Adaptive Management and Ecosystem Services

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The Wildlife Society

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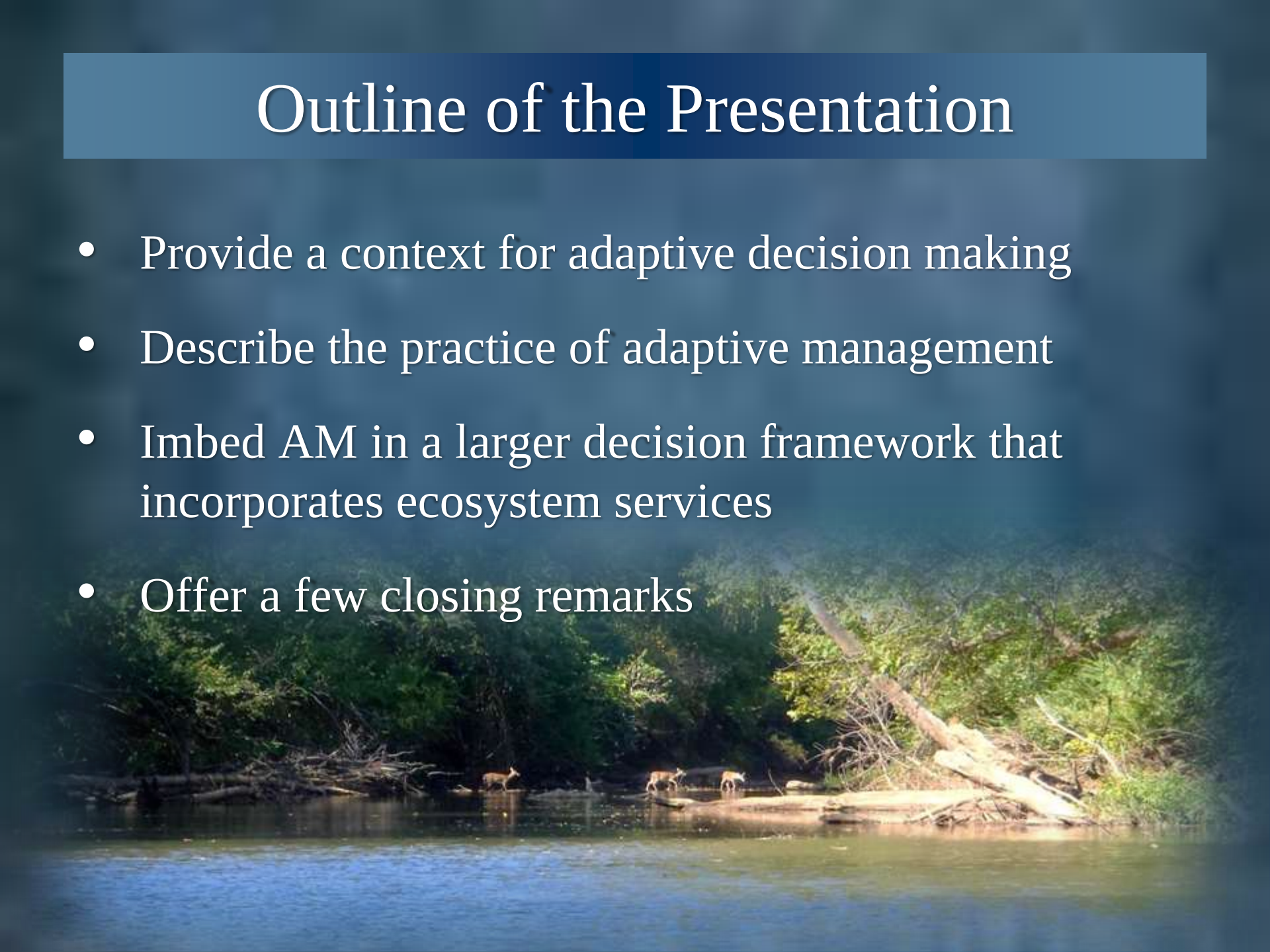
Outline of the Presentation

- Provide a context for adaptive decision making
- Describe the practice of adaptive management
- Imbed AM in a larger decision framework that incorporates ecosystem services
- Offer a few closing remarks



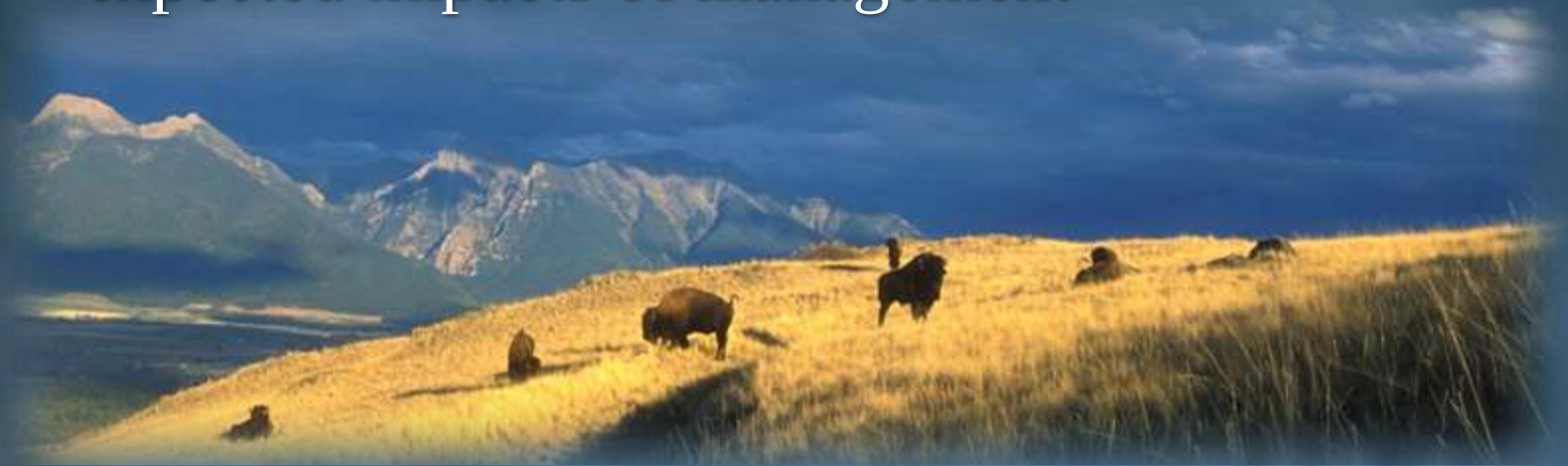
Adaptive Management

Learning by doing, and adapting based on what is learned

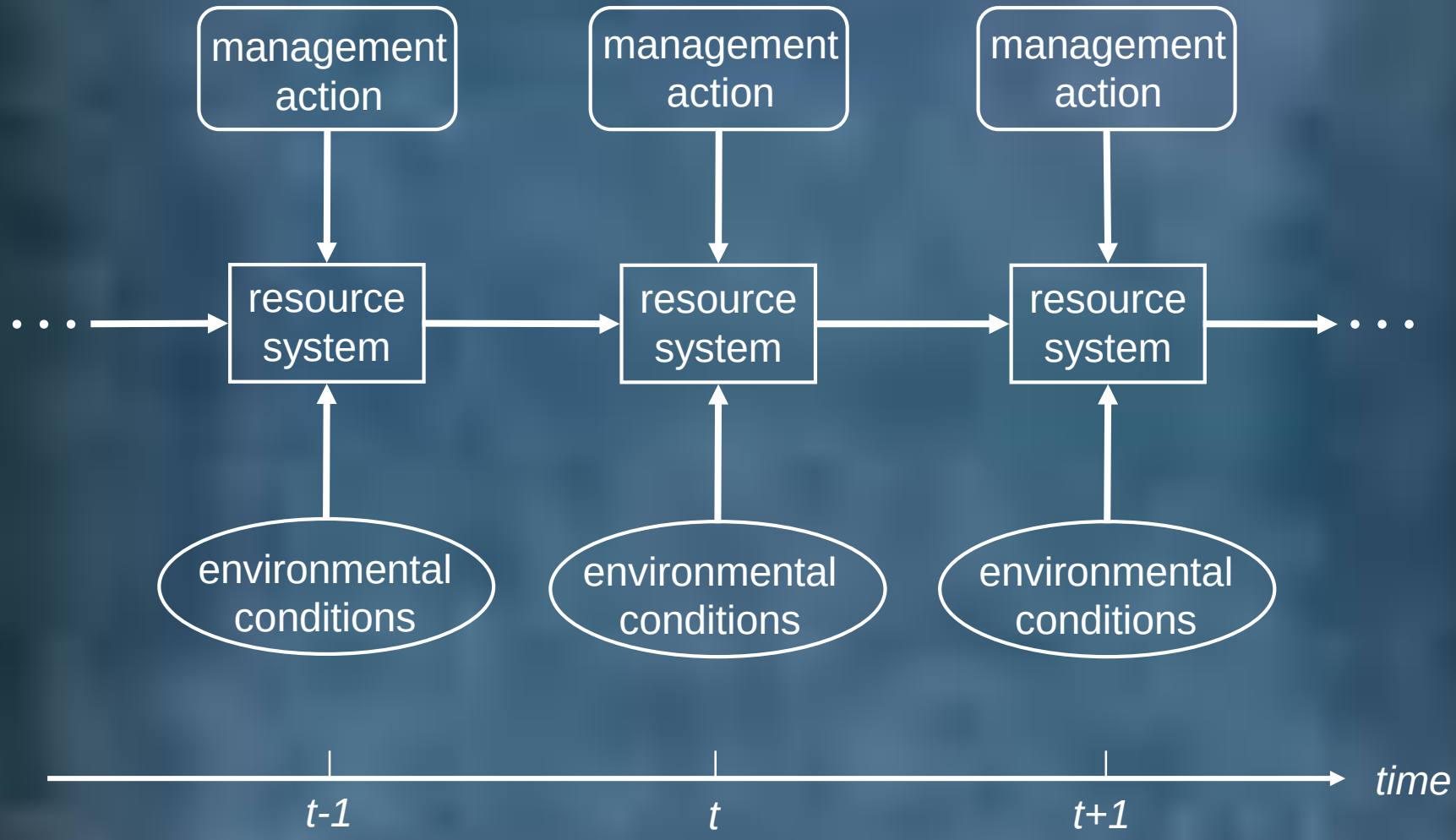
- Dual goals: to reduce uncertainty and thereby improve management
- Accounts for future consequences of present actions
- General approach: iterative structured decision making

Adaptive Management Situation

- Management actions are taken through time
- Resource behavior is influenced by environmental conditions and management actions
- There is uncertainty (or disagreement) about the expected impacts of management



Adaptive Management Situation



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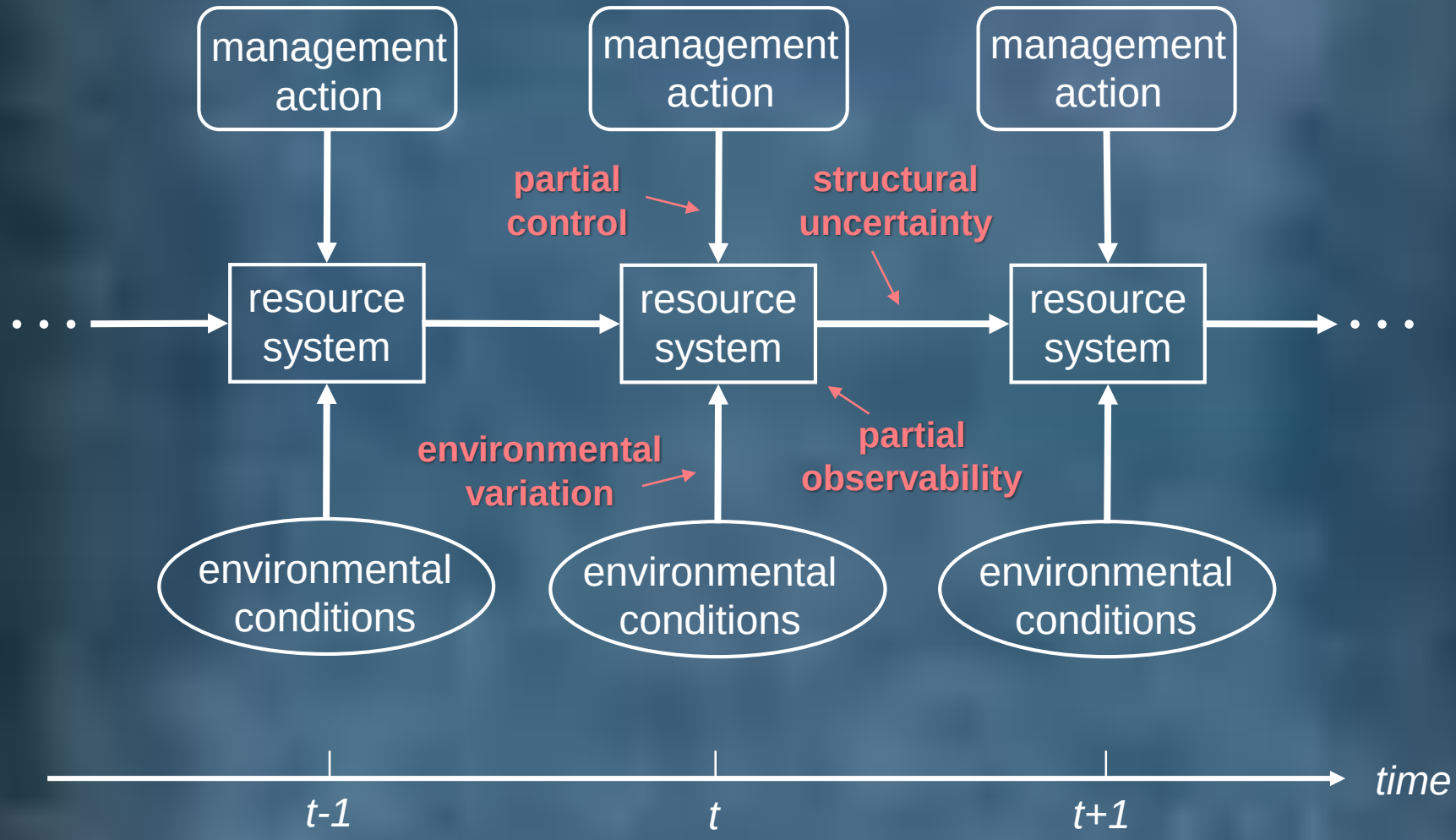
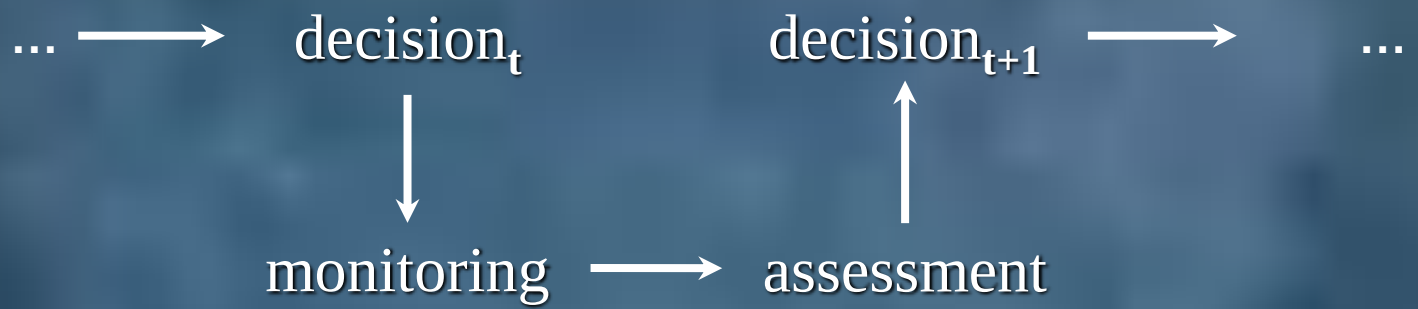


When is AM Appropriate?

- When a real management choice must be made
- When there is uncertainty about management outcomes
- When uncertainty can be expressed in terms of testable hypotheses
- When monitoring can be established to reduce uncertainty
- When there is an opportunity to apply what is learned

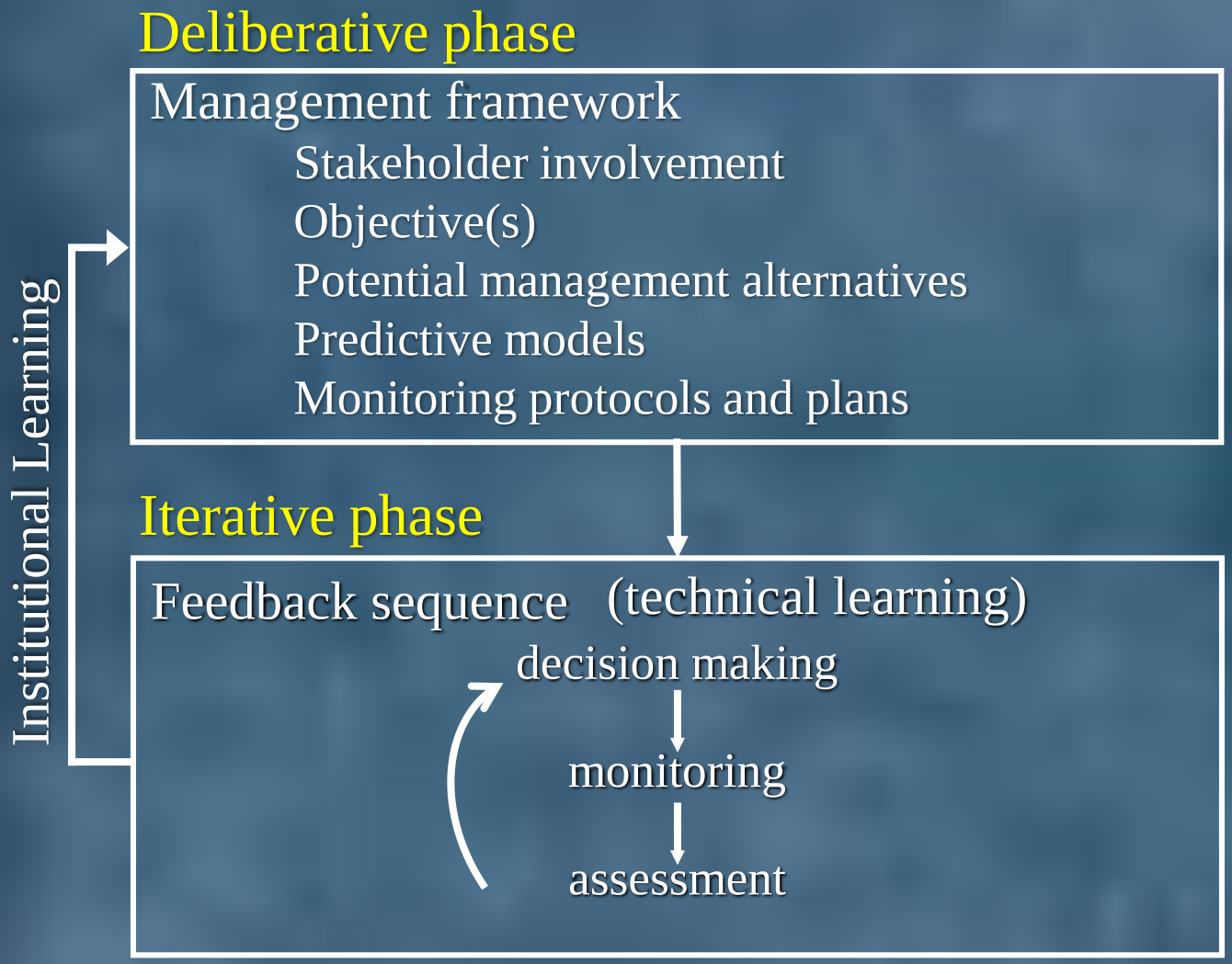
Adaptive Decision Making



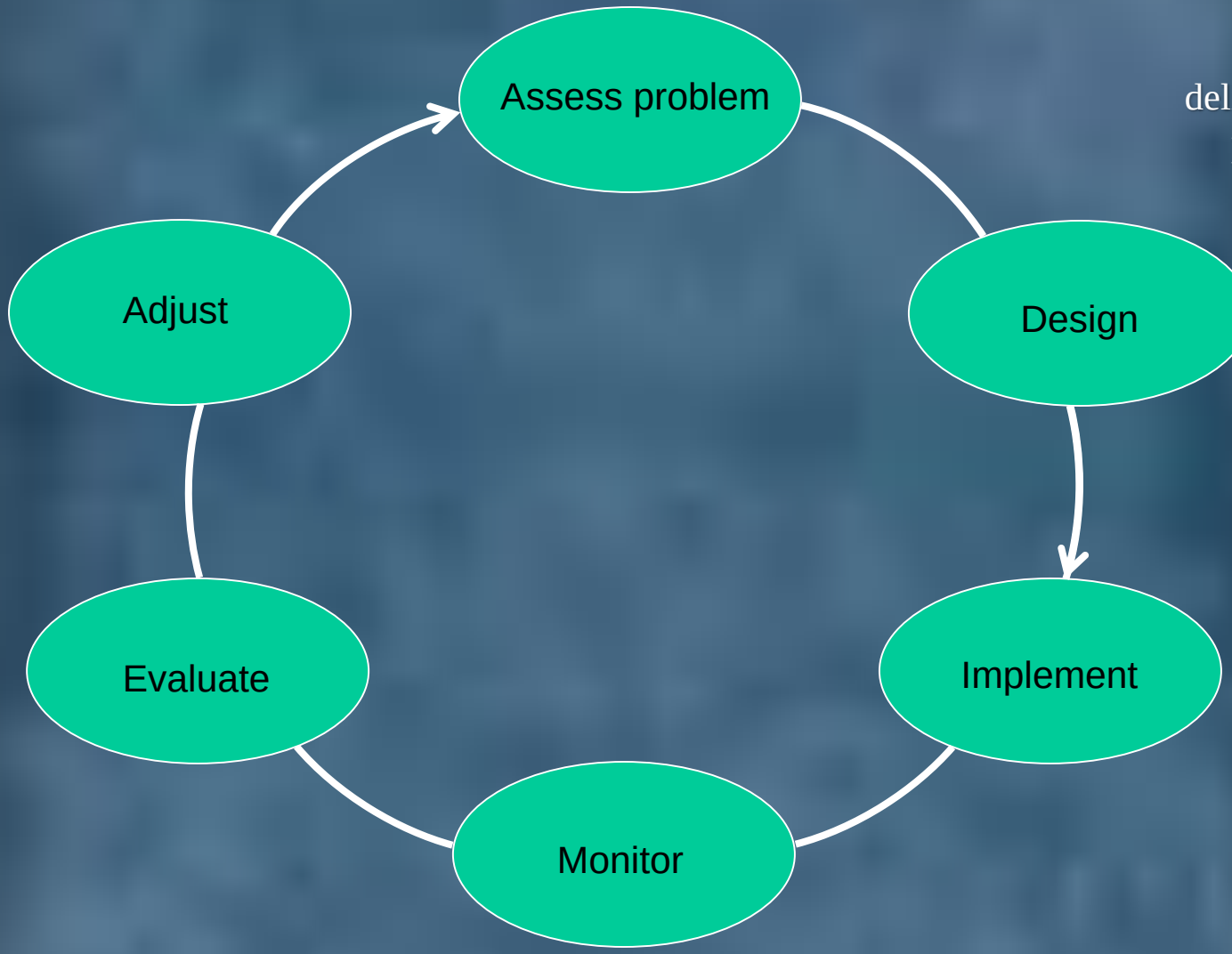
- Decisions are guided by management objectives at each time
- Monitoring is used to track system responses to management
- New information from monitoring is combined with previously collected information to produce improved understanding
- Decisions are adjusted in the next time period based on that improved understanding

Two key outcomes: improved understanding, and improved management based on that understanding

AM Process in Two Phases

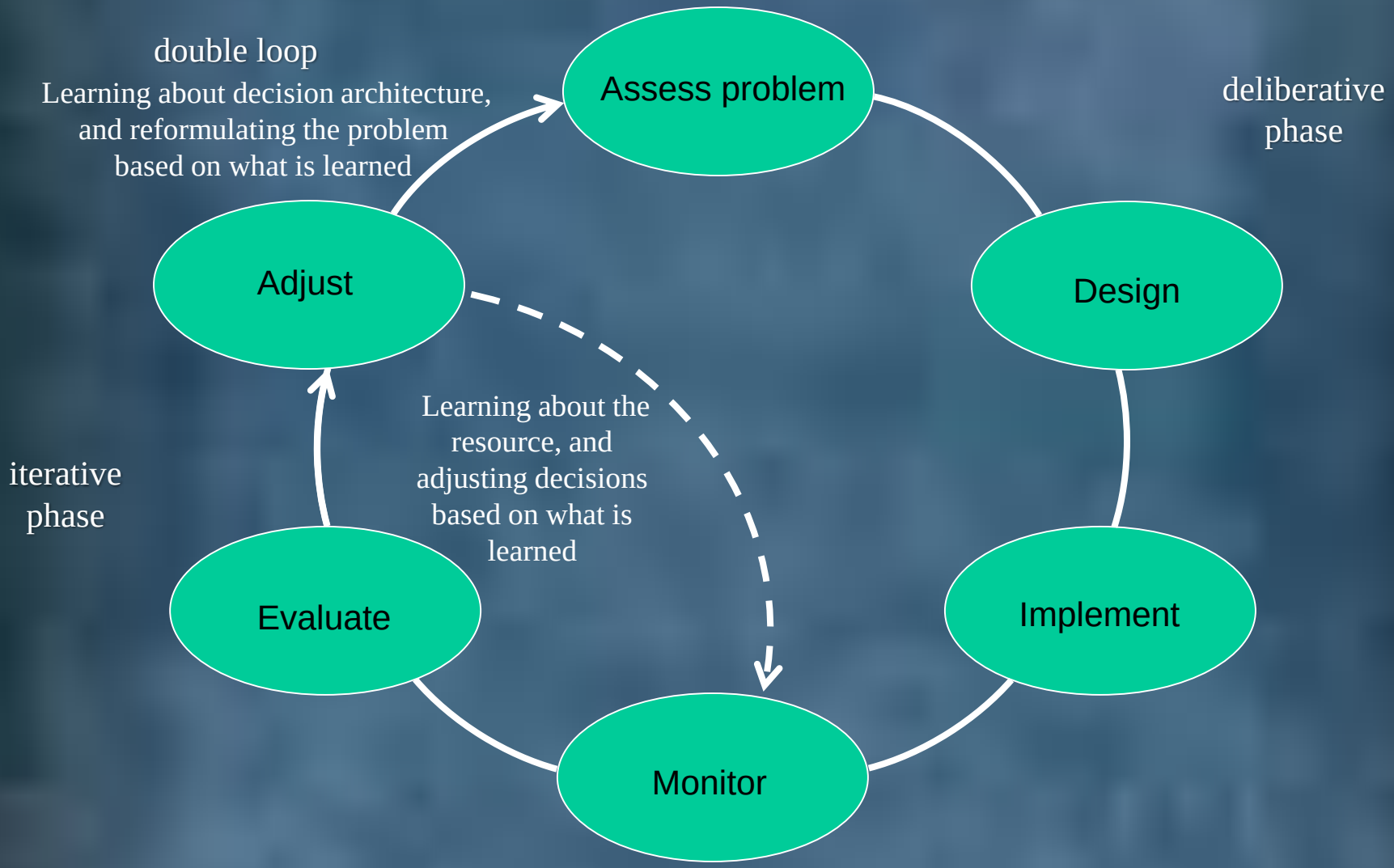


Adaptive Management Cycle



deliberative phase

Adaptive Management Cycle



Framework for Science-based Decision Making

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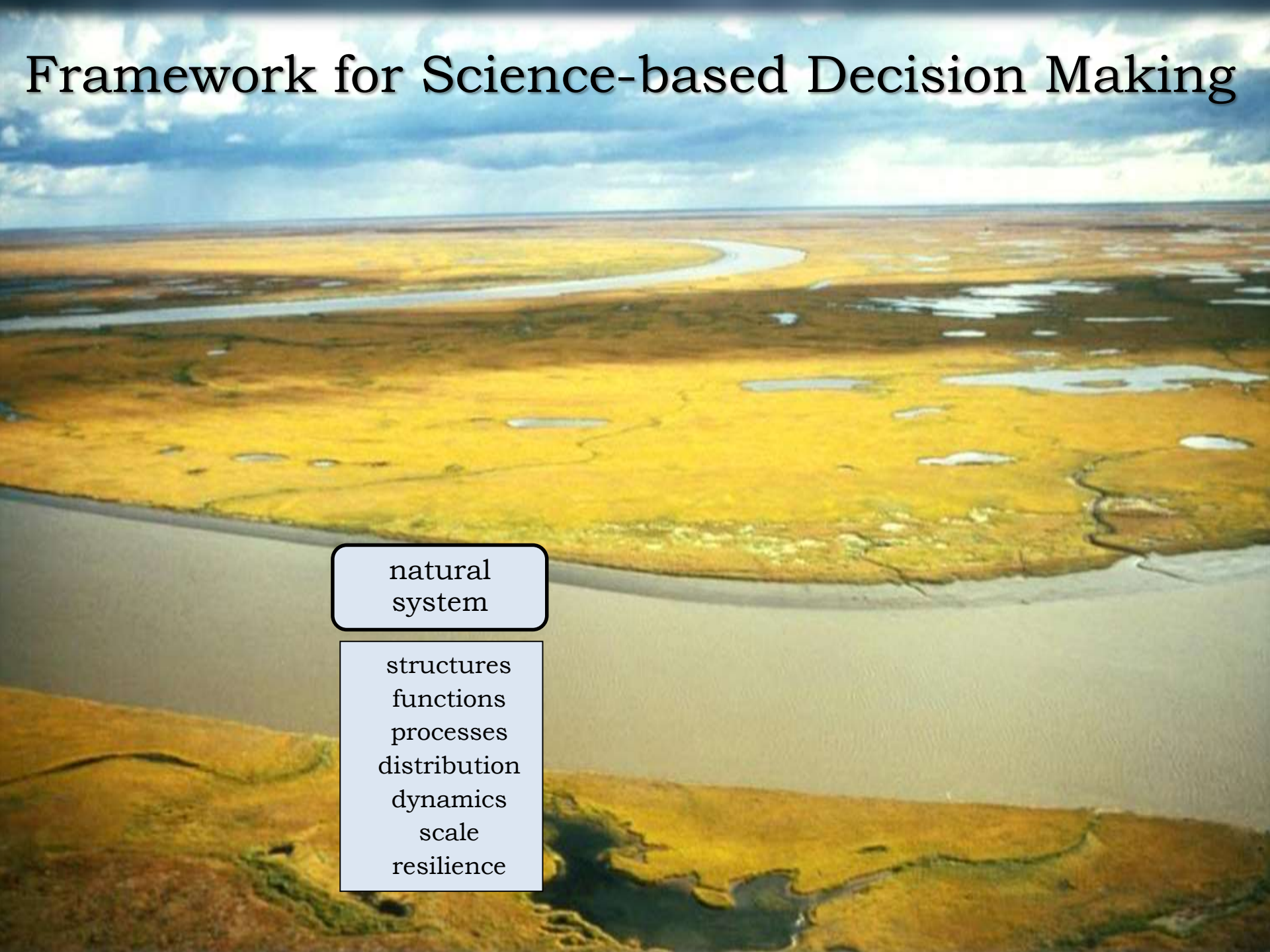

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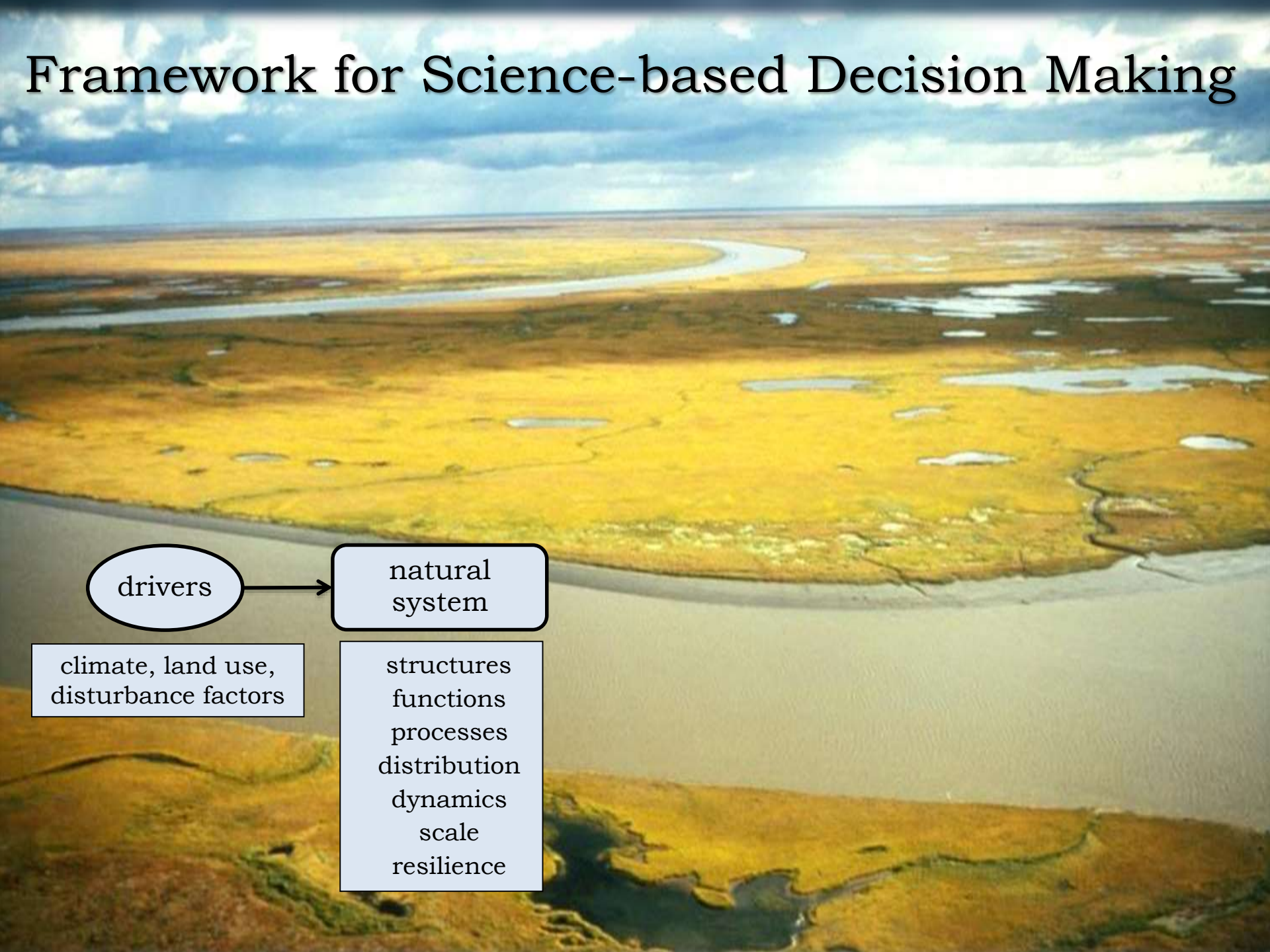

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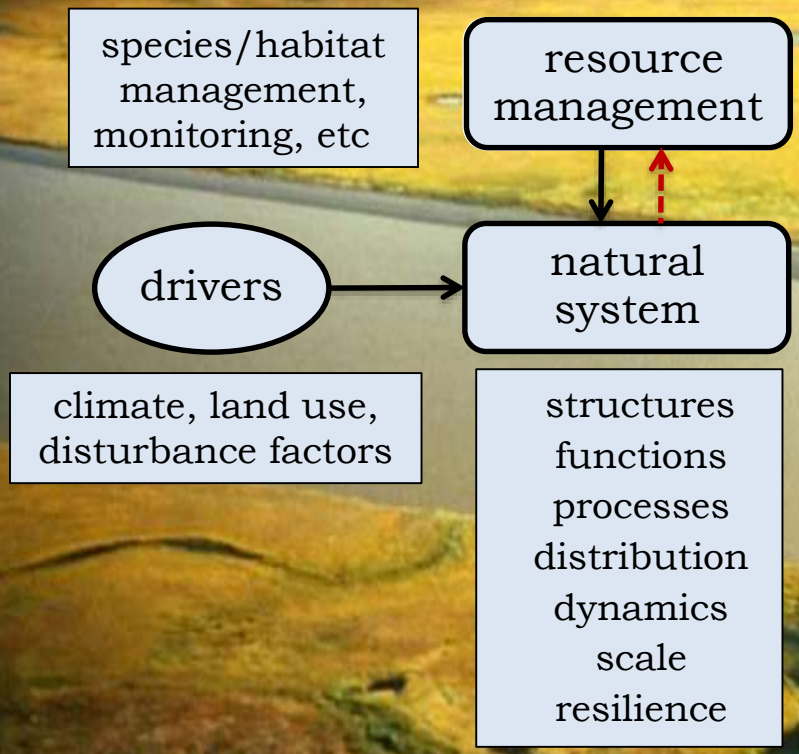

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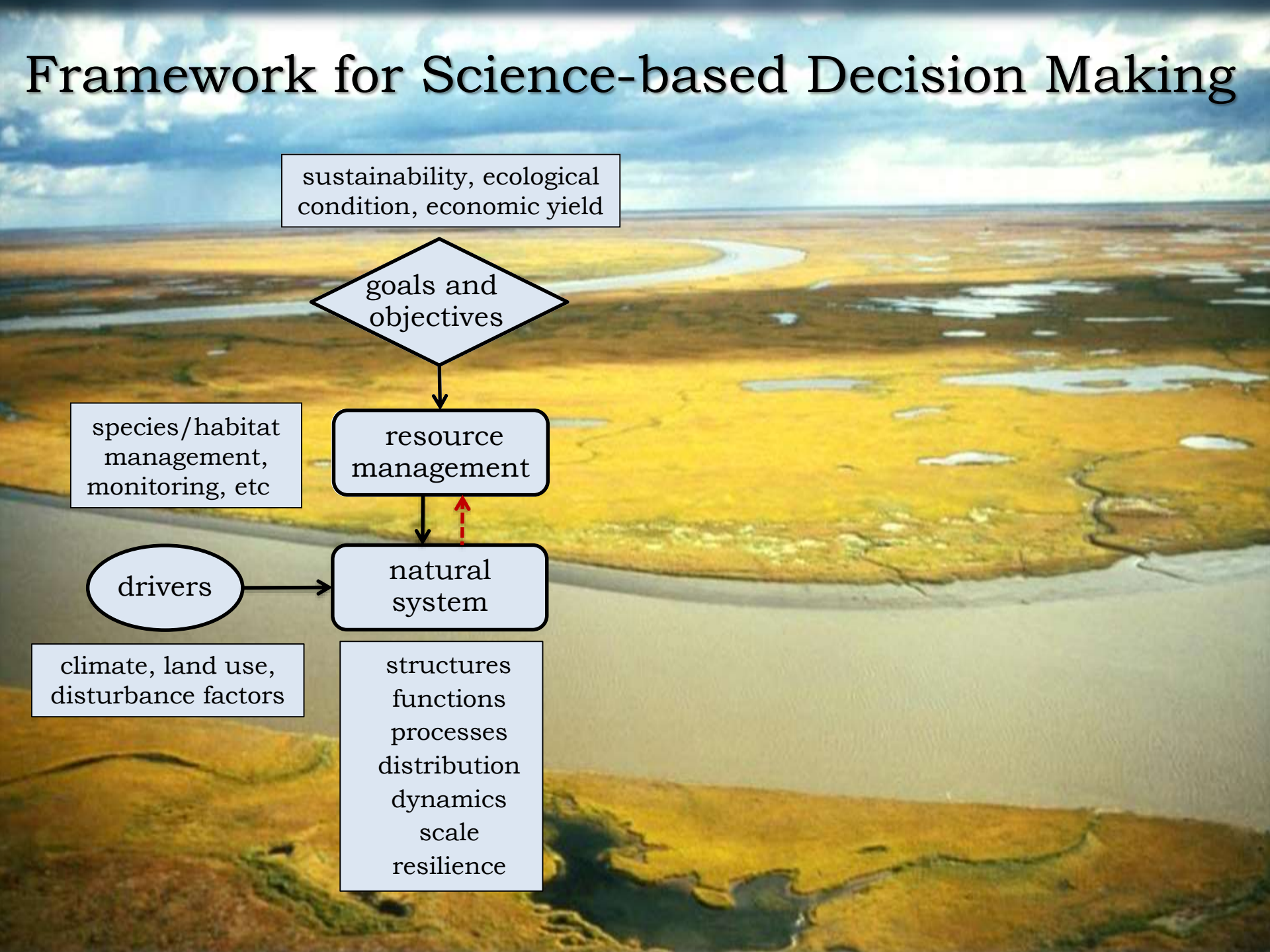

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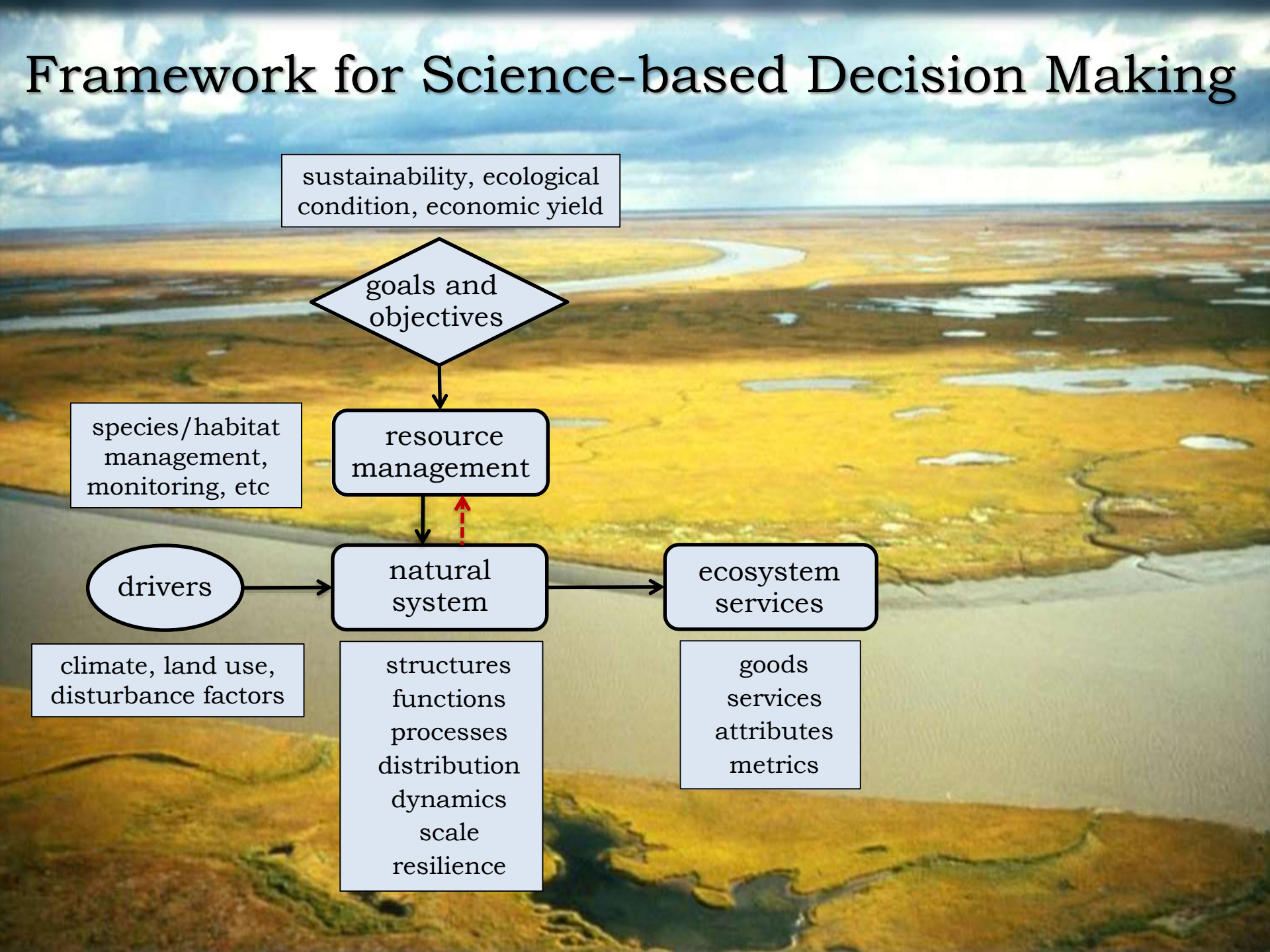

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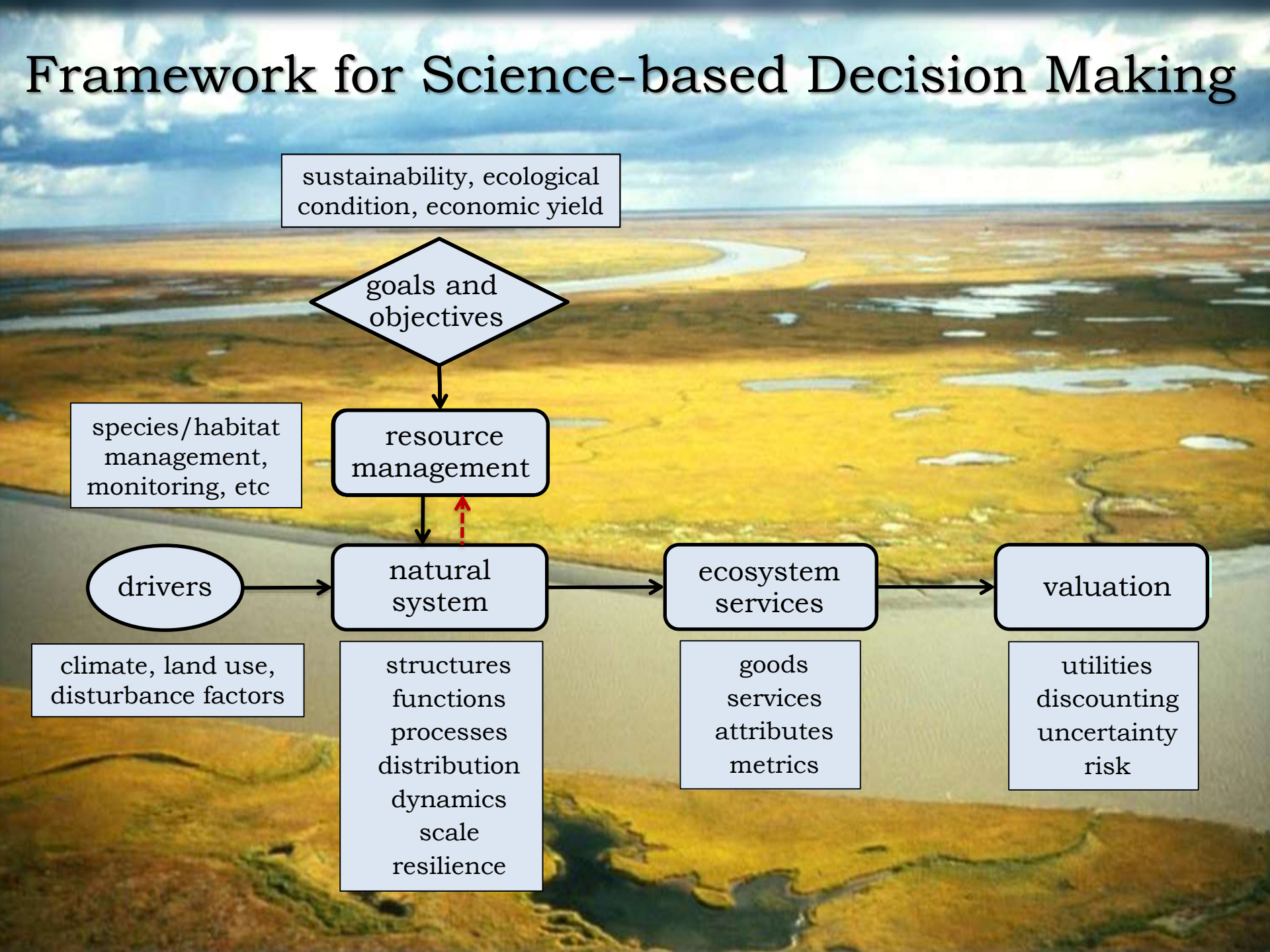

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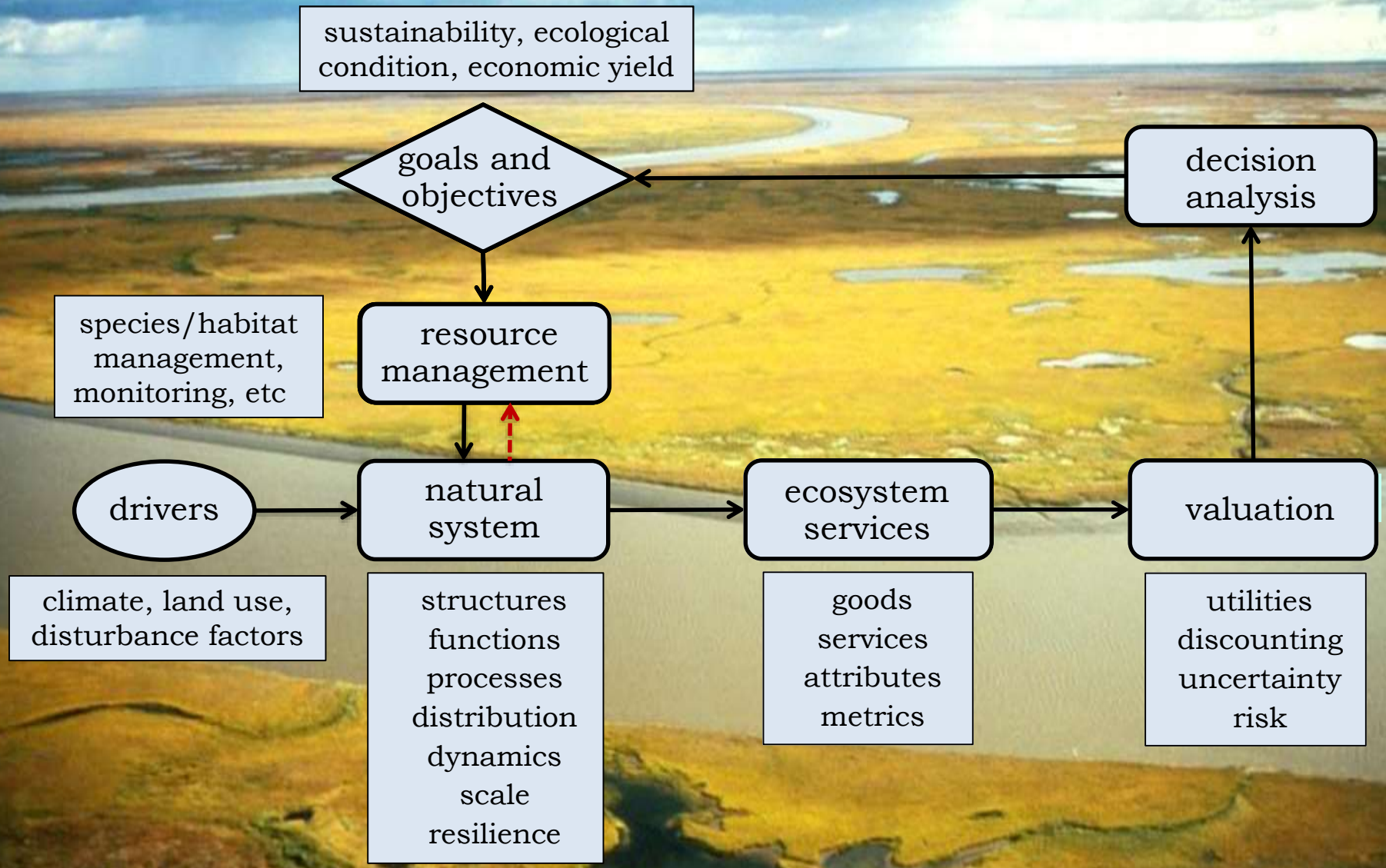

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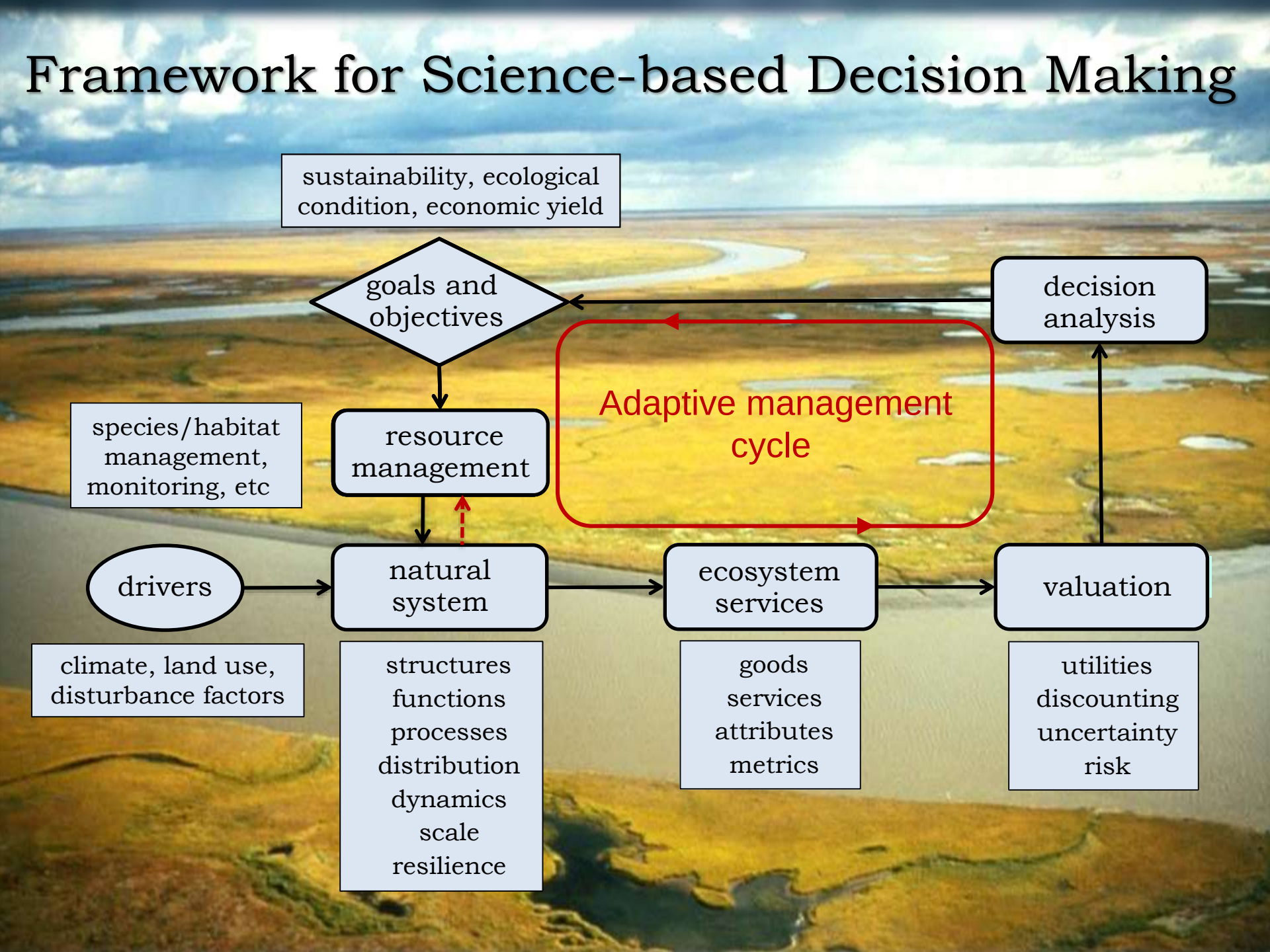
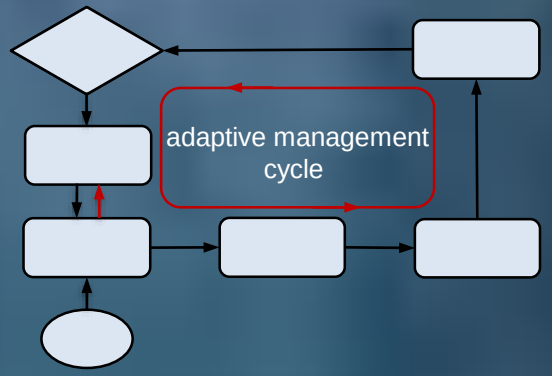


Key Attributes of the Framework

- The system is influenced by environmental fluctuations and management interventions through time
- There is limited understanding about how the system works
- Ecosystem services arise naturally in the framework, with values that inform, and are informed by, the decision making process
- Learning about ecoservices production and valuation coincides with learning about the system and how to manage it

Influences of Ecosystem Services

- Informing objectives
- System identification
- Monitoring
- Identification of mgmt strategies
- Engagement of stakeholders



What's Needed for Ecosystem Services To Be Useful in Decision Making?

- Identification of ecosystem services
- Production of ecosystem services
- Measurement of ecosystem services
- Valuation of ecosystem services