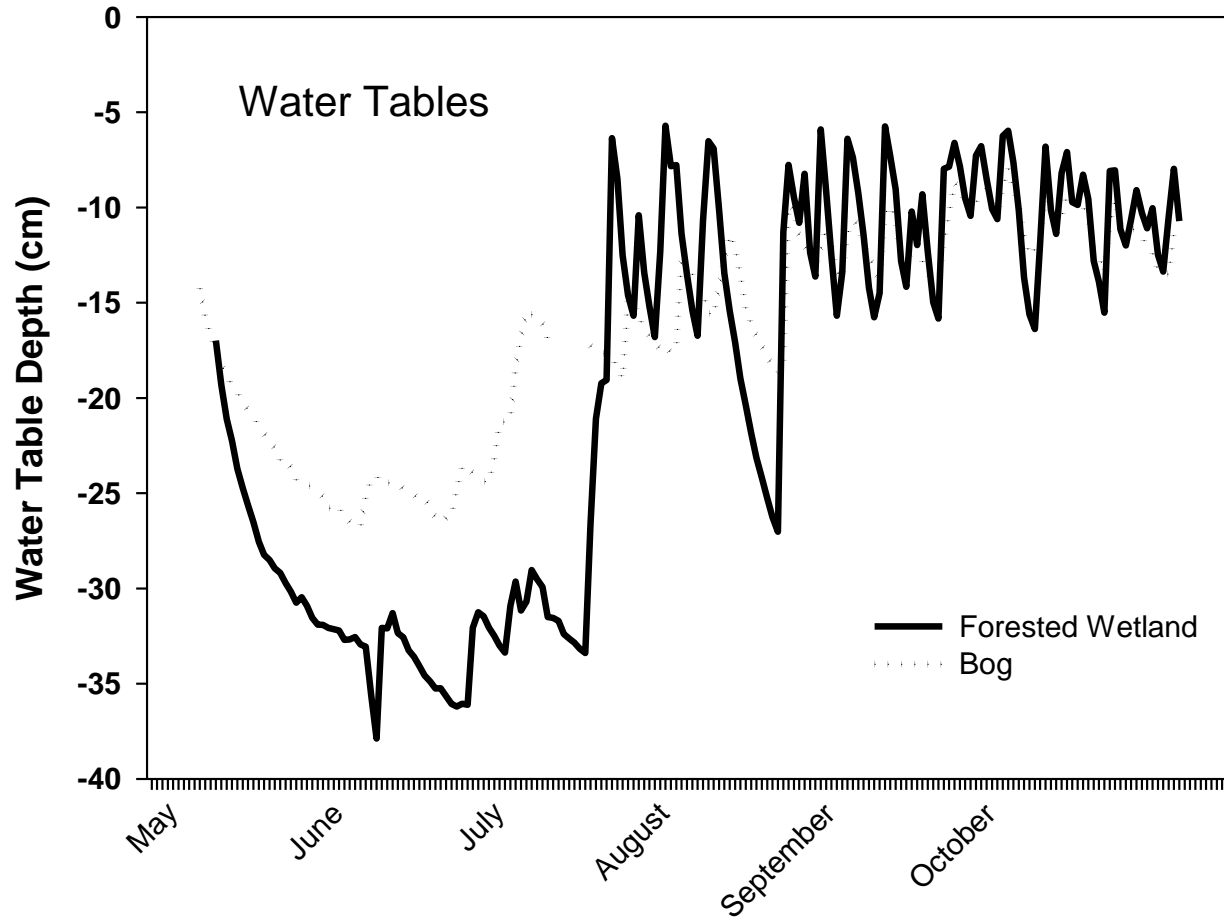




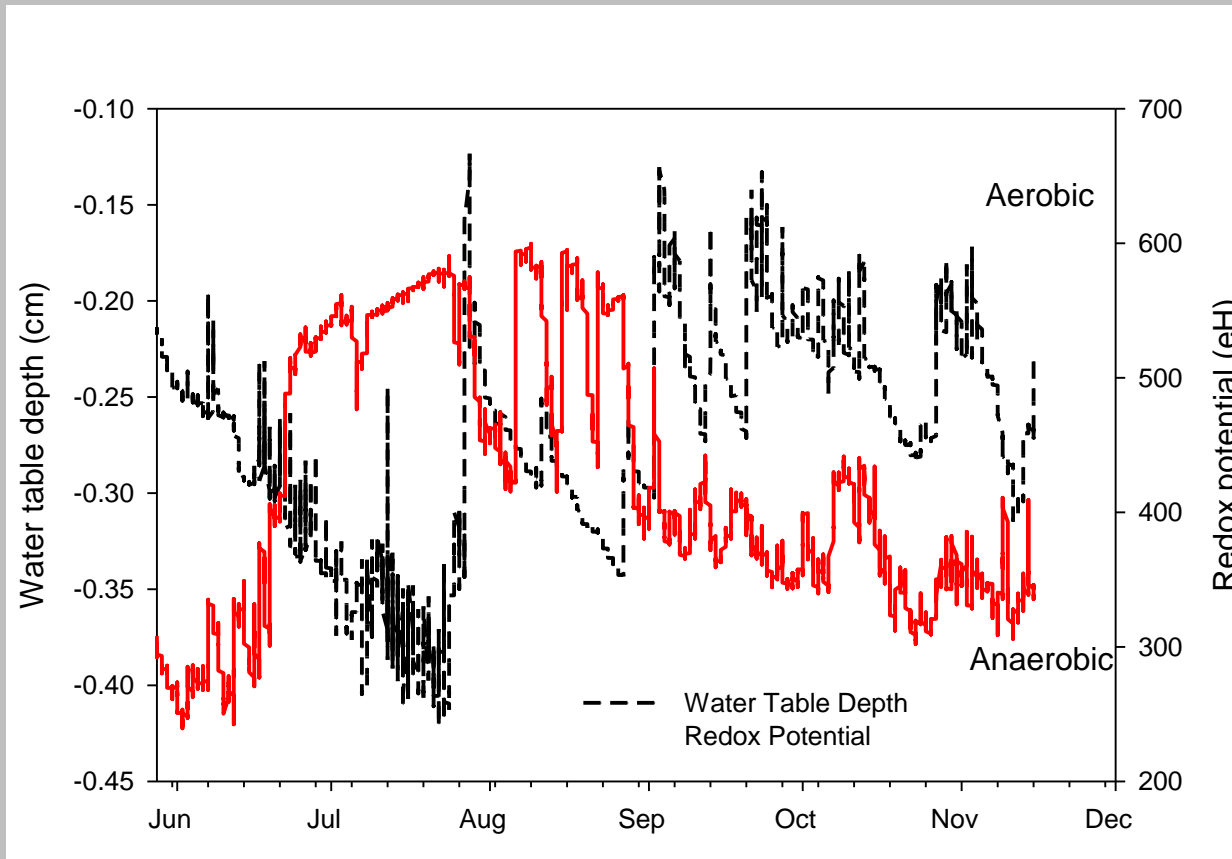


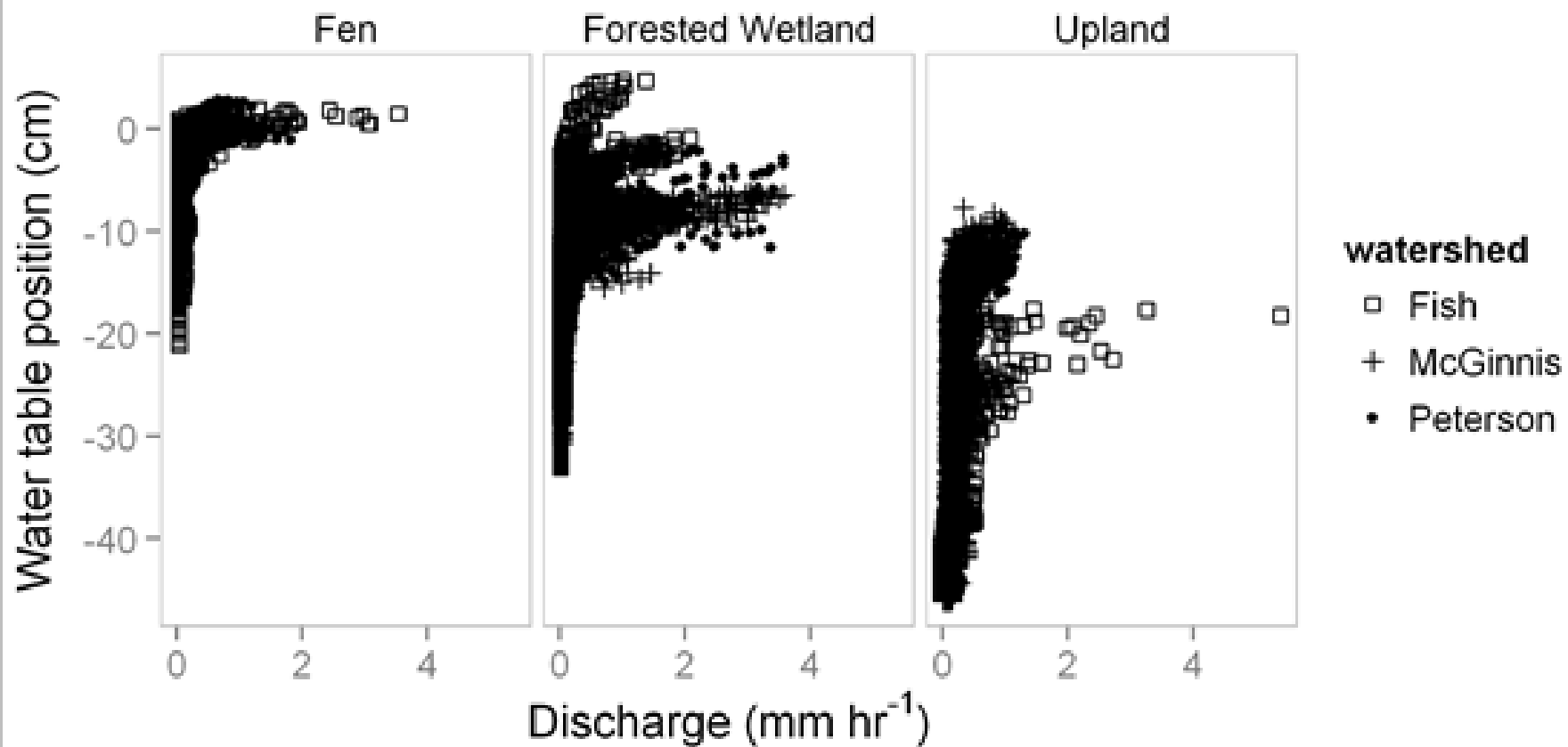


# Depth to water driven by $\Delta S$

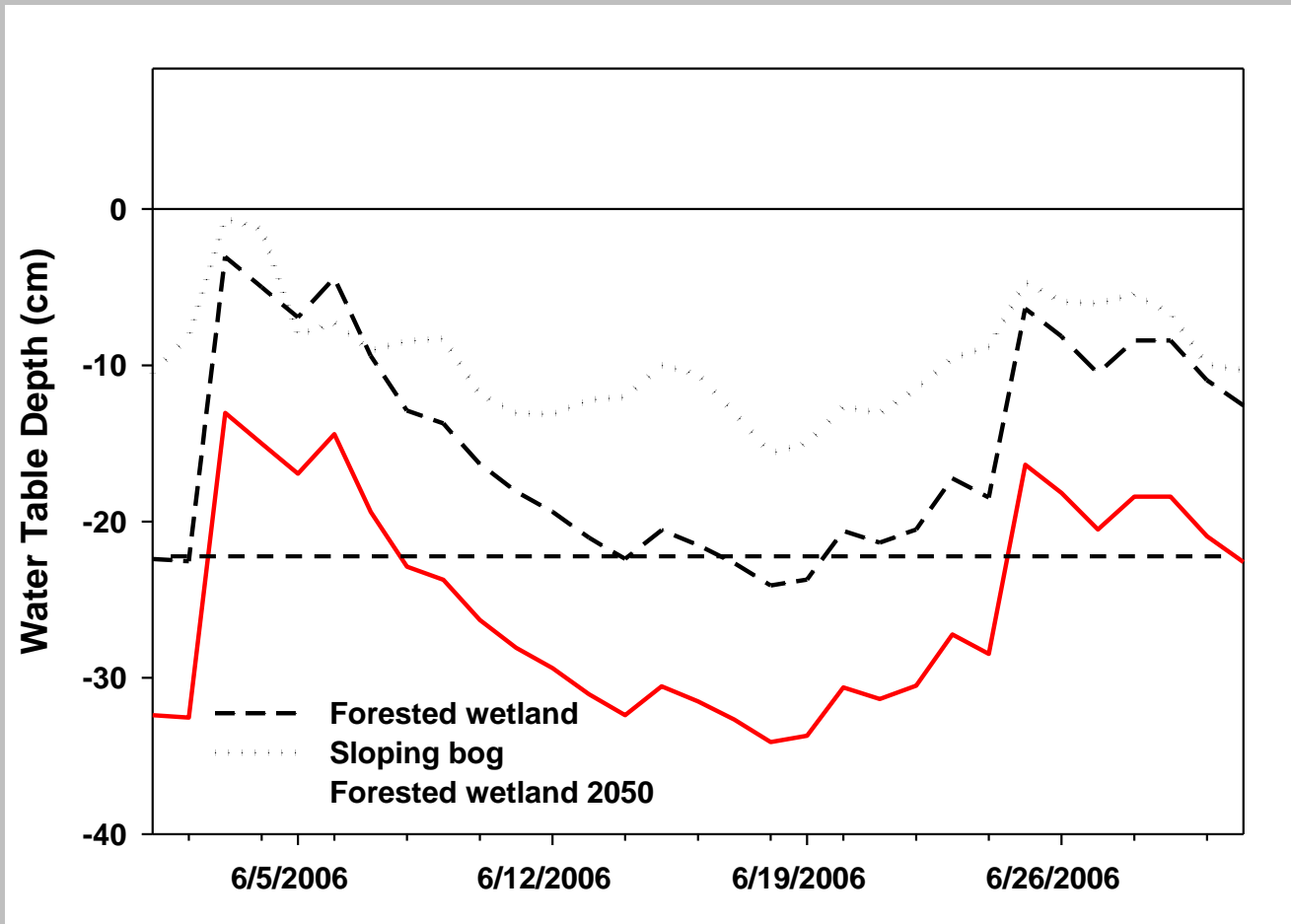


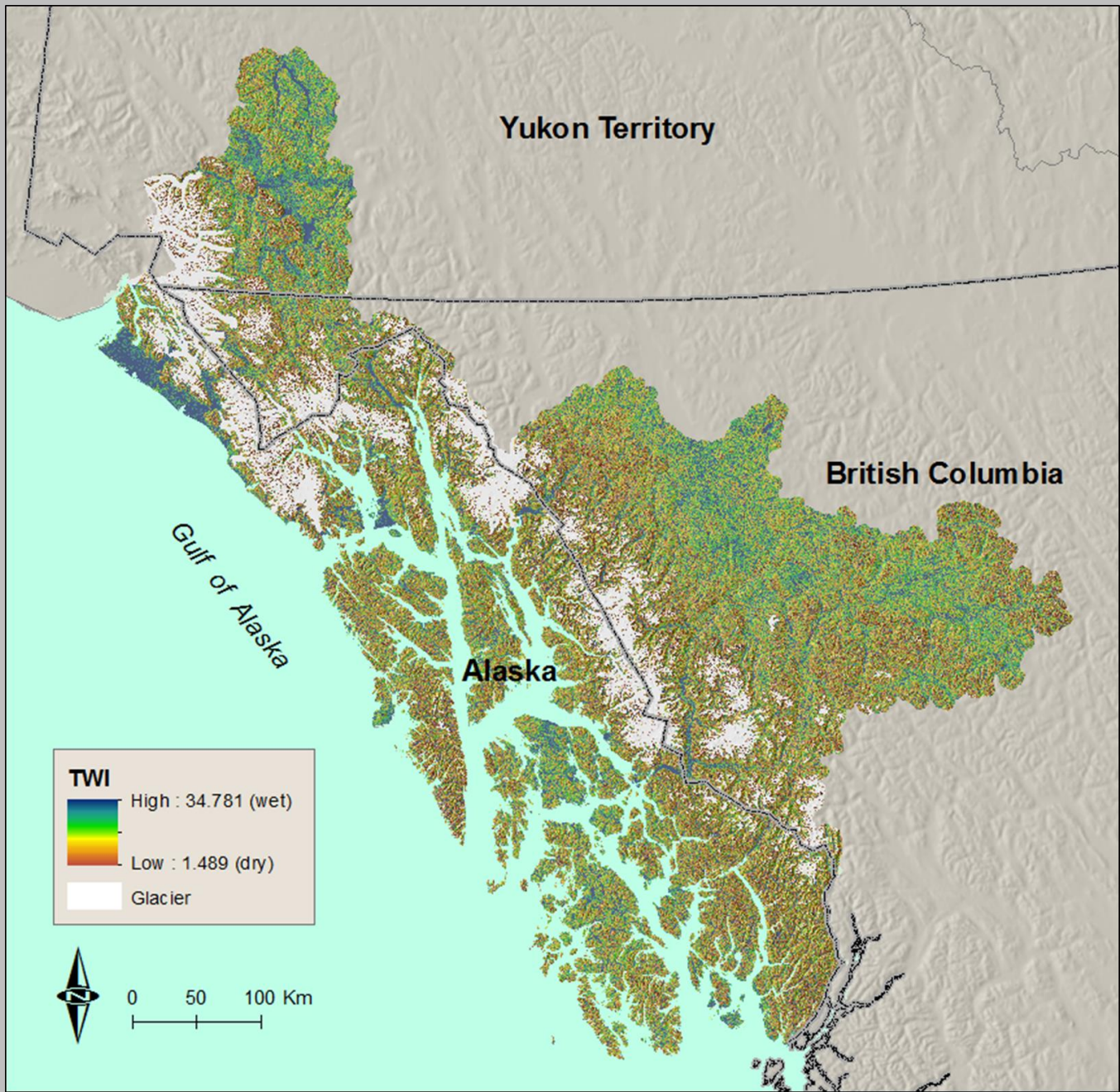
# Soil chemical reactions influenced by $\Delta S$





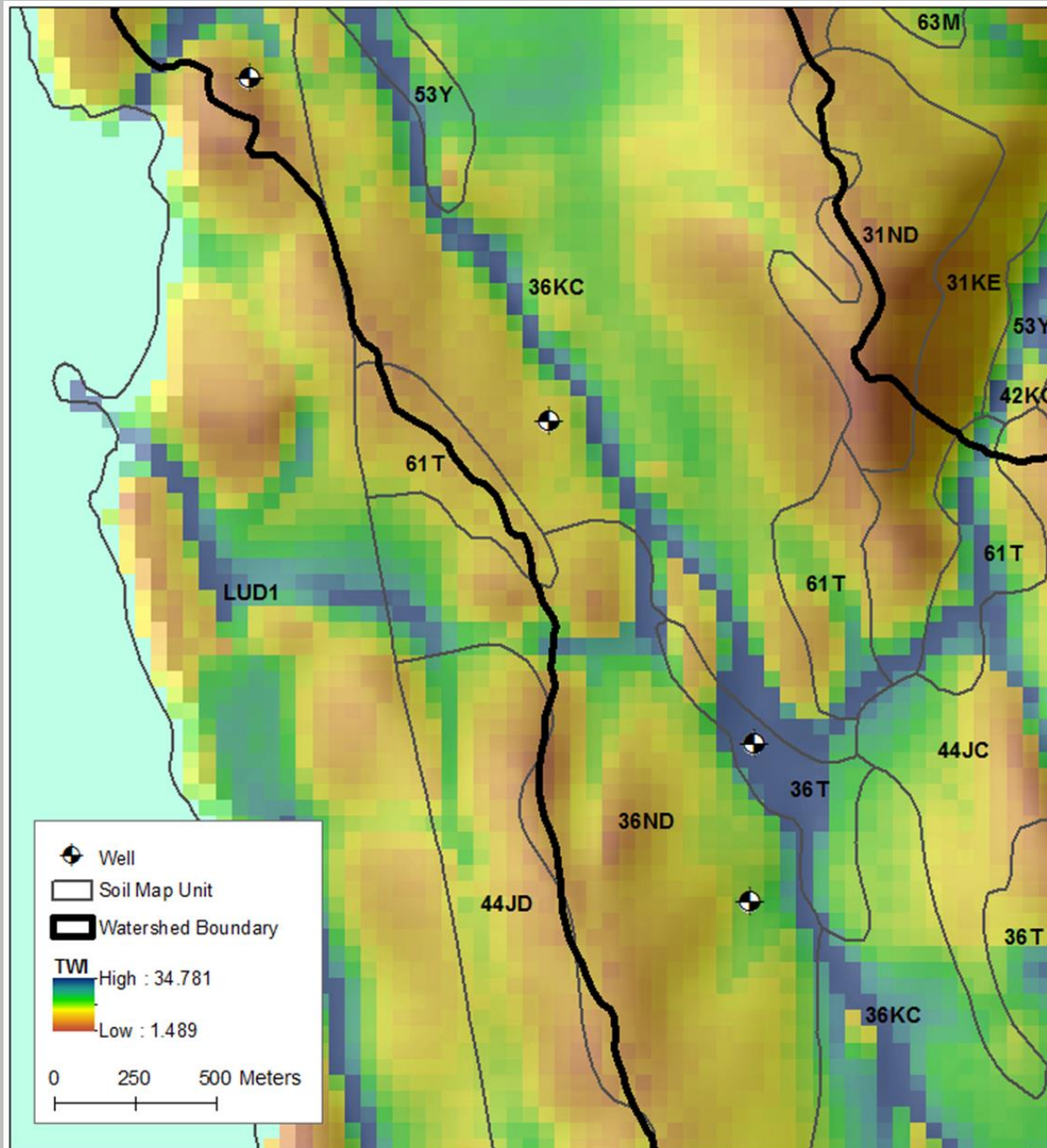
Decrease in  $\Delta S$  will increase soil moisture deficit





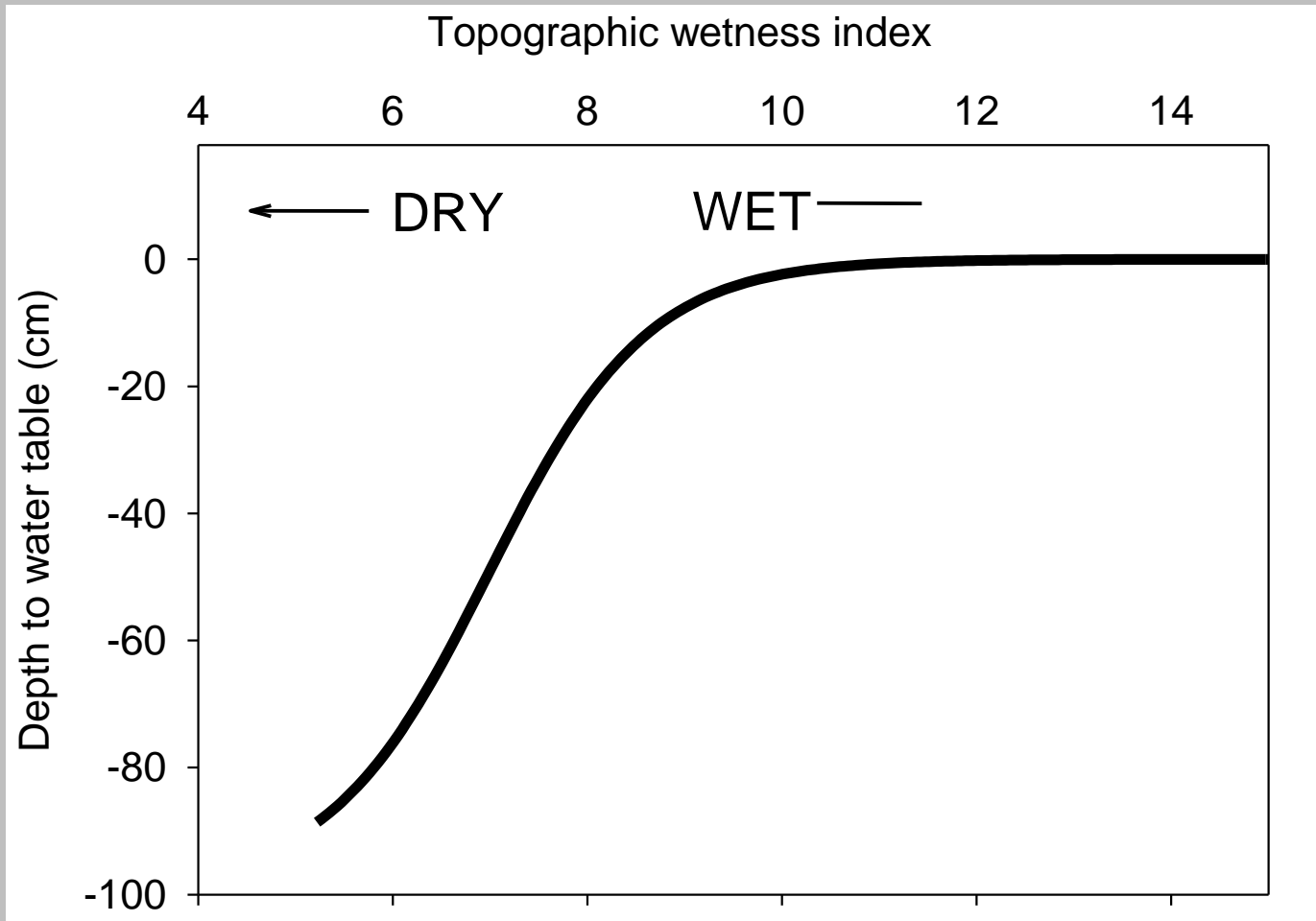
The 50-meter transboundary DEM, flow accumulation, and TWI rasters available at: <http://ckan.snap.uaf.edu/dataset>

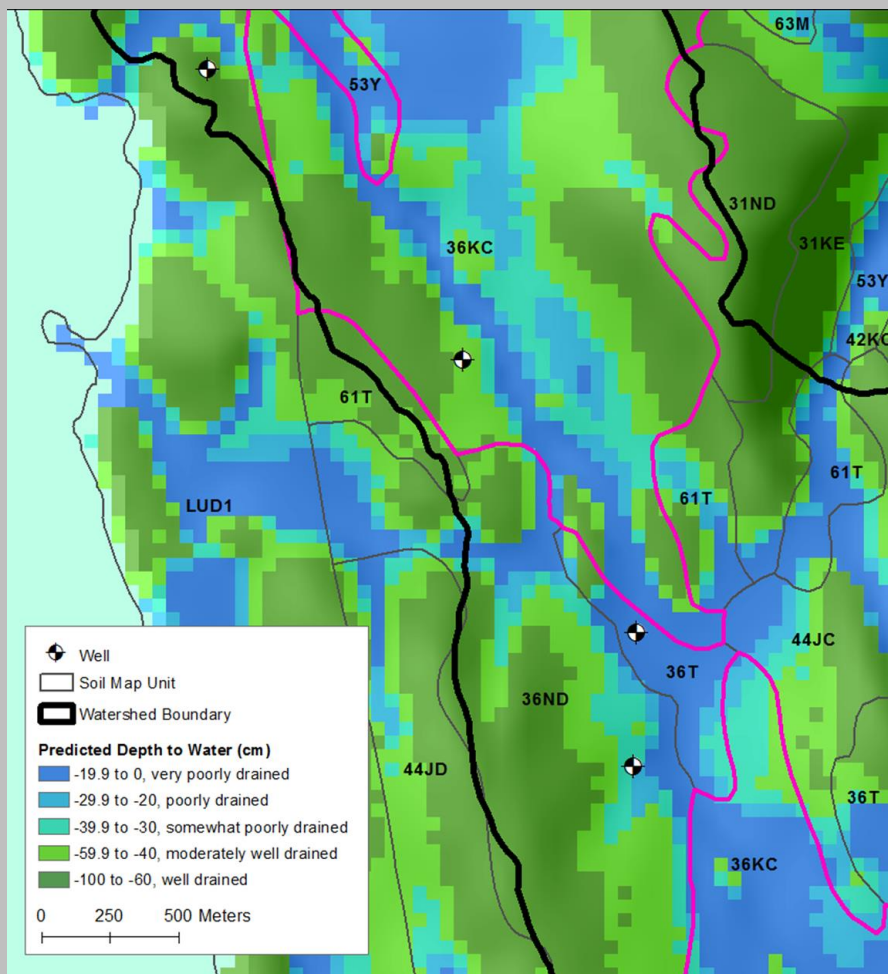
# Applications: Soil map unit disaggregation



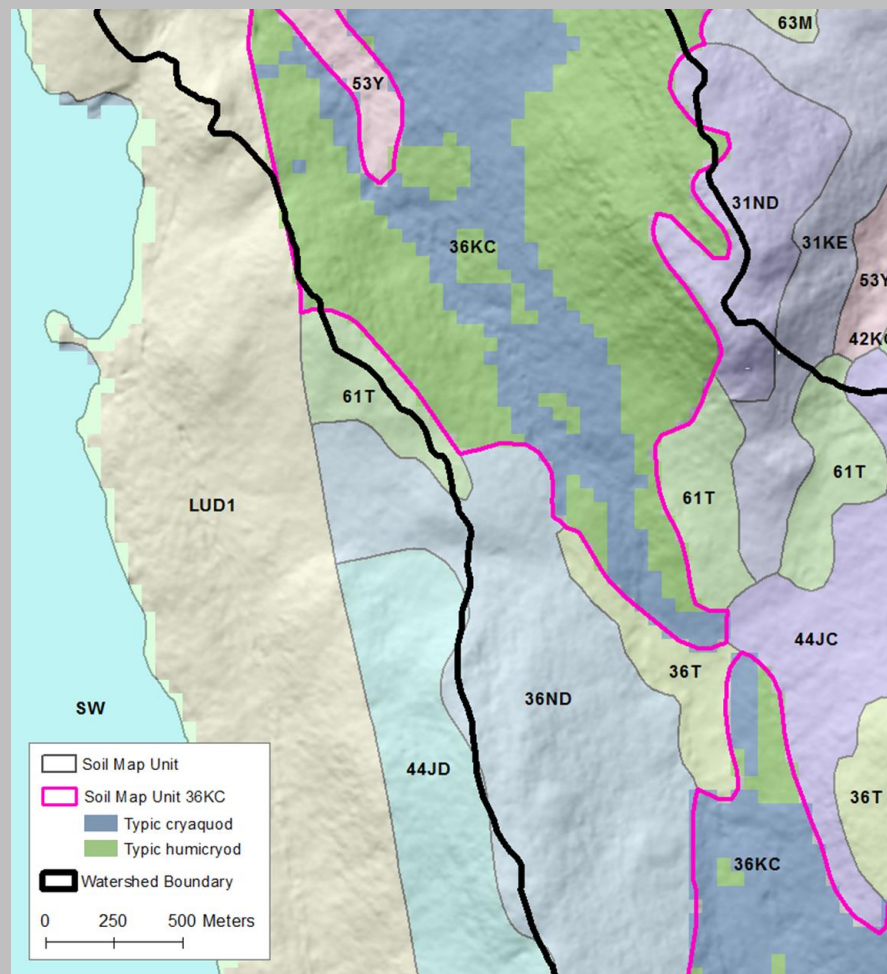


# Applications: Depth to water table

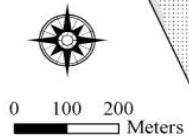
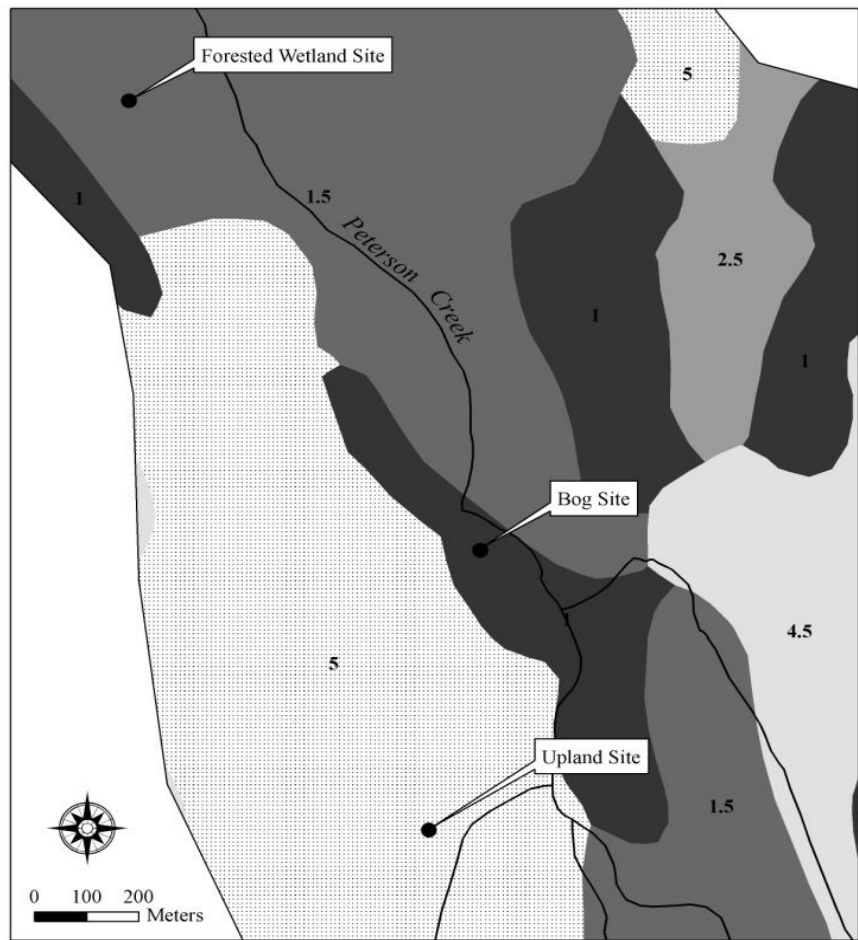




50-meter depth-to-water raster map overlaid with SMU boundaries. SMU 36KC is highlighted in pink.

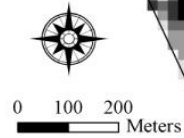
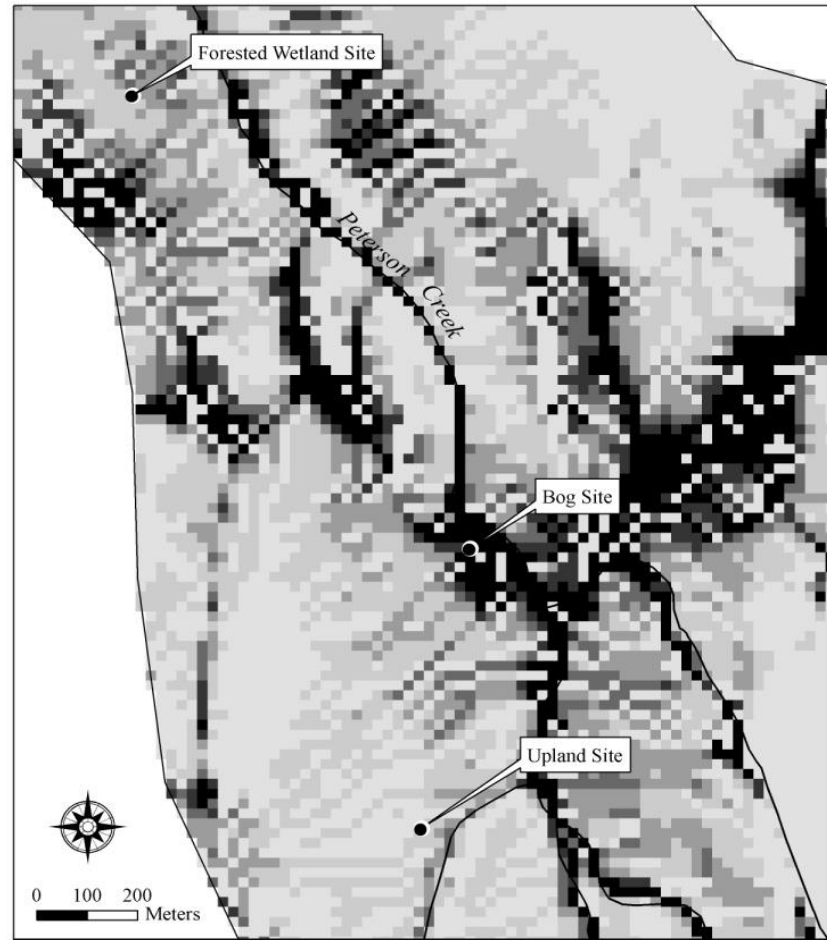
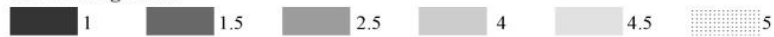


SMU boundaries. SMU 36KC is highlighted in pink.



**Peterson Creek Watershed**

Soil Drainage Class



**Peterson Creek Watershed**

Ground Water Depth (centimeters)

