

# A top-down approach to estimating spatially heterogeneous impacts of development aid on vegetative carbon sequestration

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# 1 Abstract

Since 1945, over \$4.9 trillion dollars of international aid has been allocated (Tierney *et al.* 2011). To date there have been no estimates of the regional impact of this aid on the carbon cycle. We apply a geographically explicit matching method (Andam *et al.* 2008) to estimate the impact of World Bank projects implemented between 2000 and 2010 on sequestered carbon, using a novel and publically available dataset of 47,084 World Bank project locations <sup>1</sup>. Considering only carbon sequestered due to fluctuations in vegetative biomass caused by World Bank projects, we estimate a global net positive increase in sequestration totaling 1,398,229 tonnes. However, we illustrate the apparent effectiveness of environmental safeguards (Laurance *et al.* 2015) implemented by the World Bank are variable across different geographic contexts. We argue that subnational data can be helpful in the identification of these heterogeneous impact effects, and highlight the considerable methodologic barriers which still exist.

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<sup>1</sup><http://aiddata.org/level1/geocoded/worldbank>

## 2 Introduction

The Introduction should summarize briefly the background and aims, and end with a brief statement of what has been achieved by the work.

## 3 Methods

This section should contain sufficient detail so that all procedures can be repeated (in conjunction with cited references). Where specific equipment and materials are named, the manufacturer’s name, city and country should be given (generally in parentheses after first mention).

## 4 Results

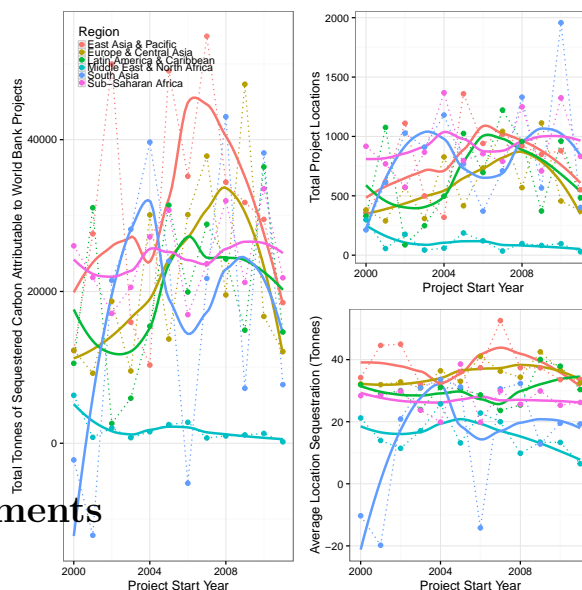
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## 5 Discussion

The Discussion section should be separate from the Results section. It allows authors to propose their interpretation of the results, and to suggest what they mean in a wider context. It should end with a clear statement of the main conclusions of the research, and a clear explanation of their importance and relevance to applied conservation and/or policy.

## 6 Acknowledgements

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## 7 References

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3. Tierney, M. J. *et al.* More Dollars than Sense: Refining Our Knowledge of Development Finance Using AidData. *World Development* **39**, 1891–1906. ISSN: 0305-750X (2011).