Valdes et al. have produced a very fine study of an extremely interesting situation. In Iceland, the herb *Cerastium fontanum* occupies a geothermally mosaic landscape. Patches separated by only a few meters about can have drastically different soil temperatures. They show that even on this fine scale, plants are genetically differentiated for flowering time, with early flowering genotypes found on warmer patches. Further, they found through a common garden experiment (at a single, relevant soil profile) that warm-temperature genotypes took longer to flower (which could indicate that warm-soil genotypes begin accumulating growing degree days at a higher temperature). The adaptive significance of flowering time differentiation is not yet clear for this system: the strength of selection on this trait did not change with the patch soil temperature, as expected. Nevertheless, this paper presents a solid data set and some firm conclusions on an intriguing system. It is a solid base for further investigation.

One technical point to address—tables 2 and 3 each present alternate models to analyze a single data set. Reporting AIC values to evaluate would help readers to evaluate the models.

The discussion could be enriched by addressing several issues raised in recent literature. The first concerns the maintenance of genetic variance. The focal trait is flowering time, which is expected to mate assortatively. This could lead to (partial) temporal reproductive isolation even on small local scales, which will blunt the interfering effect of gene flow on local selection. (See Weis, A.E. 2015. On the potential strength and consequences for nonrandom gene flow caused by local adaptation in flowering time. Journal of evolutionary biology 28:699-714). Particularly relevant is (Soularue, J.P., & Kremer, A. 2014. Evolutionary responses of tree phenology to the combined effects of assortative mating, gene flow and divergent selection. Heredity 113:485) which deals with the impact of assortment and selection on counter-gradient plasticity in phenology. Second, concerns the observes selection for earlier flowering. Austen *et al.* (2017. Explaining the apparent paradox of persistent selection for early flowering. New Phytologist. 215:929-934) have offered some possible explanations on why early is so often favored. For instance, in the common garden study it seems that some plants flowered during their first year of life, while some flowered in the second year. Similarly, duration of the flowering period and/or plant longevity could be correlated with flowering date in ways that would yield local adaptation. These points could add context to your findings.

Specific Comments:

Line 159: clearly state the census intervals for monitored first flowering.

Line 187: “relativized” instead of “reltivated”

Line 208: Interpretation of the flowered/not flowered designation diagnosis can change if there are temperature-dependent differences in the propensity to flower. Do plants in hot/cold sites require more years to reach maturity? Do plants ever skip a year in flowering? If so, how does this effect estimates of fitness.

Figure 2: warn the readers of the different y-axis scales on the two graphs.

signed: Arthur E. Weis