## Teaching Notes

### By *Court Campany*

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**Course Information**

Department: Biology

Level: **Lower Undergraduate**

Course type: **Both**

Students: **Majors/**

Number of Students: 45 (divided into 3 sections)

**Module Information**

Original Module Name:

### Link to Original: Section 30.3: How does increasing atmospheric carbon dioxide disrupt ecological systems?

### Modified Module Name: How does increasing atmospheric carbon dioxide disrupt ecological systems?

**Files associated:** Module worksheet, Questions worksheet and additional papers (for instructors)

**Modification Learning Goals**: None (kept the same). See handout

**Teaching Notes**

* **What did you change and why?**

As climate change and plant ecology has been an integral part of my research career (including FACE), I amended the module my updating the existing module with newer published findings. By doing this, I also expanded the scope of the module that is more in-line with how scientists are evaluating the CO2 response of forests. Since my course in the freshman sequence convers the diversity of life, we had previously covered mycorrhizal relationships and the importance of nitrogen in how plants function. Thus, I was able to expand the module to include those topics (more modern results from FACE experiments).

* I have attached those papers if they are of interest.
* **How did the activity go?**

This module was planned to be delivered during a 50-minute lecture slot. I would have given a brief introduction into FACE infrastructure and history. This module would have followed a lecture on climate change. Due to Covid19, this module and the lecture that precedes it were delivered remotely. The module was made available on our online portal immediately after the lecture was posted and the students had 48 hours to complete it.

I anticipated, correctly, that this module would be extremely difficult for my students to complete on their own. Usually, I would have students work in small groups with one laptop and one handout. They would each compete their own answer sheet but must work together to figure out the answers. I knew that with the remote learned they would really struggle with this content as they also had limited access to normal questioning regarding the course content. As such, I opened up forums on our learning portal where they could ask questions and I would answer them. As students got confused, several did post questions regarding plot interpretation that I was able to answer. However, some students did not utilize this and their answers response were quite poor. This was not an issue with the module, but with student’s engagement with online learning.

* **What was the prep like?**

As I am familiar with the topic, the prep went well and was enjoyable. I would estimate that I spend 4 hours converting the module and creating a separate question sheet.

* **Would you do this activity again?**

I definitely plan on re-using this module. I am still evaluating if it is appropriate for our students at the intro level. It would seamlessly work in our 2nd year Ecology course, which I also teach. I will re-run it again in the intro sequence when we are in class. I would like to evaluate how it would work with my initial implementation plan.

* **Is there anything else you would like to make note of?**

For others who want to use this module, I would take note of the papers I attached.

* **How does this activity fit in your overall course curriculum?**

We have a very short ending sequence for ecology in our intro class. The main reason is that all majors will matriculate directly into Ecology the next semester. However, many students in the college are required to take the introduction sequence for majors. These students will not take Ecology. So, I find it extremely important that certain topics in ecology, including global change, are taught from a modern perspective. I think this module is a nice fit, as long as it is update in the manner that I did. As it sits currently in DIBS, the content is out of data.

* **In what ways, if any, did you modify your teaching practice with this activity?**

I am quite comfortable with quantitative reasoning exercises taught in class room settings. Delivering this module remotely was a new experience for me. I realize that working on QR skills via remote learning is much harder for the student. I will need to re-think aspects of how to integrate collaboration, to make it work effectively.