



Trade-offs, synergies and economic relationships among ecosystem services

Jullian Sone¹ , Gabriela Gesualdo¹ , Lívia Rosalem¹ , Paulo Oliveira² , and Edson Wendland¹ 

¹ University of São Paulo, Department of Hydraulics and Sanitation, Brazil

² Federal University of Mato Grosso do Sul, Faculty of Engineering, Architecture and Urbanism, and Geography, Brazil

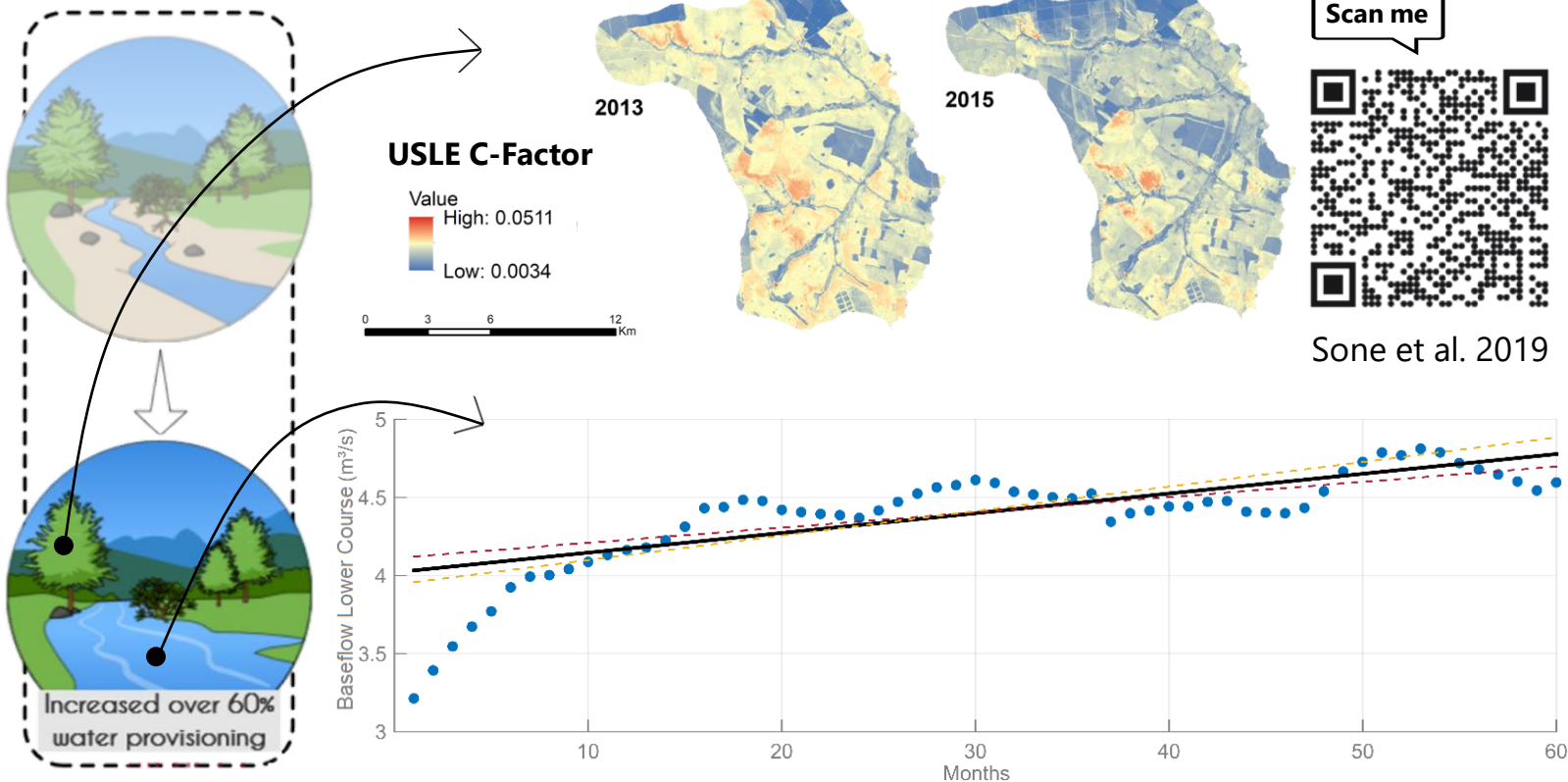
Background info

- The **Guariroba River Basin** (362 km²), located on the rural side of Campo Grande city – Brazil, **currently provides 34% of the drinking water demand** in the urban area;
- Converting native Cerrado vegetation of the basin for cattle farming has led to a **decrease in water provisioning due to soil degradation** and, consequently, **reservoir siltation**;
- In 2009, the city hall launched a Payment for Ecosystem Services (PES) programme called ‘Manancial Vivo’ (MVP).

Research gaps

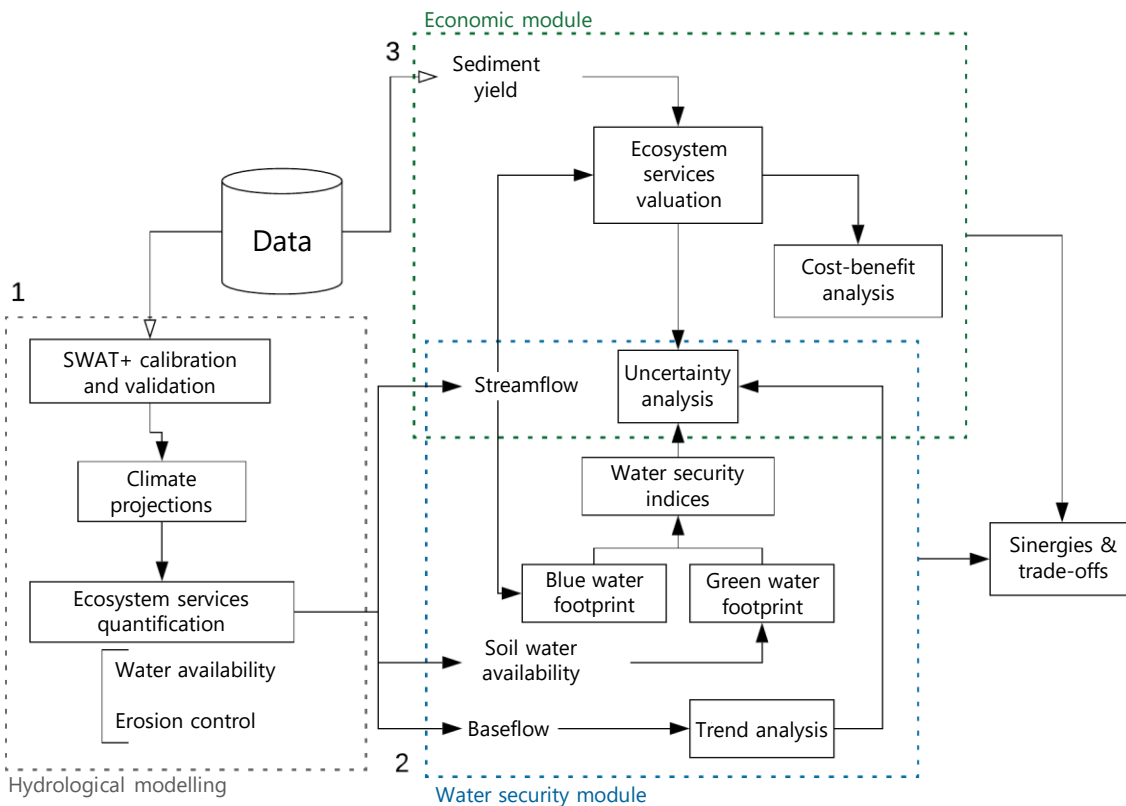
The economic incentive is a first step towards attracting farmers’ interest in protecting and conserving ES. Farmers, stakeholders, and decision-makers need **to understand the value and importance of watershed services through a straightforward cost-effective analysis** of conserving and protecting nature. It is still poorly understood regarding investments in ES restoration and preservation. There is very **few information on the restoration of water provisioning in rural basins** that participated in PES programmes.

Preliminary results



Trade-offs, synergies and economic relationships among ecosystem services

Study Design



We will assess the effects of different **climate change scenarios on water availability** to understand **hydrological uncertainties** and its impacts on **water security**. By using hydro-economic analysis, we will identify possible **synergies and trade-offs between ecosystem services and best management practices** incentivised by a Payment for Ecosystem Services program.

What we expect

By completing this research, we expect contributing to give some directions on how PES programmes can help to **increase water-food-energy nexus security** and help **people to adapt to climate change effects**.

References

Sone, J. S., Gesualdo, G. C., Zamboni, P. A. P., Vieira, N. O. M., Mattos, T. S., Carvalho, G. A., Rodrigues, D. B. B., Alves Sobrinho, T., and Oliveira, P. T. S.: Water provisioning improvement through payment for ecosystem services, *Sci. Total Environ.*, 655, 1197–1206, <https://doi.org/10.1016/j.scitotenv.2018.11.319>, 2019.

For more info: julliansone@usp.br and to access the abstract: <https://doi.org/10.5194/egusphere-egu2020-12524>

Acknowledgements

This study is supported by grants from the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brazil (Cpde 001), National Council for Scientific and Technological Development – CNPq (grants 441289/2017-7 and 306830/2017-5) and FAPESP BIOEN 2015/03806-1.

In collaboration with:



Funded by:

