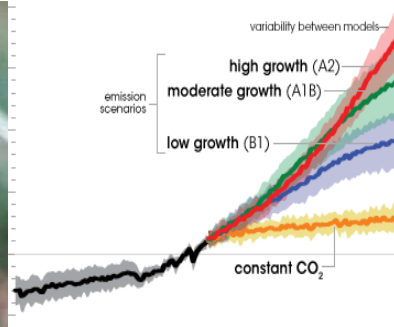




prbo

PRBO Conservation Science



CLIMATE CHANGE, UNCERTAINTY, AND ADVOCACY

John Wiens

2009 State of the Laguna Conference

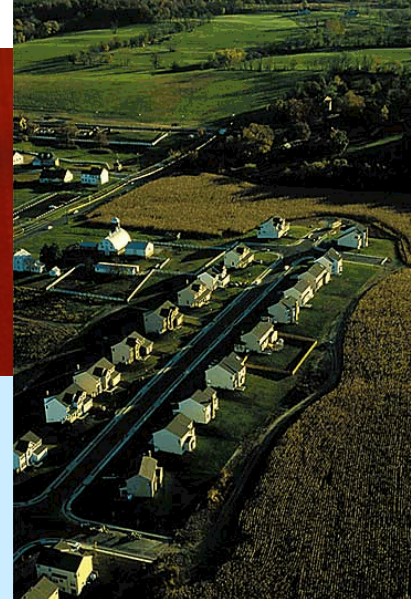
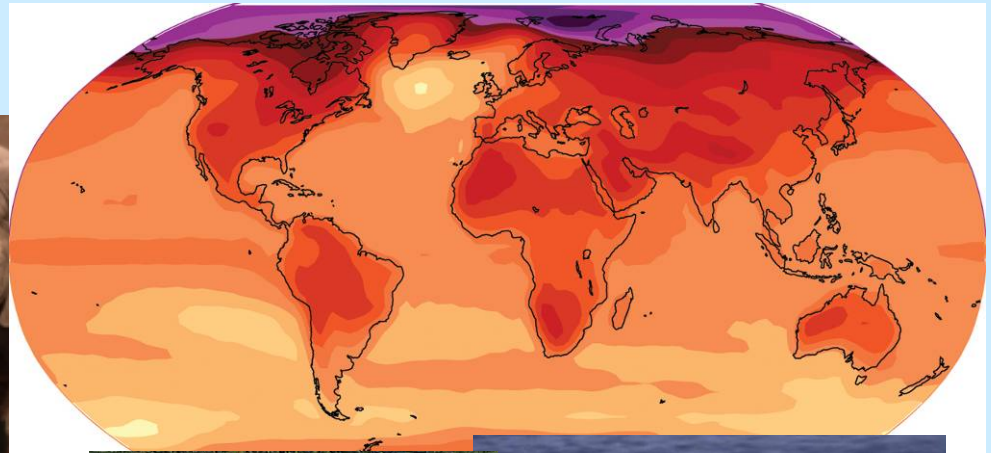
October 14, 2009

The Traditional Focus of Conservation

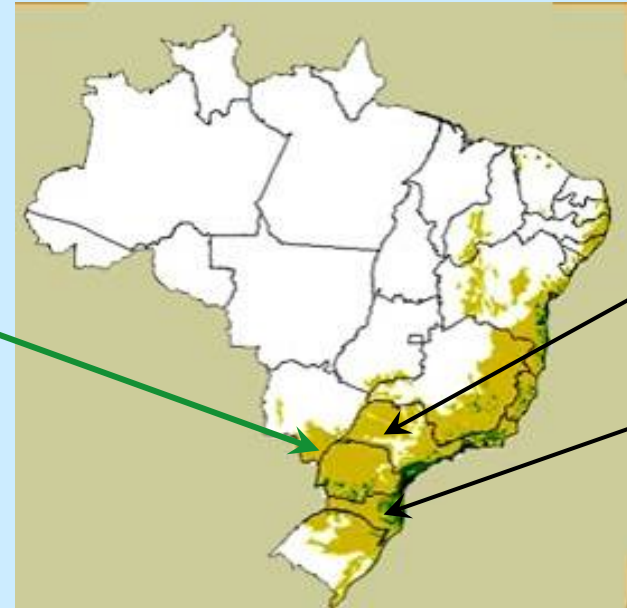
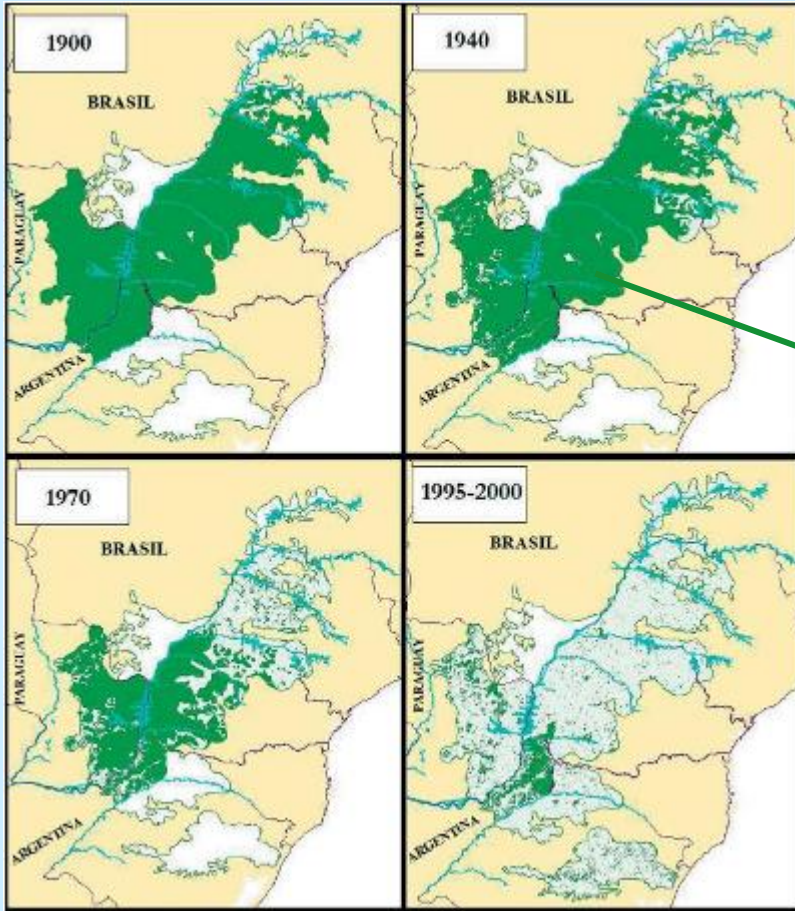
Protecting species by preserving the places they need in order to persist



But there's an Elephant in the Room



Land Use Change in Brazil



1900

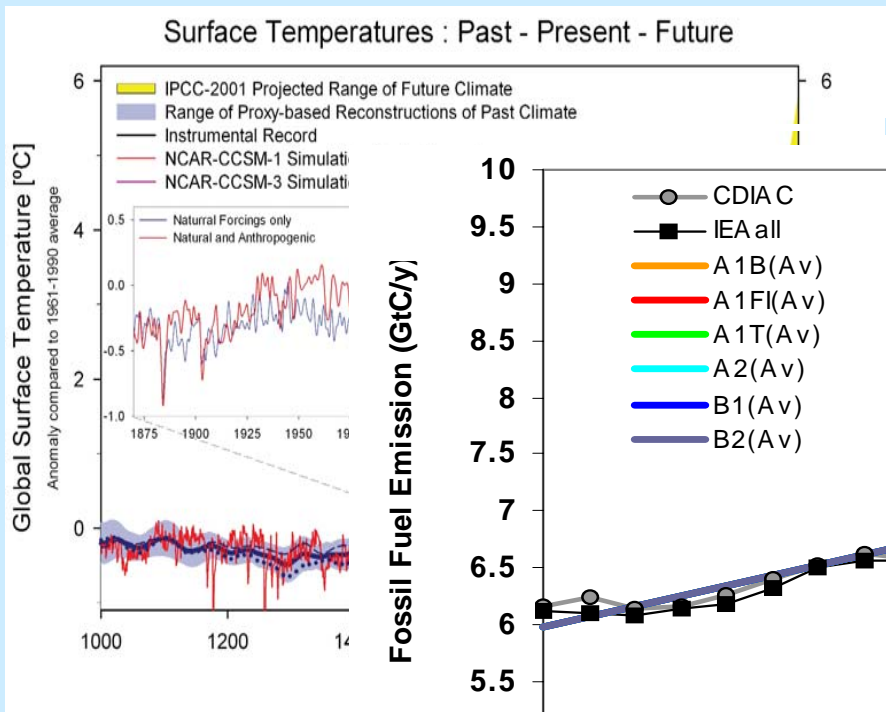
2005

Atlantic Forest



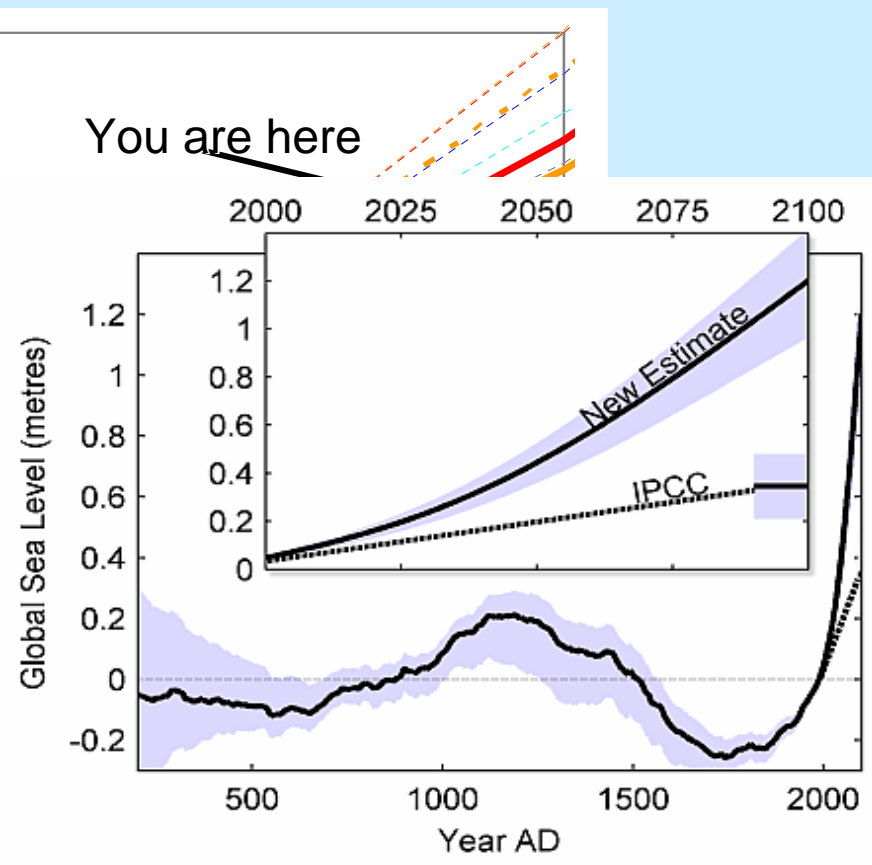
Upper Paraná Region

Climate Change

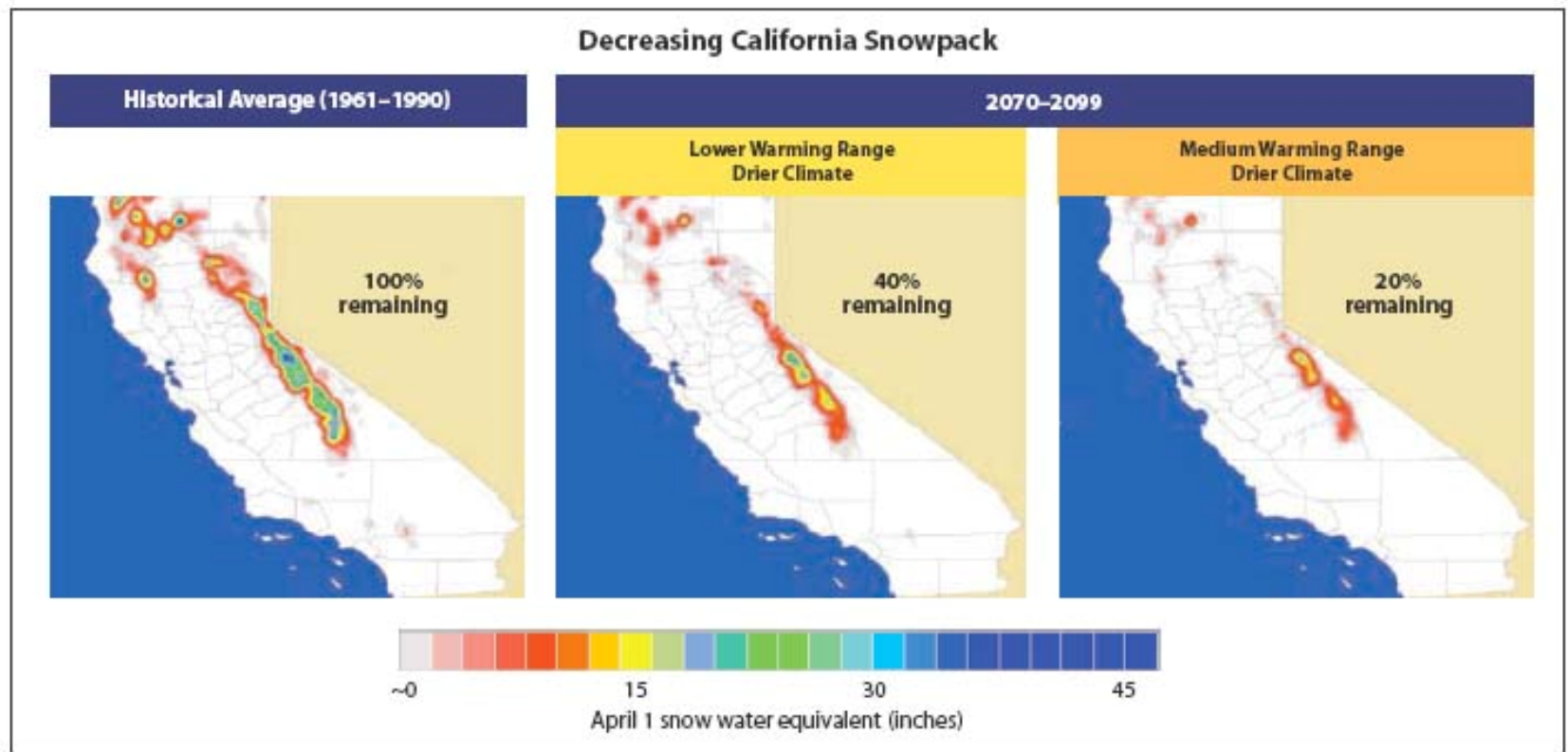


Source: IPCC 2001

Source: Raupach et al 2007, PN



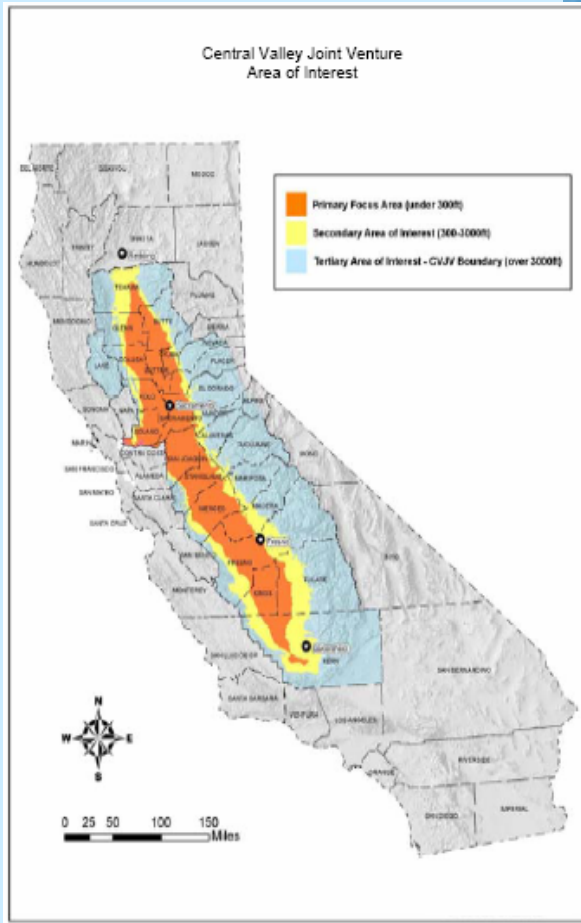
Projected Loss of California Snowpack



Source: CEC(2006). Our Changing Climate: Assessing Risks to California.

http://www.climatechange.ca.gov/biennial_reports/2006report/

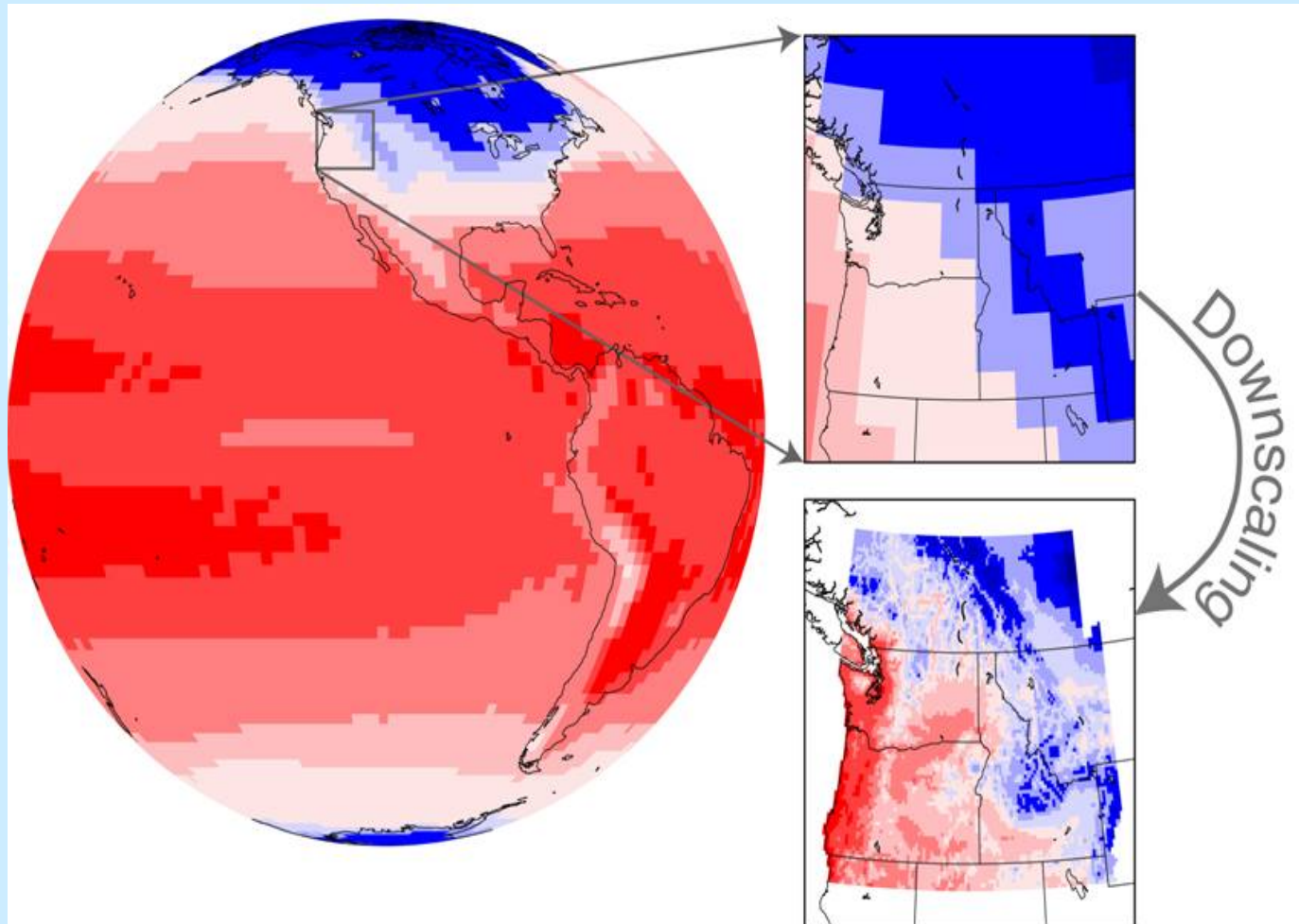
Effects on Land Use



We Need to Look Into the Future



Downscaling Climate Models



Modeling Climate Change Effects on Species Distributions

Spatial Predictions of Species
Probability of Occurrence

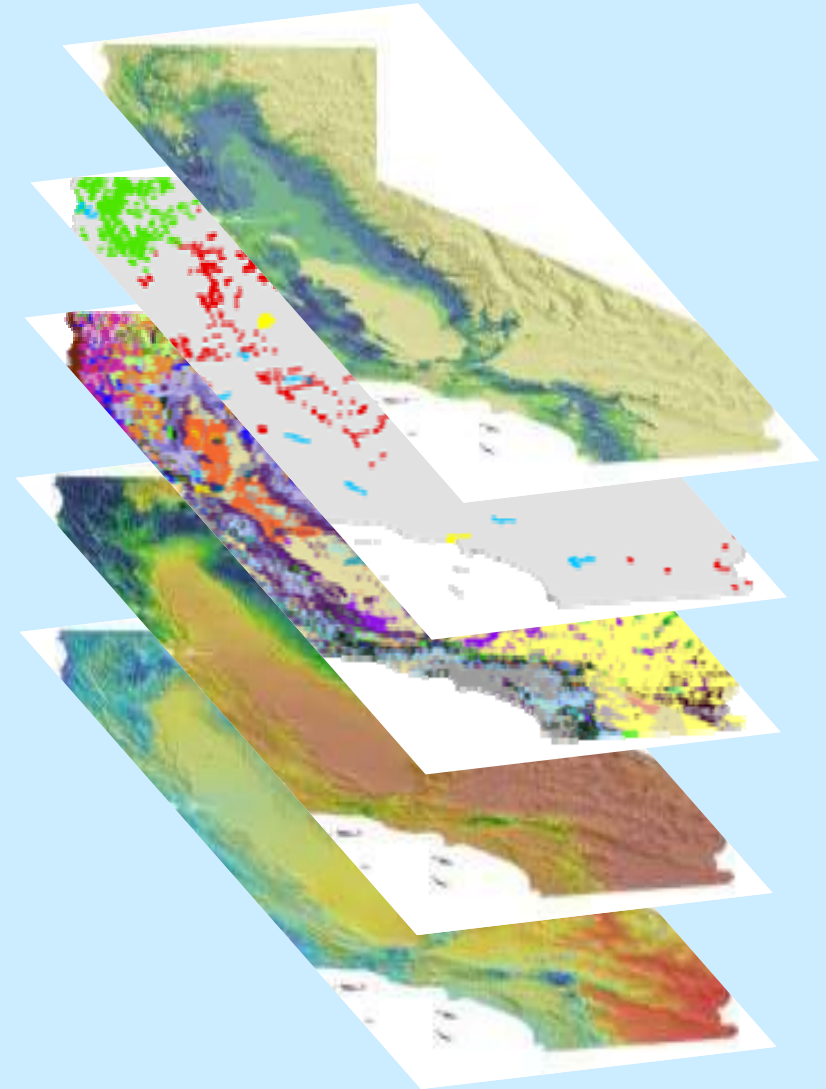


Model Algorithms
(e.g., Maxent, GAM)

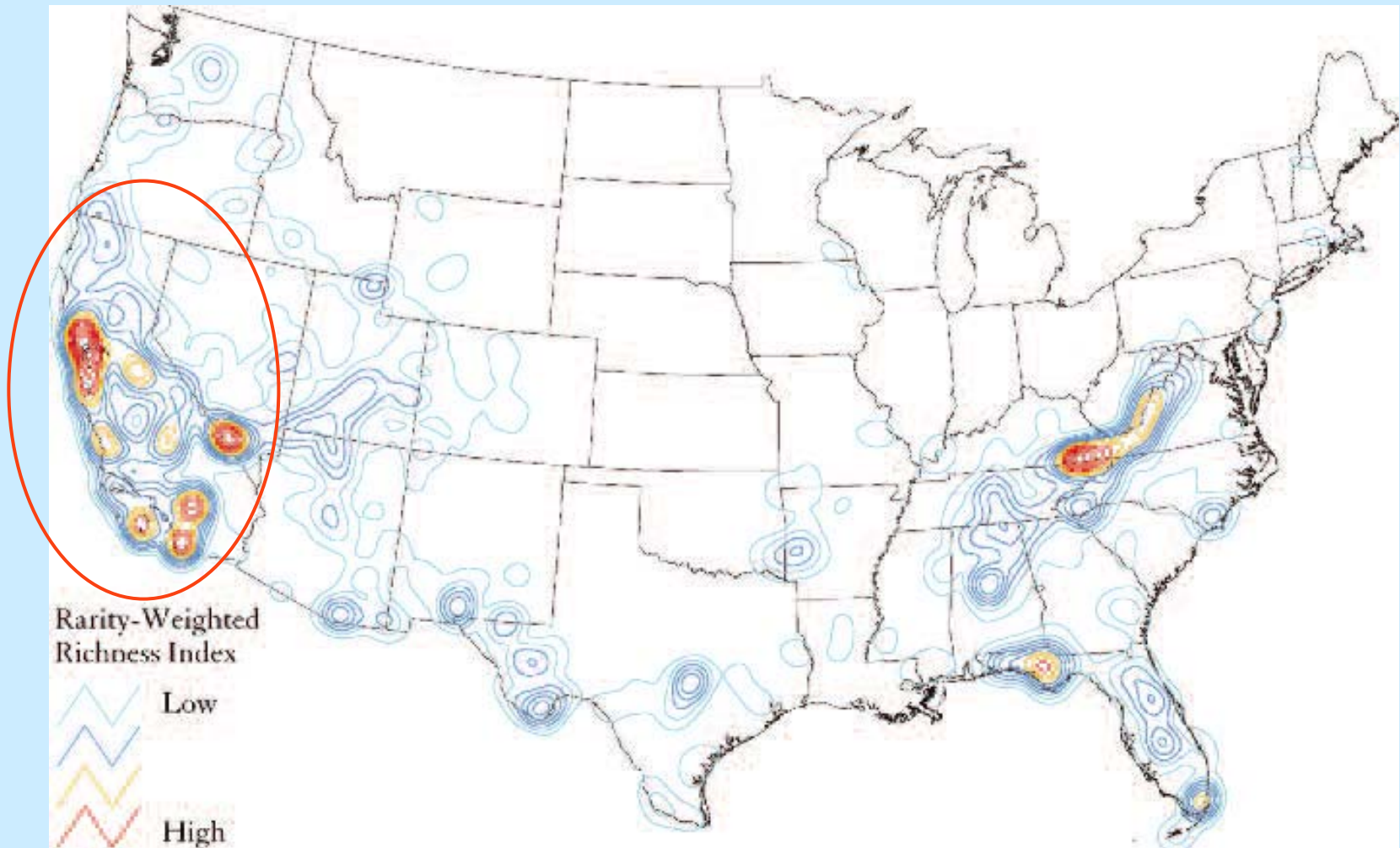
Occurrence Data



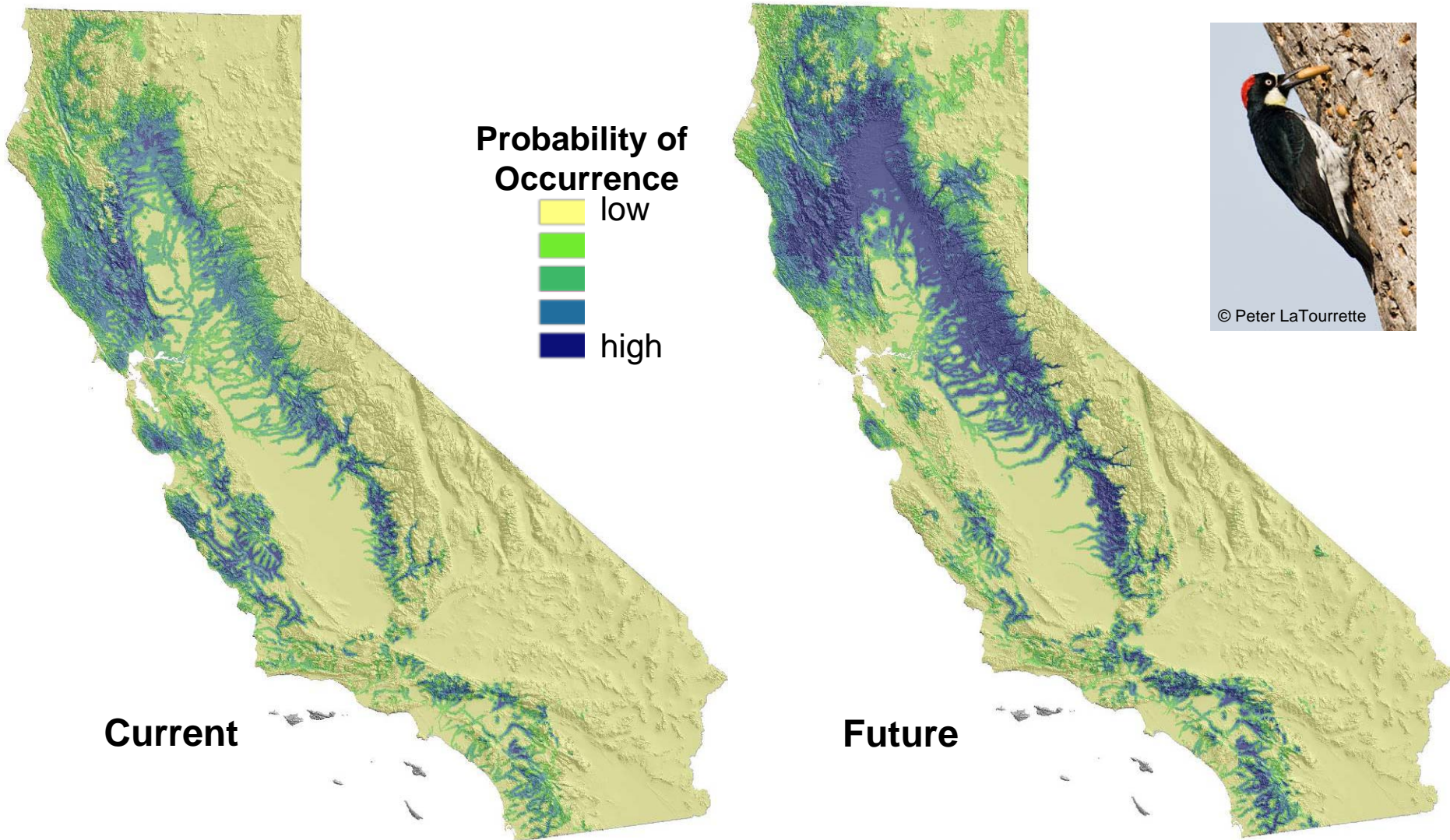
Environmental Variables



Hotspots of Rarity and Species Richness



Acorn Woodpecker Distributional Shifts



See <http://www.prbo.org/data>

Source: Stralberg et al., PRBO, unpublished

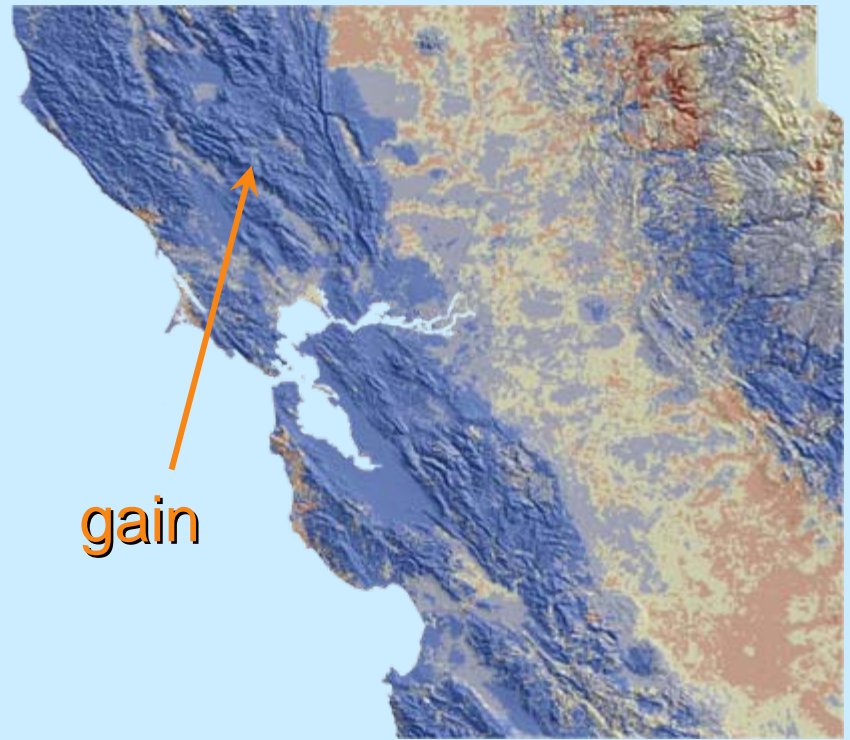
Projected Change in Bird Species Richness

conifer forest species



loss

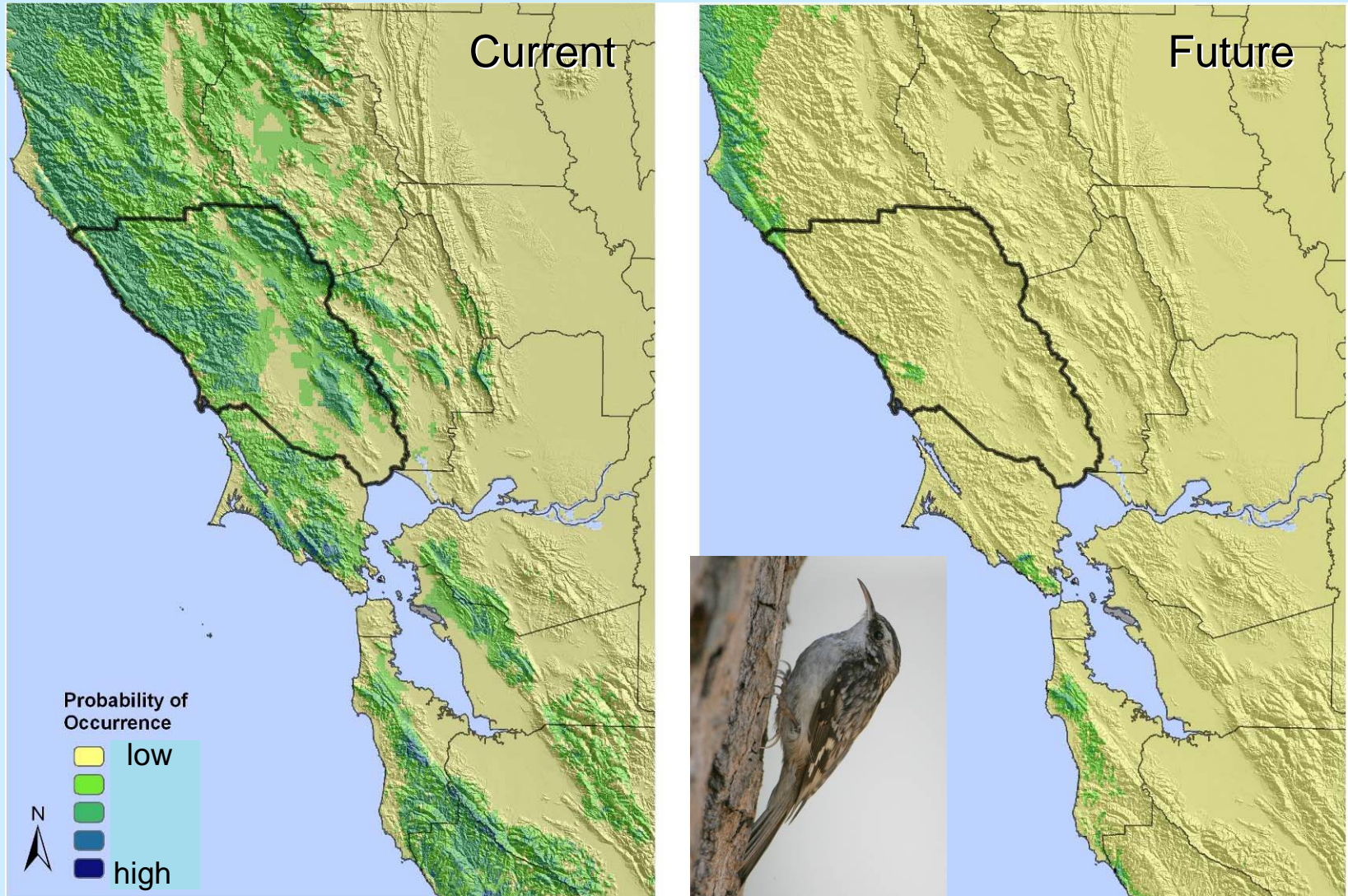
scrub-chaparral species



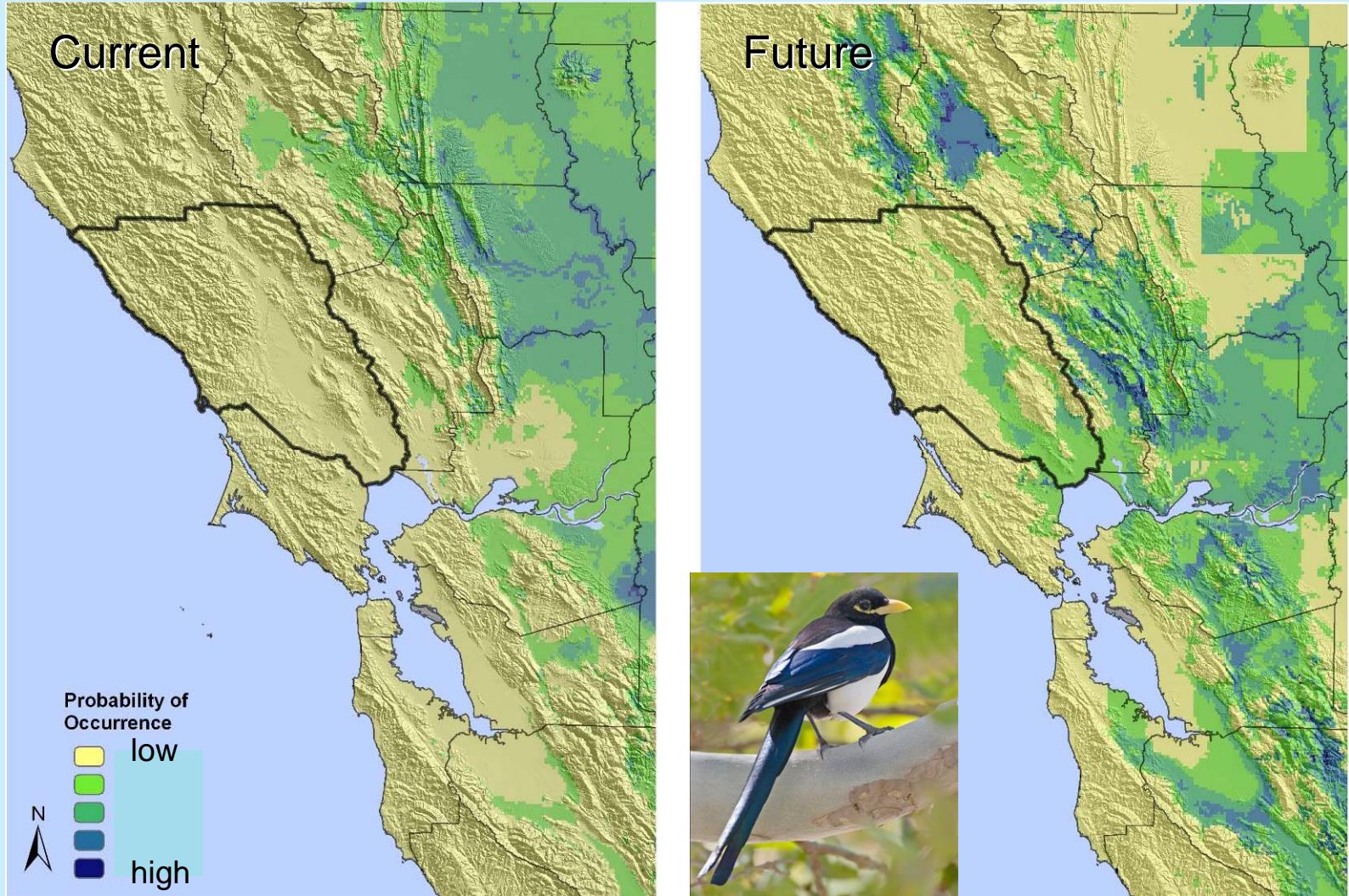
gain

Source: Stralberg et al., PRBO, unpublished

Brown Creeper



Yellow-billed Magpie



Scaling Climate Change Projections to the Scales of Conservation and Management



Tip O'Neill

“all politics is local”

Scaling Climate Change Projections to the Scales of Conservation and Management



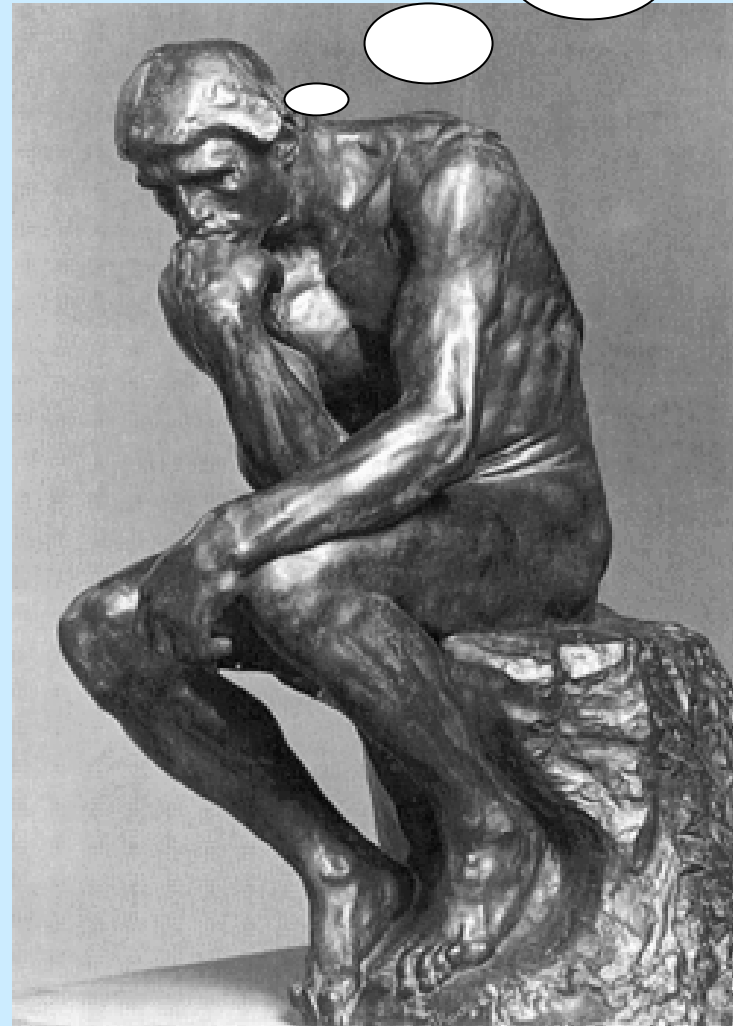
Tip O'Neill

“all conservation is local”

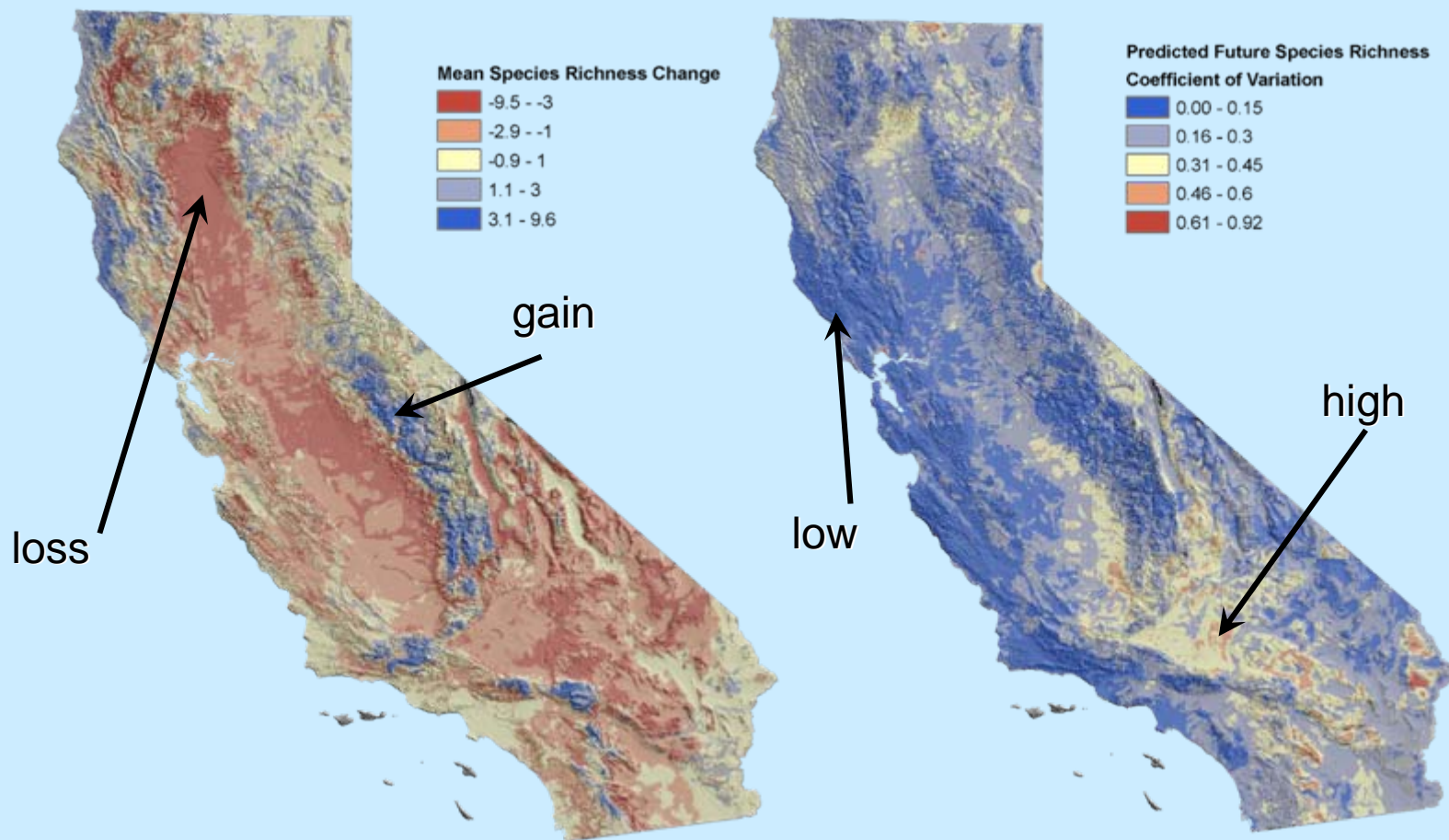
Increasing Uncertainty

I wish I could be more certain

- climate models
- distribution models
- data
- scale
- stationarity



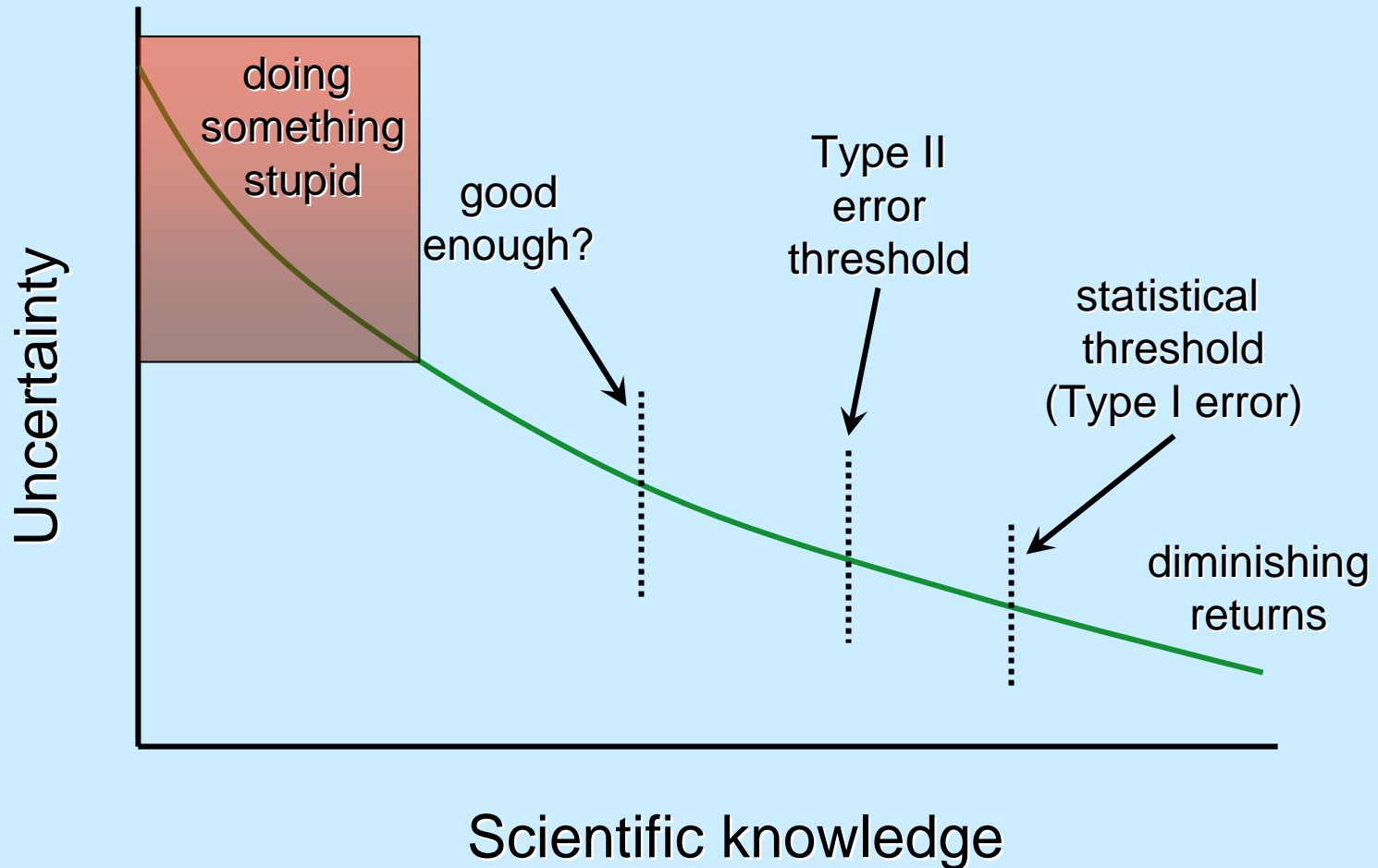
Assessing Uncertainty



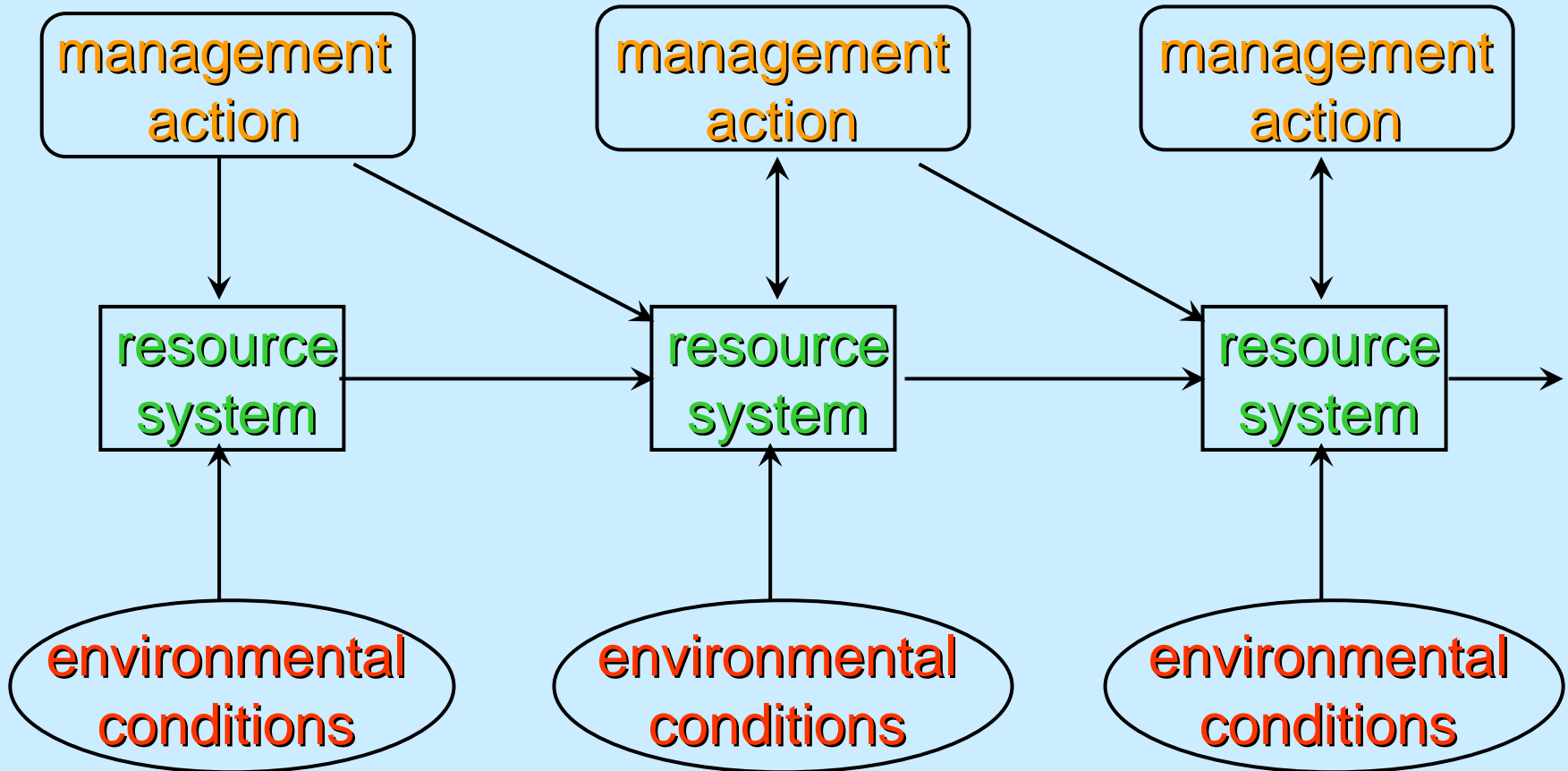
Projected Species Richness Change

Coefficient of Variation

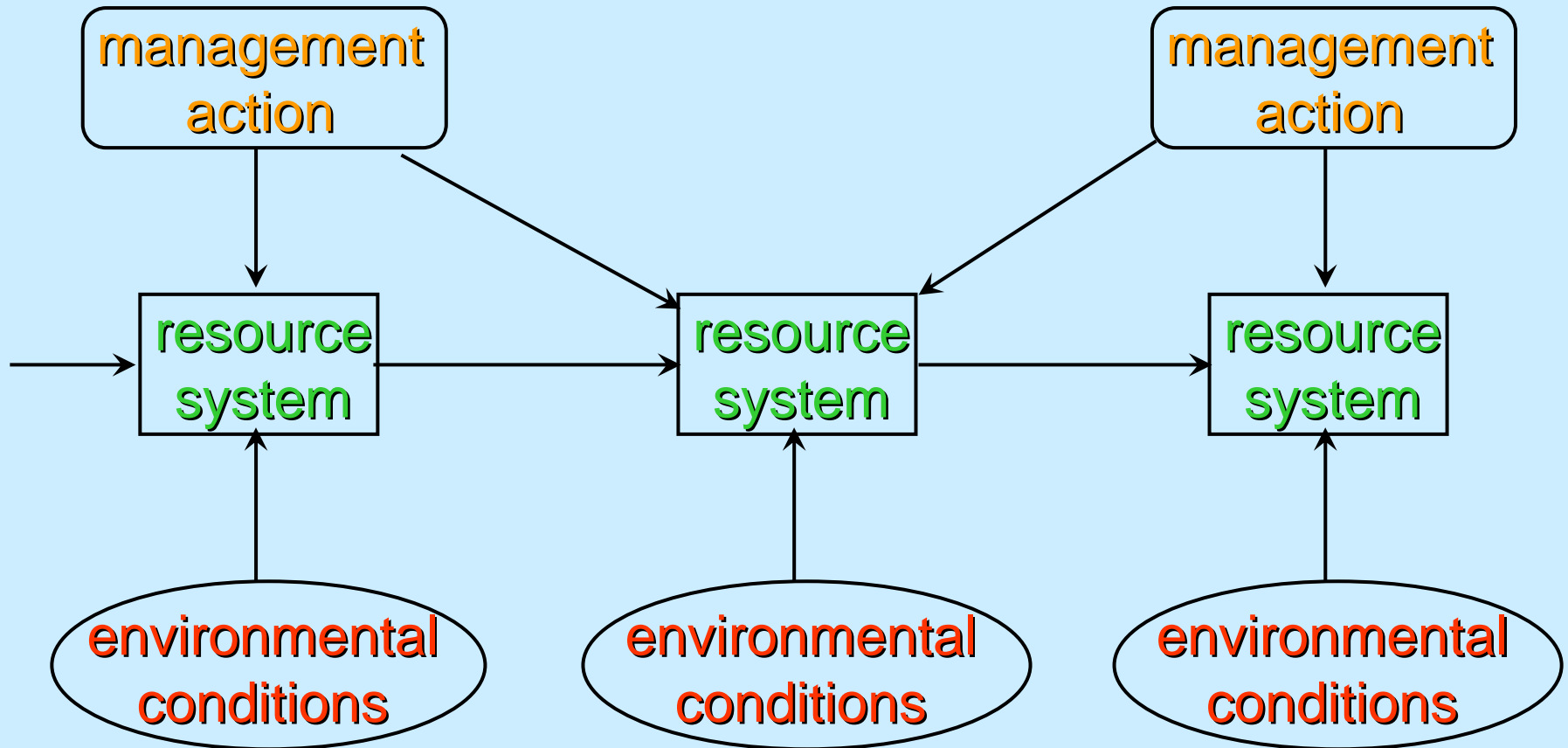
Dealing with Uncertainty



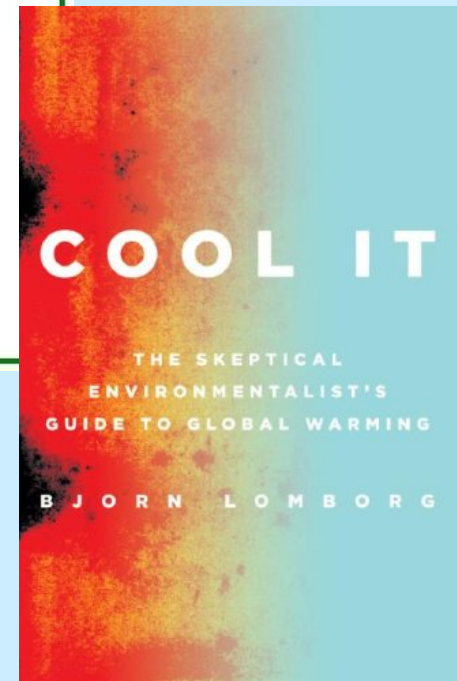
Implement Adaptive Management



Implement **Anticipatory** Adaptive Management



There are Climate Skeptics



A Few Words about Science and Advocacy



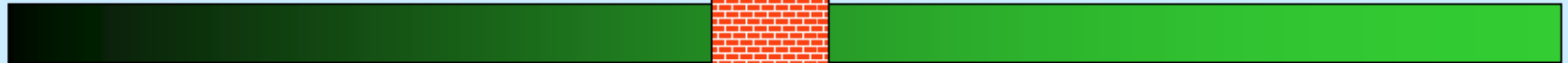
We have entered an era of uncivil discourse in which advocacy, driven by fear, misinformation, or agendas, drives the debate



At the Extremes

Science

Advocacy



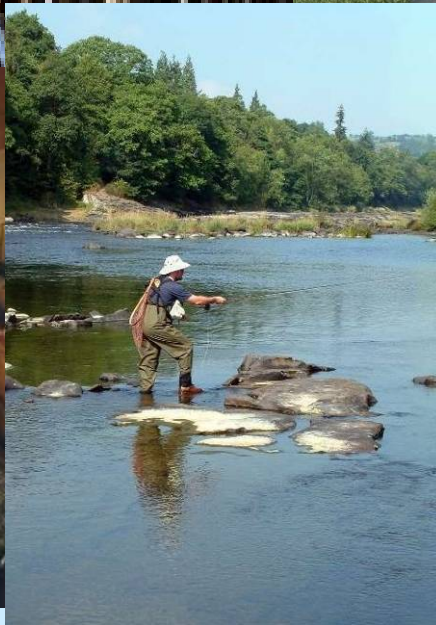
- objectivity
- data driven
- hypothesis-testing
- aims to establish truths
- preoccupied with uncertainty

- subjectivity
- beliefs
- agenda driven
- selective use of evidence
- certain

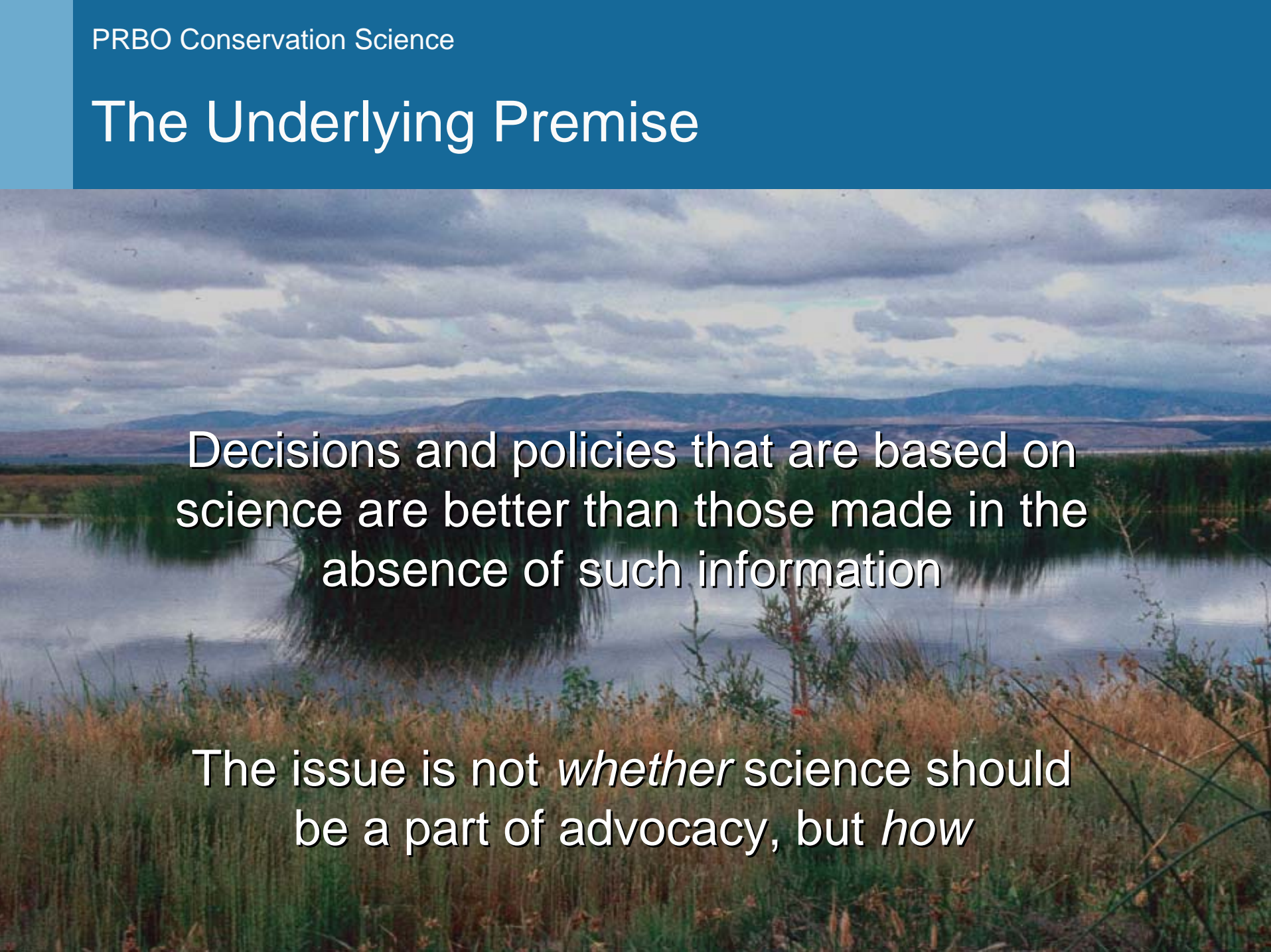
Science Cannot Remain Captive in the Ivory Tower



Decisions Will Be Made



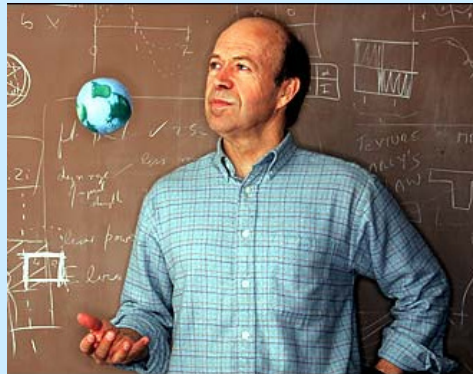
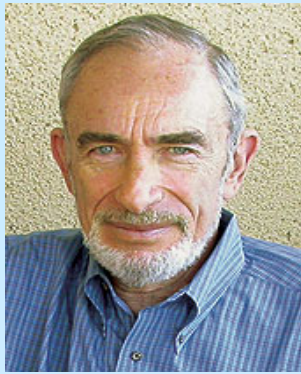
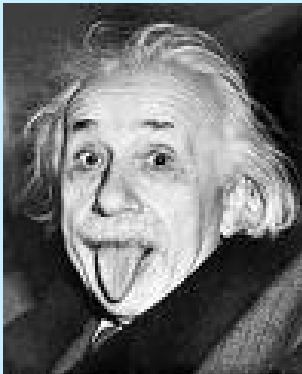
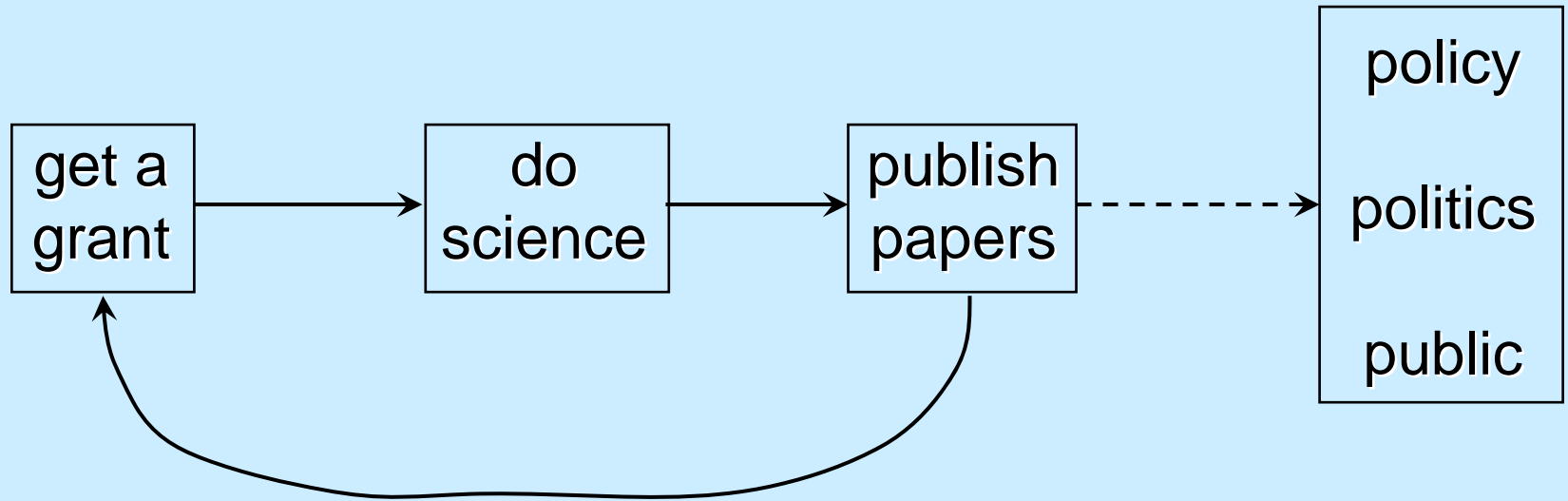
The Underlying Premise



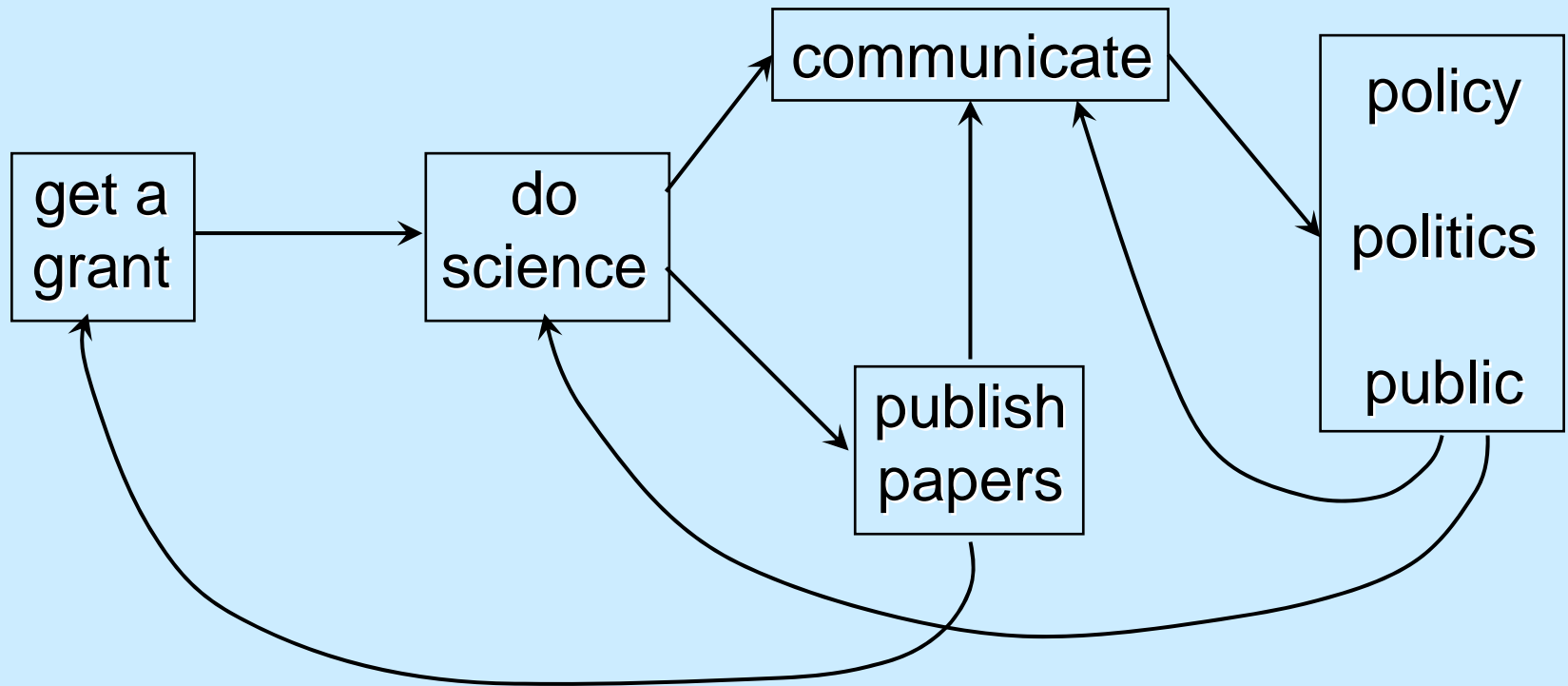
Decisions and policies that are based on science are better than those made in the absence of such information

The issue is not *whether* science should be a part of advocacy, but *how*

The Traditional Approach



The Necessary Approach



What is Required to Make It Work?

- Be alert and honest: recognize bias and agendas
- Proactive communication
- Lighten up: recognize what is “good enough” in the face of uncertainty

Thanks!

And Thanks to Diana Stralberg, Dennis Jongsomjit,
and Chrissy Howell, PRBO

