Food and Agriculture Organization of the United Nations

GLOBAL SYMPOSIUM ON SOIL INFORMATION AND DATA

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Peruvian soil legacy data: a tool for quantify pedodiversity

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INTRODUCTION

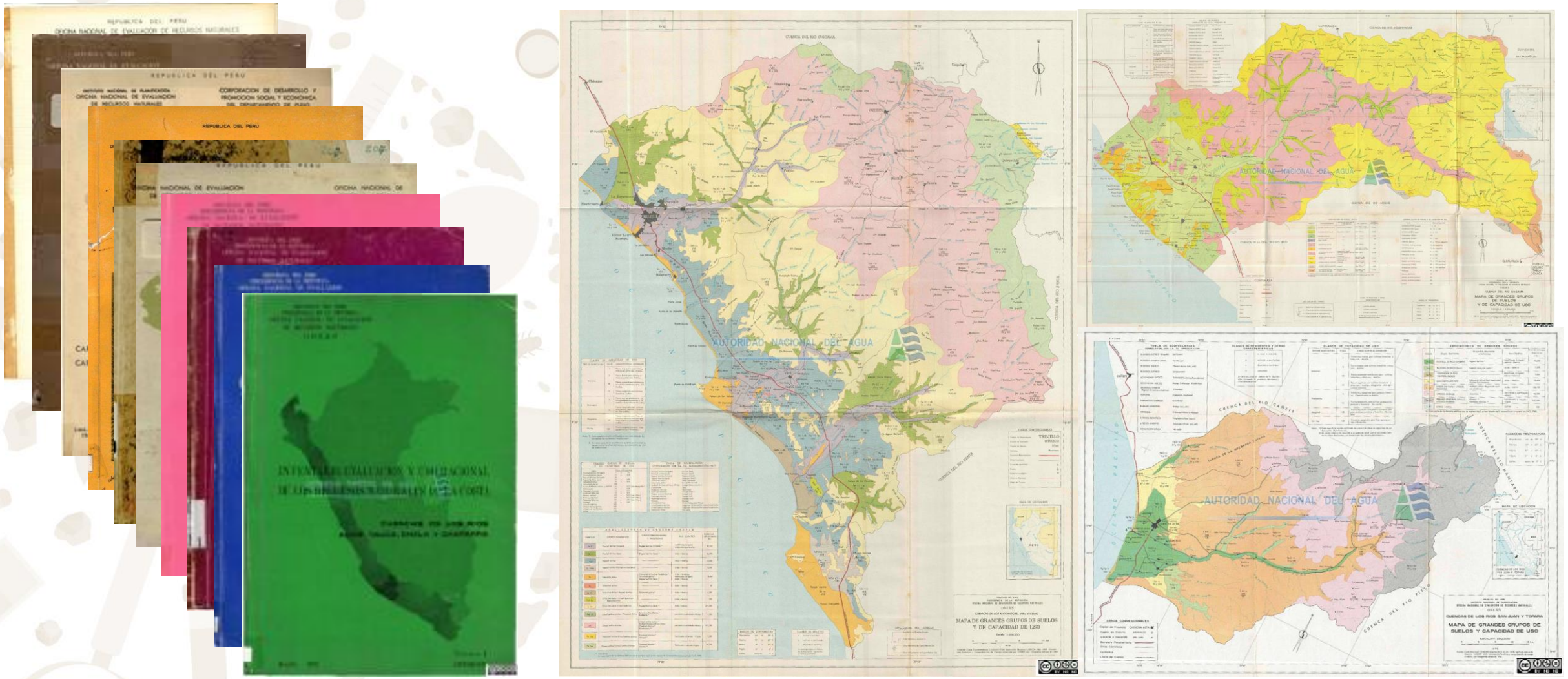


Figure 1. Legacy soil data without digitization obtained from the Oficina Nacional de Evaluación de Recursos Naturales (ONERN).

OBJECTIVES

General objective

Recover legacy soil data from Peru based on national historical information.

Specific objectives

- Create a structured database of legacy soil data from Peru.
- Explore the application of legacy data for soil science research.

METHODOLOGY

BIBLIOTECA AGRÍCOLA NACIONAL

Autoridad Nacional del Agua

SERCH FOR DOCUMENTS

DATA STRUCTURE

GEOREFERENCING VECTORIZATION

PRE-PROCESSING

CLUSTERING

DIVERSITY INDEX

WoSIS

Support global soil mapping by sharing soil profile data

GEORREFERENCIACIÓN

QGIS

Data Cleaning

Simpson's index of diversity

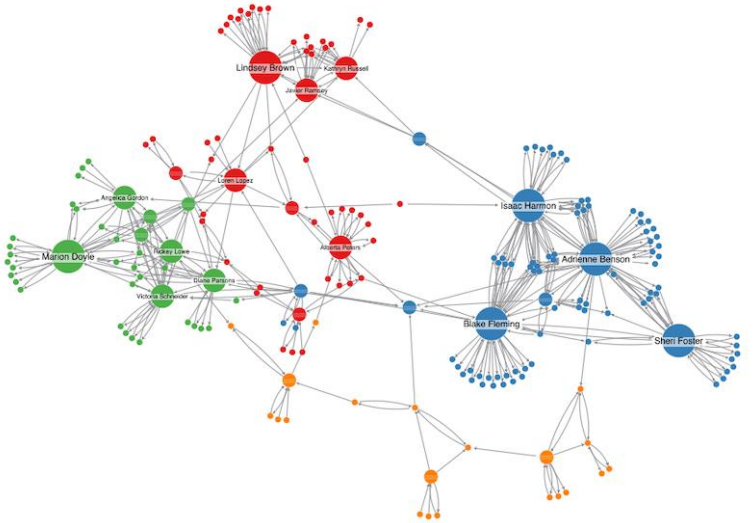


Figure 2. Procedure followed for the digitalization, structuring and diagnosis of legacy data from Peru obtained from ONERN.

PARTNERSHIP

RESULTS AND DISCUSSION

Figure 3. Georeferencing and Vectorization.

Figure 4. Identification of useful documents and data.

SERIE CACHIYACU

Zona	:	Cerca a la desembocadura de la Quebrada Cachiyacu
Clasificación Natural	:	Soil Taxonomy (1975) : Ustifluvent mólico FAO (1974) : Fluvisol éutrico
Fisiografía	:	Terraza baja
Pendiente	:	2%
Relieve	:	Plano
Clima	:	Cálido - ligeramente húmedo
Zona de vida	:	Bosque seco-Tropical (bs-T)
Material madre	:	Aluvial reciente
Vegetación	:	Naranja, mandarina, guayabo
Fragmentos gruesos superficiales	:	Guijarros de hasta 25 cm. de diámetro

Horizonte	Prof/cm	Descripción
A1	0 - 20	Franco arenoso; pardo rojizo oscuro (5 YR 2.5/2) en húmedo; granular fino, débil; friable; reacción ligeramente ácida (pH 6.4); abundantes raíces medias; contenido medio de materia orgánica (2.48%); permeabilidad moderadamente rápida . Límite de horizonte gradual al
C1	20 - 50	Franco arenoso; rojo amarillento (5 YR 4/6) en húmedo; masivo; friable; reacción ligeramente ácida (pH 6.4); contenido bajo de materia orgánica (0.69%); permeabilidad moderadamente rápida; gravillas de 2 a 3 cm. de diámetro en un 20%. Límite de horizonte claro al
C2	50 + 120	Franco arcillo arenoso; pardo rojizo oscuro (5 YR 3/4) en húmedo; masivo; friable; reacción ligeramente ácida (pH 6.5) ; contenido bajo de materia orgánica (0.48%); permeabilidad moderada; gravillas de 2 a

Figure 5. Soil profile in San Martín Region.

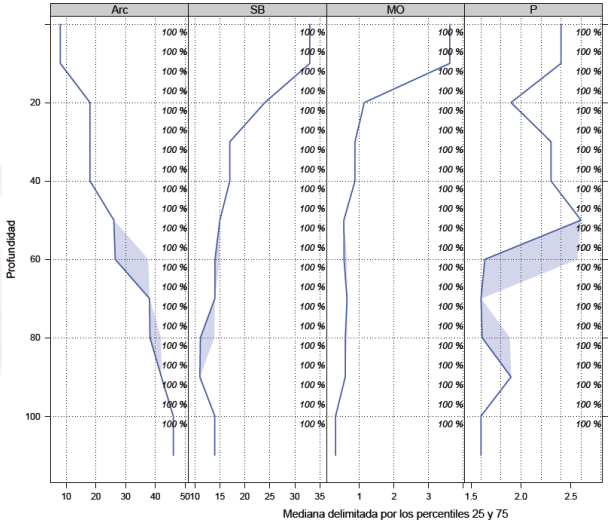
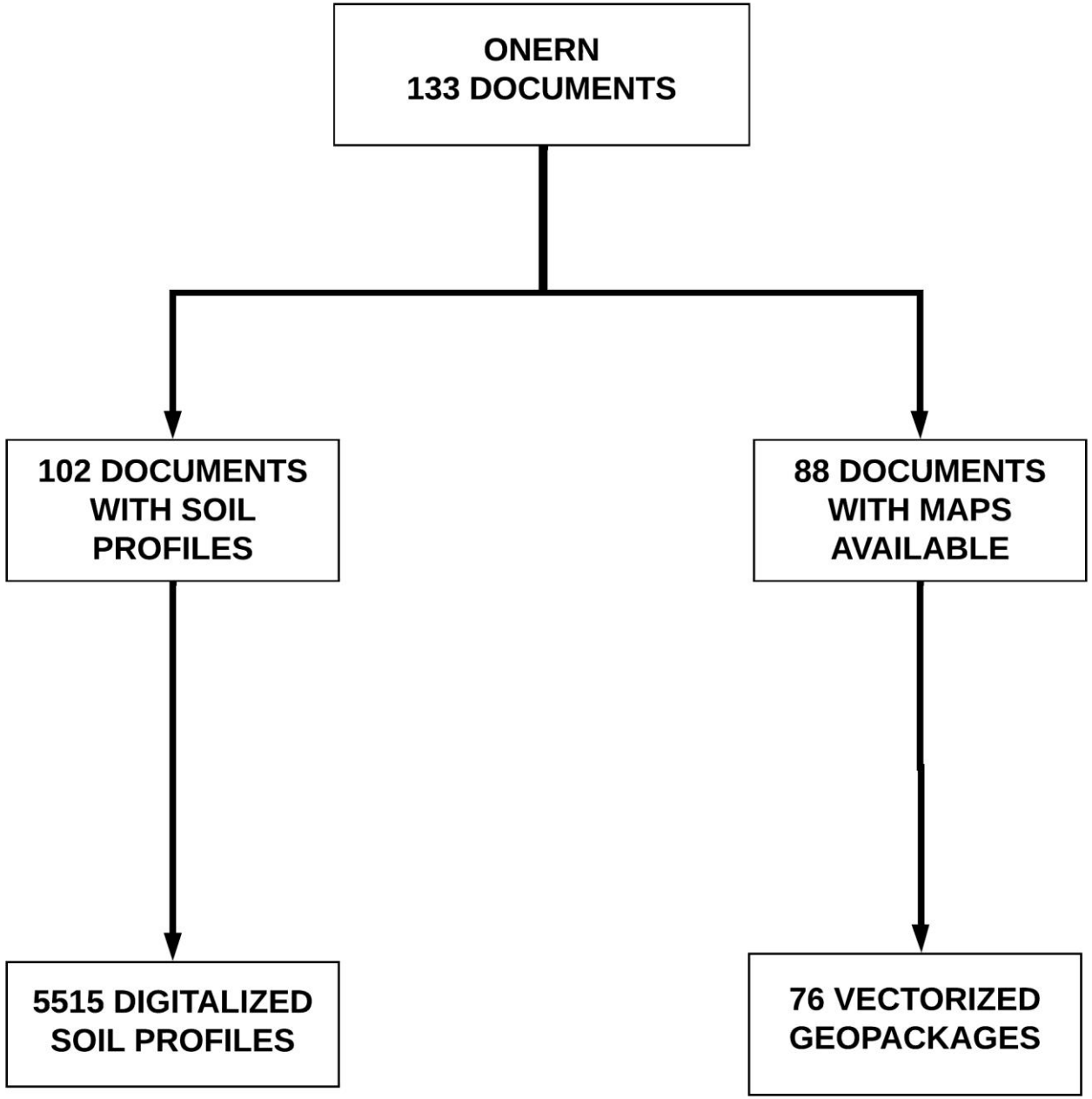


Figure 7. Soil properties variation.



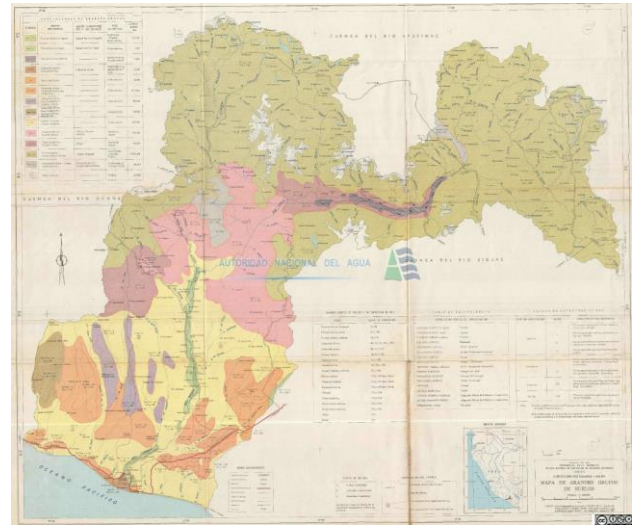


Figure 6. Traditional soil Map of Camaná – Majes Basin.

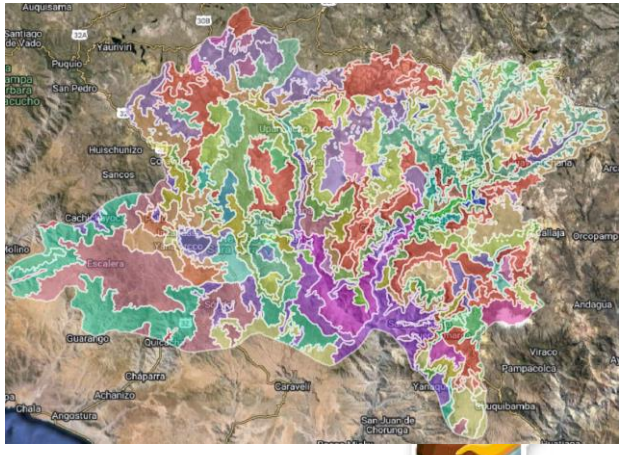


Figure 8. Vectorized soil map of Ocoña Basin.

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APPLICATIONS

RESEARCH	• Peruvian soil series level • Soil formation factors modelling
MEDIO AMBIENTE	• Climate Change simulations • Anthropocene effect
AGRICULTURA	• Crop suitability • Soil Testing (soil analysis)

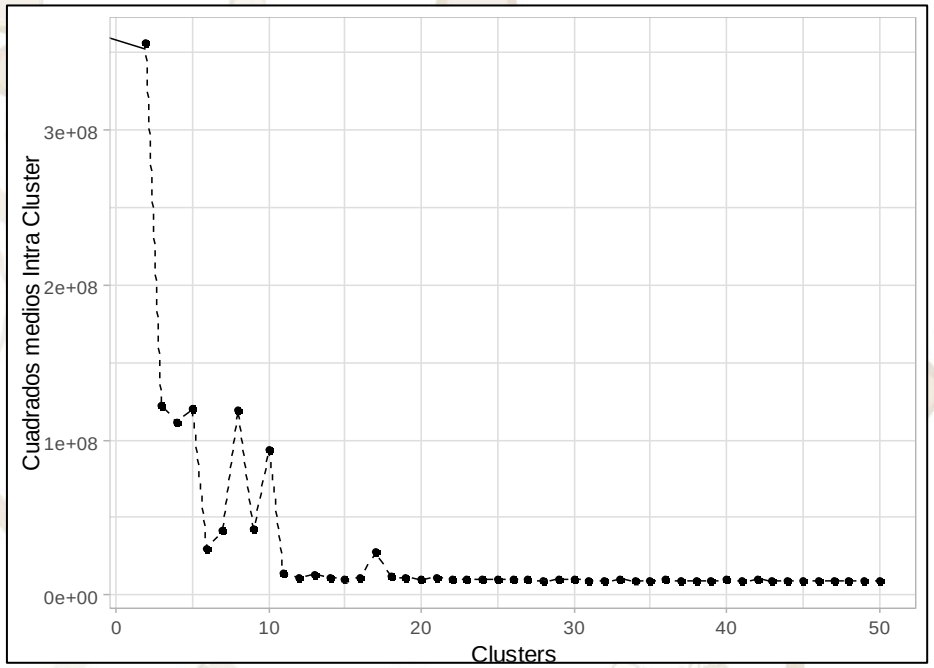

Figure 9. Number of cluster identification.

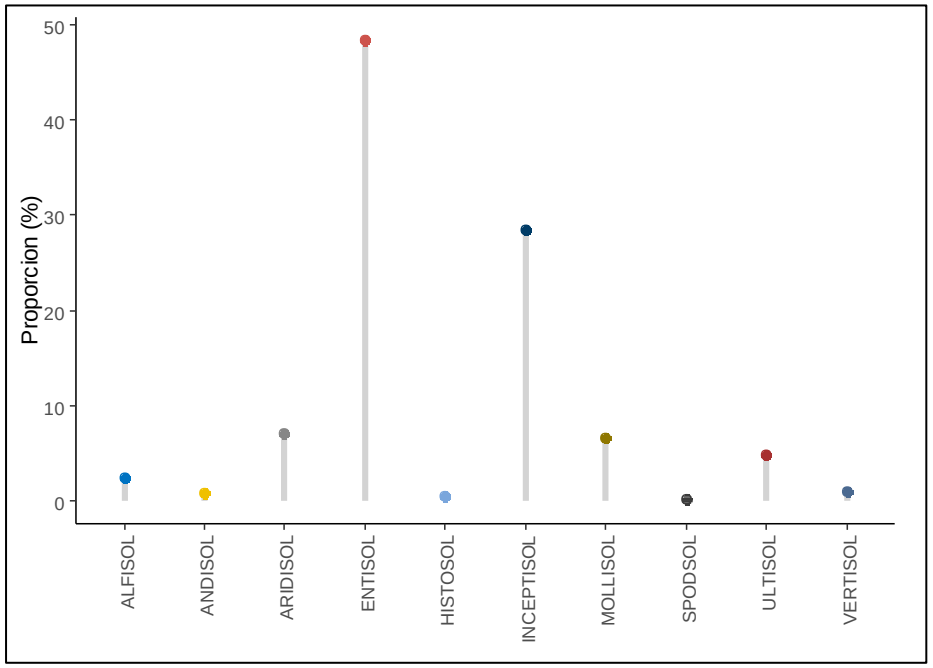

Figure 10. Soil Order relative frecuency in legacy data.

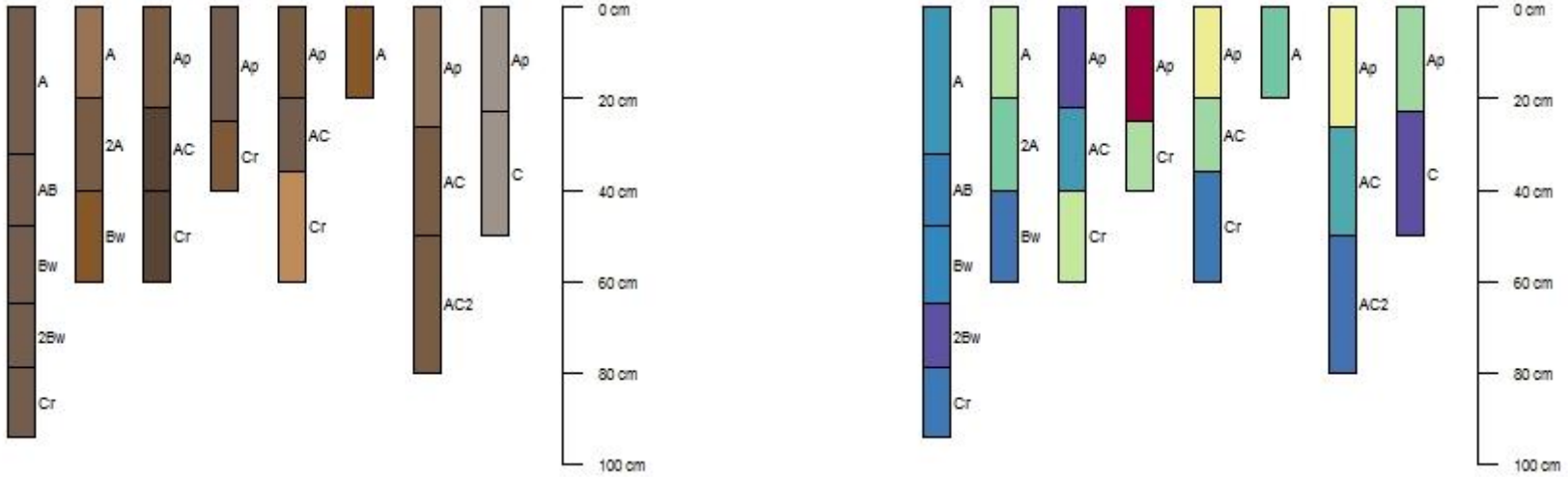

Figure 11. Soil profiles representation, dry color (left) and organic matter (rigth).

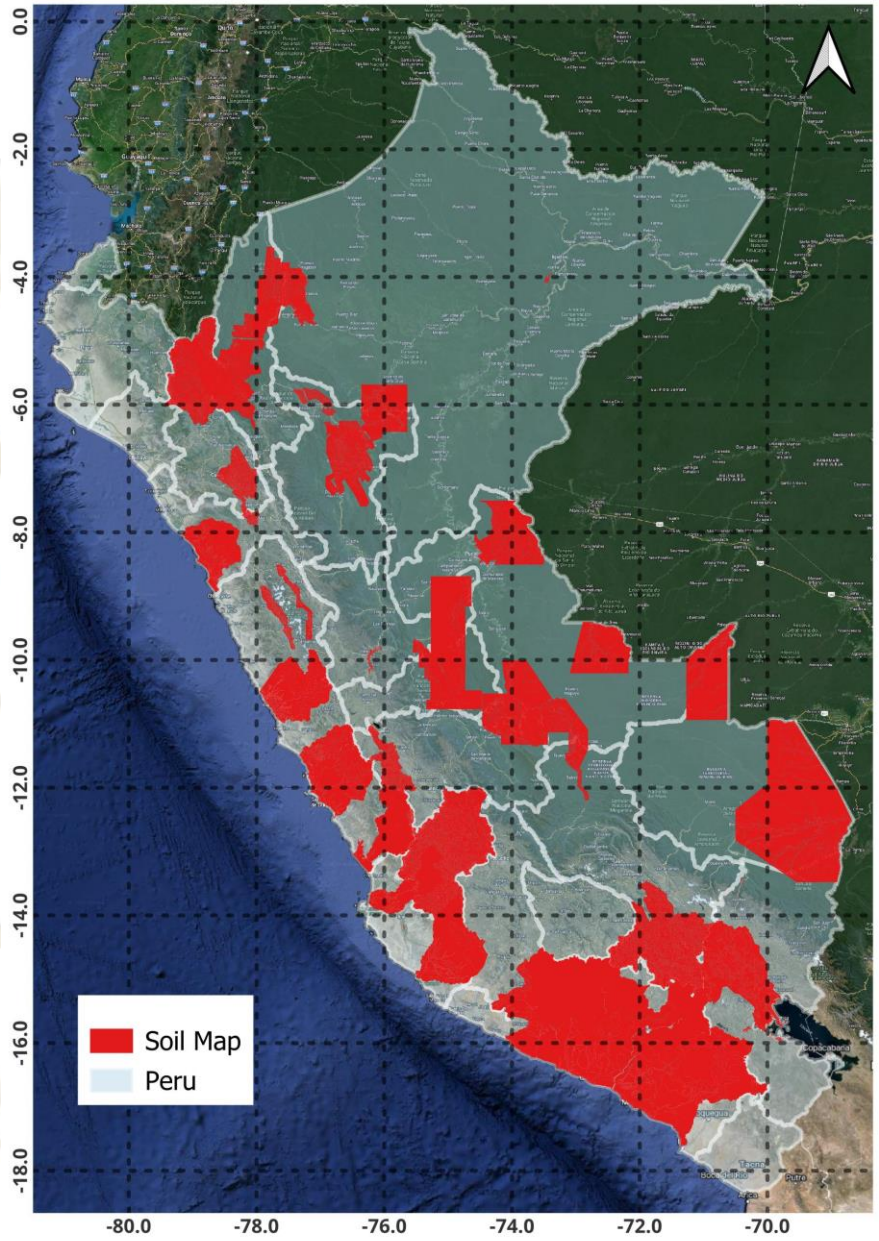

Figure 12. Area covered (25.6 %) by soil maps in Peru.

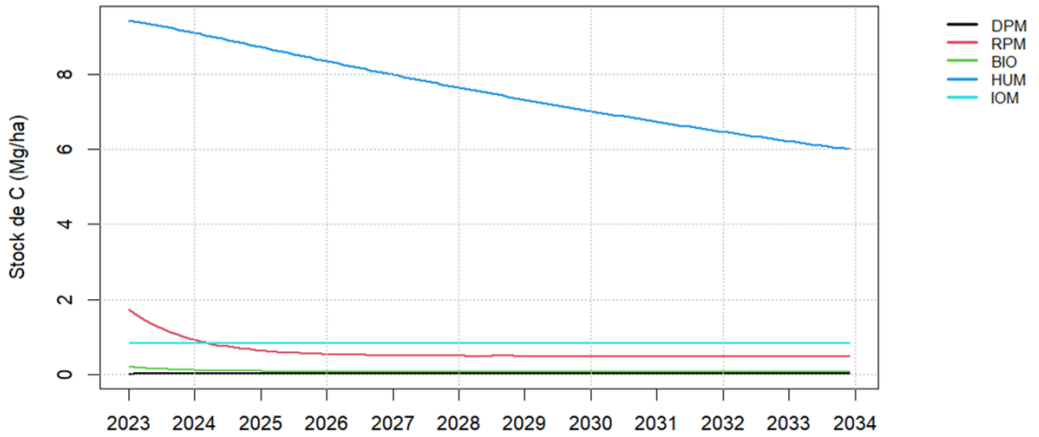

Figure 13. Soil organic carbon towards 2034 in the Rimac basin.

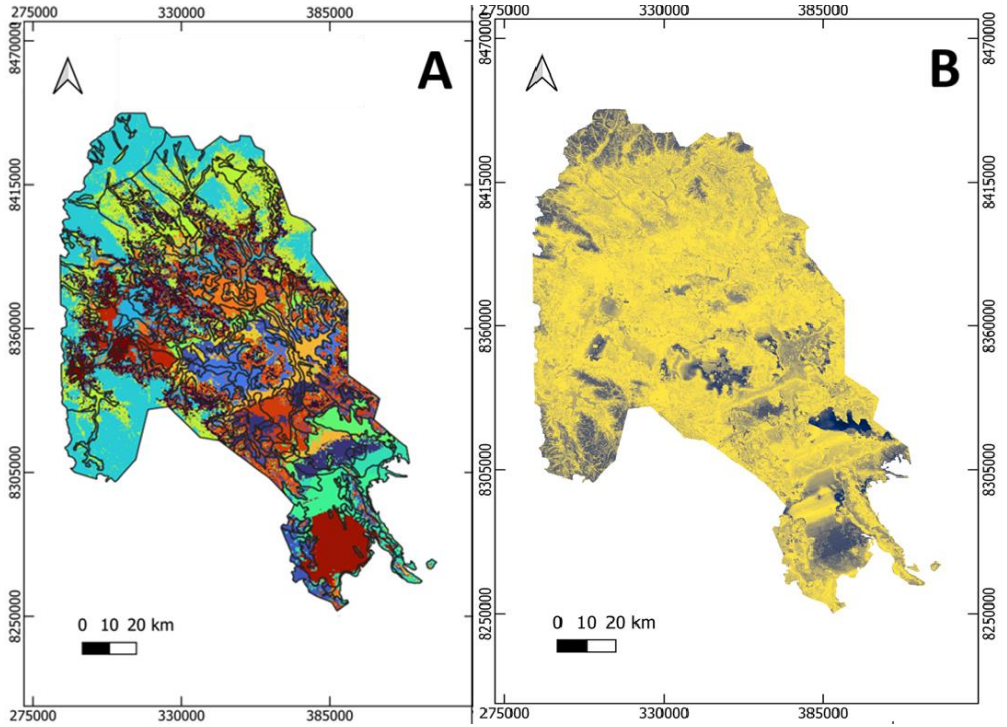

Figure 14. Disaggregating Soil Maps, soil classes (A) and Shannon Index (B)

CONCLUSIONS

Peruvian legacy soil data is an undervalued resource whose potential is not limited to soil sciences and agriculture, but expands to different areas of science that require territorial information. Peru's pedodiversity is high and dominated by similar groups. Young soils are commonly observed, but some special groups exist in isolation.

Acknowledgements

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THANK YOU

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