PRO-AGUA NATURAL RESILIENCE IN THE AMAZON

Modeling of ecosystem services in the MAP region

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INTRODUCTION

The rapid unplanned urban growth in the southwestern Amazon along with the continued degradation of primary forests has exacerbated the effects of droughts and floods on the region's major cities and communities. Cities such as Puerto Maldonado (Peru), Cobija (Bolivia) and Río Branco (Brazil) are experiencing the impacts of the lack of a comprehensive territorial ordering of their watersheds. The objective of the Pro-Agua project is to collaborate with local experts and stakeholders in Peru, Brazil and Bolivia to create and support existing networks of scientists and local leaders, to share knowledge, tools and strengthen the ability to identify and take action on opportunities for integrated watershed management to improve water safety and resilience to climate change.

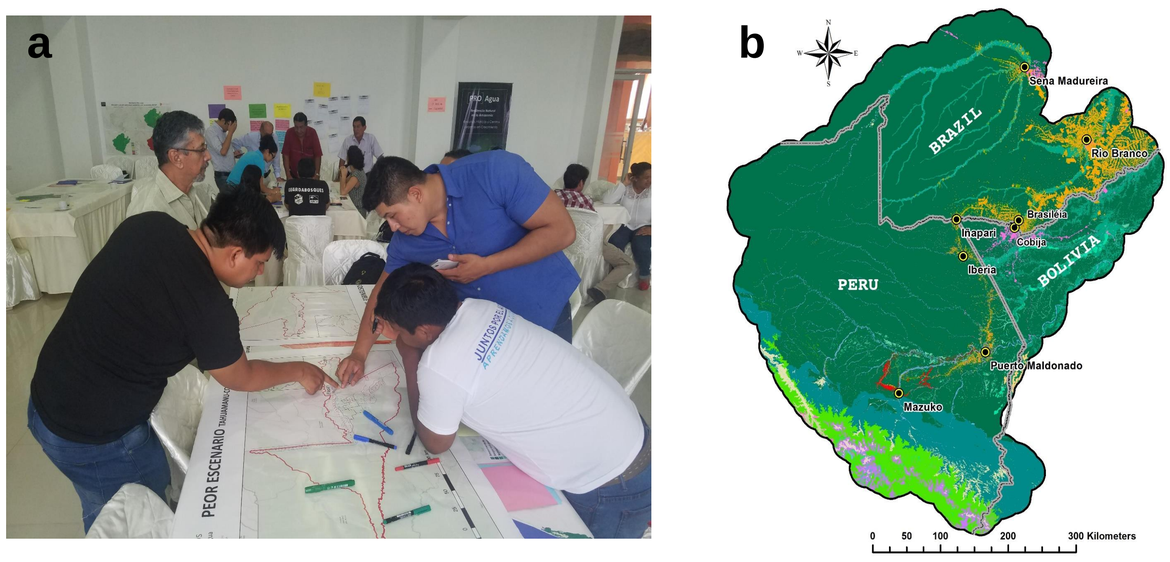

Figure 1. a Pro-Agua project work together with local experts and actors. b Map of land use for the MAP region

MATERIALS AND METHODS

The study area covers the tri-National MAP region in the states of Madre de Dios (Peru), Acre (Brazil) and Pando (Bolivia) in the southwestern Amazon. Spatial information was compiled from various agencies in the three countries on land use, public and private protected natural areas, tourism, wildlife, diversity and climatic data for the study area.

A map of land use was generated for the map region (Figure 1b) based on a correspondence of classes reviewing the descriptive memories of the land use maps of each country.

Ecosystem services for sediment retention, seasonal water yield, carbon stocks and tourism were modeled. The results were reviewed by local experts from the region from whom feedback was received, which was implemented in the spatial data to finally obtain more accurate modeling of the study area.

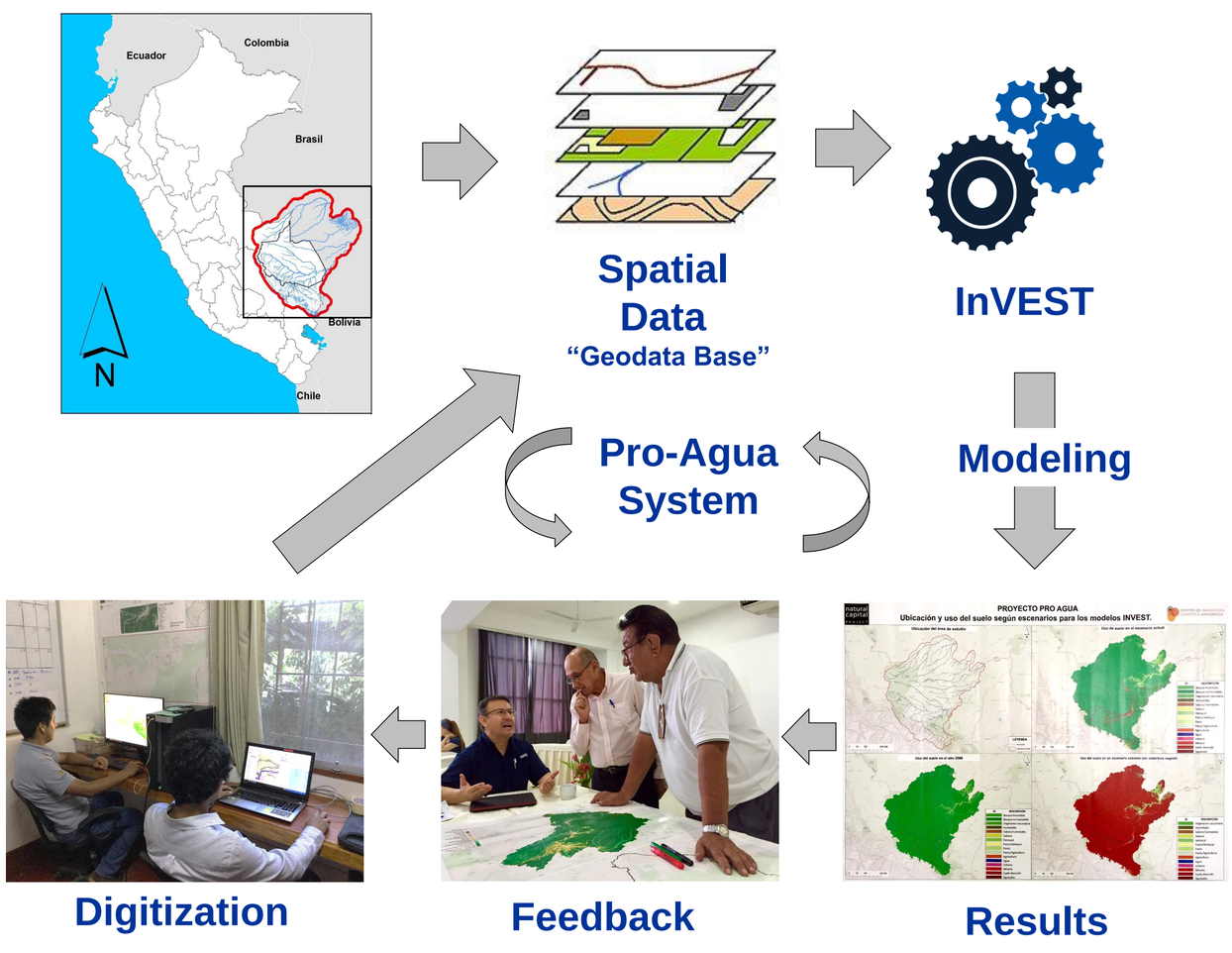

Figure 2. Spatial data workflow with InVEST and local actors for the MAP area.

RESULTS

Four environmental modeling were obtained: a) Export Sediments, b) Seasonal Water Yield, c) Carbon Stocks and D) Tourism for the MAP region.

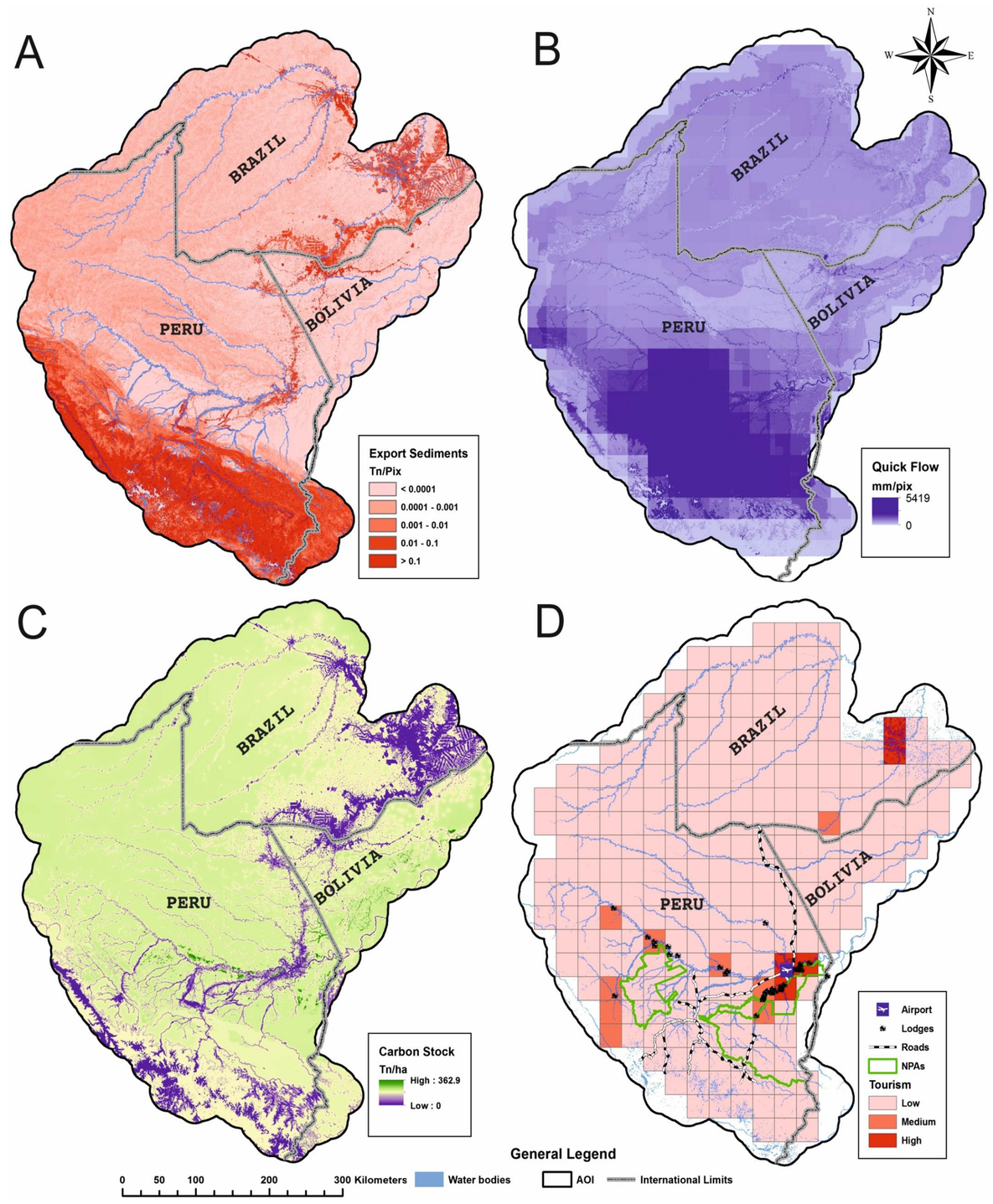

Figure 3. Modeling of ecosystem services in the MAP region.

CONCLUSIONS

Taking into account the experience of local stakeholders with spatial data from various agencies in an integrated watershed management framework, our results support a better understanding of the importance of ecosystem services in the MAP region. In designing and evaluating watersheds, decision makers should consider the ecological and human components of the system to achieve conservation goals and to minimize adverse socio-economic impacts of severe meteorological events and climate change.

ACKNOWLEDGEMENTS

We want to thank the following people for their contributions and/or assistance in carrying out this work: Luis Gallegos, Jesus Fidhel, to all local experts in the MAP region and the developers of the InVEST models. This project is developed thanks to the support of Gordon and Betty Moore Foundation.

REFERENCES

Sharp et al. 2015. InVEST 3.5 User's Guide. The Natural Capital Project, Stanford University, University of Minnesota, The Nature Conservancy, and World Wildlife Fund.

Pro-Agua 2018. Banco de Datos. Puerto Maldonado, Perú. https://drive.google.com/open?id=13gdtuhu9f2yh1gvr-Pw32Sevclia_Xlv