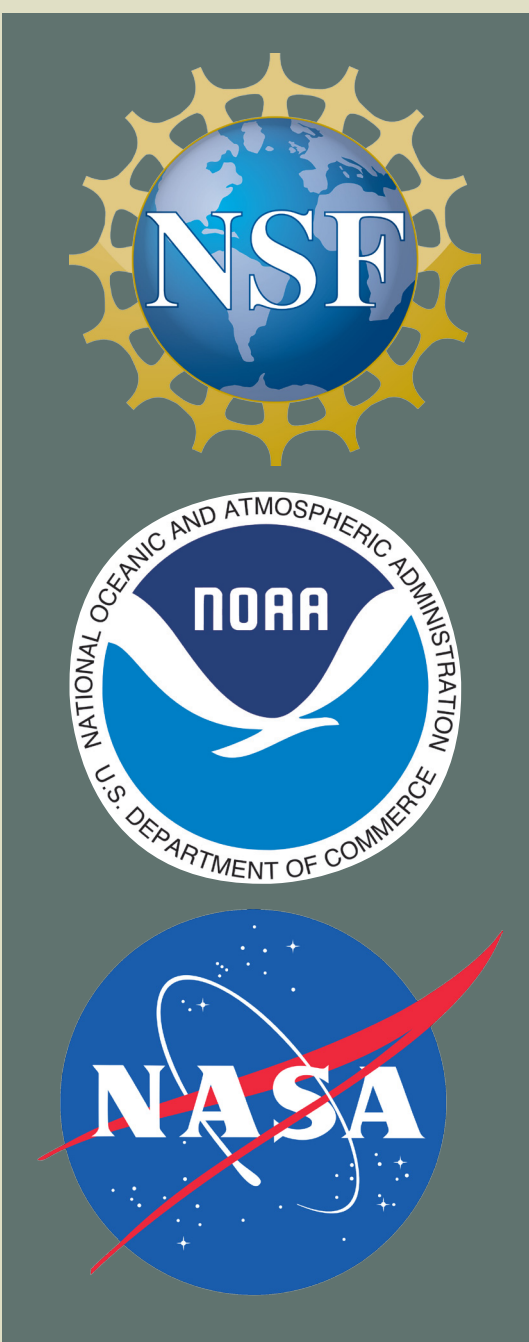


Raising Climate Literacy Through *DataStreme Earth's Climate System*

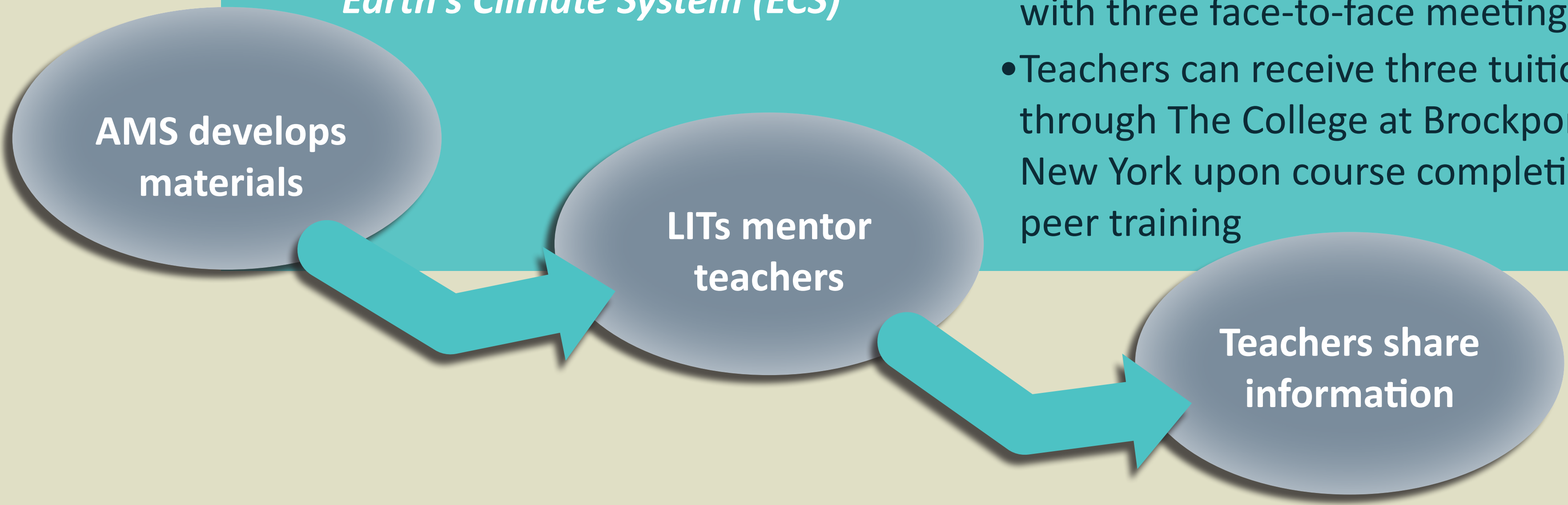
James A. Brey Ira W. Geer Robert S. Weinbeck Elizabeth W. Mills Kira A. Nugnes Anupa Asokan

The American Meteorological Society (AMS) DataStreme Project is a free professional development program for in-service K-12 teachers, in which they gain considerable content knowledge and confidence in Earth science instruction. It can be used as a curriculum and instruction model for those designing long-duration, content-rich teacher professional development courses while working with a network of educators and scientists to build scientific literacy.



the DataStreme PROJECT

DataStreme Atmosphere, Ocean, and Earth's Climate System (ECS)



- Offered each fall and spring semester by Local Implementation Teams (LITs) who coordinate with AMS Education Program
- Three-member LITs mentor about 8 teachers mostly online with three face-to-face meetings
- Teachers can receive three tuition-free graduate credits through The College at Brockport of the State University of New York upon course completion and a Plan of Action for peer training

Atmosphere

Focuses on the study of the atmosphere through the use of near real-time weather data and other learning materials

Earth's Climate System

Systematic study of climate, climate variability, climate change and the human interaction with Earth's climate

Ocean

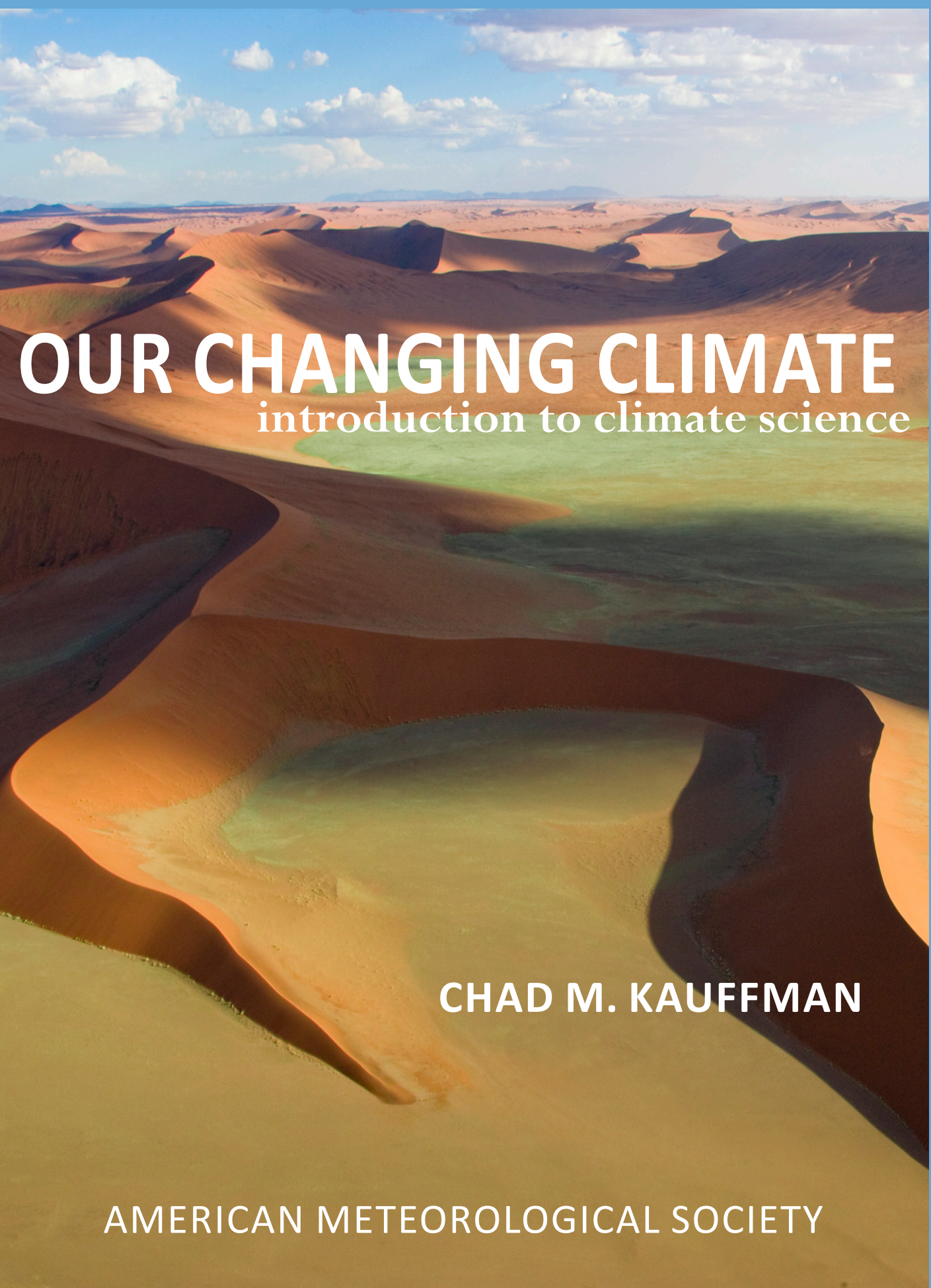
Explores the ocean with special emphasis on flows of energy and water, and interactions between the ocean and other components of the Earth system

DataStreme ECS Study

Spring 2011 – Fall 2013

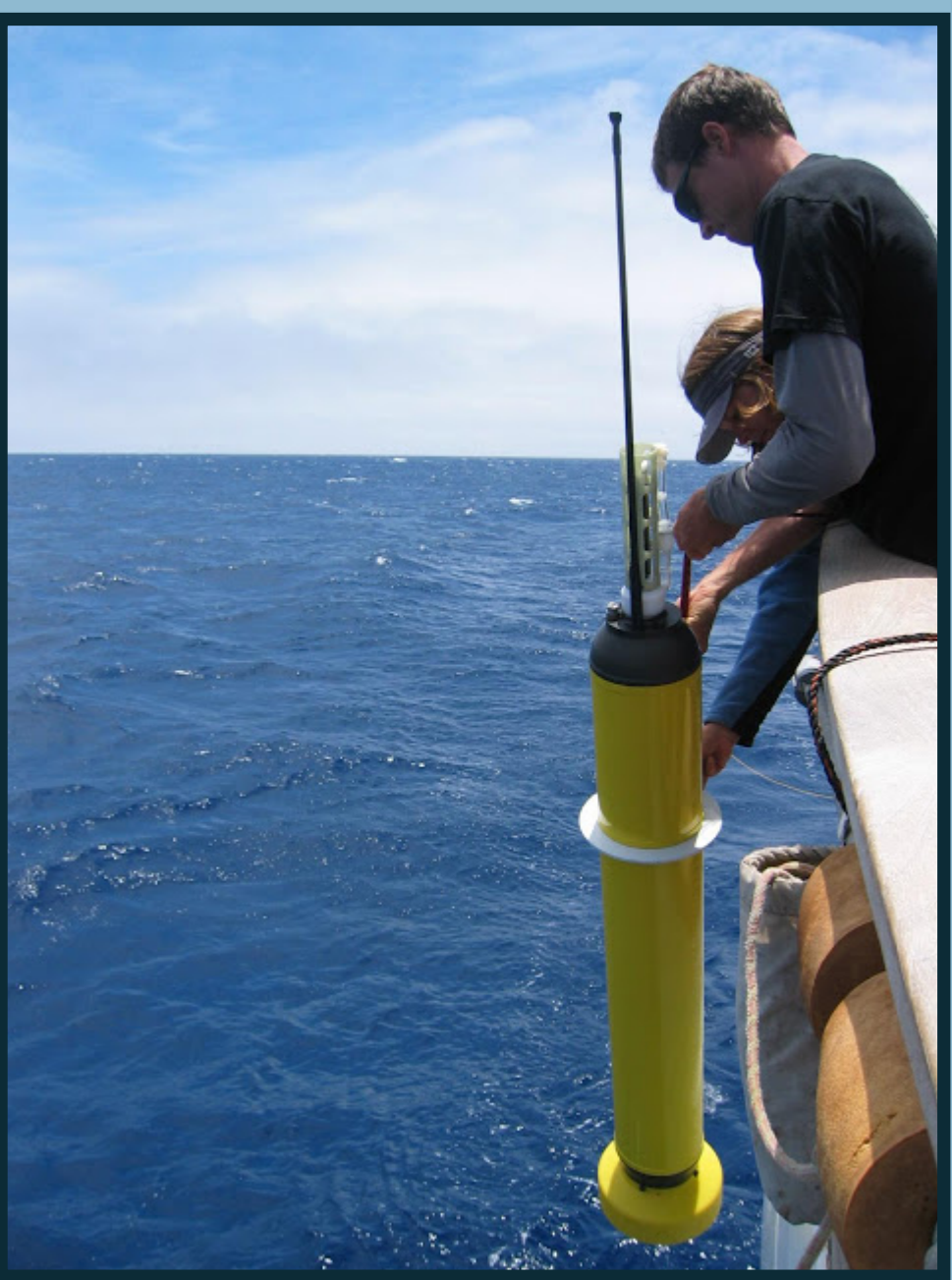
- Reached 1,027 teachers in 35 states
- Evaluated through pre/post tests on pedagogy and content, as well as a comprehensive end-of-course assessment and literacy evaluation
- Teachers acquired useful teaching knowledge, their attitudes changed toward science issues, and they gained scientific and training skills

New DataStreme ECS Textbook



Part I: Defining Climate

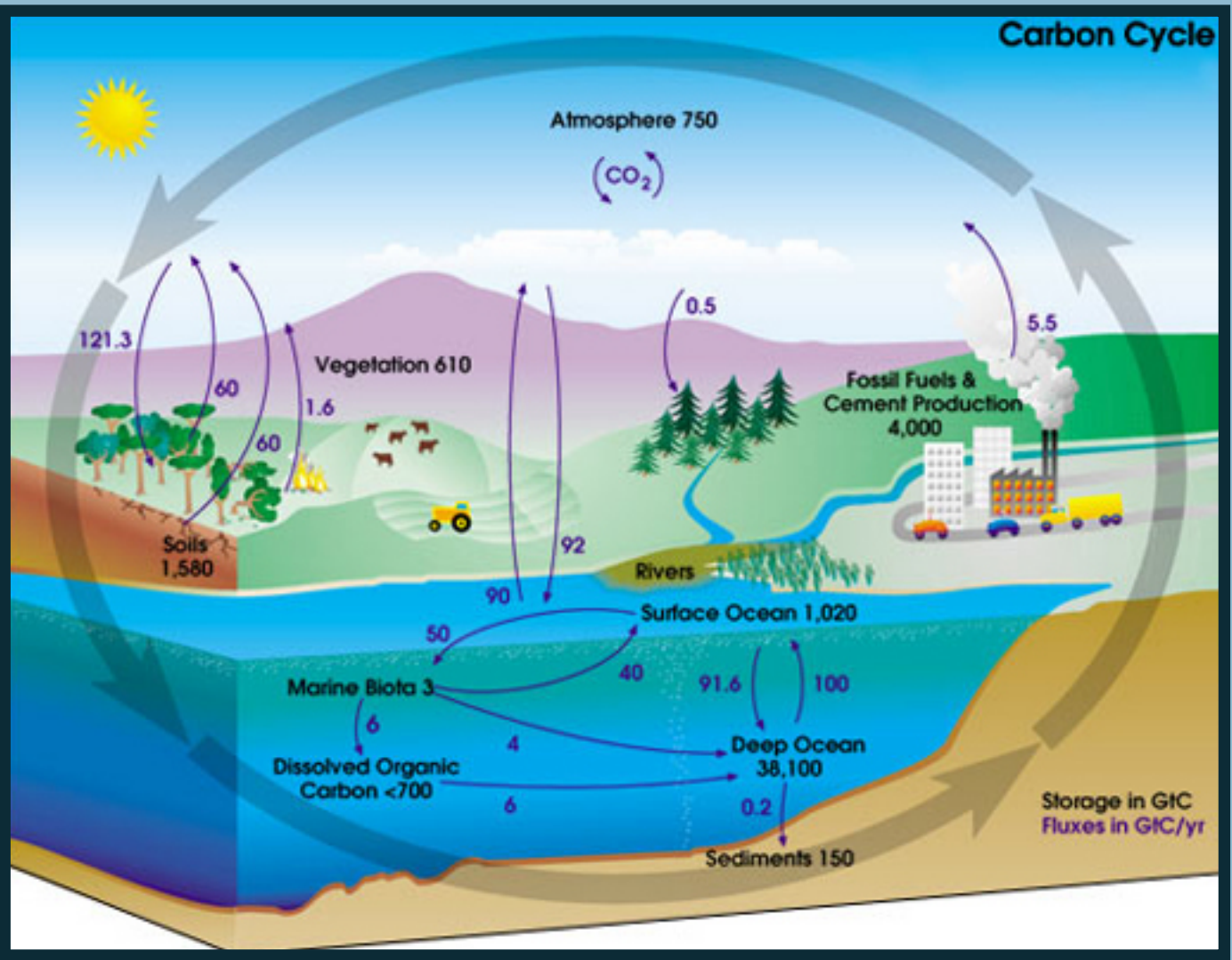
This section defines Earth's climate system and its subsystems and differentiates climate variability and climate change. Evidence of climate change is also presented.



Deployment of Argo float [Argo Program]

Part II: Principles of Climatic Processes

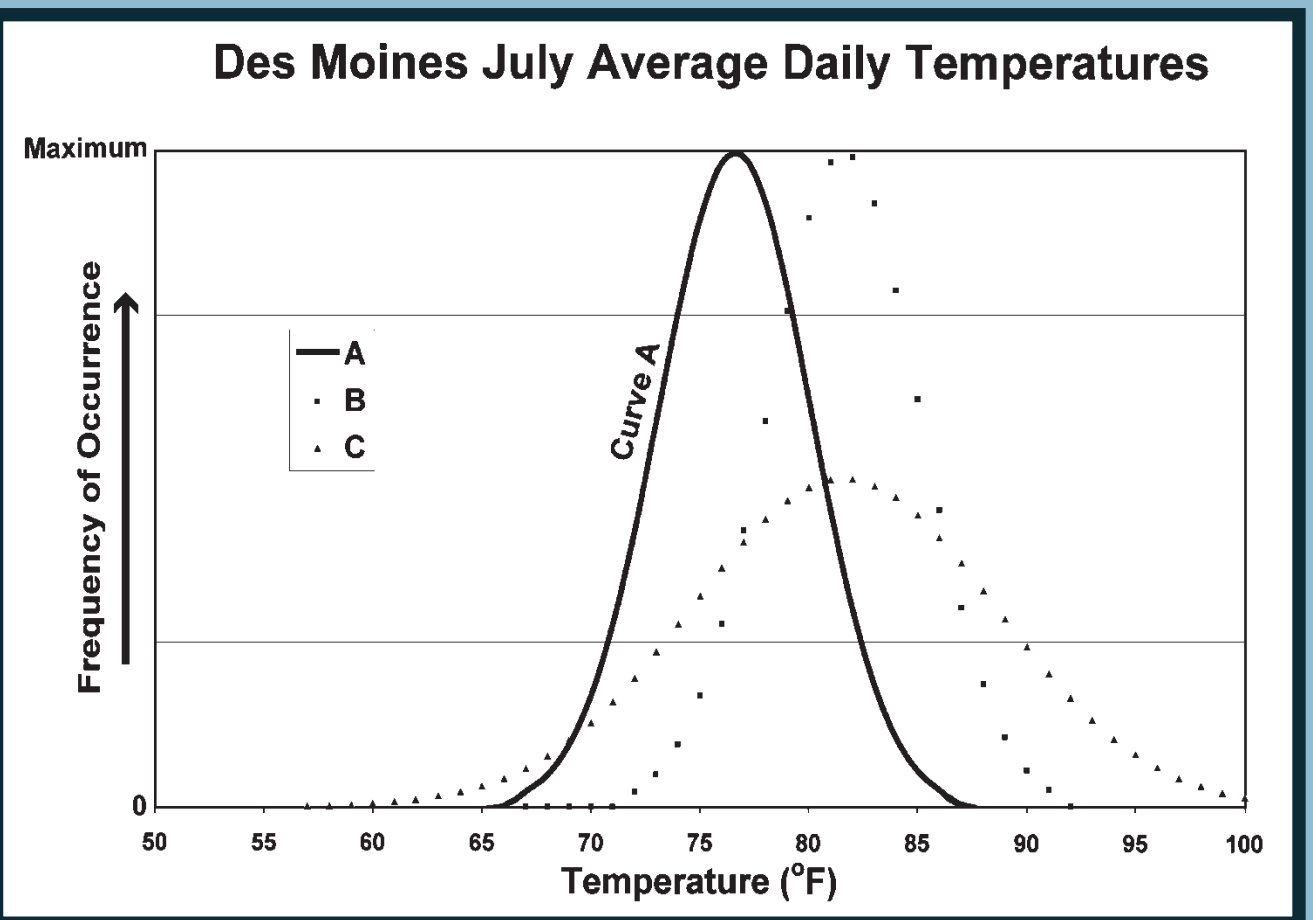
This section focuses on the underlying science of Earth's climate system and dives deeper into the subsystems.



The carbon cycle [NASA]

Part IV: Our Relationship to the Climate

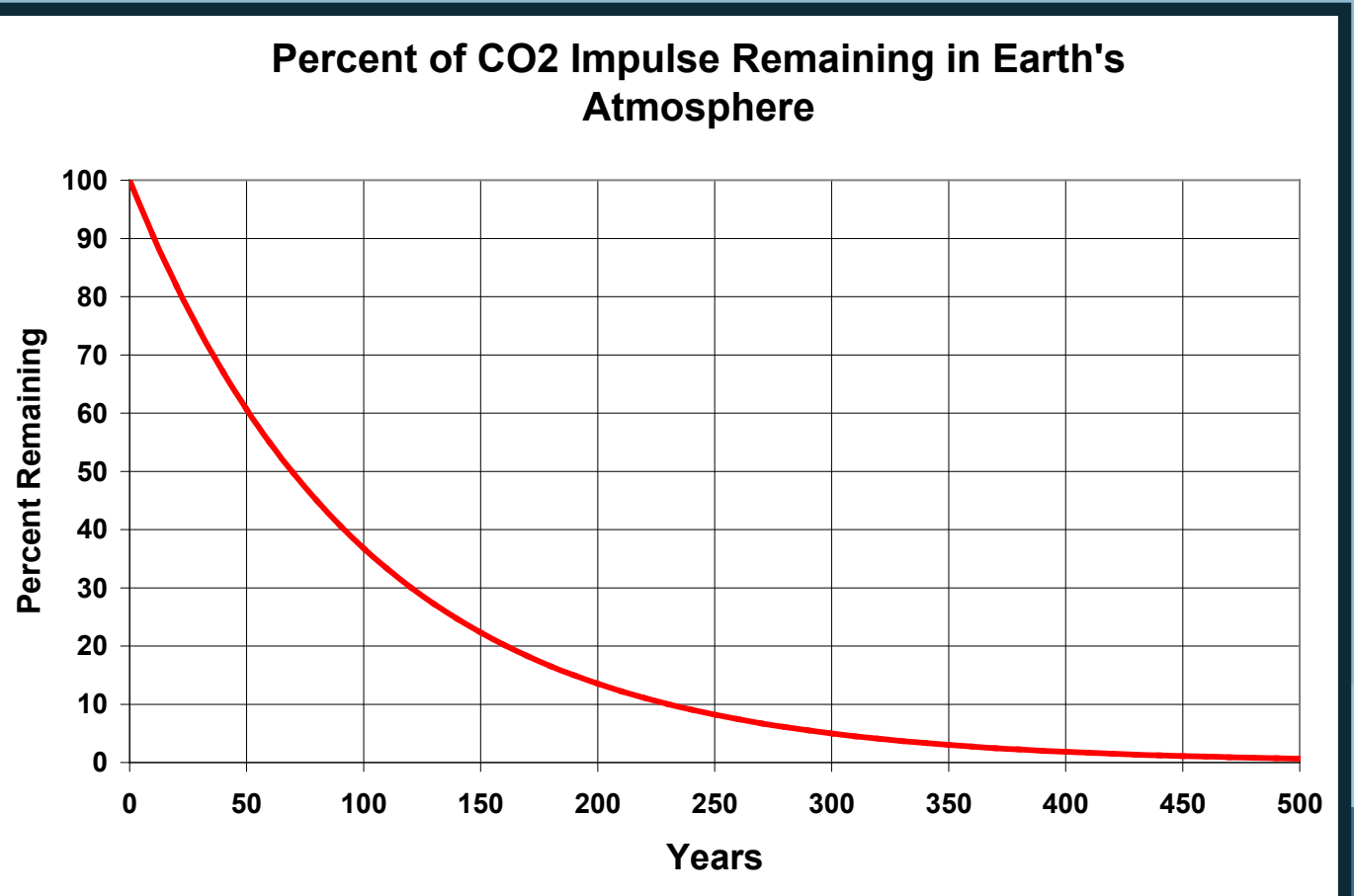
This section explains why society is vulnerable to the current, unprecedented changes in the climate system. At-risk portions of society, how modern-day conveniences are in conflict with the causes of anthropogenic climate change, and options we have to respond to climate change and mitigate future hazards are examined.



Temperature changes and corn cultivation in Iowa.

Part III: Variability of Climate

This section describes the natural and human processes by which climate can change, what notable factors trigger it to change and how it has changed in the past. Reconstruction of past climates, the present state of climate, and modeling of the climate system are also discussed.



Lifetime of carbon dioxide in the atmosphere.

DataStreme ECS Outcomes	
Average percentage of two most positive responses (averaged over six semesters)	
Outcome Description	Level
Course as a whole	94%
Science content	98%
Study materials	92%
Internet delivery	91%
Mentoring process	90%
Teacher enhancement value	92%

Environmental Literacy Survey Results	
Average percentage of two most positive responses (averaged over six semesters)	
Outcome Description	Level
Extent of increase in your understanding of Earth system processes	99%
Extent made your attitude more positive regarding science basis for environmental and economic decisions	96%
Extent increase in your skill to integrate NOAA, NASA and environmental data into your classroom	97%
Extent increase your skill for making environmentally sound personal choices	94%
Extent students' environmental literacy was influenced by your course participation and incorporated into classroom	92%

