Abstract: Shifts in the timing of plant phenology (the timing of life history events such as flowering or leafing) are the most reported biological indicator of climate change and critical to accurate predictions of carbon storage and a suite of other important ecosystem services. Progress towards prediction, however, has been slow because the major cues known to drive phenology—temperature (including winter chilling and spring forcing) and photoperiod—generally covary in nature and may interact, making accurate predictions of plant responses to climate change potentially complex. Alternatively, recent work suggests many species may be dominated by one cue, which would make predictions much simpler. Here I review how these cues underlie the phenology of diverse species, from winegrapes to North American forest trees. I show how long-term records of plant phenology can help us better understand how climate itself is changing but also highlight the difficulties of
using long-term records and field experiments to make robust predictions. I end with data from controlled environments that capture the diversity of cues species use to time spring leafout each year, and what this means for predictions of future phenology and plant communities.

Bio: Elizabeth Wolkovich is an Associate Professor at the University of British Columbia and Canada Research Chair in Temporal Ecology. Her research focuses on how phenology shapes plants and plant communities and extends to how climate change will affect different winegrape varieties. She completed her PhD at Dartmouth before enjoying postdoc life in Santa Barbara, San Diego and Vancouver. Her research sites have varied from coastal sage scrub in San Diego to eastern forests in Quebec, New Hampshire and Massachusetts, vineyards in California and now British Columbia and her lab now works in the forests of Smithers and Manning Park (BC). She has been fortunate enough to have great advisors and collaborators in her career, among them Doug Bolger, Elsa Cleland, Ben Cook, and Kathy Cottingham.