Modeling Global Temperature Change in the 21st Century (Version 1.0)
By Paige Parry
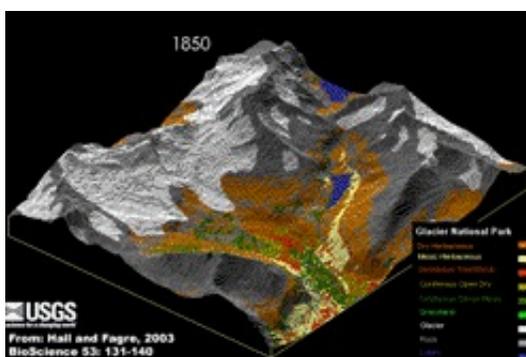
Module Description:

In this module, students use linear regression and comparison of slopes to answer three questions:

1. How will temperature change over the century in North America?

2. How will the rate of temperature change vary across different emission scenarios?

3. Will some locations experience greater rates of change than others?

This module was adapted from an original TIEE module (Global Temperature Change in the 21st Century) to emphasize linear regression, comparison of multiple models, and analysis in R. In particular, the author developed a packet for the exercise that included background from the original TIEE module, warm-up questions, and questions associated with the modeling exercise that guided students through the analysis, required them to make inference on their regression output including a comparison of slopes across models, and guided exploration of the implications of their findings. The author also

developed an R script to accompany the exercise that provided examples for students and also required students to write some of their own code.

Teaching Setting:

This module was designed for upper divisions biology majors in an Ecology course.

QUBES Citation:

Parry, P. (2017). Modeling Global Temperature Change in the 21st Century. ESA Data Discovery FMN (2017), QUBES Educational Resources. doi:10.25334/Q4PP4Z

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Related Materials and Opportunities:

The author, Paige Parry, was a participant in the Ecological Society of America (ESA)-sponsored Data Discovery Faculty Mentoring Network (FMN) in Spring 2017, during which she adapted this module from the following original *Teaching Issues and Experiments in Ecology* (TIEE) publication, which is also available at EcoEd Digital Library:

> Daniel R. Taub and Gillian S. Graham. May 2011. Global temperature change in the 21st century. Teaching Issues and Experiments in Ecology, Vol. 7: 1-15. [online].
> http://tiee.esa.org/vol/v7/issues/data_sets/taub/abstract.html

Paige Parry is now a mentor for the Reducing Barriers to Teaching with R in Undergraduate Biology FMN that is running during the Fall 2018 semester. Learn more about QUBES FMNs.

If you adopt and adapt this module, you are highly encouraged to share your adaptation back with the QUBES community using the QUBES Resources System for sharing Open Education Resources.

QUBES on Social Media

QUBES is a community of math and biology educators who share resources and methods for preparing students to use quantitative approaches to tackle real, complex, biological problems.