# Trillion Dollar Valley

## The Natural Economy of Alaska's Mat-Su Basin

November 13, 2013

EARTH ECONOMICS

# Four Types of Capital

Built Capital

Social Capital

Human Capital

Natural Capital

# Water Supply

# Food

# Biological Control

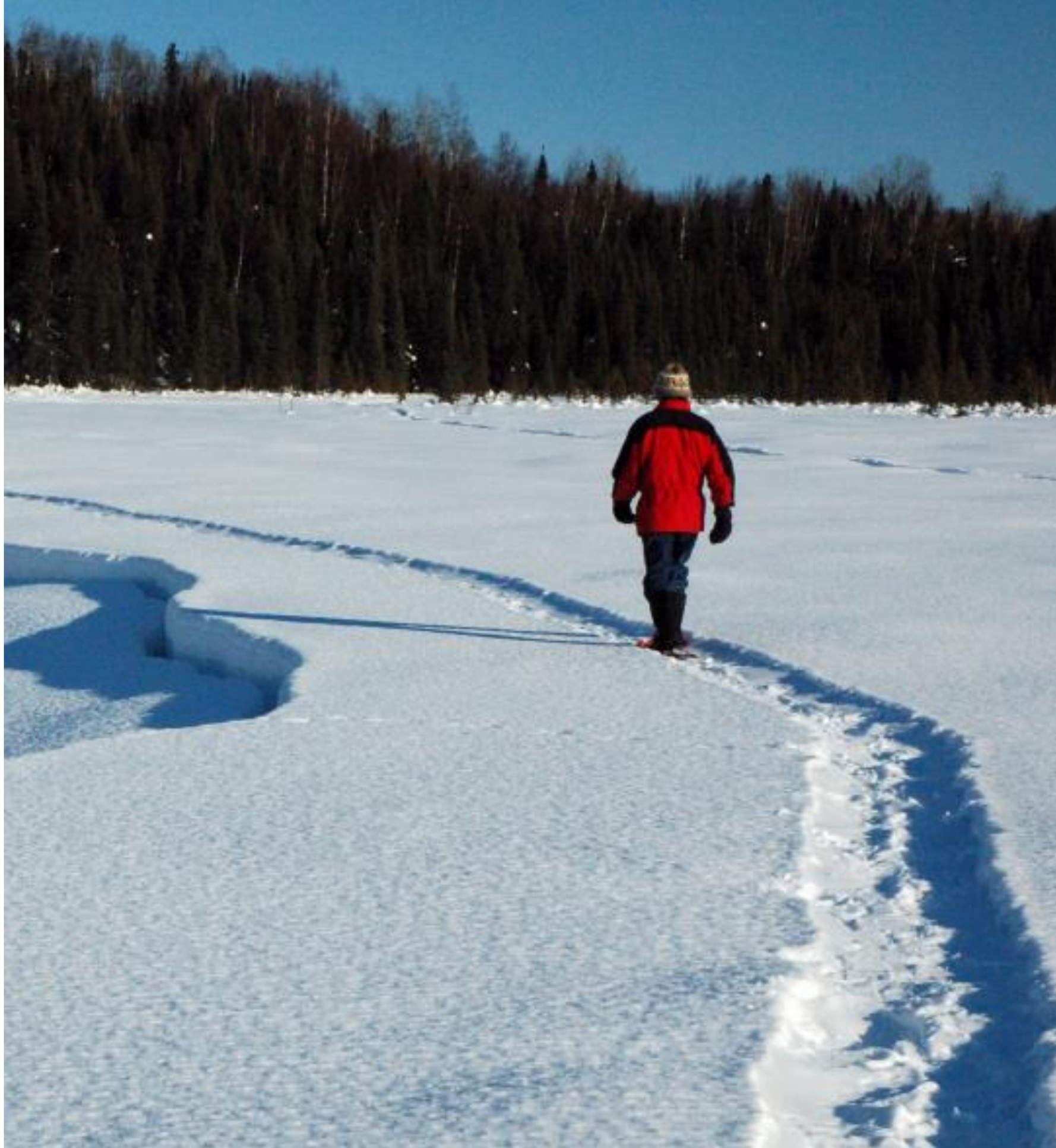
# Moderation of Extreme Events

http://www.ucmp.berkeley.edu/glossary/gloss5/biome/wetlands/wetlandsgallery.htm

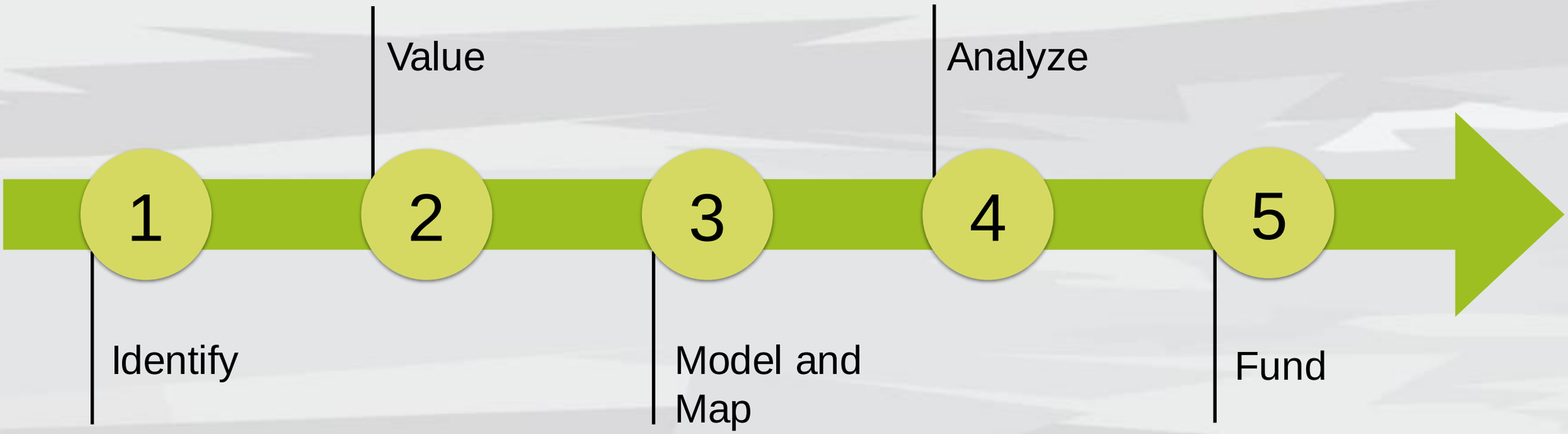
# Climate Stability

# Pollination

# Recreation and Tourism



# Applying Ecosystem Services



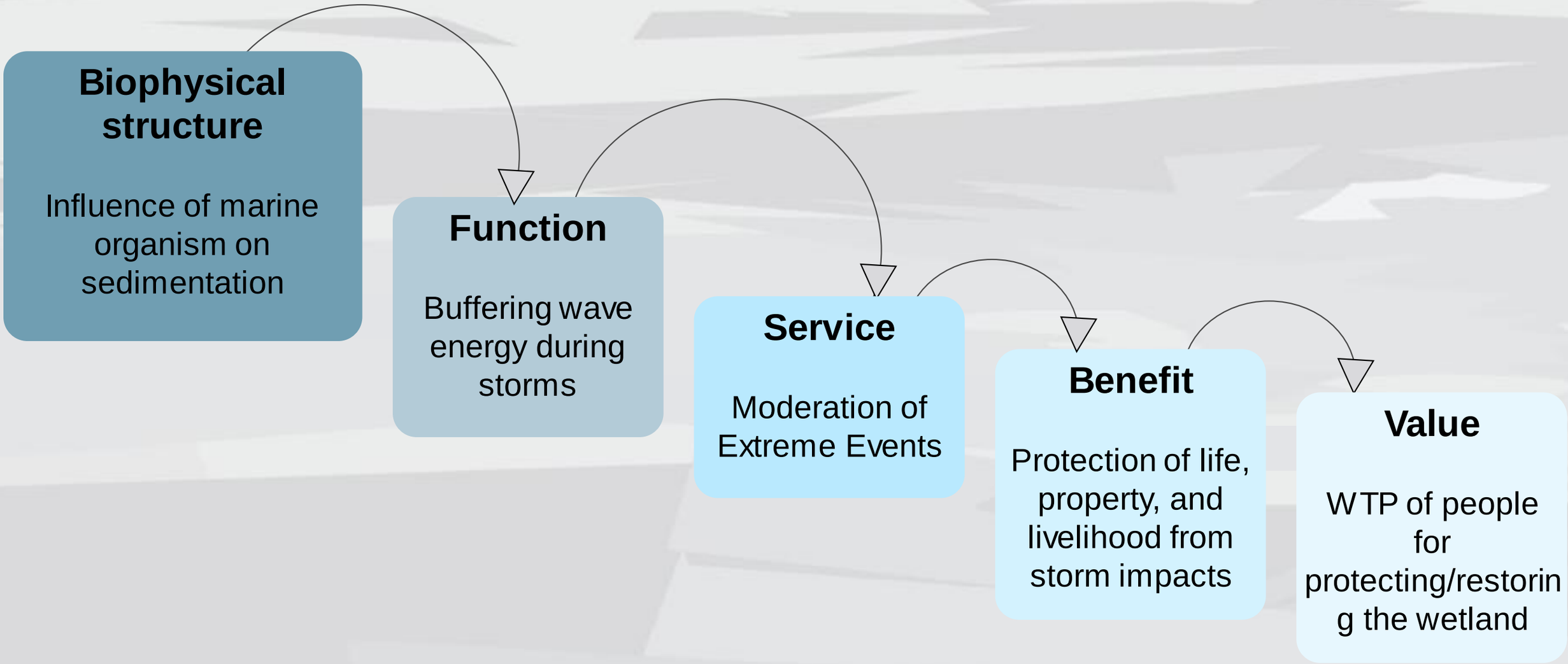
# Applying Ecosystem Services

## Today

## Tomorrow

1. Identify
2. Value
3. Model and Map
4. Analyze
5. Fund

# Linking nature and society

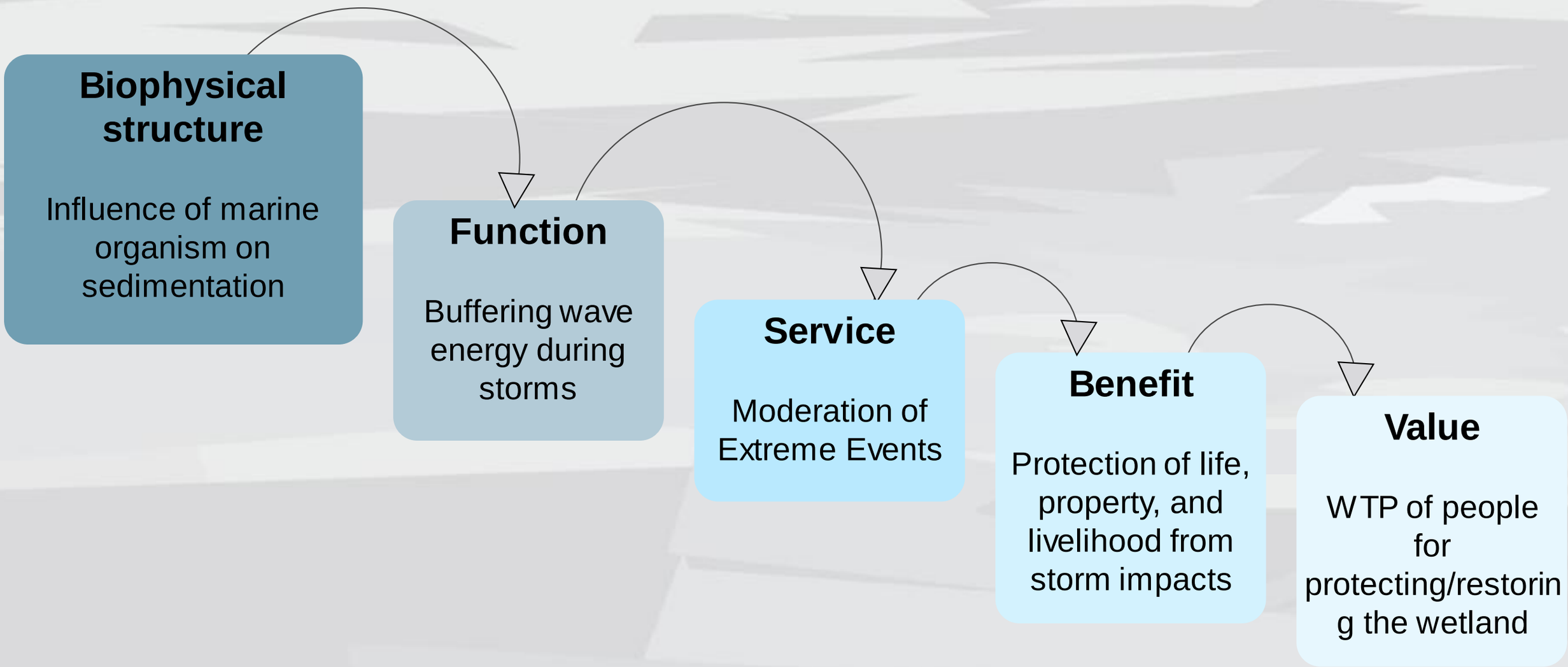



Adapted from De Groot et al. 2010, based on Haines-Young and Potschin 2010

# Linking nature and society

Ecosystems & biodiversity

Human well-being

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# Valuation Methods

- Hedonic Valuation
- Contingent Valuation
- Avoided Cost
- Replacement Cost
- Factor Income
- Travel Cost
- Production Approach
- Market Pricing

# Benefit Transfer Method

# Where do the values come from?

| | Rivers and Lakes | Wetlands | Riparian Buffer |
|---|---|---|---|
| Climate Stability | | X | X |
| Moderation of Extreme Events | | X | X |
| Habitat and Nursery | X | X | X |
| Pollination | | | X |
| Soil Erosion Control | | X | X |
| Water Regulation | X | X | X |
| Nutrient Cycling | | X | |
| Water Supply | X | X | X |
| Water Quality | X | X | X |
| Biological Control | | X | |
| Recreation and Tourism | X | X | X |
| Soil Formation | | X | X |
| Food Provisioning | X | X | |

| | Rivers and Lakes | Wetlands | Riparian Forest |
|---|---|---|---|
| Climate Stability | | $29.43 | x |
| Moderation of Extreme Events | | $117.87 | x |
| Habitat and Nursery | $0.51 | $58.89 | $269.85 |
| Pollination | | x | x |
| Soil Erosion Control | | x | x |
| Water Regulation | x | x | x |
| Nutrient Cycling | | x | |
| Water Supply | $8.4 | $199.11 | $2,105 |
| Water Quality | x | x | x |
| Biological Control | | x | |
| Recreation and Tourism | $1.71 | x | $1,043 |
| Soil Formation | | x | x |
| Food Provisioning | x | x | |

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| Water Quality | x | x | x |
| Biological Control | | x | |
| Recreation and Tourism | $1.71 | x | $1,043 |
| Soil Formation | | x | x |
| Food Provisioning | x | x | |
| Genetic Resources | x | x | x |

# Total Low Value of Rivers and Lakes

| | Rivers and Lakes | Wetlands | Riparian Forest |
|---|---|---|---|
| Climate Stability | | $29.43 | x |
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| Soil Formation | | x | x |
| Food Provisioning | x | x | |
| Genetic Resources | x | x | x |

## Rivers & Lakes

$10.62

each year

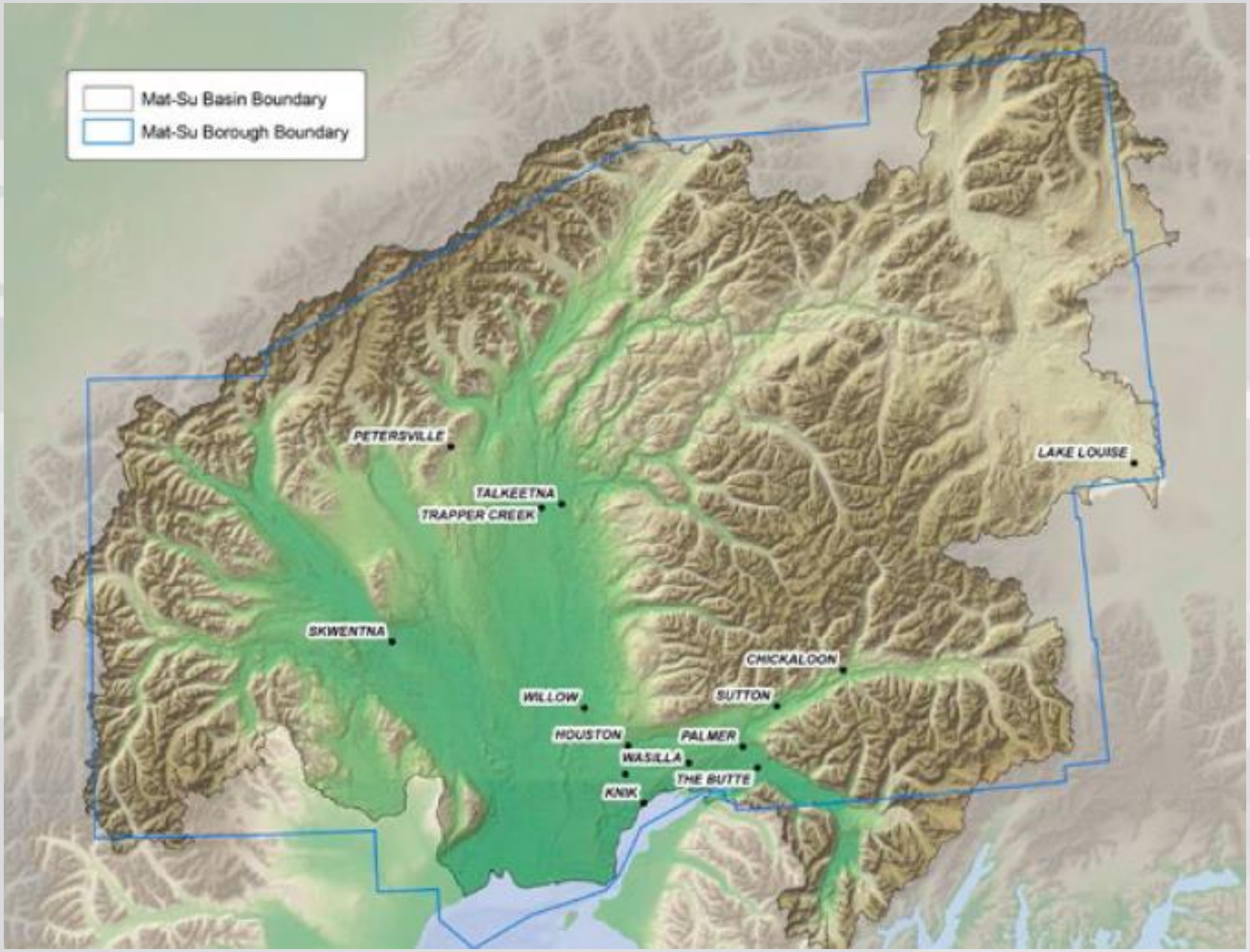
# Rivers & Lakes

$10.62 per acre

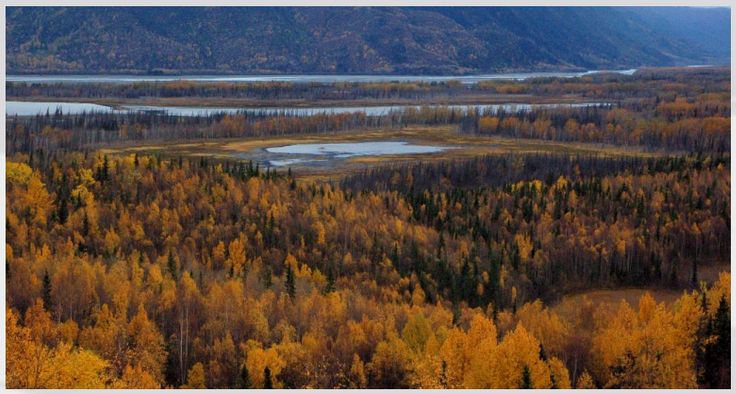
each year


$$\sum \left[ \text{Total Low Value of each landcover type} * \text{Acres} \right]$$

# Mat-Su Basin

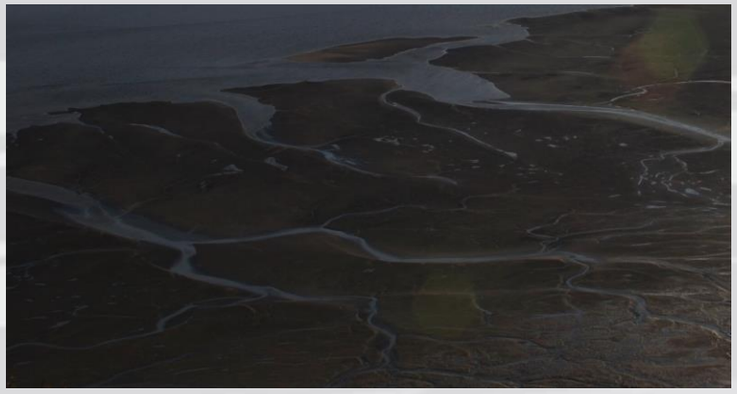


# Top three land cover classes



Wetlands
$24,330/acre/year

Riparian
$8,953/acre/year



Mudflats
$6,390/acre/year

Average values in 2011 U.S. dollars

# Annual Service Value of the Mat-Su Basin

| | |
|---|---|
| High | $51 Billion |
| Low | $20 Billion |

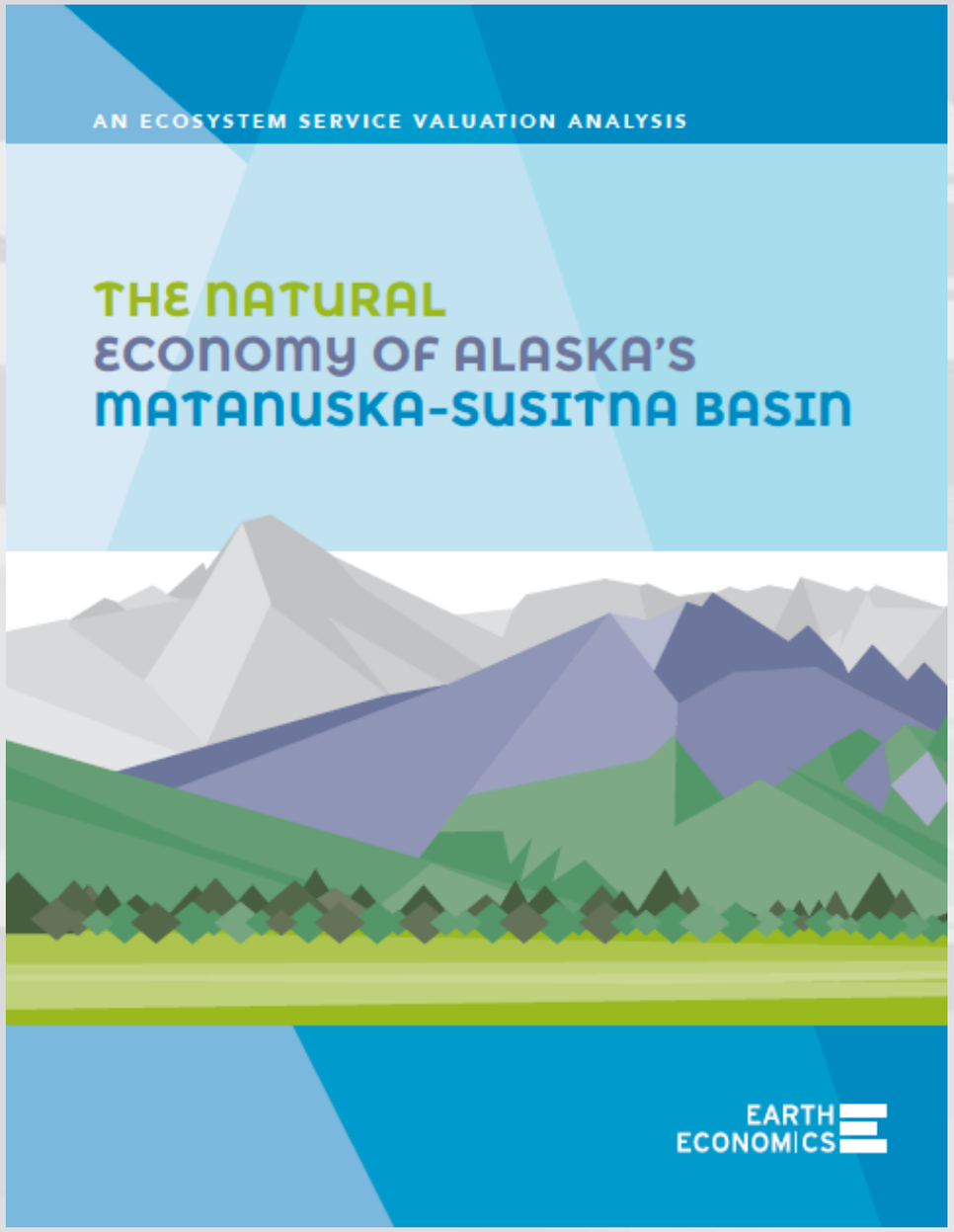
*Each Year*

# Mat-Su Asset Value

| | |
|---|---|
| High | 1,300 Billion |
| Low | $501 Billion |

*4% Discount Rate over 100 Years*

# Available online at www.eartheconomics.org



# Contact Information

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Thank **you.**

# Q & A

# A few key concepts to keep in mind

- Scarcity has shifted from built capital to natural capital over the past century.
- Ecosystem services frameworks are transdisciplinary, providing a means for science to inform economic policy.
- Natural capital appreciates over time whereas built capital depreciates and typically requires more maintenance costs.

# Carbon Sequestration ($/acre/year)