

# Adaptive Management

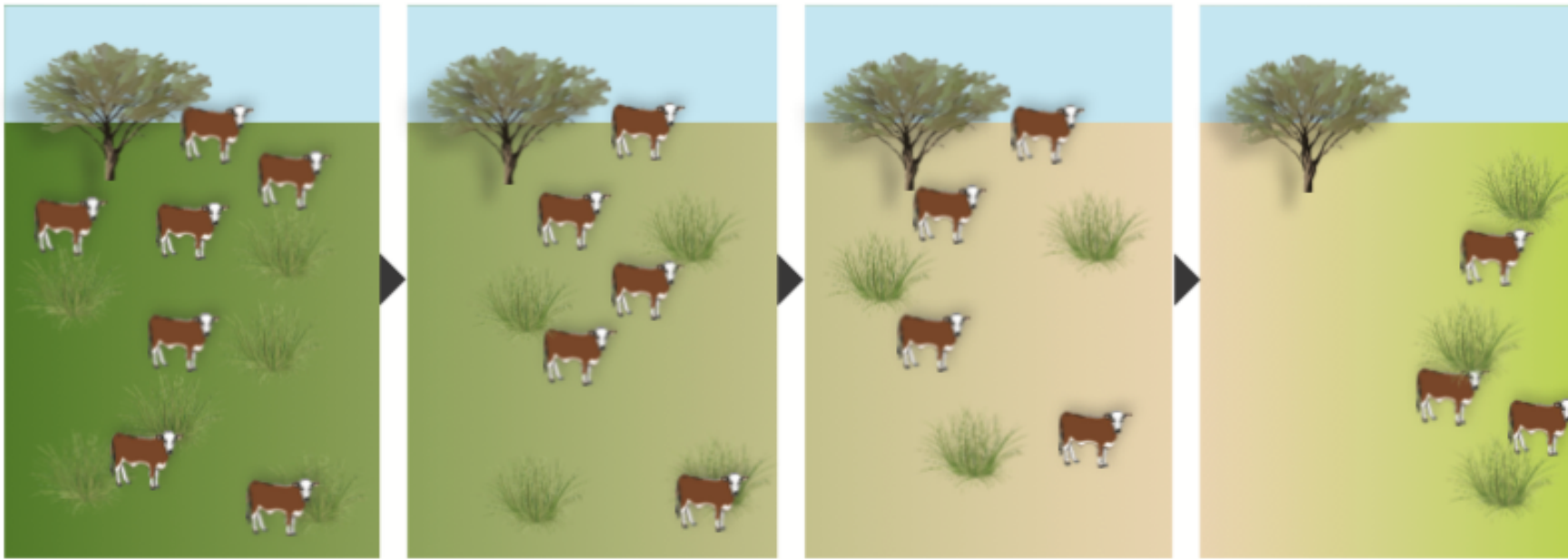
Structured, iterative process of decision making in the face of uncertainty  
System monitoring to reduce uncertainty and increase resilience over time

- Starting in 2007, USFS adopted an adaptive management policy
- Grazing allotment permits as required by National Environmental Policy Act (NEPA)
- 19 million acres in AZ and NM
- 1.7 million Animal Unit Months (AUMs)



Tonto National Forest; Photo, USFS

**Ranch A (Adaptive Management)**



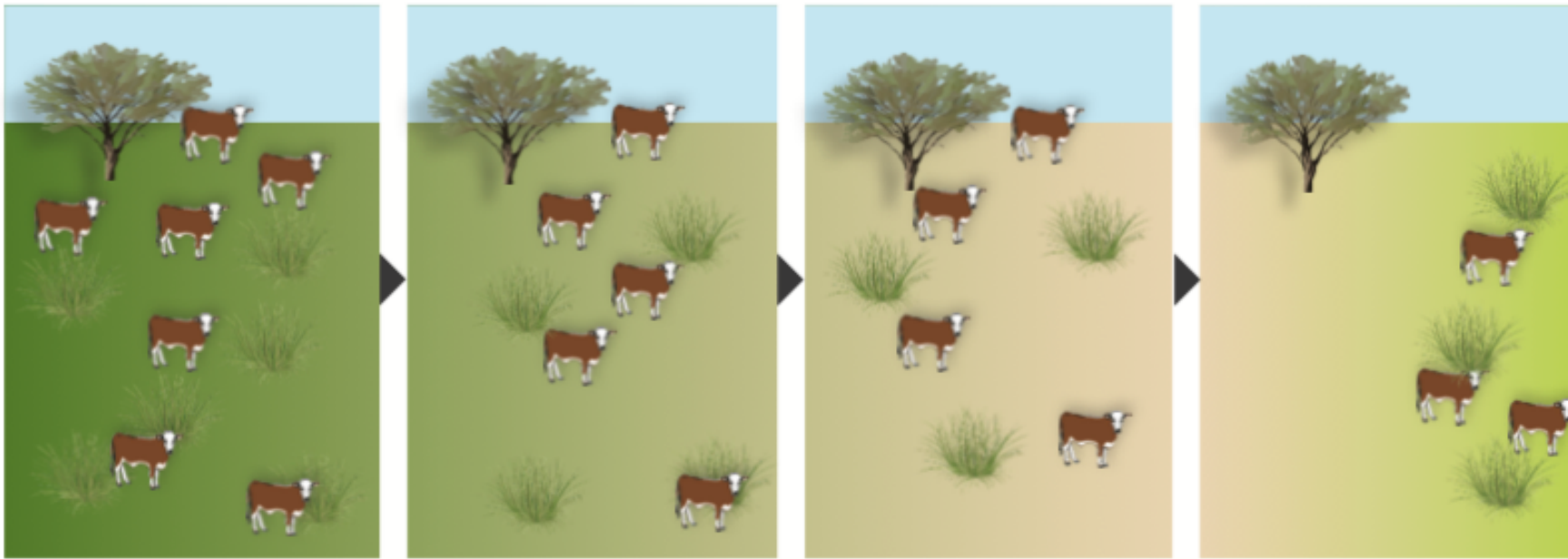
ADEQUATE  
PRECIPITATION

DECLINING  
PRECIPITATION

**DROUGHT**

INCREASING  
PRECIPITATION

**Ranch A (Adaptive Management)**



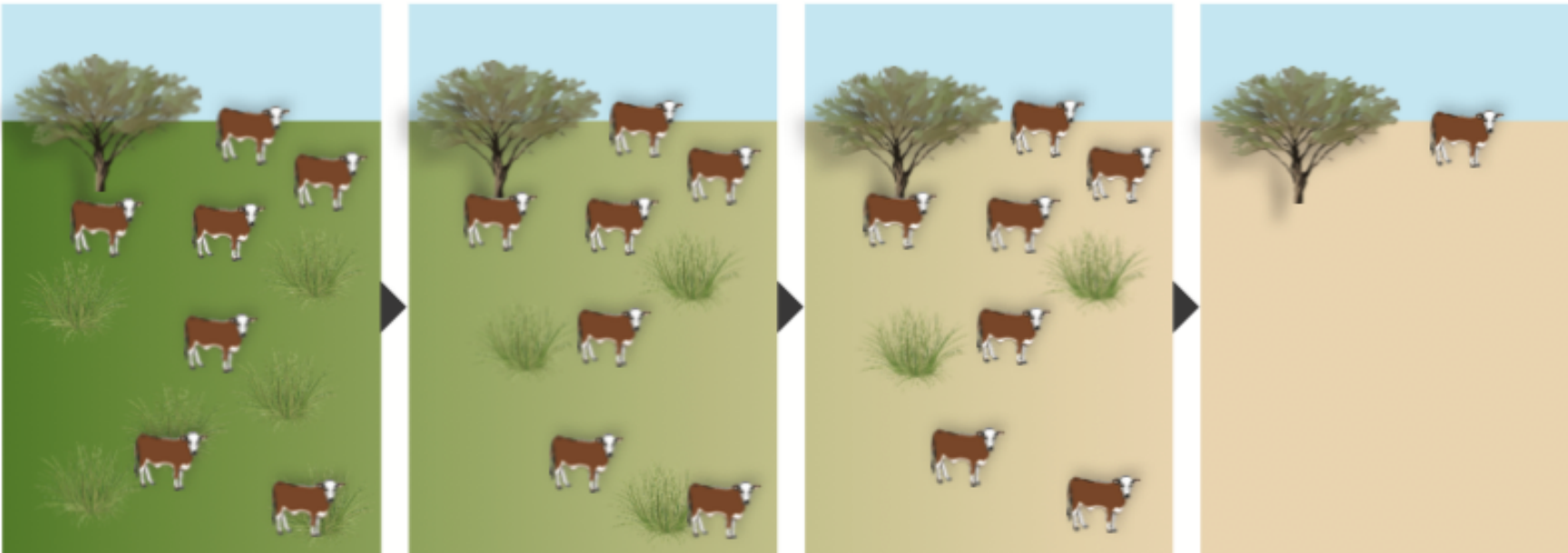
ADEQUATE  
PRECIPITATION

DECLINING  
PRECIPITATION

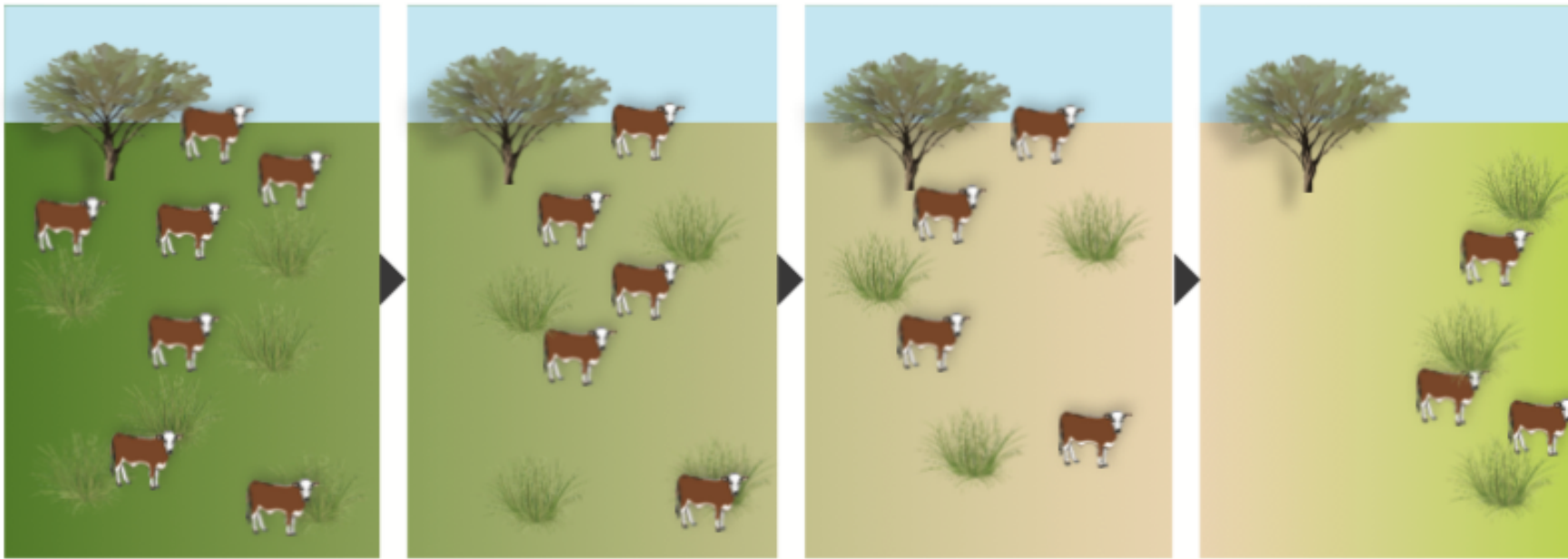
DROUGHT

INCREASING  
PRECIPITATION

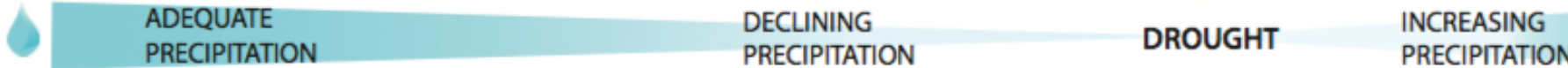
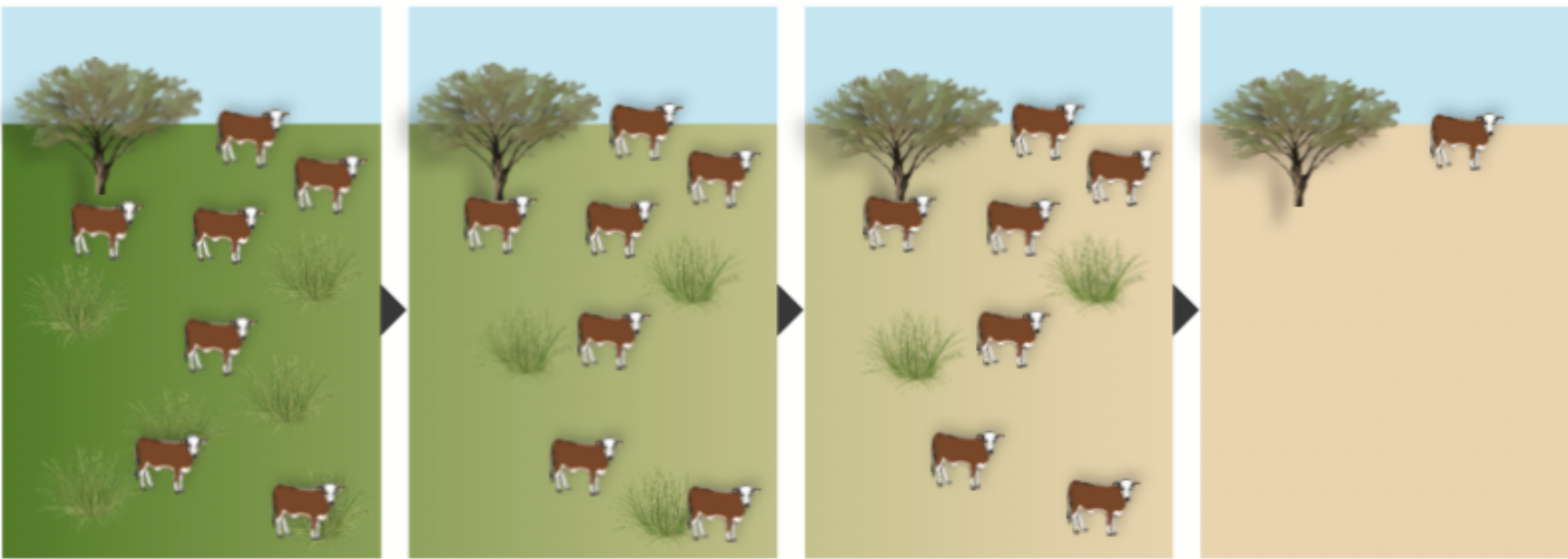
**Ranch B (No Adaptive Management)**



Ranch A (Adaptive Management)



Ranch B (No Adaptive Management)



**HYPOTHESES ABOUT OUTCOMES**

**Ranch A**  
(Adaptive Management)

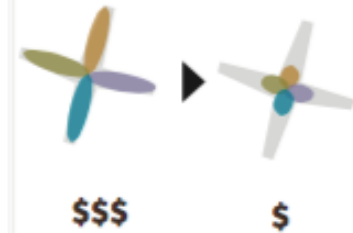


Less NEPA Transaction Costs

**ECOSYSTEM SERVICES**

- Forage production
- Beef production
- Plant biodiversity
- Soil health

**Ranch B**  
(No Adaptive Management)



Greater NEPA Transaction Costs

# Social & Natural Science Methods

## Economics

Cost of production / lb  
of beef

Ranch budgets  
(economic resiliency)

## NEPA (Regulatory)

Preparation Costs

Time to approval

Lawsuits

Perceived relationships  
ranchers & managers

## Ecological

“Ecosystem Services”

Parker 3-step

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