

Closing the gap: a framework to inform ecosystem service quantification at multiple scales

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Abstract. Comprehensive reviews of ecosystem service studies have revealed a discipline characterized by use of disparate and inconsistent methodologies for quantifying the benefits people obtain from ecosystems. Modeling of freshwater services such as drinking water provisioning often incurs trade-offs among desirable model features like user-friendliness and quantitative rigor. Evaluation of these trade-offs must be done in light of the decision-making context; however fundamental modeling decisions such as scaling effects (e.g. use of coarse vs. fine-grain data) can be assessed a priori based on the types of information different modeling structures generally produce. Such a framework would aid scientists and decision makers in their tasks to evaluate existing methodologies, develop new models and to establish their relevance to decision makers. Despite global interest and repeated calls for consistency in quantifying service provision, there remains minimal guidance to support development of robust and consistent quantification standards needed to inform decision making at multiple scales. For example, how should we represent watershed processes in the context of a local development project vs. prioritizing drinking water watersheds for a national assessment? I present a framework to couple ecosystem service modeling efforts with decision making context.