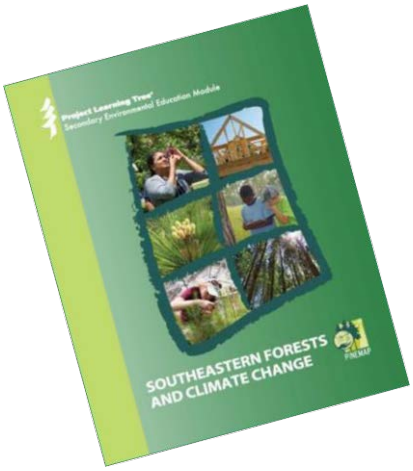


# Southeastern Forests and Climate Change

## STEM Connections

*This table shows the connections between the Project Learning Tree secondary module, Southeastern Forests and Climate Change, and key connections in STEM – Science, Technology, Engineering, and Mathematics.*

| | 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.<br>• Create a graph of atmospheric carbon over time.<br>• 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.<br>• Understand the causes of climate change.<br>• 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.<br>• Use a computer model to understand the impact of climate change on forests.<br>• 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.<br>• 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.<br>• Graph data and interpret results. |

| | Activity | Summary | STEM Connection |
|---|---|---|---|
| 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.<br>• 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 | • Collect data.<br>• Practice using field tools to measure trees.<br>• Compute comparisons of carbon sequestration and emissions.<br>• Apply concepts to determine whether a |
| 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.<br>• 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.<br>• 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.<br>• 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. |