## Teaching Notes

### By *Sarah Cadieux*

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**Course Information**

Institution: Rensselaer Polytechnic Institute

Department: Earth and Environmental Science

Course Name: Geology 1: Earth’s Interior

Level: **Lower/**Upper Undergraduate

Course type: Lab/Lecture/**Both** : Lecture and lab are two separate courses. Students do not need to take both, but 99% do.

Students:Majors/Non-majors (select one): **Both** (90% non-majors, but is required for majors)

Number of Students: 120 in lecture, 24 in each lab section

**Module Information**

Original Module Name: Climate Change

Link to Original: https://serc.carleton.edu/eddie/enviro\_data/activities/climate\_change.html

Modified Module Name: Analyzing current and past climate data

Files associated with modification: (ie. Class Worksheet, Summative Quiz, Lecture Powerpoint, etc): Pre-class assignment, in class worksheet

**Teaching Notes**

*(Think about what you would like to read about this activity if you came back to it in 2 years)*

* How did this module fit into your overall course curriculum (e.g., relationship to other content, relationship to course learning objectives)?

*This course is focused on physical geology (rocks, tectonics), and doesn’t typically include a section on climate change. However, as this may be the only geology course many students make take, I wanted to add in a class on climate change. Particularly, I wanted students to understand where climate data comes from, and how interpretations about climate change are made.*

* Did you use the entire EDDIE modules as presented? If not, which components did you use?

*All the data from the module was used, but the graphs were produced for the students, as opposed to them making them.*

* What did you change about the module and why?

*For this adaptation, I planned to do it during lecture (~2 hours) with 120 students. For that reason, I produced the graphs for the students and had them analyze and interpret the graphs.*

* What was the prep like?
  + What did you do to prep ahead of module implementation?

*I had previously done this module as a lab, so was familiar with the data and questions. For this adaption, I created a pre-class assignment and made the graphs.*

* + How much time went into prep?

*2-3 hours since I had previously done the activity. Most of the time went into making a pre-class assignment and making figures.*

* How did the activity go?
  + What went well and why?
  + What went wrong and why?

*Due to a snow day, the activity wasn’t able to be implemented.*

* What do you think students took away from the activity?

*I did show students the graphs on the overhead briefly, with the focus of looking at how CO2 concentrations over the past 450,000 years had been lower than they are now.*

*The pre-class assignment was useful to introduce students to isotopes as temperature proxies. When I introduce this in class students struggle with it, but reading on their own time they did well on the pre-class questions.*

* Where did students struggle the most?

*Previously when I did the activity as written, students struggled with utilizing excel. My hope is by removing that element, the objectives will be able to be met without students getting bogged down by excel.*

*Previously I found that students struggle with understanding how isotopes record temperature changes. By introducing this as a pre-class reading, students seemed to understand how the system worked better than when I introduce it without previous background.*

* Would you do this activity again?
  + If yes, what would you change in the future?
  + What suggestions would you give to a colleague before they used it in their teaching?

*I would like to add in a part to show where the data is from. Perhaps there could be a pre-class assignment where students download one set of data and come to class with one figure made, and then the rest are made for them.*

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