

Effect of Climate Change on California Forests and Landscapes



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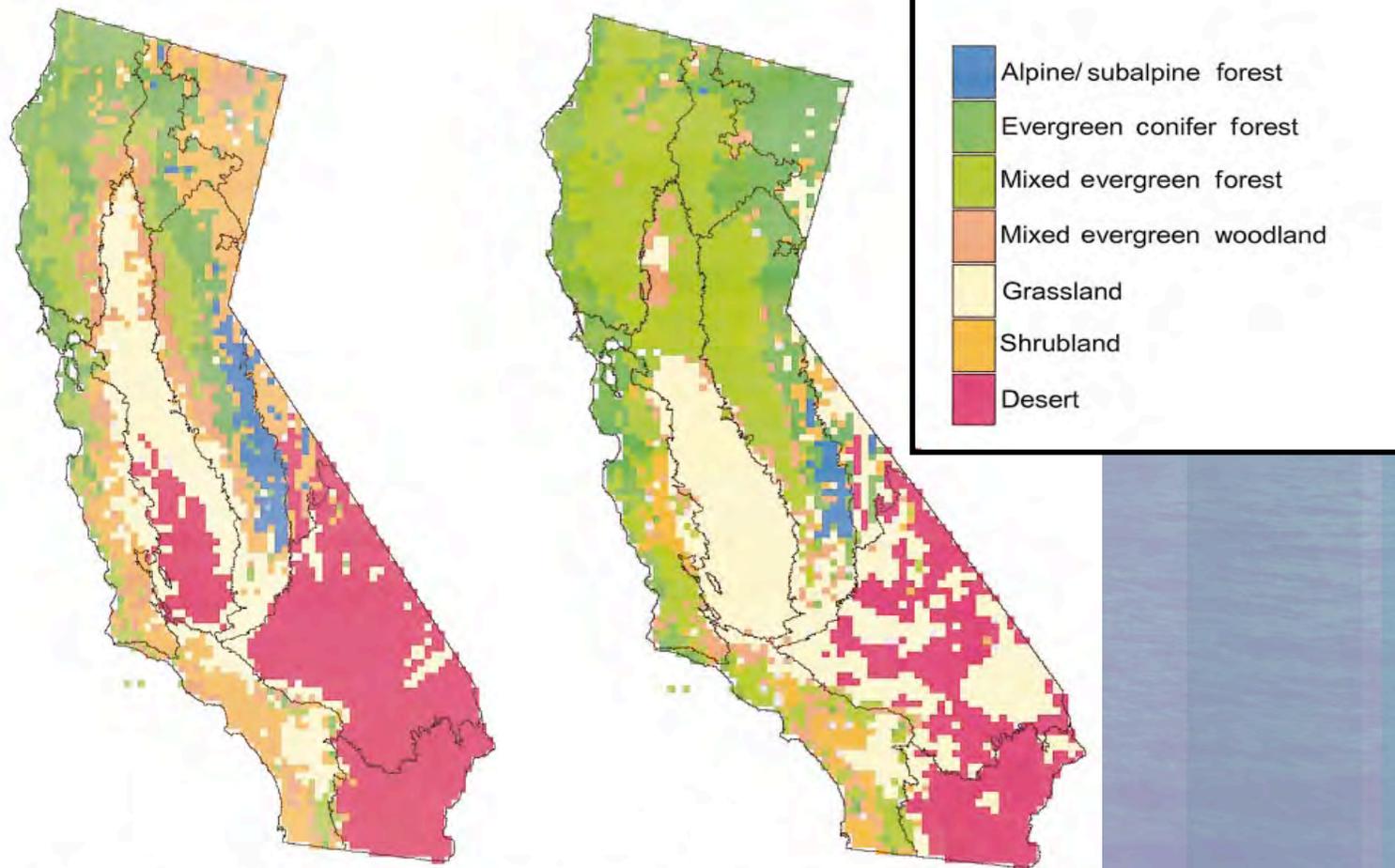
Anthony Westerling – *Scripps Institution of Oceanography*

Jeremy Fried – *US Forest Service*

Katharine Hayhoe – *UIUC and Union of Concerned
Scientists*

Amy Lynd Luers – *Union of Concerned Scientists*

Vegetation is Expected to Shift Due to Projected Climate Changes 2070-2099, relative to 1961-1990



1961-1990
Simulation Baseline

2077-2099
Simulation HADCM2

What Drives these Shifts?

- Changes in average Temperature and Precipitation patterns
- Changes in extremes and disturbances
 - Wildfire
 - Pests
 - Drought

How Could these Changes Affect California Health and Economy?

- ❑ More Wildfires
 - Worse Air Quality
 - Increased suppression and damage costs
- ❑ Warmer climate
 - Increased softwood forest productivity and decreased acreage
- ❑ Increased climate-related hazards
 - Forests more vulnerable to catastrophic loss

Scope of Work

Assess the projected changes in:

- ❑ Wildfire risk and associated costs
- ❑ Timber yields and timber prices
- ❑ Forestry vulnerability to climate-related disturbance (e.g. drought, fire)

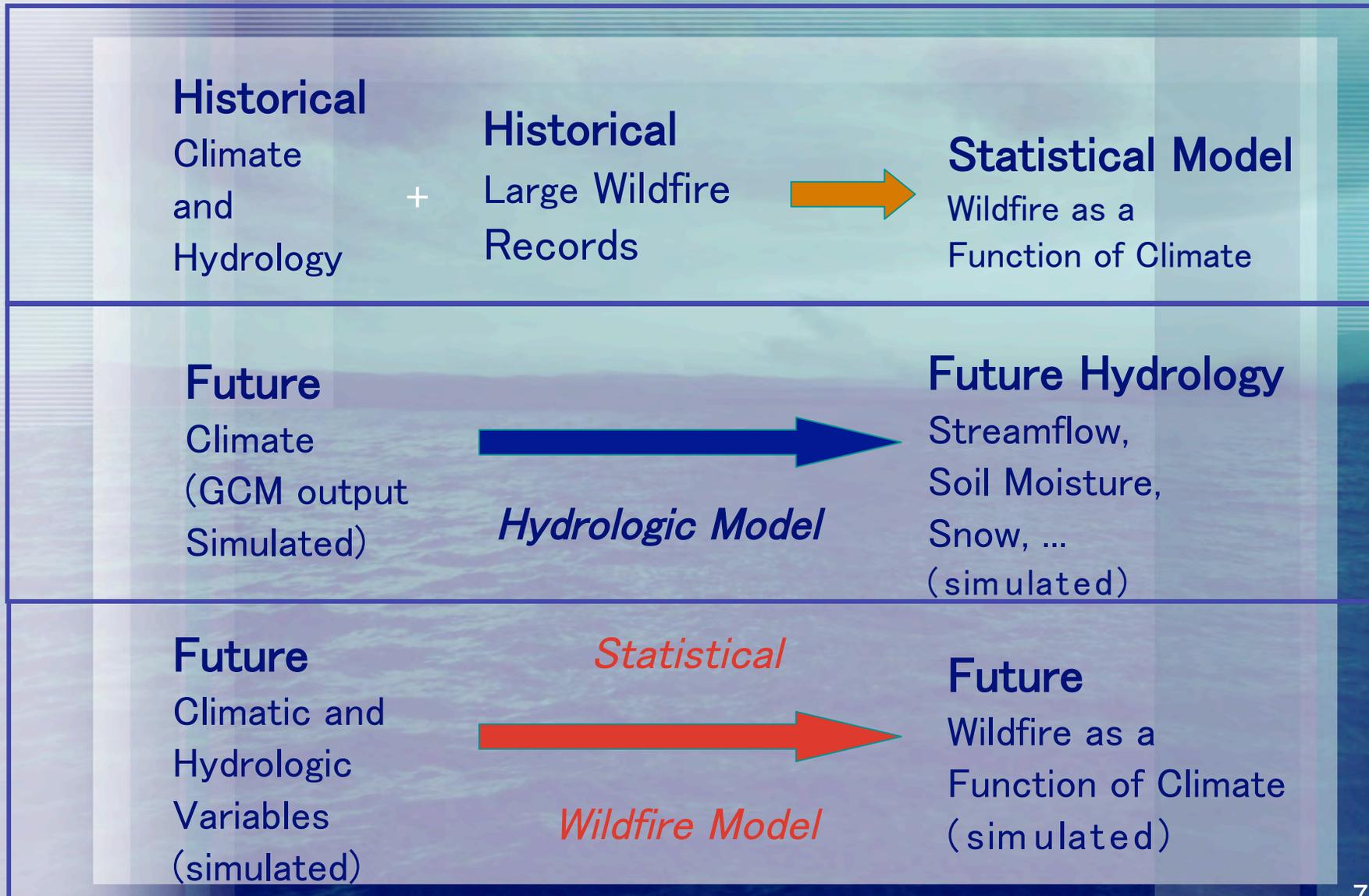
Methodology: Wildfire Analysis



- Two Approaches
 - Statistical approach
 - Process-based approach

Statistical Approach

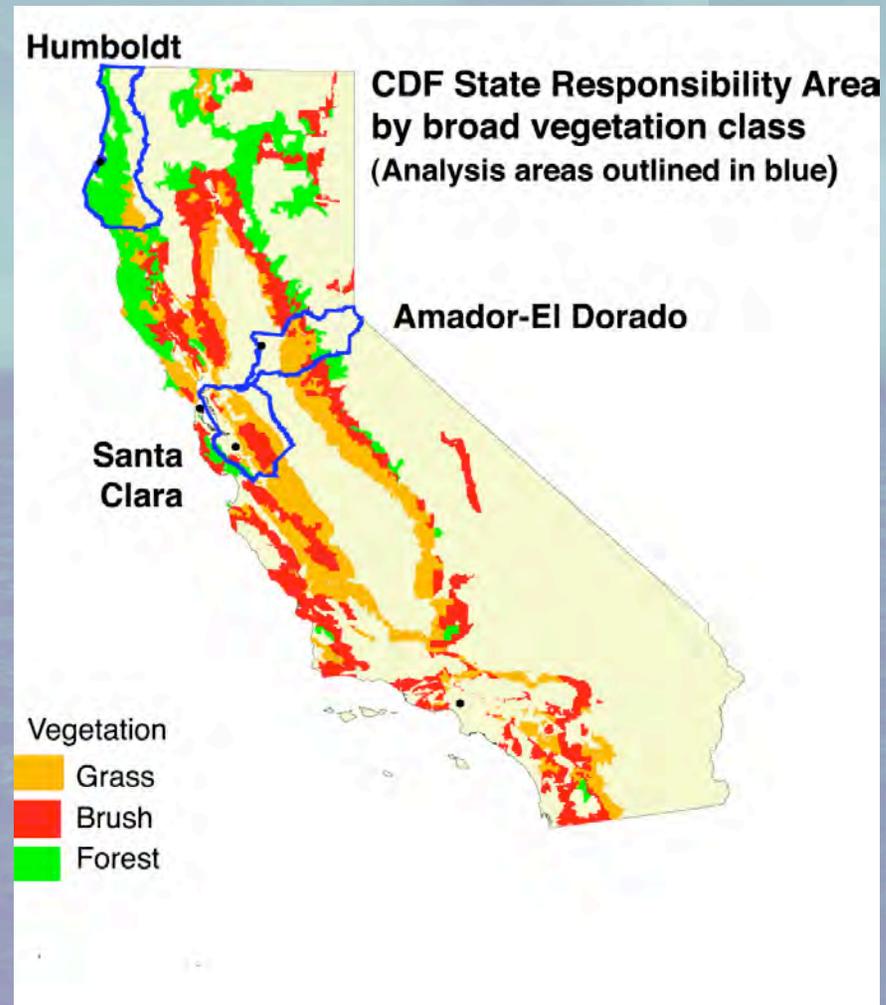
Lead Researcher: Anthony Westerling – Scripps Institution of Oceanography



Process-Based Approach

Research Team: Jeremy Fried, Margaret Torn, Scott Stephens, Max Moritz, William Riley, Katharine Hayhoe

- Applies future climate scenarios to *CDF's Fire Protection Planning System* to assess:
 - The projected changed in Wildfire Escapes under existing fire suppression dispatch rules.



Process-Based Approach

Research Team: Jeremy Fried, Margaret Torn, Scott Stephens, Max Moritz, William Riley, Katharine Hayhoe



Methodology: Forestry Analysis

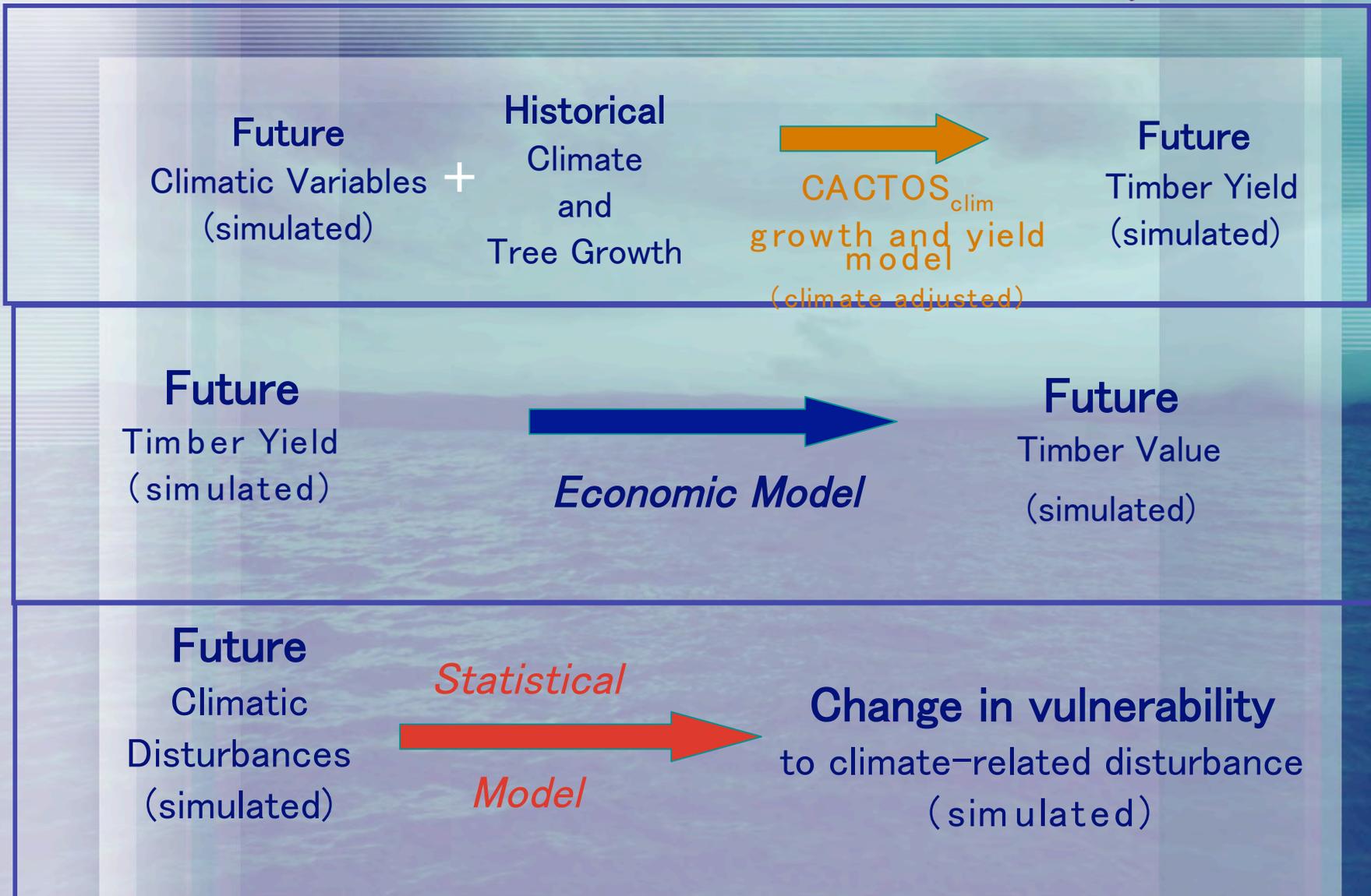


- ❑ Assess sensitivity of mixed conifer timberlands to projected climate change climate
 - growth and yield model
 - economic translation of projected changes in yield.

- ❑ Statistical assessment of vulnerability to climate-related disturbance

Forestry Analysis

Lead Researcher: John Battles and Keith Gilles – UC Berkeley



Expected Products

- ❑ Projected changes wildfire risks
- ❑ Projected changes in site-specific forest growth and yield
- ❑ Economic implications of the projected changes in timber yield
- ❑ Preliminary assessment of forest vulnerability to extreme events
- ❑ Policy recommendations for minimizing risks over short-term