



April 22, 2020

Dear Dr. Findlay:

Please consider our paper, entitled "Winter temperatures dominate spring phenological responses to warming" for publication as a 'Letter' in *Nature Climate Change*. This manuscript is a second revision of an earlier submission (NCLIM-19081773). We include a point-by-point response to reviewer comments.

As you may recall, our manuscript utilizes a new global database to address a research topic of critical relevance to a broad reach of *Nature Climate Change* readers: the timing of spring phenology (e.g., budburst) in woody plants. Spring phenology impacts plant fitness, shapes plant and animal communities, affects wide-ranging ecosystem services from crop productivity to carbon sequestration and unites the fields of biometeorology, ecology, cellular and molecular biology. Our work is groundbreaking in its synthesis of four decades of research across 72 experiments to quantify the relative importance of three environmental cues critical to phenology for 203 species from around the globe.

In this round of reviews, we addressed concerns of Reviewers 1 and 2 (Reviewer 3 felt our manuscript was clear, greatly improved from the previous version, and agreed with the conclusions of our manuscript). Though Reviewers 1 and 2 felt our study addresses an important question, constitutes an impressive dataset and includes sophisticated analyses, they also highlighted some concerns in regards to our methods and how we presented those methods. Given these concerns, we have double-checked many of the studies contained in our database to search for additional information on measurement error and sample size, conducted five additional analyses, revised text and figures in the main text, and added a new figure and modified text in the supplement. The new analyses yielded results very similar to our previous analyses, so we have not always included the new results in our supplement, which is already substantial. The results are summarized in our response to reviewers below, though, and we would be happy to include them in the supplement upon request. Our original results and conclusions are unchanged but we believe this new version of the manuscript is stronger now and shows even more clearly how and why our results are robust.

Upon acceptance for publication, the database will be freely available at KNB (currently meta-data are there); the full database is available to reviewers and editors upon request. This work is a meta-analysis, so data have been previously published; however, the synthesis of these data and the tables, figures, models, and materials presented in this manuscript have not been previously published nor are they under consideration for publication elsewhere.

Sincerely,

A handwritten signature in cursive script that reads "Ailene Ettinger".

Ailene Ettinger

Quantitative Ecologist, The Nature Conservancy- Washington Field Office
Visiting Fellow, Arnold Arboretum of Harvard University