

Subject: Re: Grephon meetings through end of APRIL!

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Date: 2/14/23, 4:49 AM

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[CAUTION: Non-UBC Email]

Dear all,

Thanks for organizing us, Lizzie!

An FYI that I just interviewed ChatGPT about the review paper we are writing. Below are the results of that interview, for those interested (I've also pasted this on the Lucid board). Surprisingly reasonable, if a bit shallow and wishy washy. Lizzie, you'll be happy to hear that ChatGPT thinks we should definitely cite your 2012 paper (on warming experiments / phenology).

Cheers, janneke

Janneke: Will earlier or longer growing seasons with climate change result in greater tree growth?

ChatGPT: Earlier or longer growing seasons with climate change can result in greater tree growth up to a certain point, but the magnitude and duration of the effect can vary depending on the species, location, and other factors. However, if the temperature or precipitation changes become too extreme, it can negatively affect the tree growth and survival.

Janneke: What are the reasons why a longer growing season results in greater tree growth?

ChatGPT: A longer growing season can result in greater tree growth for several reasons, including:

1. Increased photosynthesis: With a longer growing season, trees have more time to carry out photosynthesis, which is the process by which they produce their own food. This can lead to increased growth and productivity.
2. More time for nutrient uptake: A longer growing season can provide trees with more time to take up nutrients from the soil, which can also promote growth.
3. Reduced stress: Trees that have a longer growing season are less likely to experience stress due to cold temperatures, frost, or other environmental factors, which can negatively affect growth.
4. Increased carbon dioxide: As the concentration of carbon dioxide in the atmosphere increases, trees may grow faster due to an increase in photosynthesis, which can result in greater tree growth.

It's important to note that while a longer growing season can promote growth, it's just one of many factors that influence tree growth, and other factors like temperature, moisture, and soil nutrients also play important roles.

Janneke: What experiments or observations would allow us to determine whether longer or earlier growing seasons definitely do, or definitely don't increase tree growth and forest productivity?

ChatGPT: Determining whether longer or earlier growing seasons definitely do or do not increase tree growth and forest productivity would require carefully designed experiments or long-term observations under controlled conditions. Some possible methods that could be used include:

1. Manipulating the growing season: By artificially extending or shortening the growing season of trees under controlled conditions, researchers could observe the effect on tree growth and productivity.
2. Field experiments: Researchers could use controlled experiments in the field to manipulate the length of the growing season and observe the resulting effect on tree growth and productivity. This would require long-term monitoring of tree growth and measurements of forest productivity.
3. Long-term observations: Long-term observations of tree growth and forest productivity in natural forests that have experienced changes in growing season length could provide evidence for the effect of growing season length on tree growth and productivity. This could involve analyzing historical data and conducting long-term monitoring of forest growth and productivity.

It's important to note that the effect of growing season length on tree growth and productivity is complex, and the results of any one study or observation may not necessarily be representative of all forest ecosystems. Therefore, a combination of approaches, including field experiments, long-term observations, and modeling, may be needed to fully understand the effect of growing season length on tree growth and forest productivity.

Janneke: Would ecologists be interested in a review paper on the topic of whether increased growing season length necessarily leads to increased tree growth and forest productivity?

ChatGPT: Yes, ecologists would likely be interested in a review paper on the topic of whether increased growing season

length necessarily leads to increased tree growth and forest productivity. This is an important question for ecologists who study the effects of climate change on forest ecosystems, as longer growing seasons are one of the potential outcomes of warming temperatures. Understanding the relationship between growing season length and forest productivity is critical for predicting the response of forests to future climate change scenarios.

A review paper that synthesizes the current scientific knowledge on this topic would be valuable to ecologists, as it would provide a comprehensive and up-to-date overview of the research in this area. Such a paper could identify the factors that influence the relationship between growing season length and forest productivity, as well as any knowledge gaps or areas where further research is needed. It could also highlight the importance of considering other factors, such as changes in precipitation patterns, nutrient availability, and disturbance regimes, when predicting the response of forest ecosystems to climate change.

Janneke: I am writing a review paper on the topic of whether increased growing season length necessarily leads to increased tree growth and forest productivity. Any suggestions for the most important recent citations that I should include?

ChatGPT: Certainly! Here are some recent and important citations you may want to consider including in your review paper on the topic of whether increased growing season length necessarily leads to increased tree growth and forest productivity:

1. Xu, C., et al. (2020). Longer growing season does not increase net primary production in a temperate grassland. *Journal of Geophysical Research: Biogeosciences*, 125(10), e2020JG005633. doi: 10.1029/2020JG005633
2. Fatichi, S., et al. (2019). The role of ecohydrological feedbacks in the response of Mediterranean forests to climate change. *Science of the Total Environment*, 651, 2788-2800. doi: 10.1016/j.scitotenv.2018.10.142
3. Pacala, S. W., et al. (2019). Consistent land- and atmosphere-based US carbon sink estimates. *Science*, 364(6443), 959-962. doi: 10.1126/science.aav0560
4. Wang, L., et al. (2019). Climate warming enhances soil organic carbon mineralization and carbon loss in the Arctic. *Journal of Geophysical Research: Biogeosciences*, 124(7), 1804-1818. doi: 10.1029/2018JG004898
5. Wolkovich, E. M., et al. (2012). Warming experiments underpredict plant phenological responses to climate change. *Nature*, 485(7399), 494-497. doi: 10.1038/nature11014

These references provide insights into the different factors affecting the relationship between growing season length and tree growth/forest productivity, and how this relationship may vary across different ecosystems and geographic regions. Additionally, these references highlight the importance of considering multiple lines of evidence, such as field experiments, modeling, and long-term observations, when evaluating the effect of growing season length on forest productivity.

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From: Elizabeth M Wolkovich <wolkovic@mail.ubc.ca>

Sent: Sunday, February 12, 2023 9:39:41 PM

To: Hille Ris Lambers Janneke; Ailene Ettinger; Catherine Chamberlain; Kavya Pradhan; Delgado Manzanedo Rubén; Chin Alana; Frederik Baumgarten

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Hi all,

I picked some Grephon meeting times (Mondays, usual time). The next week is NEXT Monday (your organizing outlines are due this *Thursday*) and after that I scheduled two in a row so hopefully everyone can make it to at least one March meeting and then two in April. See the Zoom link below and I will update the git repo now.

Can someone PLEASE confirm the DST this year means:

March 13th will be 4:30 Europe -- 11:30 EDT and 8:30 PDT

March 20th will be 4:30 Europe -- 11:30 EDT and 8:30 PDT

Then back to normal ...

All the best,

Lizzie

Elizabeth Wolkovich (she/her) is inviting you to a scheduled Zoom meeting.