



The Future of Forests

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Exploring post-fire patterns of ecological succession



About this Course

As wildfires continue to ravage the west, burning more and more of the landscape, many are left wondering what happens next? Traditionally, we think of forests recovering after a disturbance (e.g., wildfire) following a particular pattern (secondary succession). However, [contemporary research](#) shows that fire-affected landscapes across the west are struggling to recover to pre-fire conditions due to increasing drought and are transitioning to grasslands and shrublands. These data suggest that the future of our forests is uncertain.



In this teacher workshop, University of Colorado Boulder curriculum developers lead participants through “[The Future of Forests](#)”, a MS/HS curriculum connected to NGSS life science standards that explores patterns of post-fire recovery (or lack thereof) across the west and inspires classrooms to engage in citizen science using NASA's GLOBE Observer land cover app. Participants will engage with online interactives from the National Forest Service and NASA, authentic datasets, and App-based labs in this 2-day online teacher workshop.

Note: Registration is *FREE*; however, participants have the option to purchase 1 credit from the University of Colorado Boulder for \$90.



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Course Goal

The goal of this course is to introduce educators to NGSS Life Science standards in the context of the NASA-funded curriculum, "[The Future of Forests](#)". At the end of the course, participants will be able to effectively facilitate each lesson, connecting concepts and standards back to the unit driving question, "How do landscapes recover after a wildfire?"

Your Instructors

Jonathan Griffith, Education & Outreach Associate, Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado Boulder

Dr. Anne Gold, Senior Research Associate, Director of Education & Outreach, Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado Boulder

Course Format

This interactive workshop will be conducted virtually via Zoom. Facilitators will lead participants through each lesson of the curriculum following the approach below:

- 1) Utilize the main Zoom meeting room for lesson instructions
- 2) Participants engage with lesson resources either individually or in small groups via Zoom breakout rooms
- 3) Everyone returns to the main Zoom room to wrap up and reflect on the lesson

Suggested Readings

There are no required readings for this course. However, we recommend reviewing the unit summary and curriculum resources prior to the start of the course.

Learn more about wildfire and ecological succession in [this video](#).



The Future of Forests

Course Content

Day 1: June 7th from 8 am -12 pm PST, 9 am - 1 pm MT, 10 am - 2 pm CT, 11 am - 3 pm ET

| Activity/Resource | How will you be engaging with the activity/resource? |
|--|---|
| <i>Welcome and Introductions</i> | <ul style="list-style-type: none">Who are you and what inspired you to sign up for this workshop? |
| <i>Model-Based Inquiry and 3D Learning in Today's Classrooms</i> | <ul style="list-style-type: none">NGSS and 3D LearningModel-Based Inquiry pedagogy |
| <i>Course Overview</i> | <ul style="list-style-type: none">Discuss the flow and content of the curriculum |
| Lesson 1: Landscapes on Fire | <ul style="list-style-type: none">Identify and interpret patterns in wildfire frequency and sizeIntroduce anchoring phenomenon and the unit driving question |
| Lesson 2: From Fire Comes Life | <ul style="list-style-type: none">Develop storyboards to communicate the process by which landscapes change (secondary succession) after a disturbance. |
| Lesson 3: Succession Survey | <ul style="list-style-type: none">Engage with the National Forest Service's "Landscape Change Monitoring System" data explorer tool to evaluate the recovery of fire-affected landscapes. |
| Citizen Science With GLOBE | <ul style="list-style-type: none">Engage with NASA's GLOBE Observer app to make land cover observations as part of a citizen science initiative to monitor landscape changes. |



The Future of Forests

Day 2: June 7th from 8 am -12 pm PST, 9 am - 1 pm MT, 10 am - 2 pm CT, 11 am - 3 pm ET

| Resource/Activity | Workshop Engagement: What will you be doing? |
|---|---|
| <u>Lesson 4: Measuring Soil Moisture From Space</u> | <ul style="list-style-type: none">Evaluate soil moisture conditions throughout the western United States with data from NASA satellites. |
| <u>Lesson 5: Temperature and Transpiration</u> | <ul style="list-style-type: none">Analyze and interpret temperature and evapotranspiration data from the western United States (1979-2020) |
| <u>Lesson 6: Landscape Recovery Case Study</u> | <ul style="list-style-type: none">Analyze and interpret post-fire tree regeneration data from 1485 sites across 52 fire-affected regions of the US Rocky Mountains. |
| <u>Lesson 7: Putting Pieces Together</u> | <ul style="list-style-type: none">Construct a written argument supported by citing empirical evidence and scientific reasoning that drought has prevented some fire-affected landscapes from recovering to their pre-fire conditions. |
| Final Assessment(s) | <ul style="list-style-type: none">Construct a final descriptive model and explanation for the unit driving question (<i>Must be submitted to the course instructors</i>) |
| Feedback Survey and Closing Remarks | <ul style="list-style-type: none">Complete an online feedback survey about the course |



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Final Assignments *(required):*

As part of the course, participants are required to complete a final assignment outside of online course hours. Participants will reflect on their learning from the course to construct a final descriptive model and explanation for the unit driving question, “How do landscapes recover after a wildfire?” See instructions below. Upon completion, please scan and submit your final assignment documents to jonathan.griffith@colorado.edu. *Note: These are the same summative assessments your students would complete at the conclusion of the unit.*

Final Descriptive Model:

Refer to [this](#) example of a final summary table and [these](#) instructions to develop a descriptive model to represent the unit driving question.

Final Explanation:

Please find the instructions and rubric for the final explanation [here](#).