1. How often is snow important?
2. Why is it important?
3. Alpine or not alpine- further research, why is it different from alpine
4. Prairie phenology and snow

Wang (2017)

* Less snow related to advanced snow melt- initiate growth earlier, extending the growing period
  + More evapotranspiration could lead to dryer soils in growing season
* Winter snow affects soil moisture availability in growing season- soil moisture anomaly formed from melting snowpack takes months to dissipate
* Good Explanation of path analysis
* Increased snow delays snowmelt and spring onset and suppresses growth in Alaska and Central Europe
* Grow period is determined by winter SWE (snow water equivalent), timing of snowmelt, spring onset date on vegetation productivity
* Increased snowpack doesn’t necessarily mean delayed snow melt
* Snowmelt is accompanies by increased temperatures which is largely recognized as most ecologically relevant cue for spring onset in many species.
* Spring onset was not synchronized with snowmelt- insufficient heat accumulation after snowmelt and light limitation might prevent plants from taking advantage of snow melt

Sherwood (2017)

* Temperature
* Early DOBG may lead to frost damage in plants which could be the reason that DOBG and snowpack didn’t influence flowering phenology for early plants
* Heat treatment had less frost kill than when snow was removed.
* Less snow pack lead to earlier emergence of species.
* Examples of asynchrony for plants and insects…
* Flower buds are particularly sensitive to cold temperatures. Earlier plants could have exaggerated responses to cold when snow melt happens too soon
* Heating increased growth and reduced frost-killed buds

Semenchuk (2016)

* Late-season phases/plants are triggered by environmental thresholds of factors such as day length, light quality, temperature, and soil moisture
* Phenology response to snowmelt date may be species-specific
* Hypotheses: phenoperiods are shorter in late-melting snow
  + Short seed maturation decreases viability
  + Species- specific
* How to cite R
* DOBG and snowpack might not have much of an effect because, plants may shorten their phenophases to compensate for a late start
* Shorter phenophases could mean lower seed viability- they found more of an interannual effect than snow depth
* In some species the soil moisture from the deep snow may have played a bigger role in development than the active period duration
* Flowering period was unaffected by snow regime- flowering duration is more closely linked to temperature
* Deeper snow protects sensitive buds from frost damage
* Warmer temperatures could also speed up phenophases
  + Periodicity may be a competitive trait in species attempting to reside in tundra ecosystems