

Southeastern Forests and Climate Change: Systems Thinking Tools by Activity

Found on PLT module website: <http://sfrc.ufl.edu/extension/ee/climate/>

Activity 1: Stepping through Climate Science- understanding historic CO₂ levels by creating a behavior over time graph

Learning about a Tree- discussion to help students understand how systems thinking can change the way we think

Dynamic Systems Dance- game to show how complex systems respond to changes

Activity 2: Clearing the Air- examining a series of behavior over time graphs to explain trends of a changing climate

Bathtub Dynamics- concept of stocks and flows using an example of a bathtub, create behavior over time graphs

Riddle Me This- changes in complex systems due to reinforcing feedback loops in the system, exponential change

Activity 3: Atlas of Change- manipulating a computer simulation to learn how forest and bird habitat may change with projected temperature and precipitation changes

Understanding Climate Momentum- online model to explore several possibilities for projecting global carbon dioxide emissions, temperatures, and atmospheric carbon dioxide concentrations

Exploring Climate Models: C-LEARN- a more complex computer simulation model to explore emission scenarios

Activity 4: The Changing Forests- looking for patterns of change and identifying forest variables and relationships

Activity 5: Managing Forests for Change- creating causal loop diagram to show relationship between forest variables and how they respond to a variety of climate scenarios and management strategies

Feedback Loops in the News- identify feedback loops from NY Times article and then draw a systems diagram

How Earthworms Got Me into College- use a causal diagram to understand the web of cause-effect relationships

Activity 6: Mapping Seed Sources- understanding relationships between forest system variables to better understand and predict the future behavior of the system

Activity 7: Carbon on the Move- mapping the flows of CO₂ between different stocks

Activity 8: Counting Carbon- calculating carbon stored and sequestered to measure how much CO₂ is flowing between stocks at different scales

Activity 9: The Real Cost- defining the boundaries of a system to understand how the variables and relationships change at different scales

Activity 10: Adventures in Life Cycle Assessment- understanding the difference between a life cycle assessment diagram and a causal loop diagram

Impacts for Sustainable Wood- the difference between life cycle diagrams and causal diagrams

Activity 11: Life Cycle Assessment Debate- debating environmental impacts to consider multiple perspectives of consumer decisions

Activity 12: The Carbon Puzzle- creating and interpreting a complex behavior over time graph to learn about total carbon emissions over time from a variety of sources

Activity 13: Future of Our Forests- using systems thinking skills to synthesize information, make informed recommendations, and communicate to others

Activity 14: Starting a Climate Service-Learning Project- considering leverage points in the system where an action project might make the most difference and predicting both direct and indirect project outcomes