

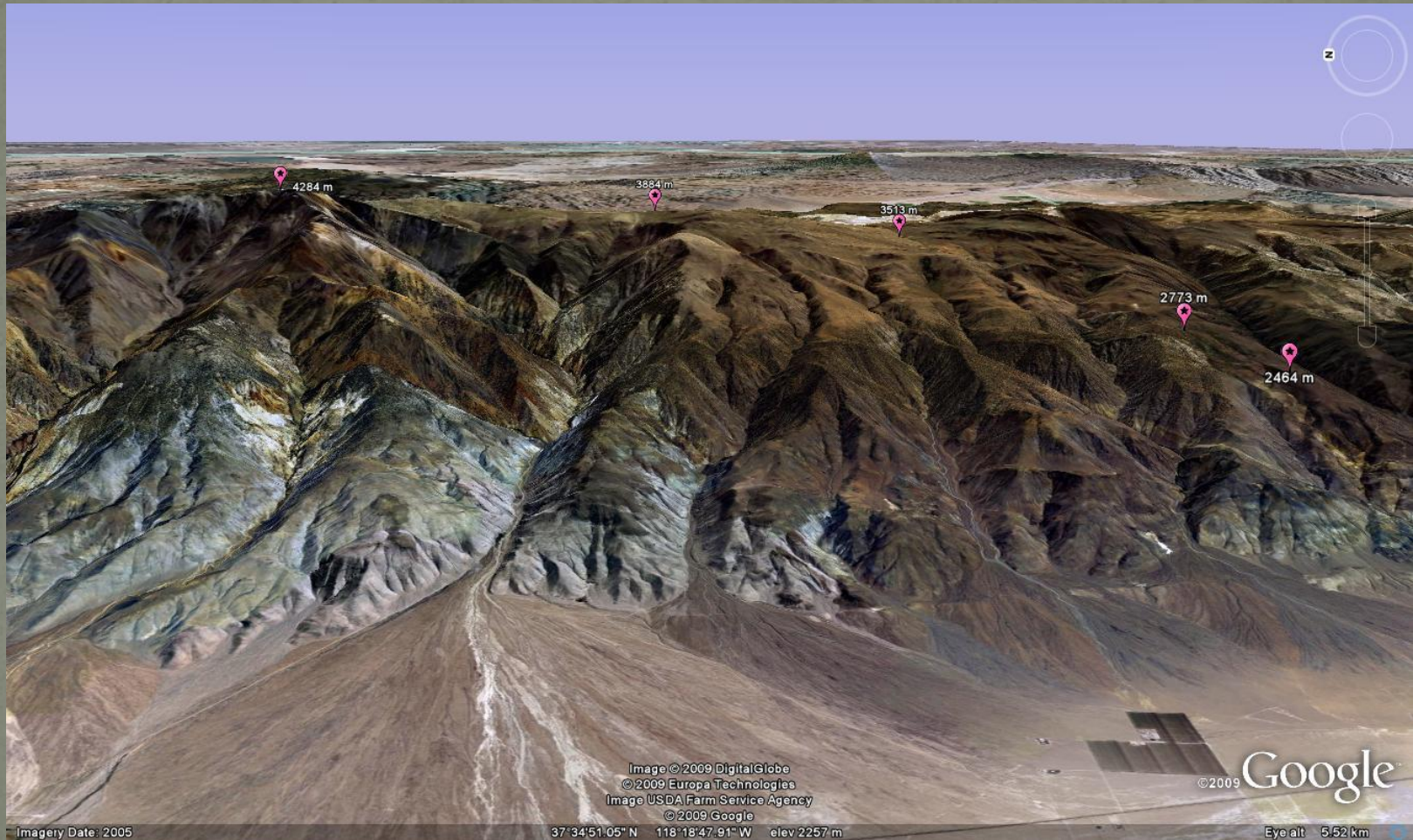
Soil Organic Carbon Storage Along an Elevational Transect in the White Mountains, Inyo County, eastern California

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Research Objective

To analyze the present characteristics of soils along an elevational transect to predict the effects of climate change on soil organic carbon sequestration.

Elevational Transect in the White Mountains, Inyo County, eastern California



Research Question

- How will climate change affect soil carbon sequestration in the arid regions of eastern California?



Presentation Outline

- Overview of vegetation and climate
- Resulting carbon storage at each site
- Conclusions
- Implications for climate change

Valley Floor, 2464 m

MAP: 135 mm

MAT: 13.4 deg. C



Hop-sage/Blackbrush, 2464 m

Interspace

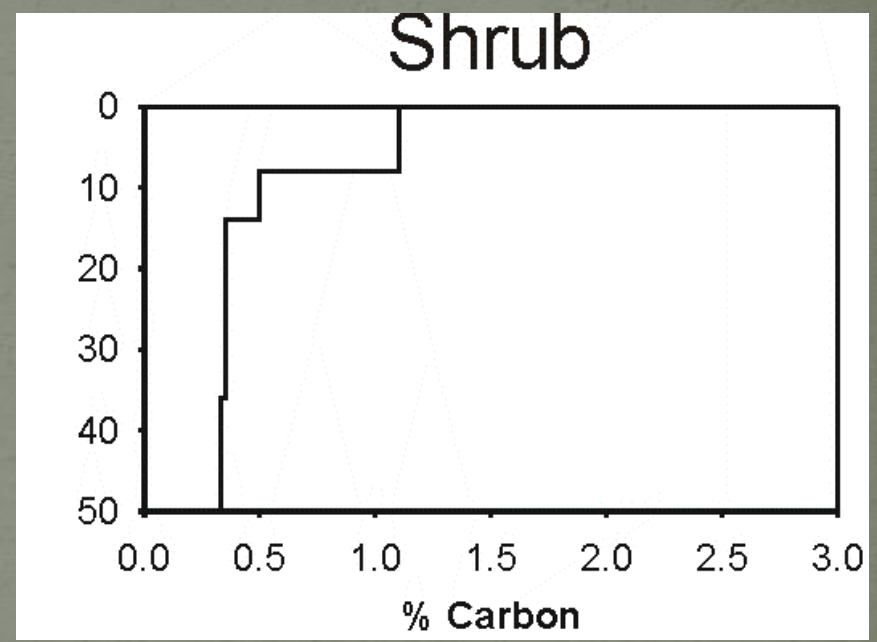
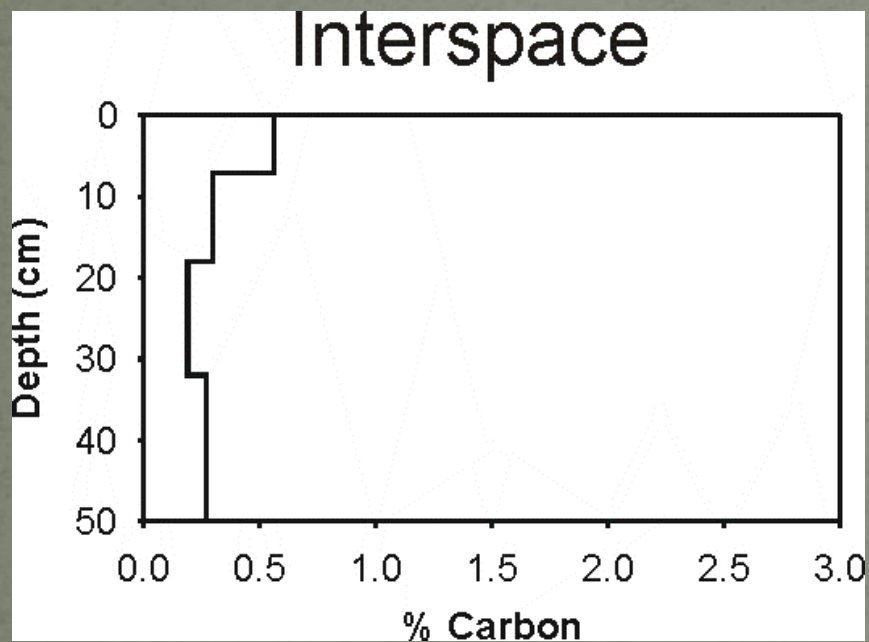


Shrub



Haplarigids

Organic Carbon: 2464 m



Big Sagebrush/Pinyon Pine, 2773 m



Haplargids

Tree



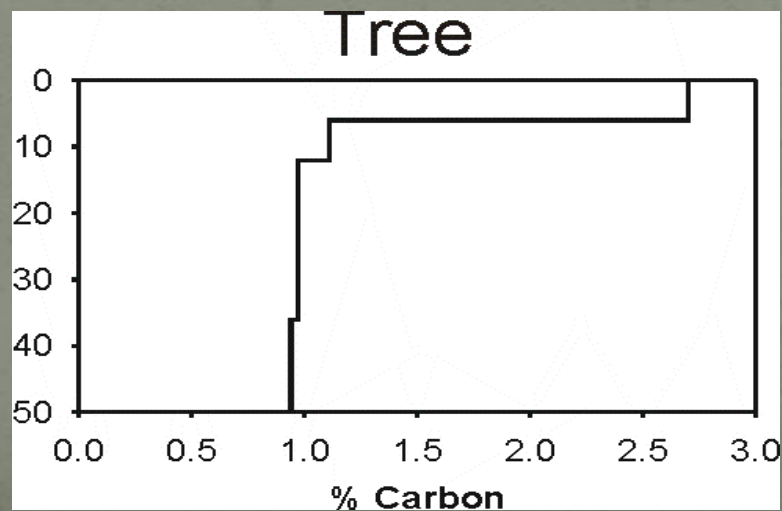
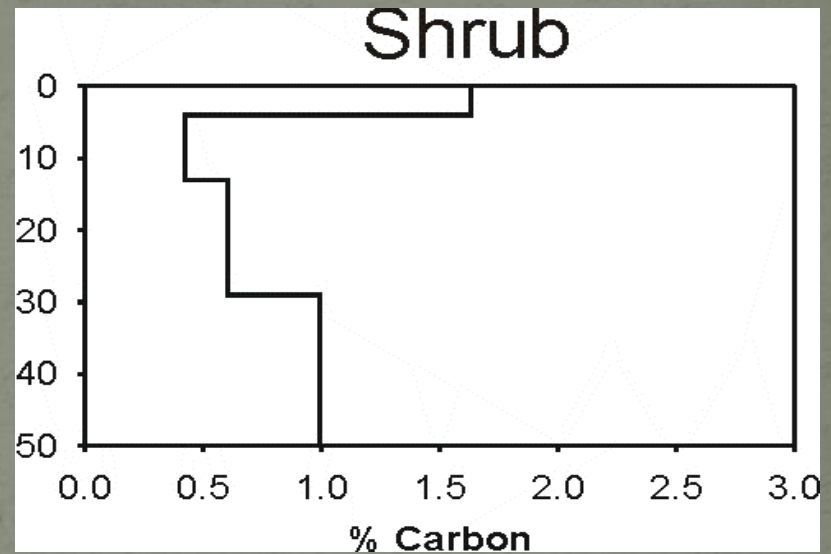
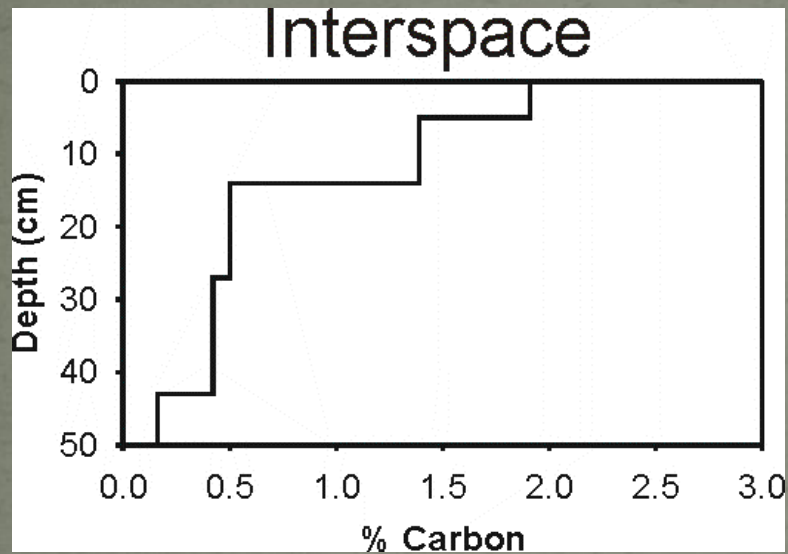
Interspace



Shrub



Organic Carbon: 2773 m



Sagebrush, 3513 m



Interspace



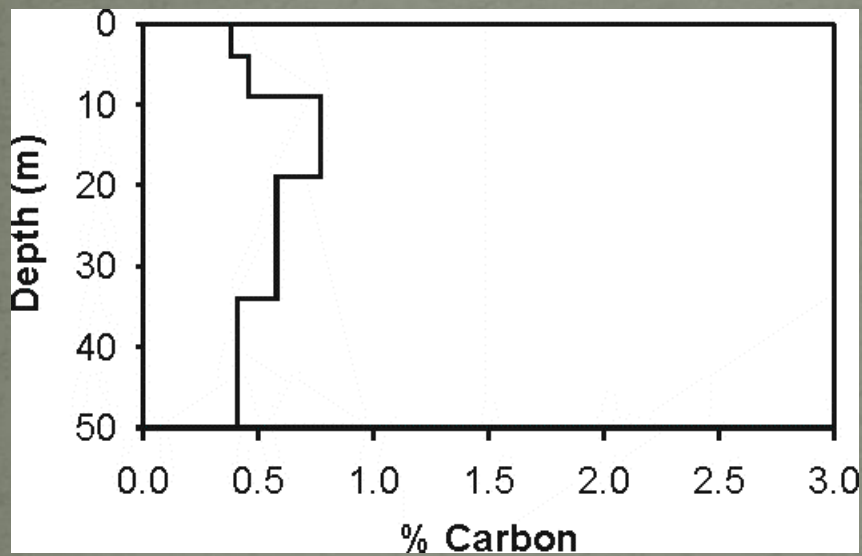
Shrub



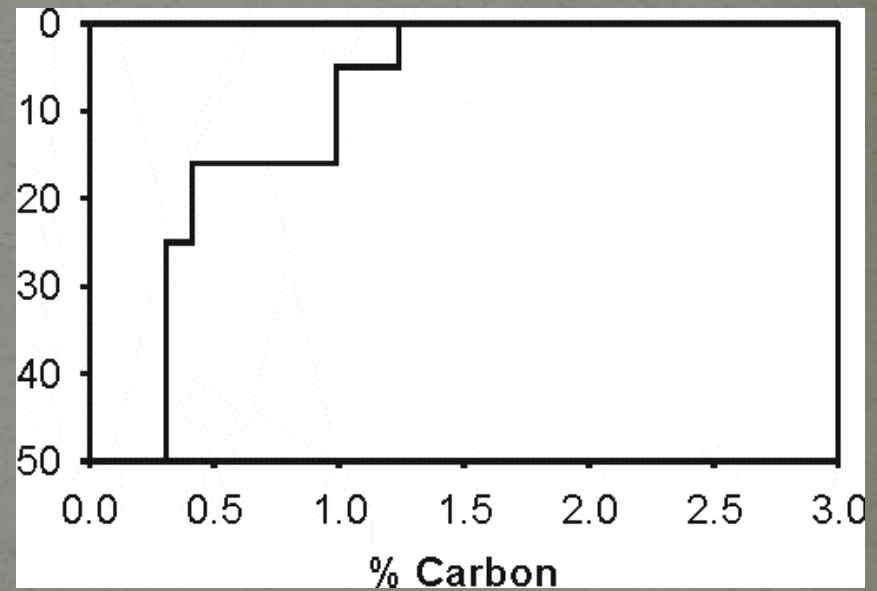
Argicryolls

Organic Carbon: 3513 m

Interspace



Shrub



Alpine Grassland, 3884 m



Interspace

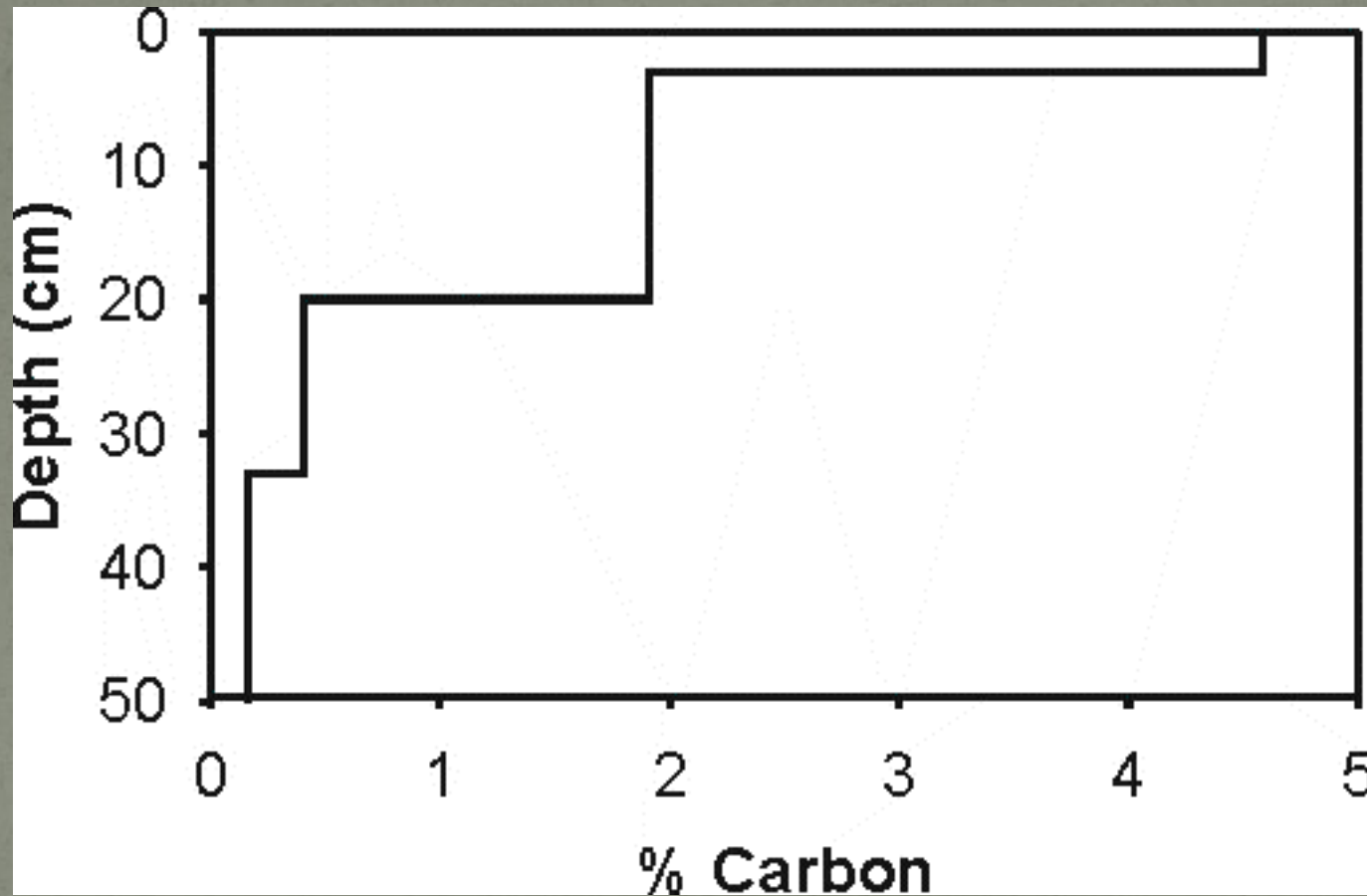


Shrub



Argicryolls

Organic Carbon: 3884 m Alpine Grassland



Talus Field, 4284 m

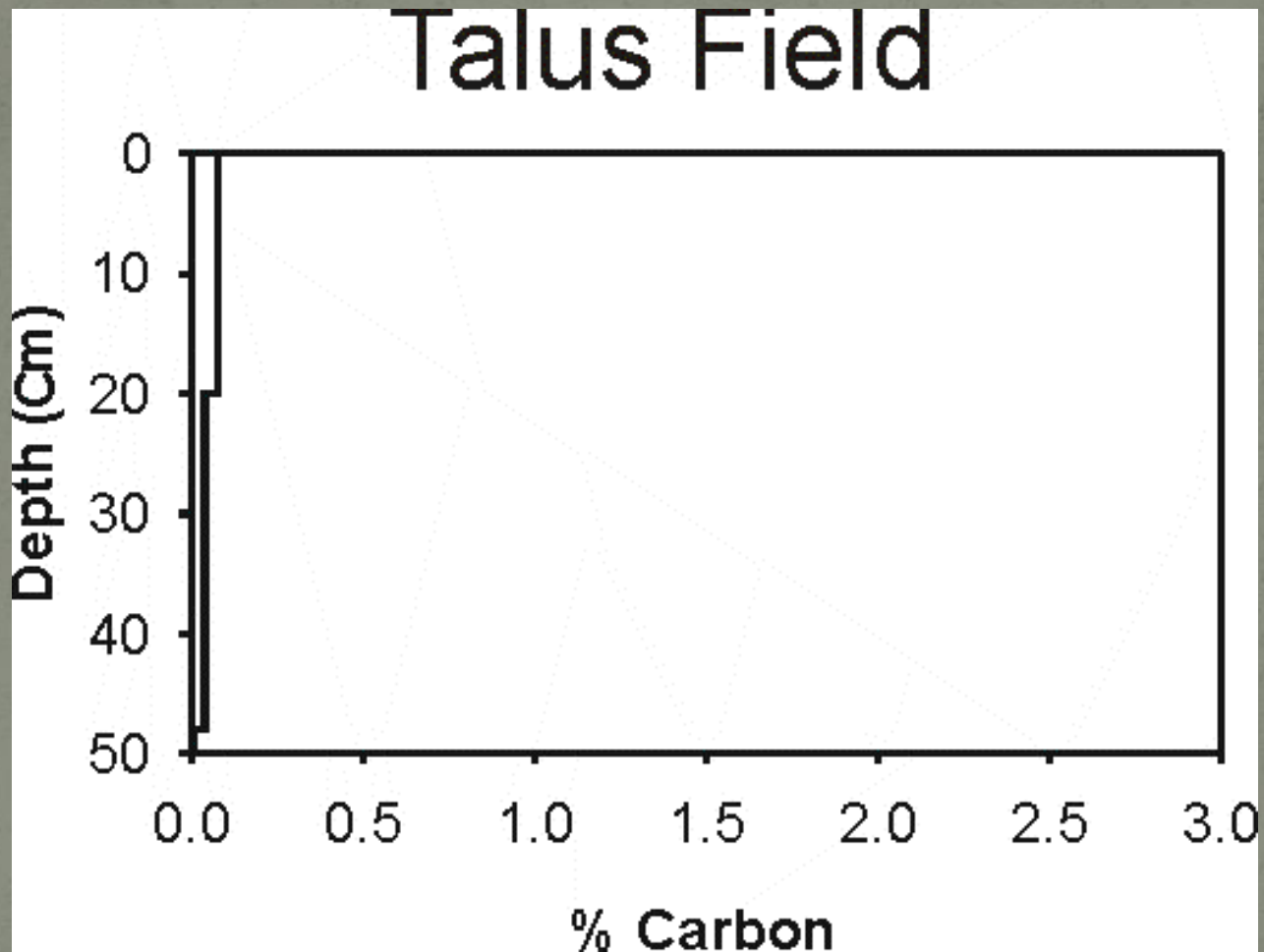
MAP: 500 mm

MAT: -4.3 deg. C

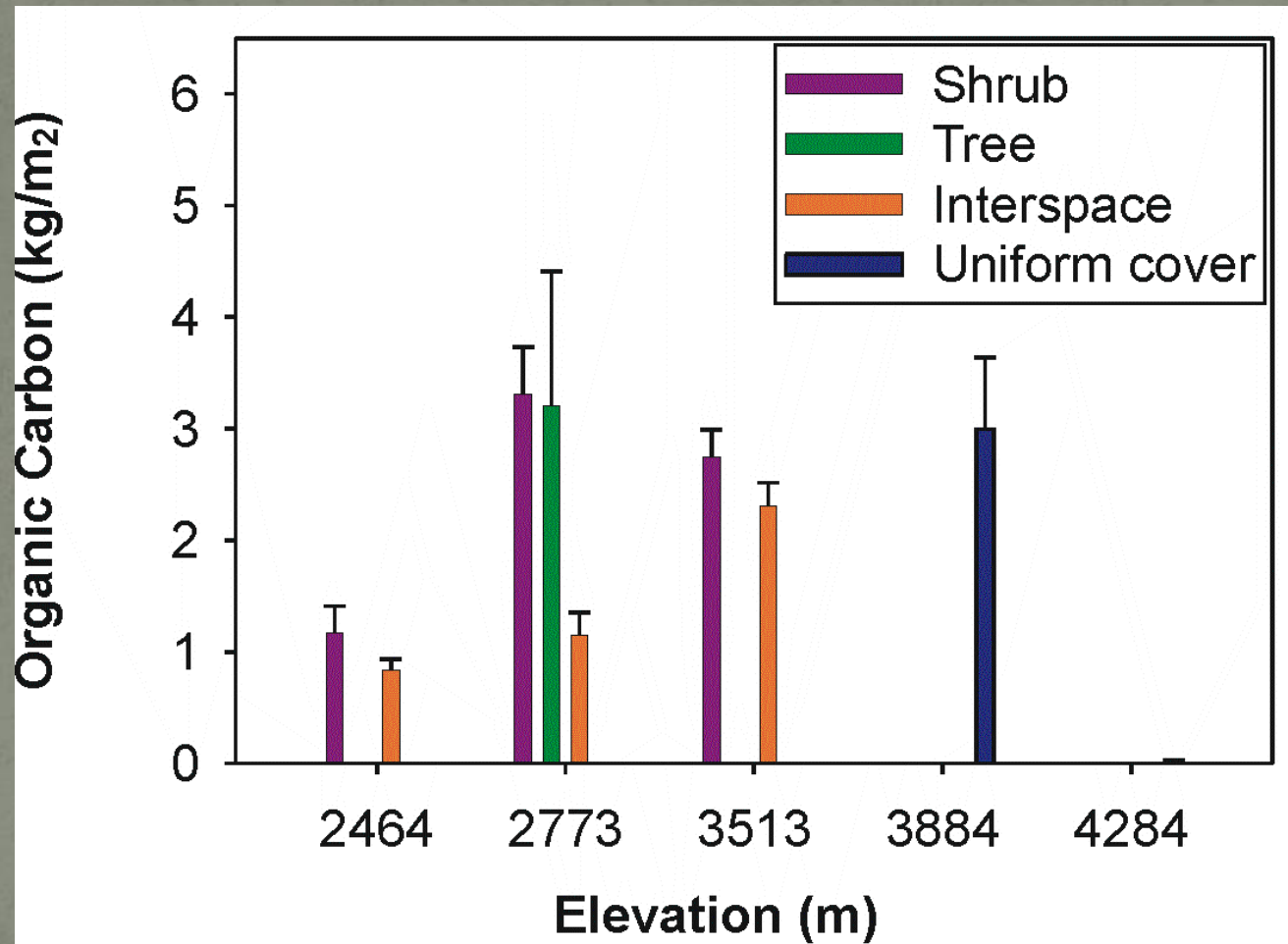
Haplorthels



Organic Carbon: 4284 m



Organic Carbon vs. Elevation



Conclusions

- Carbon is stored in soils both under vegetation and interspaces
- Greater carbon content under localized regions of vegetation than in interspaces
- Interspace carbon increases with elevation

Conclusions Continued

- Although there is less vegetative density at 3884 m, alpine grassland is uniform across site landscape and overall soil organic carbon is highest
- Greater carbon storage can be attributed to reduced microbial decomposition as a result of low temperatures

Implications for climate change

- An increase in temperature due to climate change will increase microbial decomposition of organic matter
- Soils at higher elevations will take on properties of warmer soils at lower elevations
- A potential increase in carbon dioxide emissions from microbial decomposition may result