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Engaging Stakeholders in Ecosystem Service Assessment Under Climate Change and Urban Development Scenarios

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Ecosystem Services Research to Action Program
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How can scientists engage in diverse stakeholder community?

- Dissemination of information (community education)

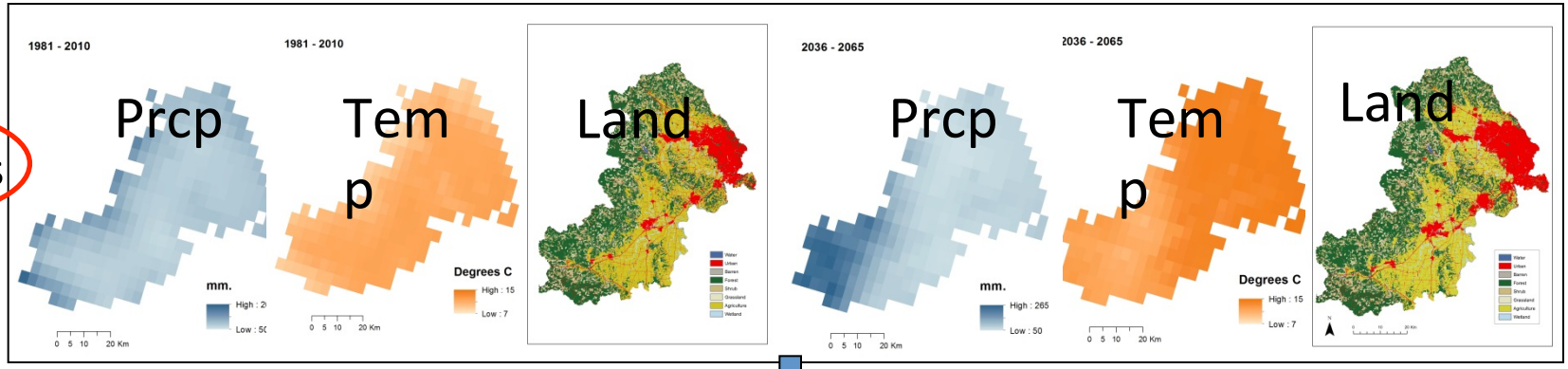
- Development of practical steps towards implementation of integrated resource management (decision tool)

Booth and Burgin (1997) *Frontiers in Ecology*

Current (2000) t_1

Future (2050) t_2

Scenarios



Modeling

Water Related ES

-Water Yield

-Water Temperature

-Sedimentation

-Nutrients (N & P)

-Soil Water Assessment Tool –SWAT-temp

INtegrated Valuation of Environmental Services and Tradeoffs

Nutrient Tracking Tool

Terrestrial ES

-Carbon sequestration

-Timber harvesting

-Agricultural production

Spatial/ Economic Analysis

Economic analysis: Target conservation area

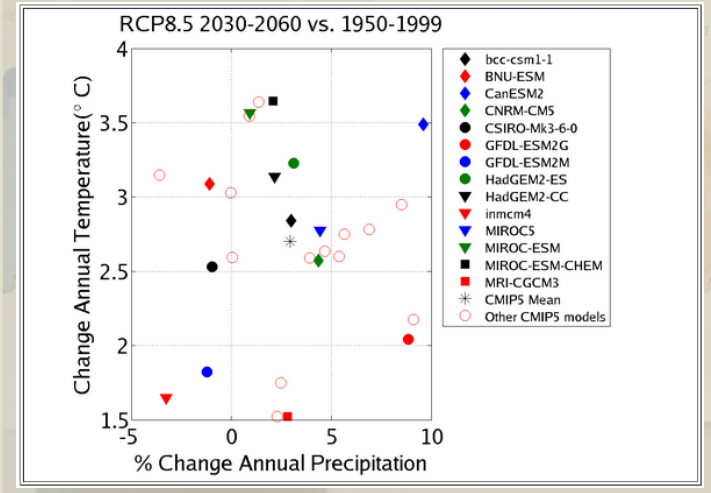
FRAGSTATS: Landscape Configuration

Map correlation: Bundling and Tradeoff

Multilevel model: Scale Influence

How to construct scenarios?

Climate Change



Riparian planting

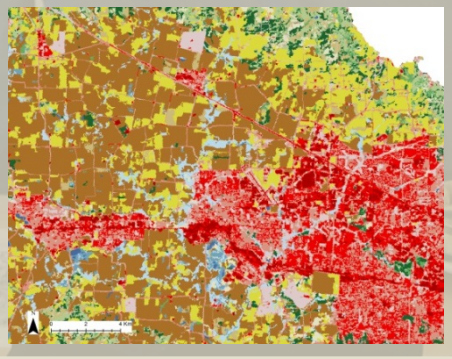
High Δ

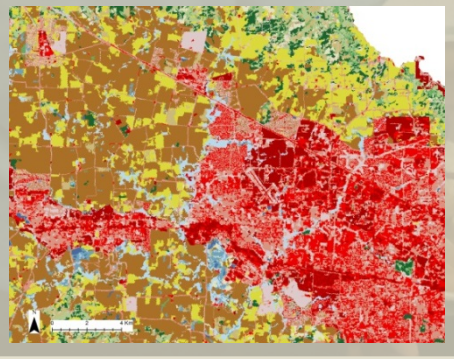
Low Δ

Management

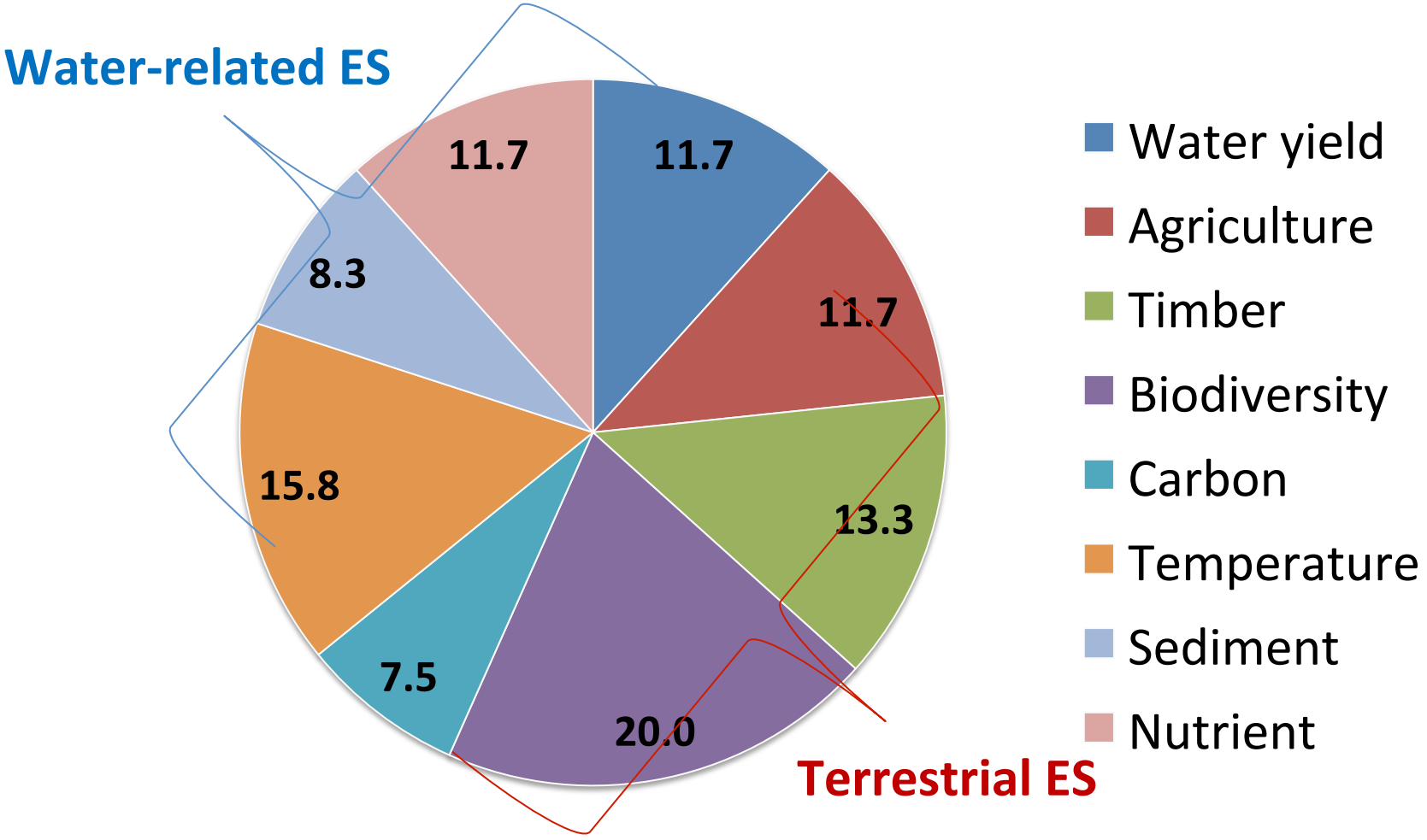
9 12 3 6 8 11 2 5 7 10 1 4

Low Δ — Land development — High Δ



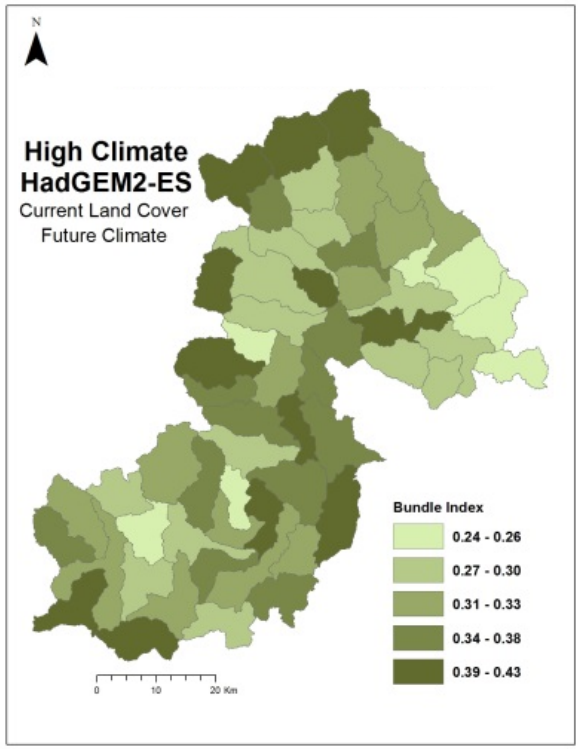


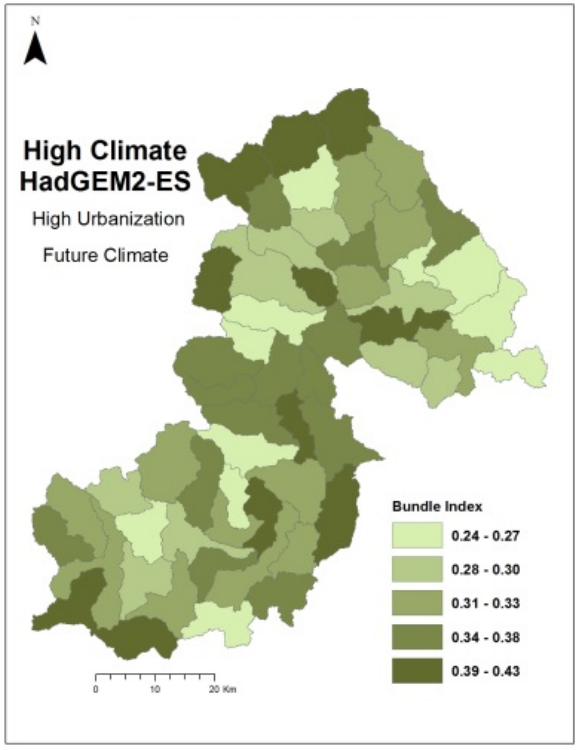
Summary of the stakeholders' perception of the relative importance of individual ecosystem services

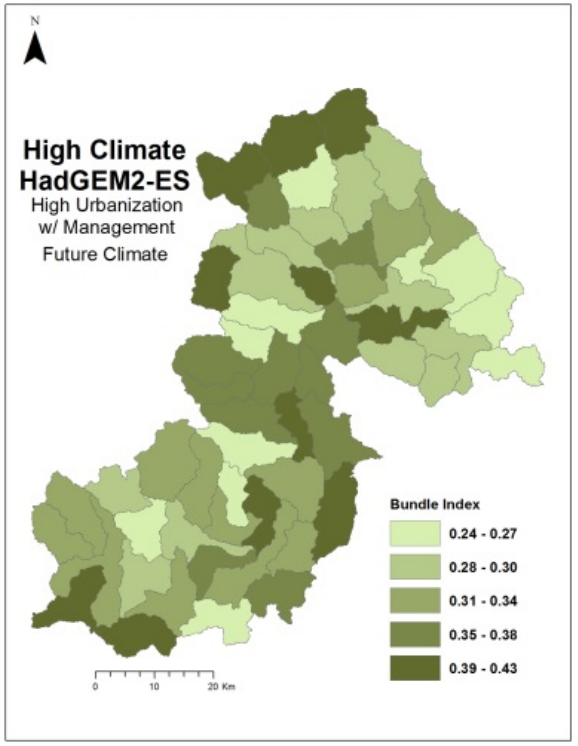


Bundling of ecosystem services

Example: Water yield 40%, water temperature 30%, nitrogen retention 15%, phosphorus retention 15%







Lessons learned

- **Early** communication helps identify the problems with appropriate scale and the needs of stakeholders in ES assessment.
- **Continuous** communication helps clarify and develop the common issues of interest (e.g., scenario development).
- More importantly, researchers can obtain **original rich data** from community partners (both quantitative and qualitative)
- **Visuals and maps** are useful tools for communication in the spatial patterns of ES.
- The **process** of developing a community of science and policy might be time-consuming but rewarding.

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http://www.pdx.edu/ecosystem-services/

Questions or comments:
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