



Southeastern Forests and Climate Change

Errata and Improvements (as of April 26, 2016)

The following table provides brief descriptions of the content changes included in the 2nd edition of the *Southeastern Forests and Climate Change* secondary module. These improvements are the result of feedback provided by 32 teachers who participated in the summative evaluation and include any feedback we received during workshops and from Project Learning Tree state coordinators, facilitators, and educators.

All changes have been made to the full PDF available online (<http://sfrc.ufl.edu/extension/ee/climate>) and to the individual files on each activity webpage. Page numbers for both editions, along with online file names are provided. If you have any questions, please contact Annie Oxarart at oxarart@ufl.edu.

| Section/Activity and File Name (if applicable) | 1 st Edition Page Number | 2 nd Edition Page Number | Description of Change |
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| Throughout Module | -- | -- | Inserted module website URL in several places throughout Background and highlighted activity webpage URL in each Activity Overview box and under the Getting Ready section. |
| Inside Front Cover | -- | -- | Updated edition and reference information. |
| Acknowledgments | 4-8 | 4-9 | Added new contributors, including the summative evaluation teachers. |
| Background | 9 | 10-12 | Inserted text to provide additional information about PINEMAP and program outcomes. |
| Background | 15 | 17 | Changed photo caption to highlight connections to STEM education. |
| Background | 20 | 22 | Updated sidebar information with total number of contributors. |
| Section 1 Overview | 24 | 26 | Included in-text citations under Activity 2 |
| Section 1 Overview | 26 | 28 | Included two additional citations in reference list. |
| Section 1 Overview | 26 | 28 | Corrected title of first citation. |
| Activity 1 | 27 | 29 | Changed Time Consideration from "one to two 50-minute class periods" to "two to three 50-minute class periods." |
| Activity 1 | 29 | 31 | Changed title of online file to "Timeline Interval Signs" and corrected typo in figure title. |
| Activity 1 | 31 | 33 | Inserted stopping point times for video and suggestion for students to watch the video as homework (Doing the Activity, Step 3). |
| Activity 1 | 32 | 34 | Inserted note for reference in Systems Enrichment Exercise. |
| Activity 1 | 33 | 35 | Inserted new teacher quote in sidebar. |
| Activity 1, Master Timeline | 37 | 39 | Corrected the reinforcing prompt for the 2013 interval sign. |
| Activity 2 | 47 | 49 | Included information about Antarctic sea ice. |
| Activity 2 | 54-55 | 56-57 | Clarified instructions for the student role play, including the use of the Role-play Guide and providing time for students to think about their role. |
| Activity 2 | 58 | 60 | Included new resource on sea ice trends. |
| Activity 2, Climate Change Role Cards student page | 65 | 67 | Changed the name of "Justice" to "Jessie." |
| Activity 2, Role-play Guide student page | 67-68 | 69-70 | Provided more specific instructions for students; changed the criteria titled "Trade-offs" to "Community Acceptability"; and reduced the number of rows for "Actions" to 4 to match the instructions. |
| Activity 3 | 69 | 71 | Included suggestion for using this activity to begin unit on climate change. |
| Activity 4 | 85 | 87 | Included reminder that presentations and teacher notes can be edited to meet teacher needs. |

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| Activity 5 | 95 | 97 | Inserted sentences in Background to explain landowner objectives and diagram. |
| Activity 5 | 96-97 | 98-99 | Inserted the terms “positive” and “negative” feedback loops and clarified that these terms may be used instead of reinforcing and balancing feedback loops. |
| Activity 5 | 97 | 99 | Inserted paragraph to explain impacts of increased atmospheric carbon dioxide on tree growth. |
| Activity 5 | 98 | 100 | Deleted text on increased atmospheric carbon dioxide and added new sentence to end of “Thin Crowded Forests” bullet. |
| Activity 5 | 100 | 102 | Indicated that the “Introduction to Southeastern Forests” presentation is now available on Activity 5 webpage. |
| Activity 5 | 100-101 | 102-103 | Clarified instructions in several places; indicated that the provided systems diagrams are potential answer keys, but students may find alternate ways of exploring and explaining the system. |
| Activity 5 | 103 | 105 | Corrected the website link for the Forest Encyclopedia Network. |
| Activity 5, Forest Systems Diagram student page | 105 | 107 | Changed the variable “Tree stress” to “Tree stress from lack of nutrients/water” and clarified student instructions. |
| Activity 5, Management Cards and Climate Scenario Cards student pages | 107-108 | 109-100 | Improved instructions to indicate that students will be modifying their existing systems diagram, switched page order, and switched order of climate scenarios 1 and 6. |
| Activity 6 | 109 | 111 | Changed Time Consideration from “one to two 50-minute class periods” to “one to three 50-minute class periods.” |
| Activity 6 | 111 | 113 | Indicated that the “Introduction to Southeastern Forests” presentation is now available on Activity 6 webpage. |
| Activity 6 | 111-112 | 113-114 | Improved references to the graphing resources available on the Activity 6 webpage. |
| Activity 6 | 115 | 117 | Inserted correct title for presentation under Enrichment. |
| Activity 6 | 116 | 118 | Inserted new resource for learning about genetics. |
| Activity 6, Forest Growth and Rainfall Data student page | 117-118 | 119-120 | Improved student instructions to indicate that the graph will contain two y-axes; added bold lines between sites on data table. |
| Activity 7 | 124 | 126 | Corrected typo in carbon cycle figure (decomposition). |
| Activity 7 | 125 | 127 | Added explanation of outgassing. |
| Activity 7 | 126 | 128 | Indicated that the “Introducing Carbon” presentation is now available on Activity 7 webpage and included a reminder to use Additional Resources for more information. |
| Activity 7, Mapping Carbon student page | 136 | 138 | Included Carbonate Rock and Volcanism (Outgassing) in question 3. |
| Activity 8 | 138-139 | 140-141 | Inserted box to discuss carbon in wetland ecosystems. |
| Activity 8 | 141 | 143 | Indicated that the “Introducing Carbon” presentation is now available on Activity 8 webpage. |
| Activity 8 | 145 | 147 | Added a question under step 5 to help students consider what happens to sequestered carbon. |
| Activity 8, Protractor Template student page | 148 | 150 | Added text to explain why to use the template. |
| Activity 8, Carbon in a Tree student page | 150 | 152 | Inserted equal signs into equations in Data Table 3. |
| Activity 9 | 167 | 169 | Inserted text at end of step 7 to help educators facilitate activity, whether or not students change their decisions between rounds 1 and 2. |
| Activity 9, Externality Cards student page | 172 | 174 | Changed the first paragraph under Cotton Shirt to indicate that pesticide/herbicide use varies. |
| Activity 10 | 178 | 180 | Changed carbon dioxide equivalent for methane to 25 in multiple places (to match current data from US EPA). |
| Activity 10 | 180 | 182 | Clarified instructions for student presentations. |
| Activity 10 | 184 | 186 | Added a new paragraph under Enrichment to suggest that students can consider the durability and longevity of the furniture materials examined. |
| Activity 10, Greenhouse Gas Emissions Table student page | 195 | 197 | Changed “Recycling Aluminum” under Cast Aluminum Set to “Disposal (Recycling Aluminum)” to match student pages and presentation. |

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| Activity 10, Global Warming Contribution Calculation student page | 196 | 198 | Changed carbon dioxide equivalent for methane to 25 and for nitrous oxide to 310 in multiple places (to match current data from US EPA). |
| Activity 12 | 216 | 218-219 | Updated figure with clearer image; included image of the simplified figure we provide in the presentation. |
| Activity 12 | 217-218 | 219-220 | Clarified instructions for Six Bits; provided a suggested alternative method to walk students through the process. |
| Activity 12, Six Bits student page | 221 | 224 | Edited instructions on student cards. |
| Activity 12, Combining Carbon Pools student page | 222 | 225-226 | Clarified question 3; added the completed carbon pools figure. |
| Glossary | 239-243 | 243-247 | Included references to positive and negative feedback loops within definition for reinforcing or balancing feedback loops, respectively; changed carbon dioxide equivalent for methane to 25 (to match current data from US EPA). |

Additional Online Files Updated on Website (as of April 26, 2016)

The following online files that supplement the Southeastern Forests and Climate Change secondary module have been updated or improved. The original files are no longer available. Please download these to replace the earlier versions.

- **Activity 1, Timeline Interval Signs:** Corrected orientation of signs so they will print properly; changed file title.
- **Activity 2, Explaining the Evidence Presentation and Teacher Notes:** Added information about Antarctic sea ice trends.
- **Activity 2, Exploring Solutions Presentation and Teacher Notes:** Updated the notes for slide 7 to explicitly state that communities must consider several factors when making energy decisions, including cost, feasibility, environmental and social impacts, and community acceptance.
- **Activity 5, Building a Forest Systems Diagram Presentation and Teacher Notes:** Changed the variable “Tree stress” to “Tree stress from lack of nutrients/water.” Improved description of the variable “Understory fuel.” Added a note to indicate that the provided systems diagrams are potential answer keys, but students may find alternate ways of explaining the system.
- **Activity 5, Suggested Solution Diagrams Presentation and Teacher Notes:** Changed the variable “Tree stress” to “Tree stress from lack of nutrients/water.” Added a note to indicate the provided systems diagrams are potential answer keys, but students may find alternate ways of explaining the system. Switched scenario order for 1 and 6 to match the revised student page, as noted above. Added a slide for scenario 1 and scenario 7 to discuss longer term effects of the situation.
- **Activity 6, Survival and Height Answer Key:** Corrected the answer key and added answers for English units of measure.
- **Activity 7, Carbon Diagram Answer Key:** Answer key now includes Carbonate Rock and Volcanism (Outgassing).
- **Activity 8, English Units Version (all student pages):** Carbon in the Tree student page was updated to reflect change noted above.
- **Activity 10, Comparing Outdoor Furniture Answer Key:** Answer key has changed to reflect calculations using new US EPA numbers for carbon equivalents.

- **Activity 10, LCA Play Presentation (1 act):** Updated to reflect calculations using new US EPA numbers for carbon equivalents.
- **Activity 10, LCA Play Presentation (3 act):** Updated to reflect calculations using new US EPA numbers for carbon equivalents.
- **Activity 12, Combining Carbon Answer Key:** Updated to reflect changes noted above.
- **Systems Enrichment Exercise, 3a:** Fixed typo on page 1.
- **Systems Enrichment Exercise, 5a:** Included reference to article in the overview box and noted that the article can be found on the systems webpage.