Timing of the **end of plant growth season** is influenced by **snowmelt** and **soil moisture** in Svalbard

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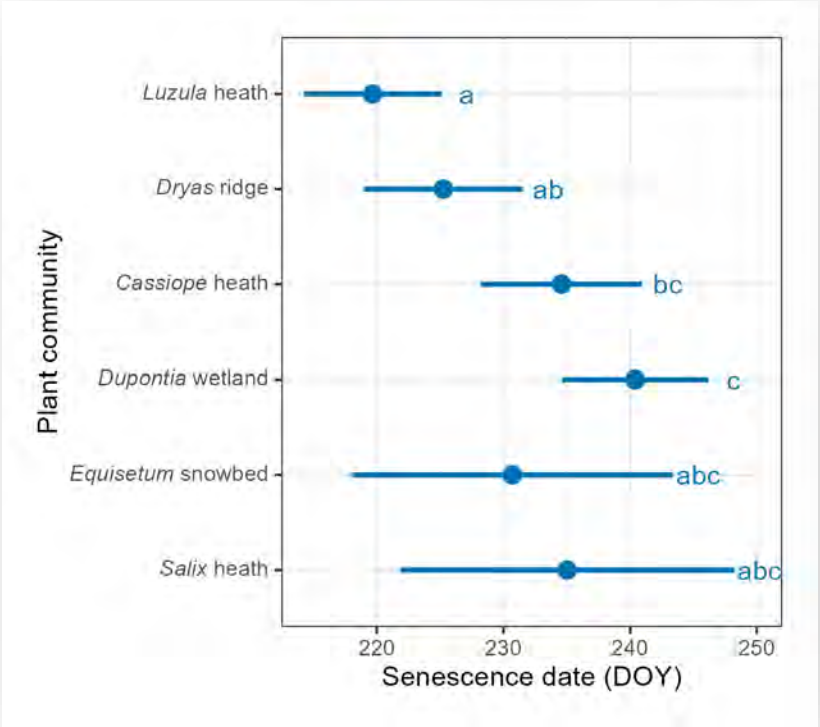
Investigating climatic drivers of autumnal senescence phenology in Arctic tundra plant communities

Background: Svalbard is undergoing rapid climate change with advancing spring snowmelt, increasing rain precipitation, and warming. Plant growing season onset is advancing but we have limited knowledge on changes in end-of-season timing.

Result 1: Senescence timing differs between common plant communities.

Result 2: Heterogeneity in senescence timing is influenced by spring snowmelt date and soil moisture.



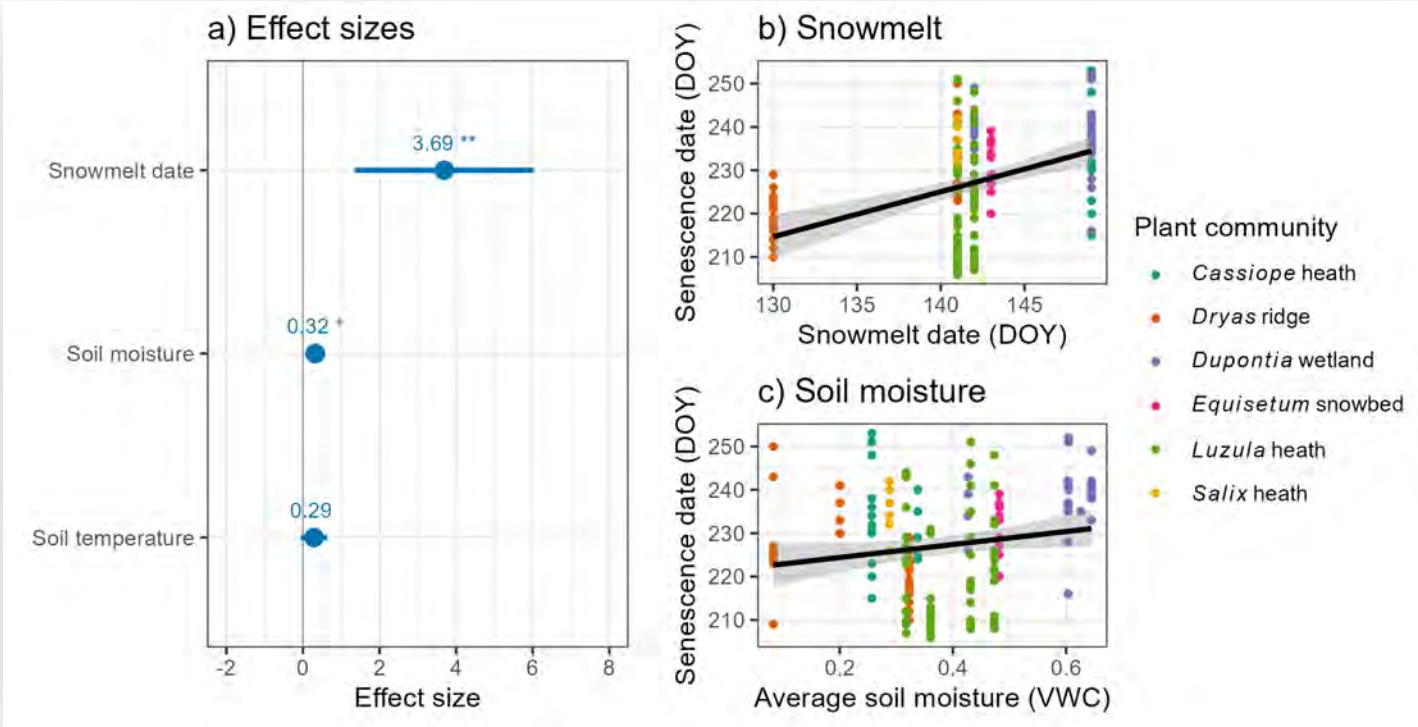


Fig 1: Average senescence date (day where 50% of leaf area had senesced) in Day Of Year (DOY) for each plant community with 95% confidence intervals according to LMM: senescence date ~ community + (1|plot ID/species). Letters indicate Tukey's Honest Significant Differences test with a 5% significance level.

Fig 2: a) Effect sizes of each climatic predictor on senescence date (day where 50% of leaf area had senesced) with 95% confidence intervals according to LMM: sqrt(senescence date) ~ snowmelt date + soil moisture + soil temperature + (1|community/plant functional type). All predictors were scaled by dividing with standard errors. The LMM explained 57.3% of the variability in senescence dates (R^2 = 0.573).
b) Model correlation between snowmelt date and senescence date (DOY) . c) Model correlation between average soil moisture (Volumetric Water Content) from June-September and senescence date.