Climate change reshapes the drivers of false spring risk across European trees: Submission Questions (max 50 words per answer)

What is the scientific question you are addressing?

With climate change, there is growing interest in false spring events, which can affect both plant performance and survival. By better understanding the influence of known geographic and climatic factors for predicting false spring risk, we will be able to advance forecasting in the field. (45 words)

What is/are the key finding(s) that answers this question?

False spring risk is changing in the face of climate change, resulting in early-leafout species having a heightened risk since the early 1980s. Some factors are better at predicting risk than others, however it is essential to include all factors to increase the accuracy of the overall model. (48 words)

Why is this work important and timely?

Recent studies have documented the impacts of false springs but few have agreed on how risk will shift with climate change. New models, such as ours, are essential to best predict spatiotemporal, species-specific shifts in false springs, which could have escalating effects on temperate forests and ultimately augment climatic shifts. (50 words)

Does your paper fall within the scope of GCB; what biological AND global change aspects does it address?

By investigating leafout observations of six temperate, deciduous tree species from Central Europe, we unravel the species-specific effects and multiple geographic and climatic factors on false spring risk in the face of climate change. We found that false spring events increased with climate change, especially in early-leafout species. (48 words)

What are the three most recently published papers that are relevant to this question?

Ma, Q., Huang, J.G., Hänninen, H. & Berninger, F. (2018) Divergent trends in the risk of spring frost damage to trees in europe with recent warming. *Global Change Biology* **0**

Liu, Q., Piao, S., Janssens, I.A., Fu, Y., Peng, S., Lian, X., Ciais, P., Myneni, R.B., Peñuelas, J. & Wang, T. (2018) Extension of the growing season increases vegetation exposure to frost. *Nature Communications* **9**

Vitasse, Y., Schneider, L., Rixen, C., Christen, D. & Rebetez, M. (2018) Increase in the risk of exposure of forest and fruit trees to spring frosts at higher elevations in Switzerland over the last four decades. *Agricultural and Forest Meteorology* **248**, 60 – 69

If you listed non-preferred reviewers, please provide a justification for each.

N/A

If your manuscript does not conform to author or formatting guidelines (e.g. exceeding word limit), please provide a justification.

N/A