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USDA California Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

UCDAVIS John Muir Institute of the Environment

Berkeley UNIVERSITY OF CALIFORNIA

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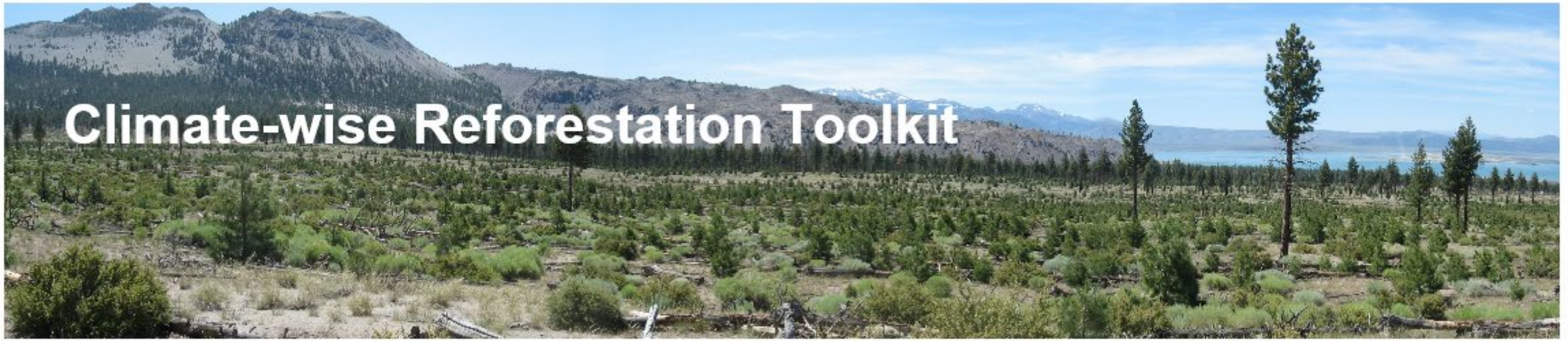
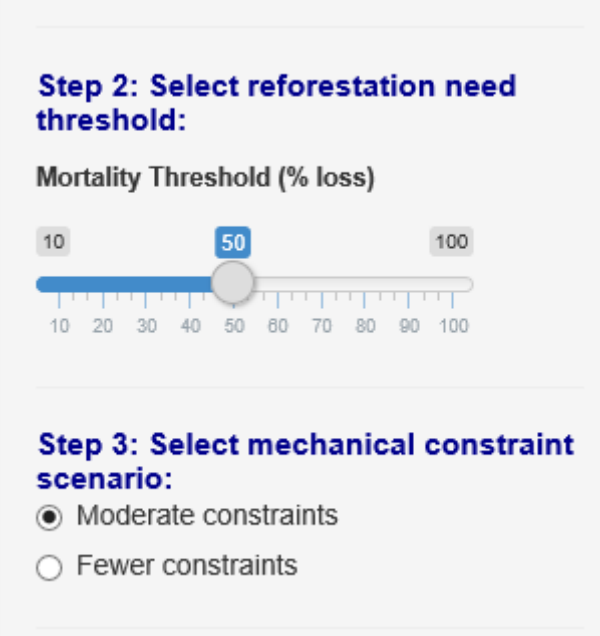


Welcome to the **climate-wise reforestation toolkit**. Due to significant levels of tree mortality during the 2012 to 2016 California drought, there is now a need to reforest in areas where much of the forest overstory has been lost. The toolkit consists of three resources that can be used individually or together to inform reforestation decisions in context of tree mortality and climate change. The **reforestation prioritization tool** was designed to help locate where to

- 3 main components
  - Reforestation prioritization tool
  - Post-drought stand condition tool
  - Best management practices (BMP)

Why build a reforestation prioritization tool?

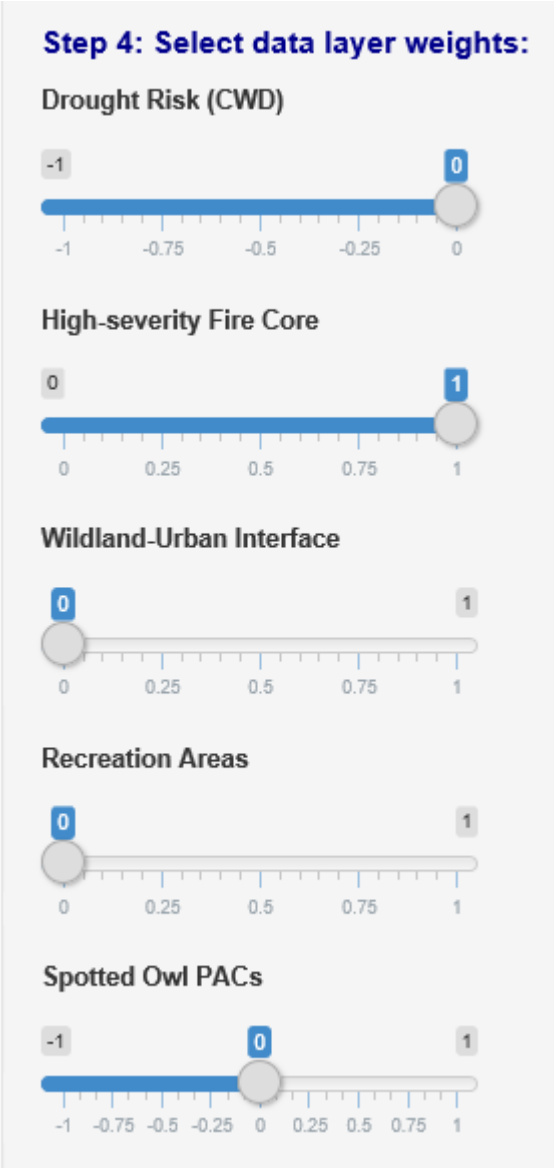
- Managers wanted to know how to “fix” the problem
- Foster holistic thinking about the landscape
- We have limited resources for vast landscape
  - Designed the tool to show
    - Areas with the biggest tree losses
    - Accessible places
      - Moderate constraints
      - Fewer constraints
    - Areas with higher probability of planting success
      - Climatic water deficit
    - High severity fire core



Tool design

- We wanted to help managers incorporate values
  - Wildland-urban interface
  - Recreation areas
  - Spotted owl PACs
  - Fisher core habitat

- Balance of art of management with simplicity



Best Management Practices Guide

Best Management Practices for climate-wise reforestation

This document outlines some recent advances in reforestation strategies in an age of climate change and altered disturbance regimes. We rely heavily on the 2019 *Tamm Review: Reforestation for resilience in dry western U. S. forests* by North et al, which readers are encouraged to review for further details. A research brief of the article is also available here. For brevity, conventional reforestation practices are not covered in this document. It is our hope that practitioners will incorporate these state of the science strategies with previously established forestry knowledge and tailor solutions for each unique project.

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1 - Seed Zonation

We suggest areas of recent drought- or wildfire-caused tree mortality be subdivided into three management zones:

1. Areas where natural tree recruitment is likely to be successful and active reforestation is unnecessary. Specifically aforested lands near existing seed sources. As a course rule of

Stand Summary Tool

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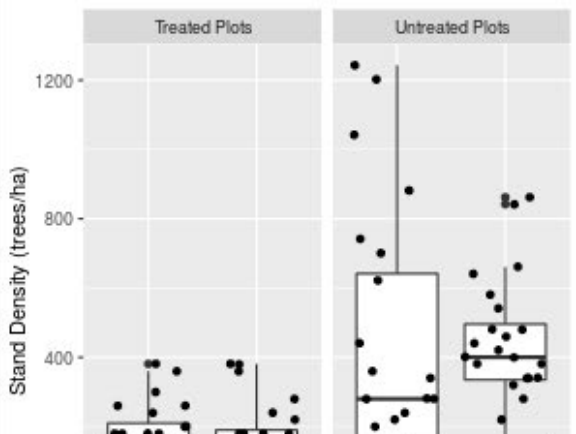
Post-drought Stand Condition Summary Tool

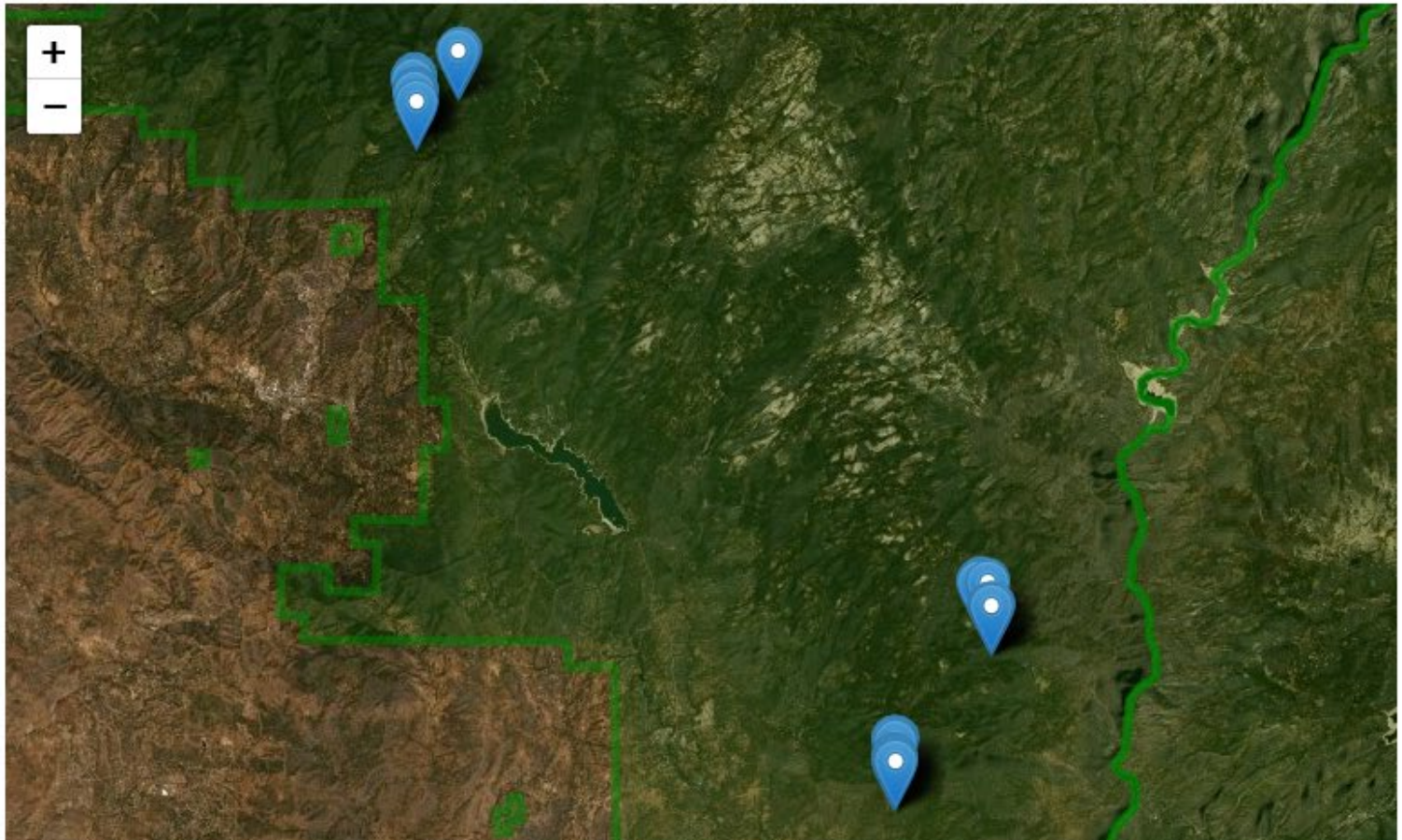
Step 1: Select area of interest

Sierra - Bass Lake

Step 2: Select stand metric to summarize

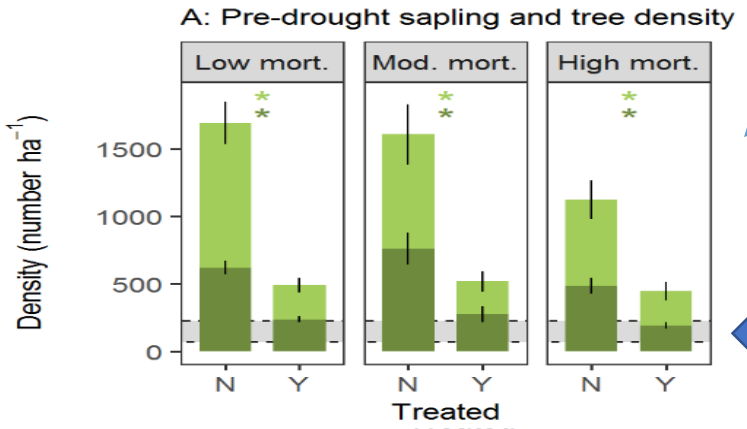
Stand Density



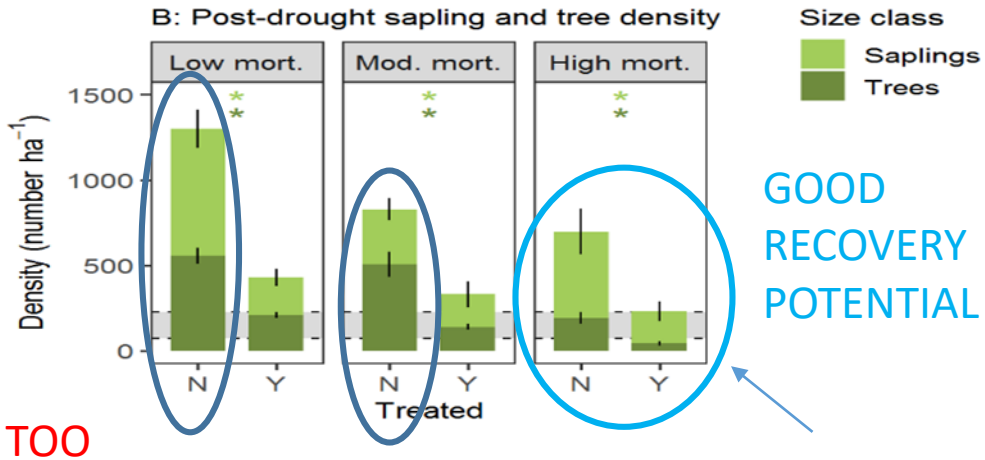


Forest Structure: Tree, Sapling & Seedling Density

PRE- Drought

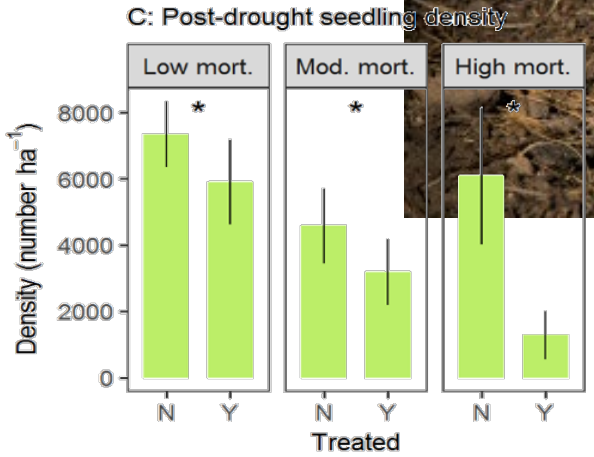


NRV



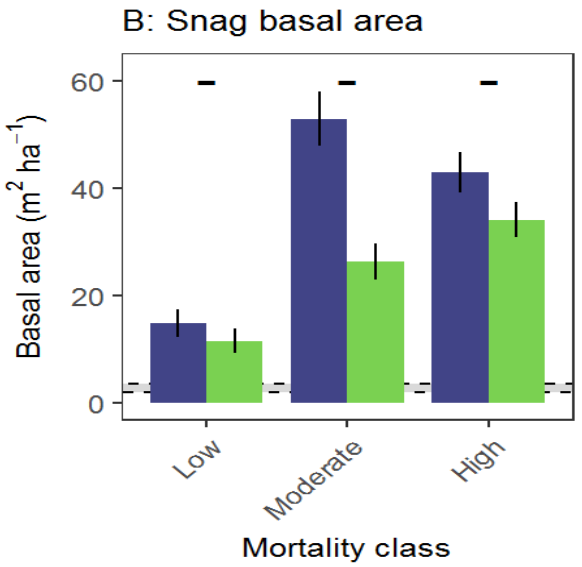
GOOD RECOVERY POTENTIAL

STILL TOO DENSE

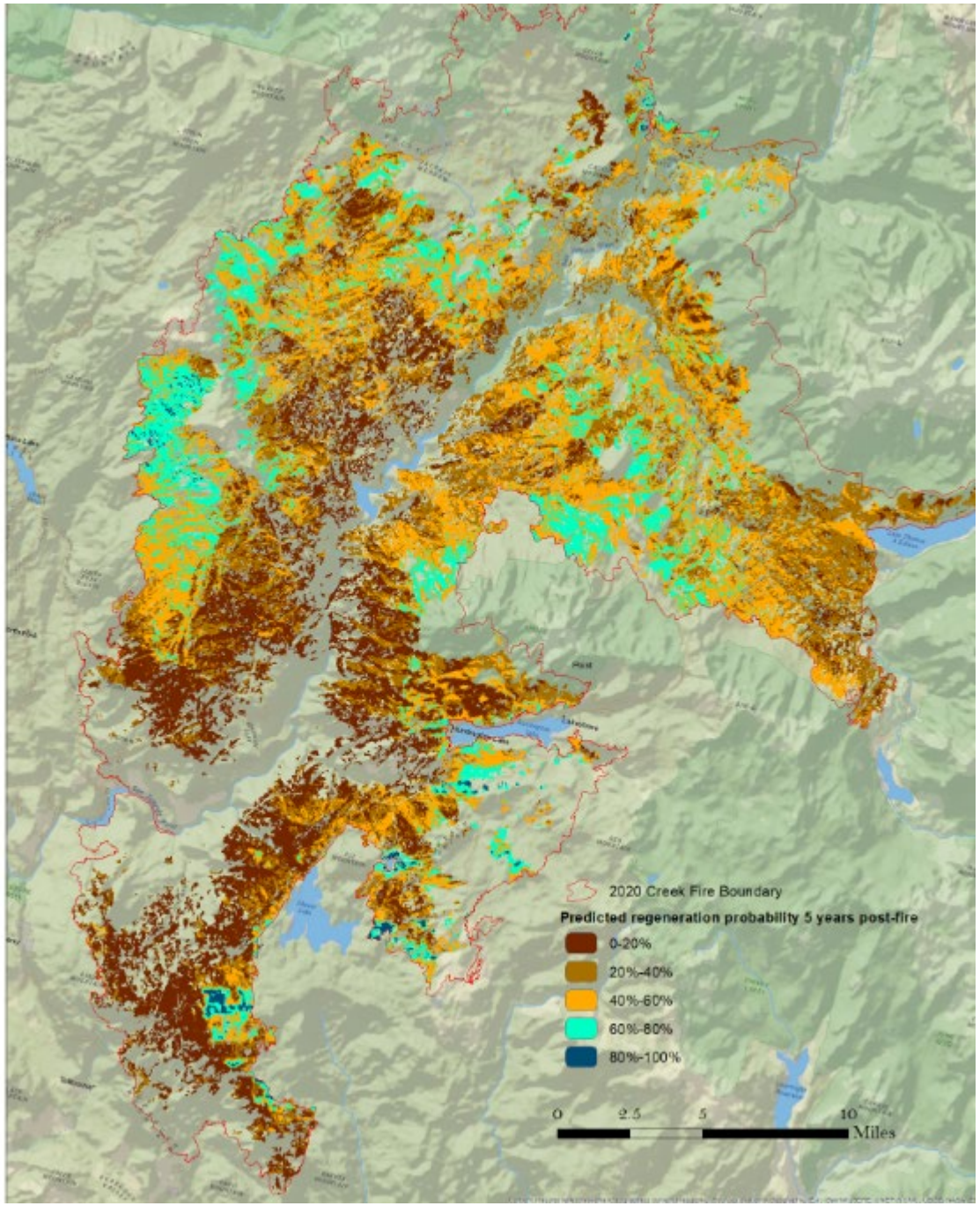


POST- Drought

Fuel Loads


B: Snag basal area
Basal area (m^2 ha^{-1})
60
40
20
0
Low
Moderate
High
Mortality class

Reforestation Moving Forward

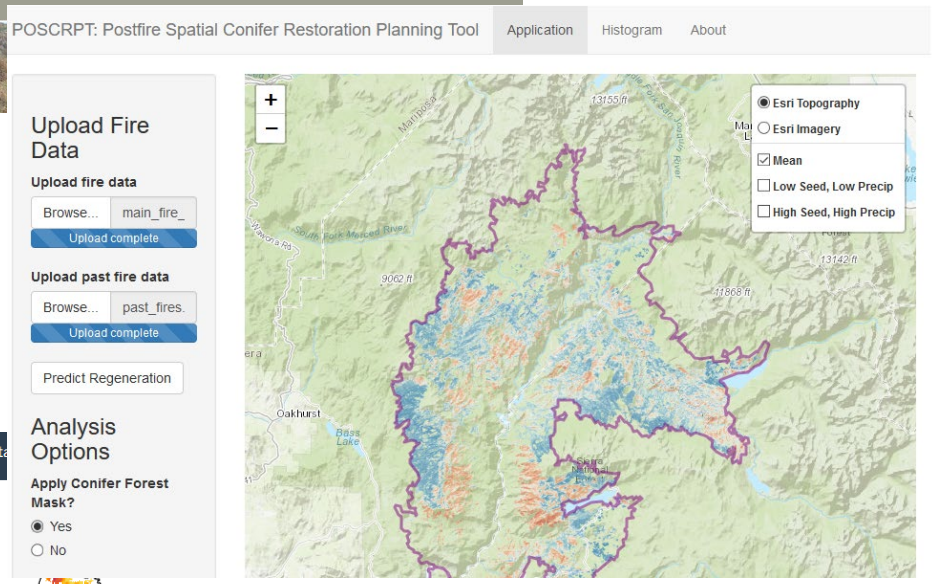


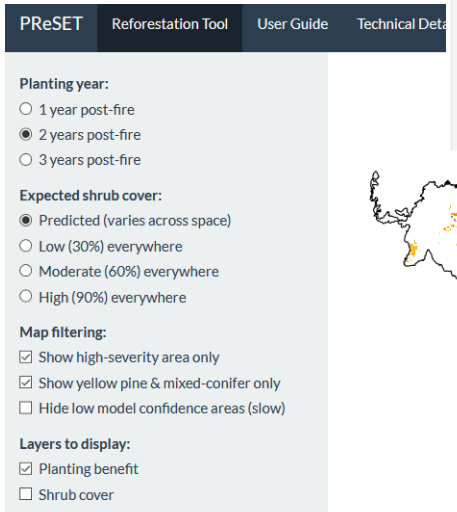
New California Post-fire Regeneration and Reforestation Resources

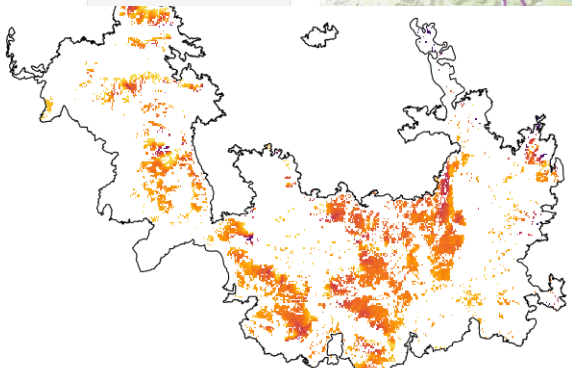
- GTR 270 Postfire restoration framework for national forests in California

- POSCRPT – predicts natural regeneration probability
  - https://stewartecology.shinyapps.io/PostfireSpatialConiferRestorationPlanningTool/

- PreSET – predicts planting benefit and shrub cover
  - https://reforestation.shinyapps.io/preset/







Thank you.