Southeastern Forests and Climate Change

STEM Connections

	Activity	Summary	STEM Connection
1	Stepping through Climate Science	Students walk along a timeline of climate science and policy initiatives and then explore connections between forests and climate.	• Understand the progression of science findings over time. • Create a graph of atmospheric carbon over time. • Make observations about the relationship between science and policy.
2	Clearing the Air	Students are introduced to the evidence of climate change, explore common confusions, and role-play a community discussion of ways to reduce greenhouse gas emissions.	• Explore scientific evidence of climate change. • Understand the causes of climate change. • Develop a chart of criteria for making an informed decision.
3	Atlas of Change	Students are introduced to climate models and use Web resources to consider how forest ecosystems might change.	• Learn about computer models. • Use a computer model to understand the impact of climate change on forests. • Use data from a computer model to create a poster.
4	The Changing Forests	Students review how scientists are monitoring forest changes and exploring adaptive strategies to keep forests healthy.	• Explore five scientific studies that scientists are currently doing.
5	Managing Forests for Change	Students develop and use a systems diagram to model a forest to advise a forest landowner with management strategies to enhance resilience in a pine plantation.	• Use a systems diagram to convey forest ecology. • Consider management strategies that can help a forest adapt to climatic changes.
6	Mapping Seed Sources	Students analyze data from three trials that test how different genotypes perform under varying environmental conditions.	• Analyze data and explain hypothesis about heredity. • Graph data and interpret results.

7	Carbon on the Move	Students follow carbon molecules through the carbon cycle.	• Explain carbon cycling and the ways in which carbon can be removed from and added to the atmosphere. • Illustrate the carbon cycle, including carbon pools and fluxes.
8	Counting Carbon	Students measure trees to calculate stored carbon and use ecosystem carbon sequestration potential to consider how the landscape can sequester carbon emitted each year.	• Collect data. • Practice using field tools to measure trees. • Compute comparisons of carbon sequestration and emissions. • Apply concepts to determine whether a state could be carbon neutral.
9	The Real Cost	Students learn about the impact (externalities) of consumer choices on the environment.	• Understand how technology affects the environmental impacts caused by a product.
10	Adventures in Life Cycle Assessment	Students investigate the life cycle of three types of outdoor dining tables to determine greenhouse gas emissions.	• Understand how products are engineered. • Calculate the emissions of three products at each step of their life cycle.
11	Life Cycle Assessment Debate	Students debate the environmental impacts of 8 common products and generate their own list of life cycle questions.	• Assess environmental impacts of common products. • Draw conclusions based on information assessed.
12	The Carbon Puzzle	Students synthesize information about carbon cycle and life cycle to interpret a graph on how to manage carbon pools to reduce atmospheric carbon.	• Interpret a graph. • Understand how carbon moves through three pools.
13	Future of Our Forests	Students review information from the module and share their knowledge with others.	• Synthesize climate and forest science.
14	Starting a Climate Service-Learning Project	Students develop an action project to mitigate climate change or help their community adapt to projected climate changes.	• Develop problem solving skills as they plan and implement a project.