



YALE NATIONAL INITIATIVE

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Curriculum Units by Fellows of the National Initiative

2022 Volume V: Floods and Fires, How a Changing Climate Is Impacting the U.S.

Introduction

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A variety of climate-driven environmental, economic, and human health-associated problems will continue to arise over the next 50 years. While mitigating the emission of greenhouse gasses will require a coordinated global effort, the societal impacts of climate change are not equally distributed by geography or population. This seminar addressed the different ways in which climate change impacts the U.S., but did so through the perspective of how the lives of local students could be affected. Scientific focus was placed on understanding and identifying statistical trends in climate and environmental data, and we investigated local engineering solutions and adaptations.

The individual units that resulted cover a variety of climate impacts across a broad geography. They include a physics unit focused on the thermodynamics of tropical cyclones and a biology unit that covers climate-based extinction of mammals as a way to understand natural selection. A group of units address food security by tracking the drought in the Western U.S. and exploring changes in the productivity of our acidifying oceans. One unit tackles urban heat islands and how an extended growing season increases exposure to pollen.

While the volume of topics are diverse, they follow central themes that include providing student's opportunities to evaluate and understand large data sets, teaching fundamental science and math skills through contemporary problems, and engaging students in science, statistics, and engineering through solving local environmental problems that will adversely impact their generation.

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