Food and Agriculture Organization of the United Nations

International Network of Salt-Affected Soils (INSAS)

Mapping and assessing salt affected soils: the challenges and opportunities as experienced for the Latin America and the Caribbean region

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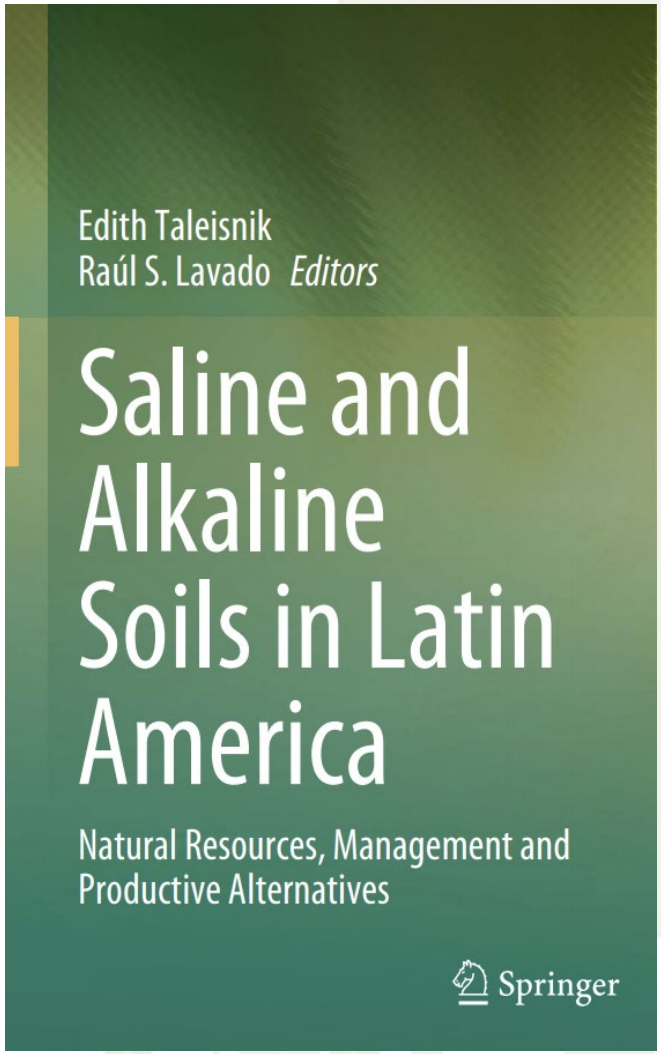
GSP Pillar 4 Latin America and the Caribbean

GLOBAL SOIL PARTNERSHIP

Recent estimates of the extension and distribution of human-induced salt affected soils in LAC are not available

Overview of Salt-Affected Areas in Latin America: Physical, Social and Economic Perspectives

Ildefonso Pla Sentís



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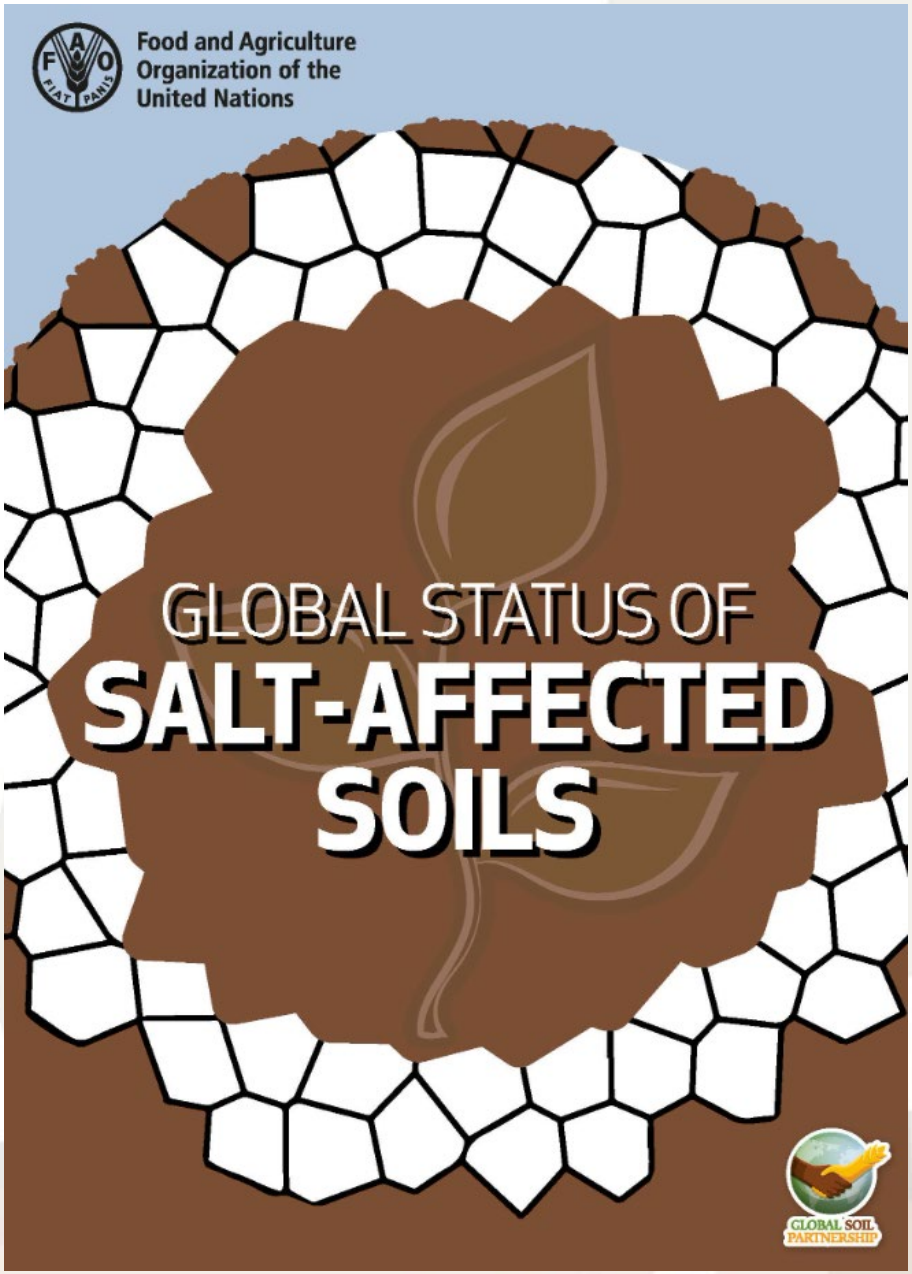
Opportunity to update national assessments of salt affected soils



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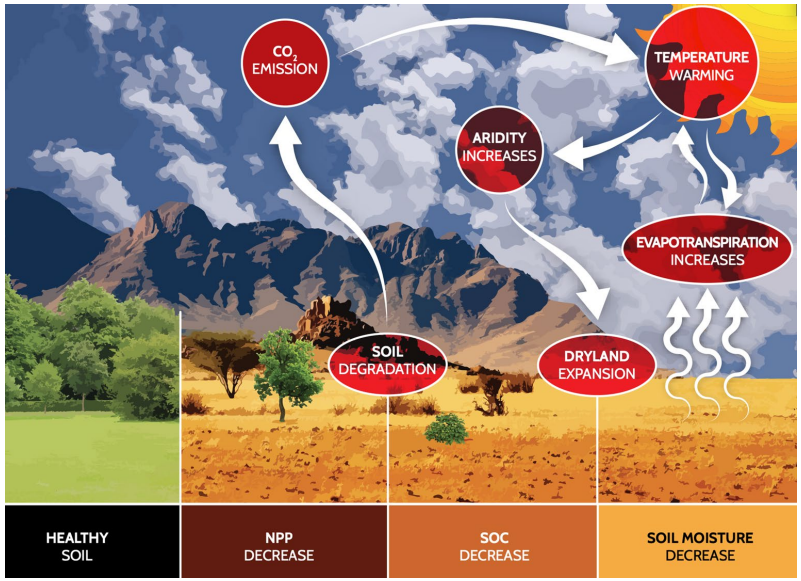
Virtual training: Specifications and transparent methodologies based on digital soil mapping

Country participation



FAO 2018

Table 1 Global distributions of saline and sodic soils

Continent	Area (million hectares)		
	Saline	Sodic	Total
Africa	412,2	208,0	620,2
Asia	378,6	236,8	615,3
Europe	19,6	57,7	77,3
Latin America	94,5	78,9	173,4
North America	36,6	56,7	93,4
Oceania	5,5	106,7	112,2

Source FAO/IIASA/ISRIC/ISSCAS/JRC (2012) and Szabolcs (1989).

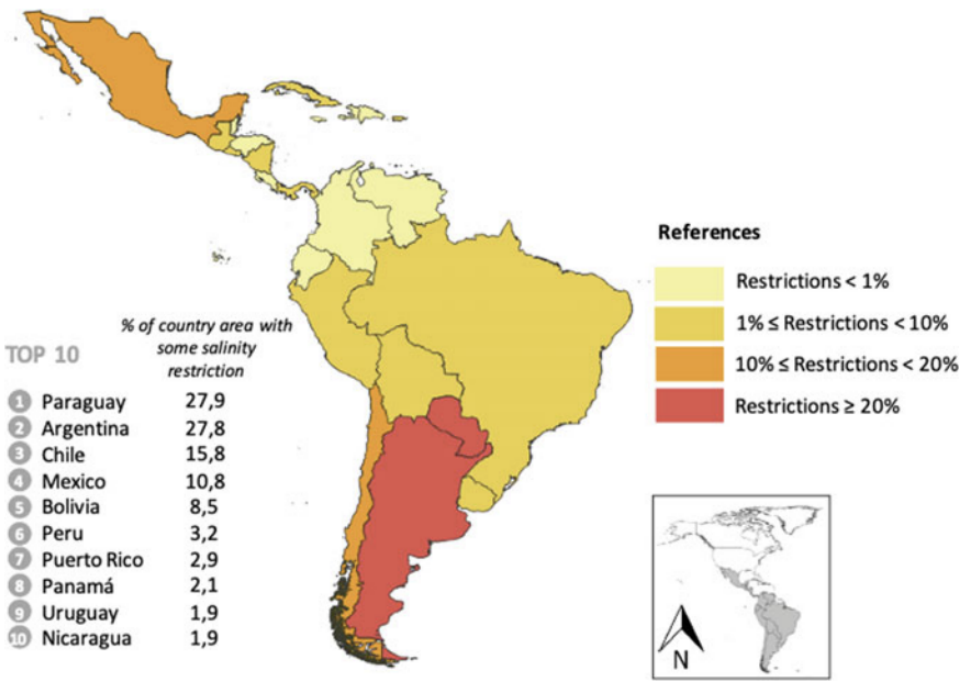
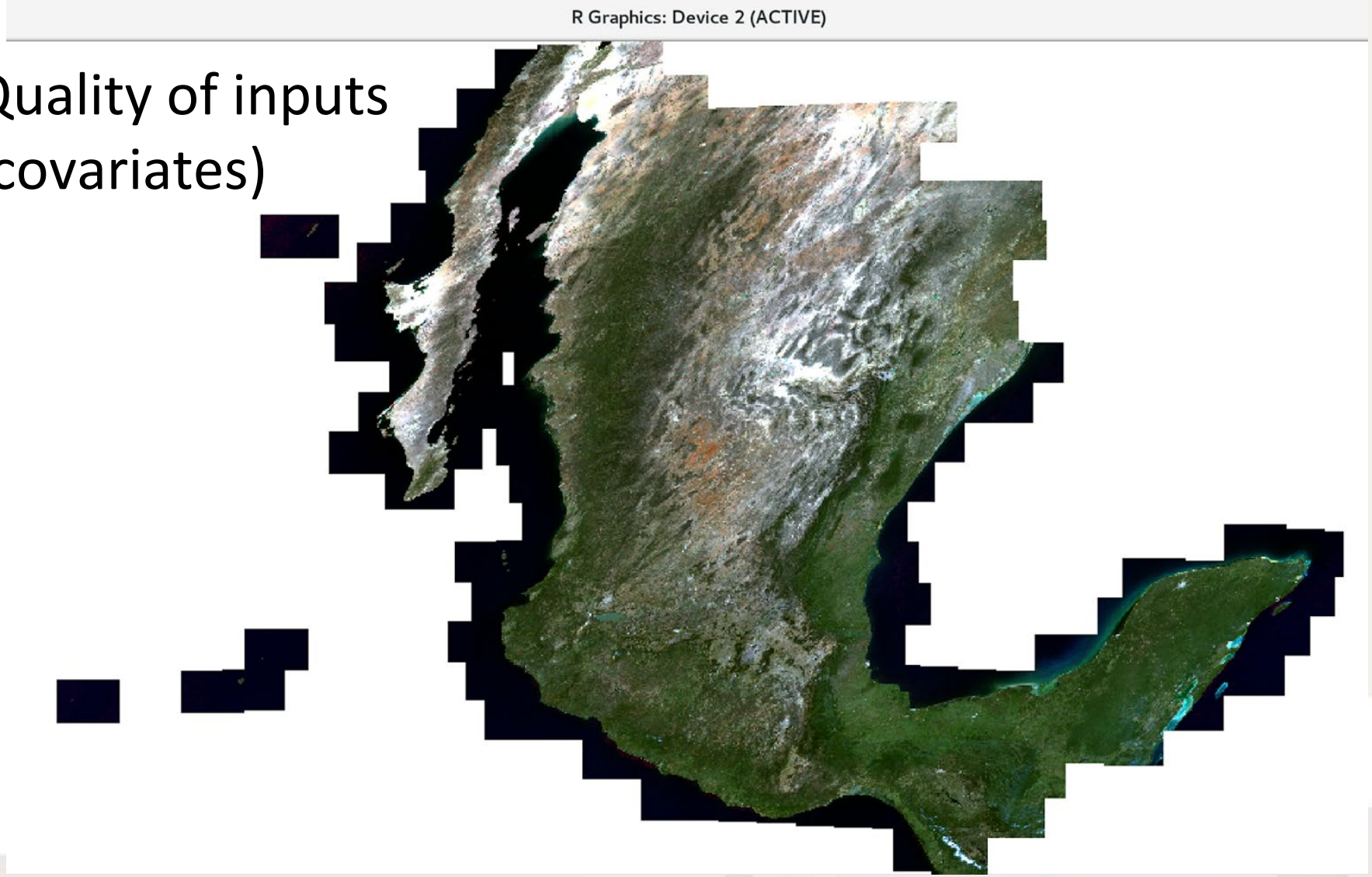


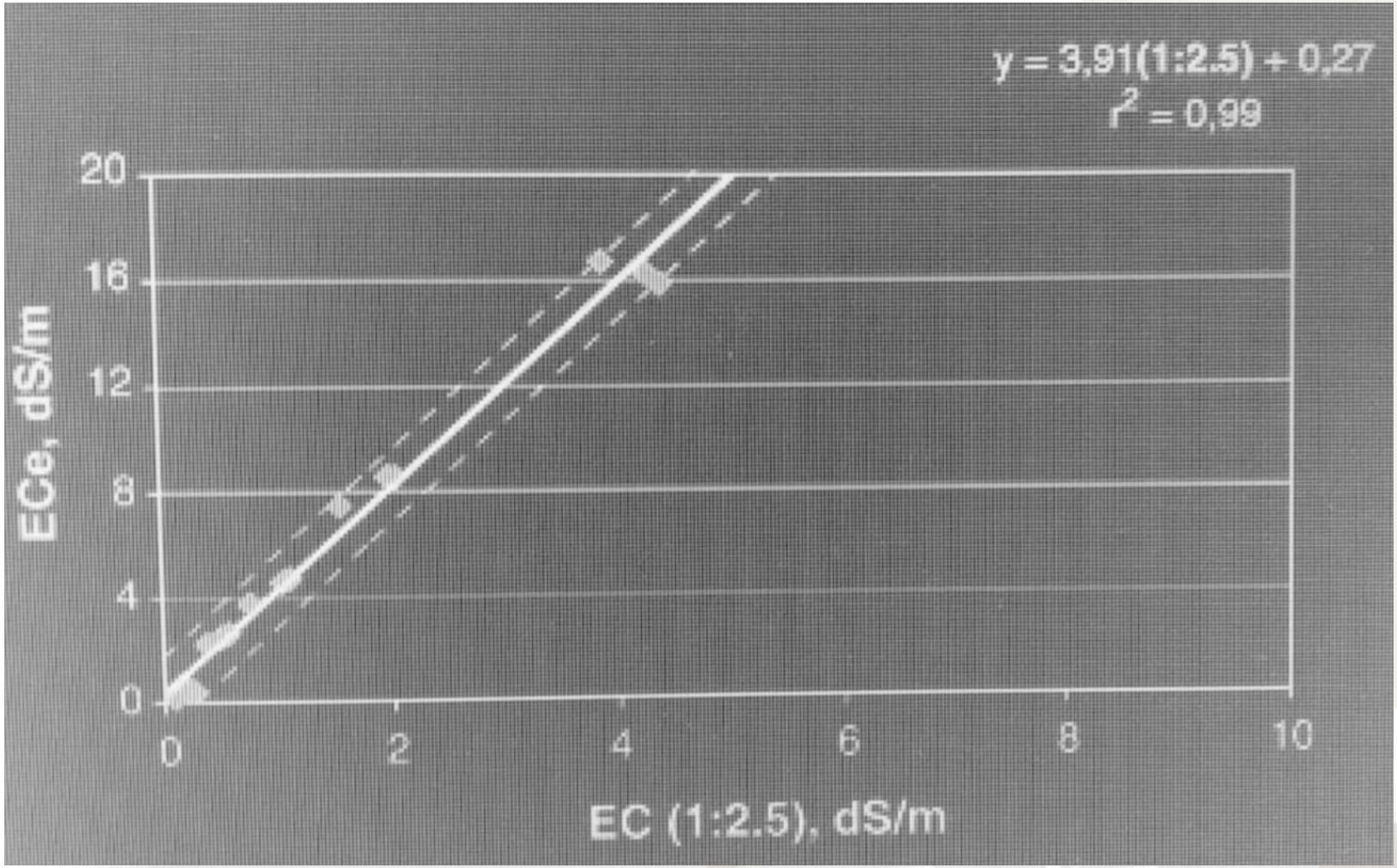
Fig. 2 Surface proportion of Latin American countries affected by some degree of salinity restriction. Modified from FAO/IIASA/ISRIC/ISSCAS/JRC (2012)

Quality of inputs (covariates)



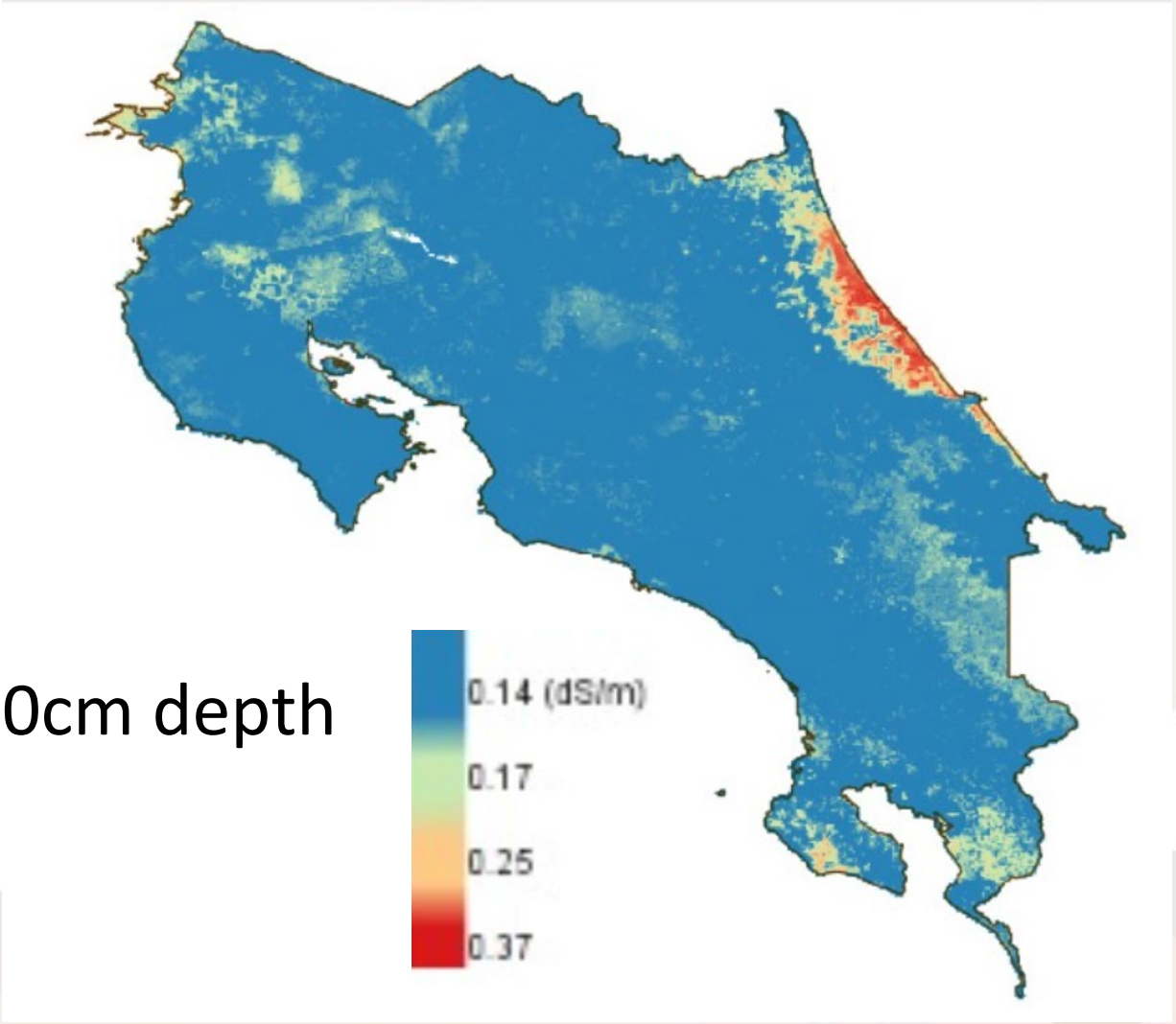
Courtesy of Julian Equihua Conabio MX

Quality of inputs (datasets)



Courtesy of Guillermo Schultz et al., 2020, INTA ARGENTINA

Availability of inputs (datasets)



Digital EC map 0-50cm depth

Courtesy of Alban Rosales,
INTA, CRI

Regional estimates and best available information

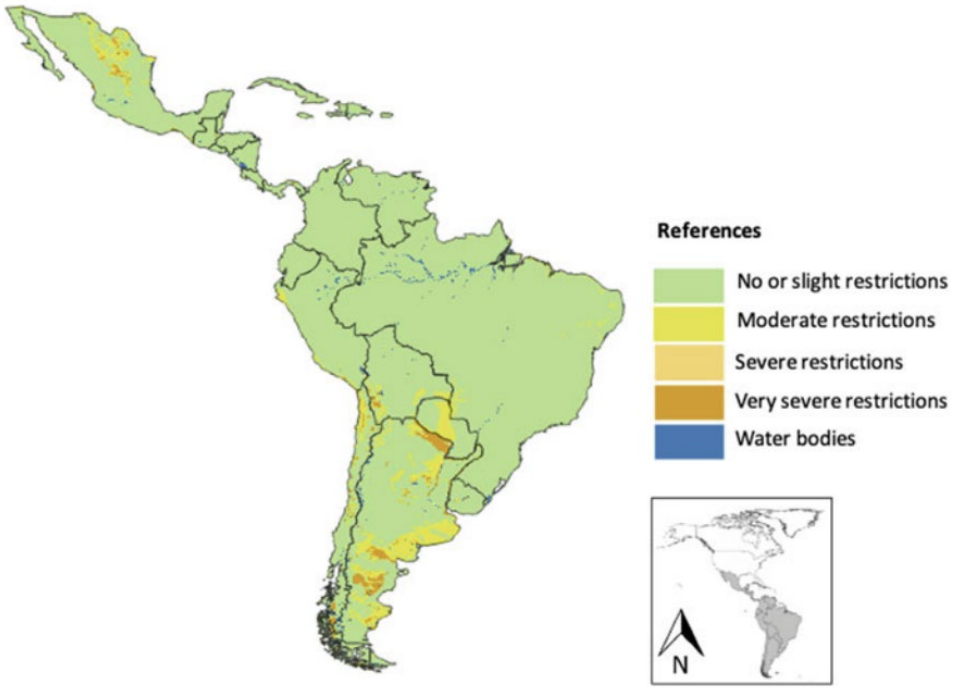
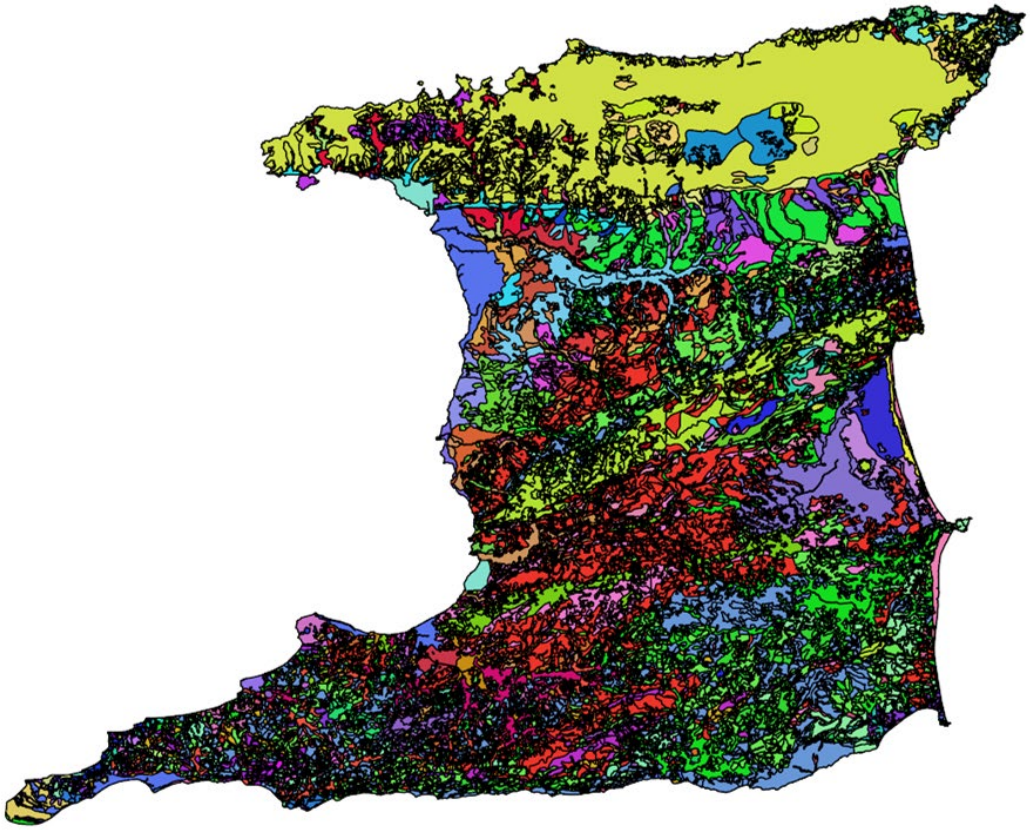
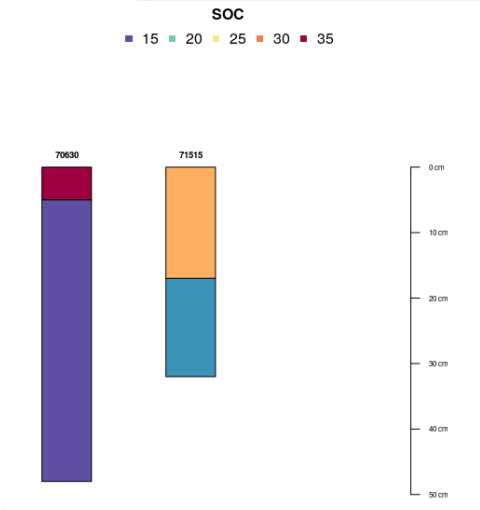


Fig. 1 Salts excess in Latin American. Modified from FAO/IIASA/ISRIC/ISSCAS/JRC (2012)

Existing soil information in Caribbean countries is limited





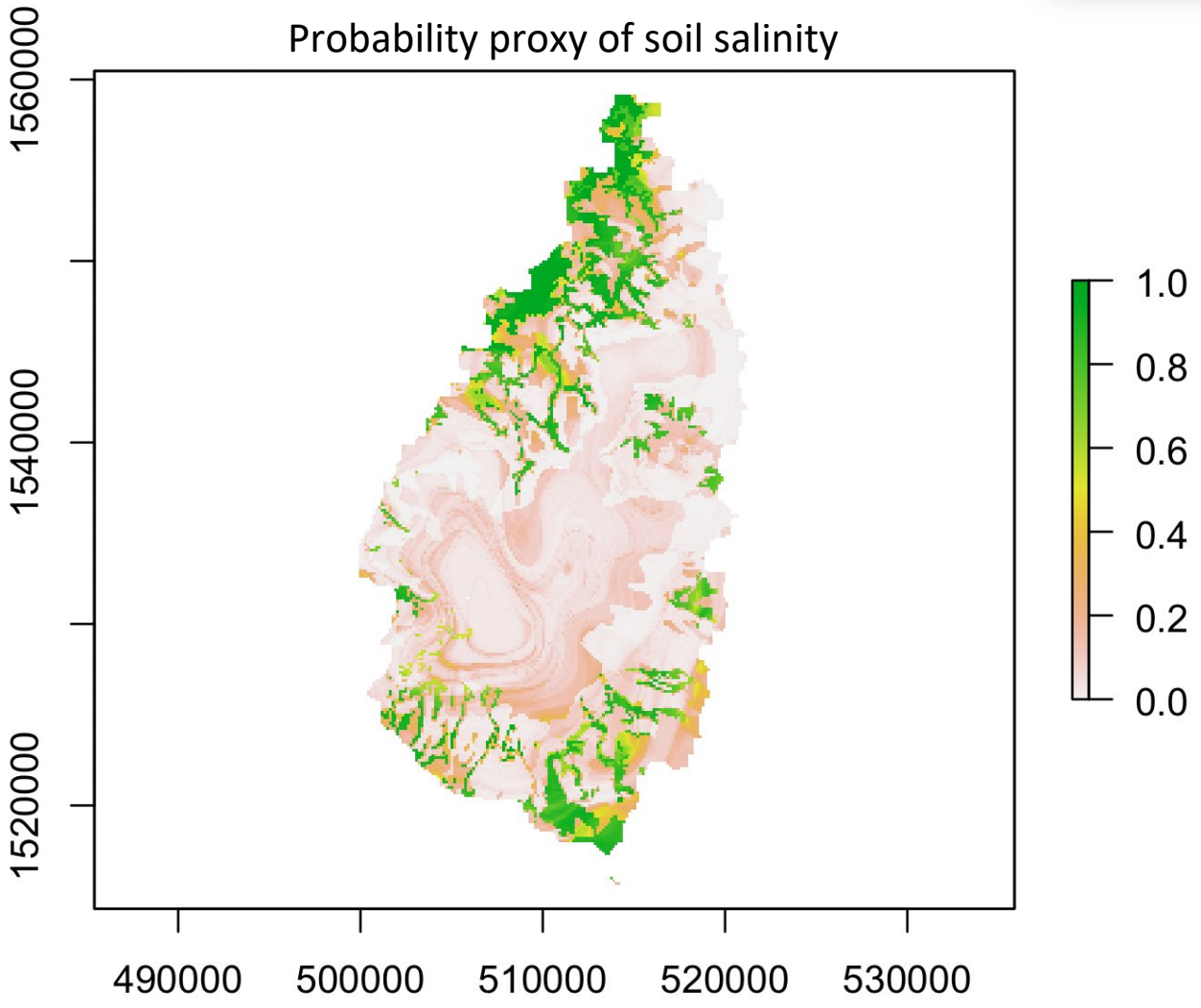
Courtesy of Gaius Eudoxie, UWI

The Sta. Lucia example

Disaggregation of soil polygon maps based on ensemble learning

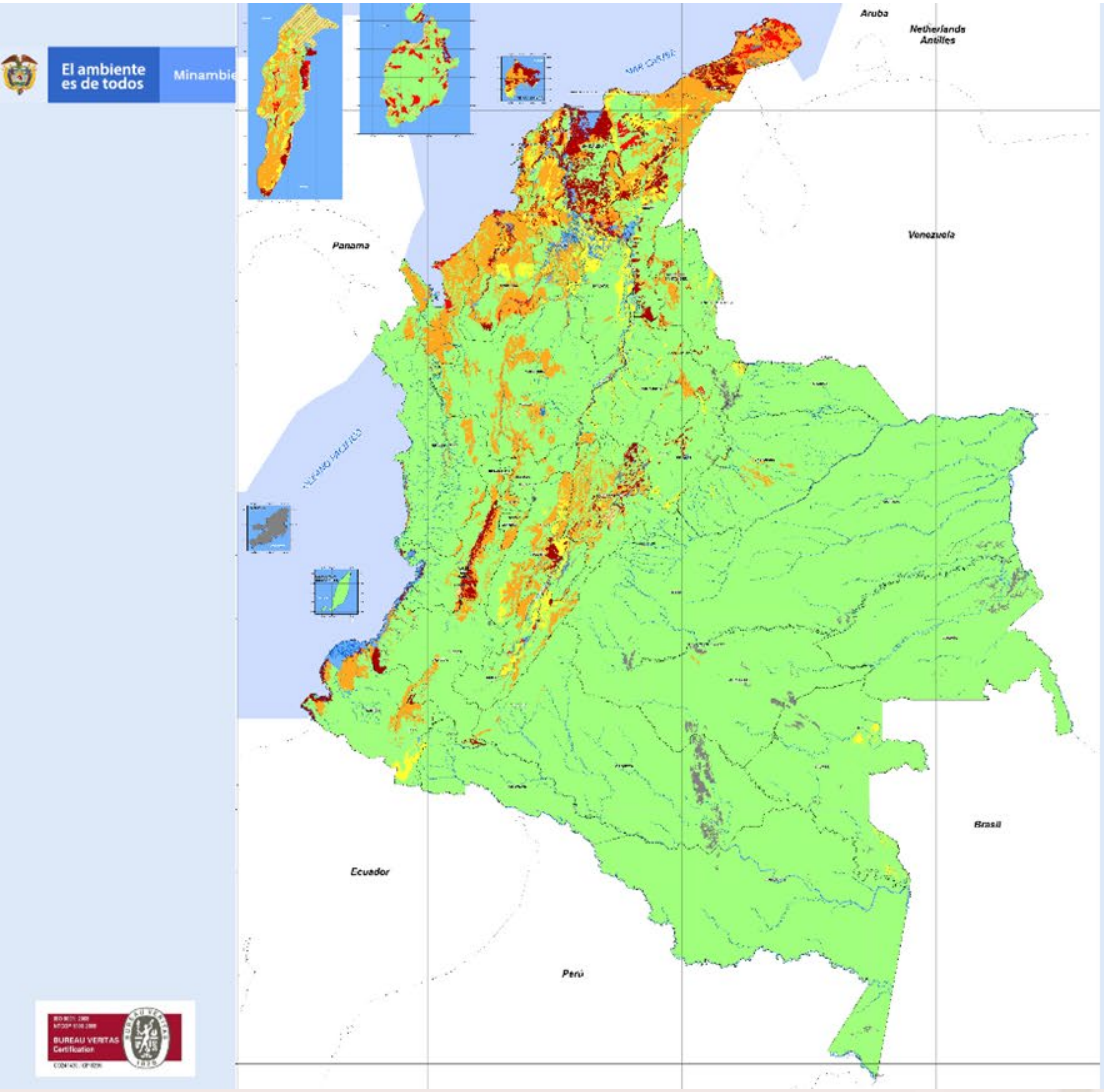
Target variables are soil salinity qualifiers

Prediction factors are environmental layers



Guevara and Omuto in prep.

National estimates based on the best available information



Estado actual de la degradación de suelos por salinización

11,7 % de los suelos de Colombia presentan algún grado de salinización **(13.241.995 ha)**

Grado	Área (ha)	%
Muy Ligero	98.566.941	86,4
Ligero	3.147.320	2,8
Moderado	8.421.500	7,4
Severo	531.124	0,5
Muy Severo	1.142.051	1,0

IDEAM

Courtesy of Reinaldo Sánchez López - Javier Otero García, IDEAM 2021

Mapping human-induced salinity requires high granularity

Courtesy of Elia Scudiero UCR USDA Salinity lab.

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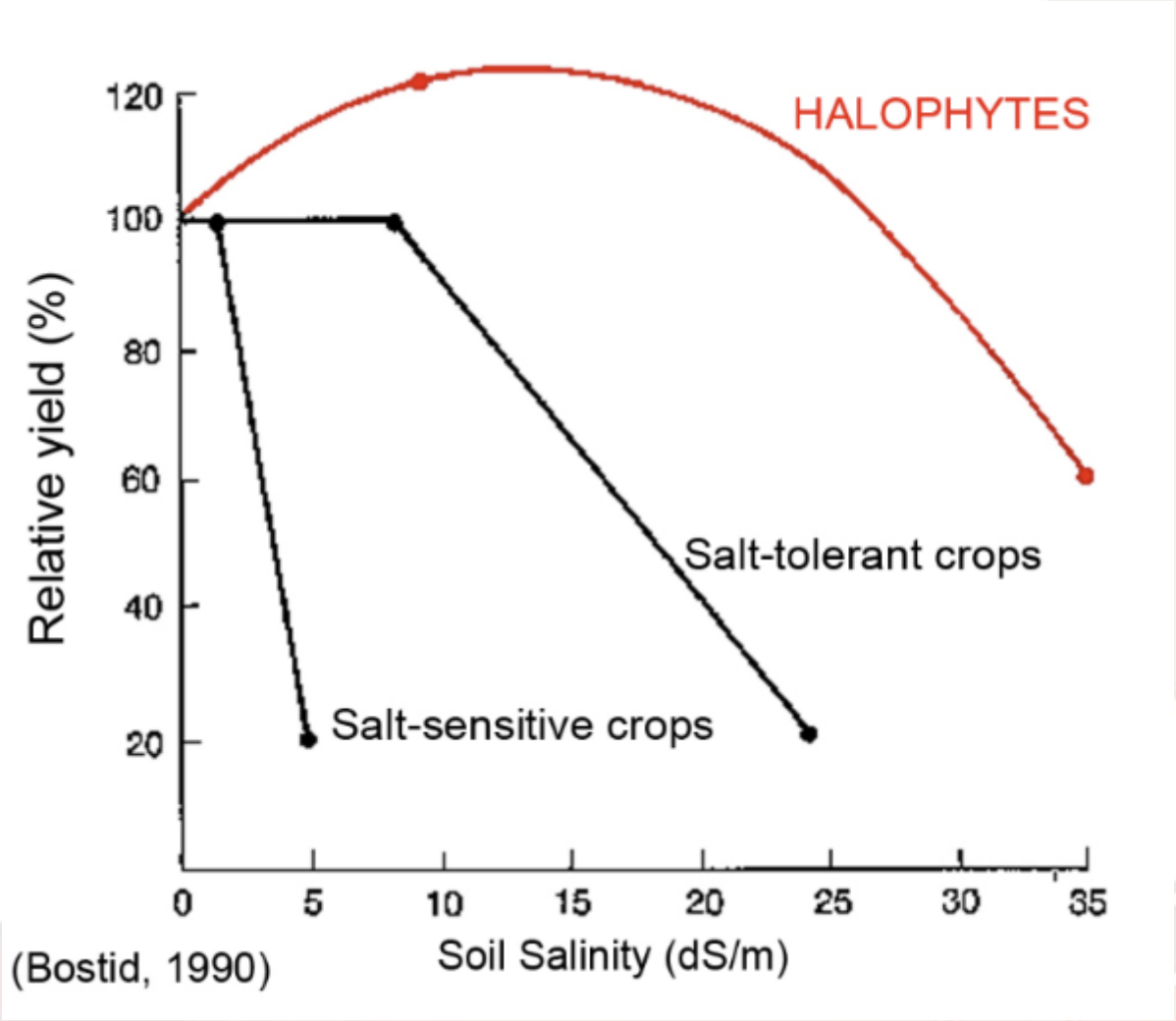
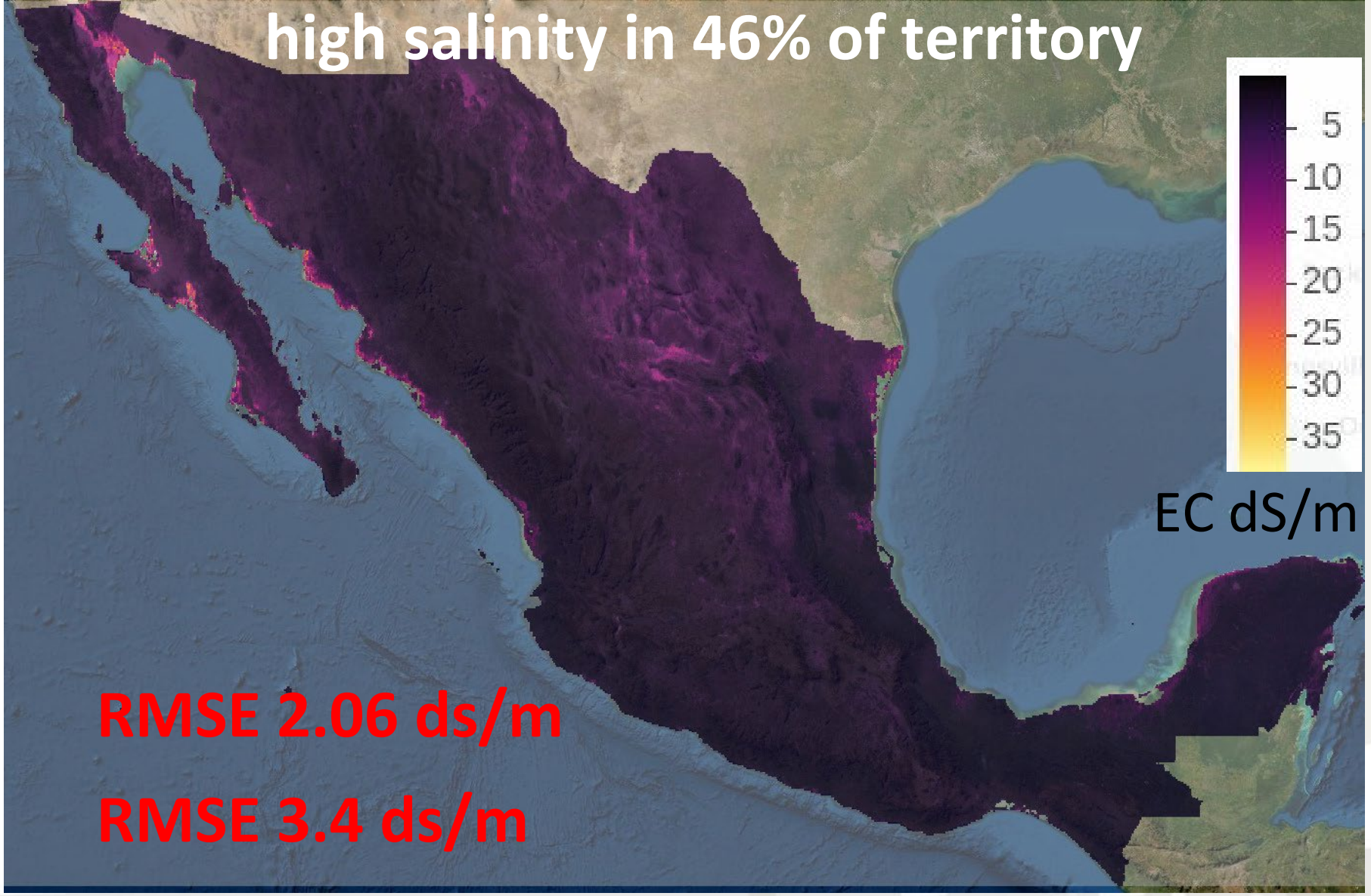
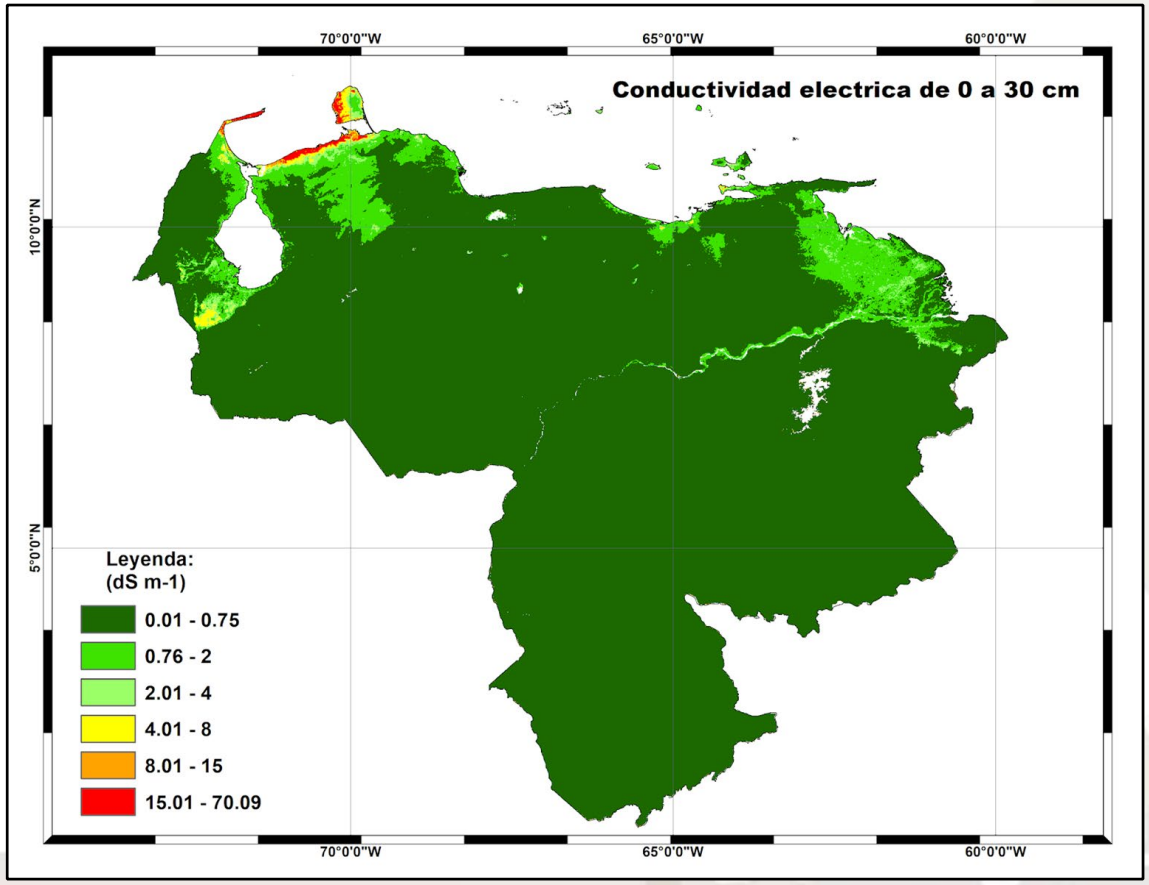
We EC want predictions with low error (statistical accuracy) rates between 0-2 dS/m





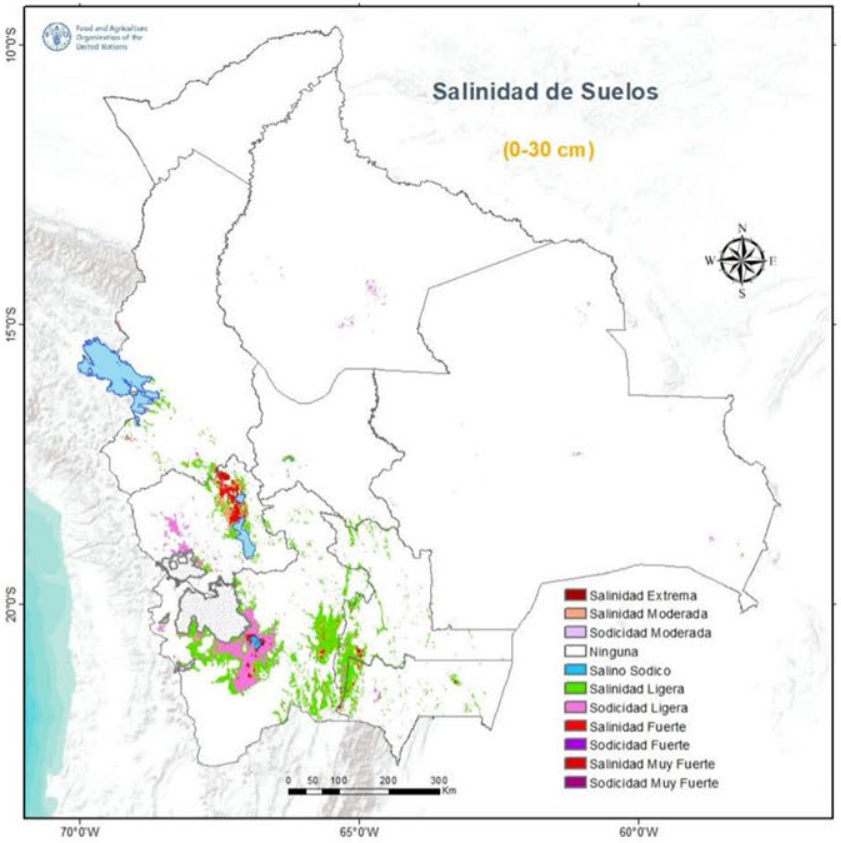
Courtesy of AGRICULTURA MX, report in prep.

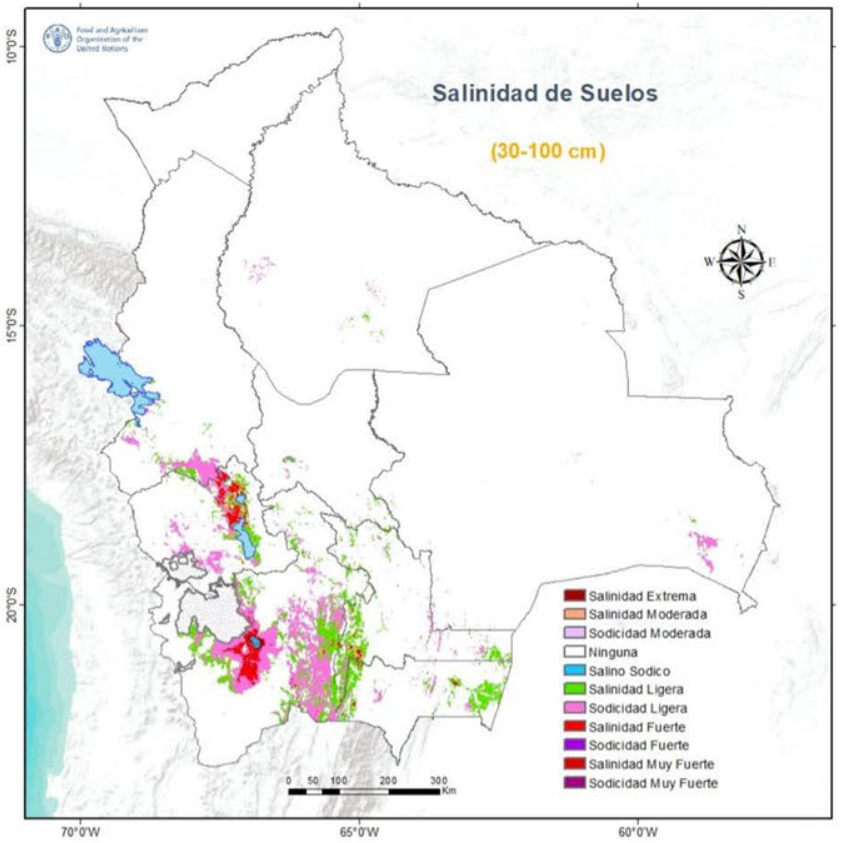
Enabling soil salinity monitoring requires increased interoperability (technological, organizational and cultural)



Courtesy of Victor Sevilla Universidad Central de Venezuela

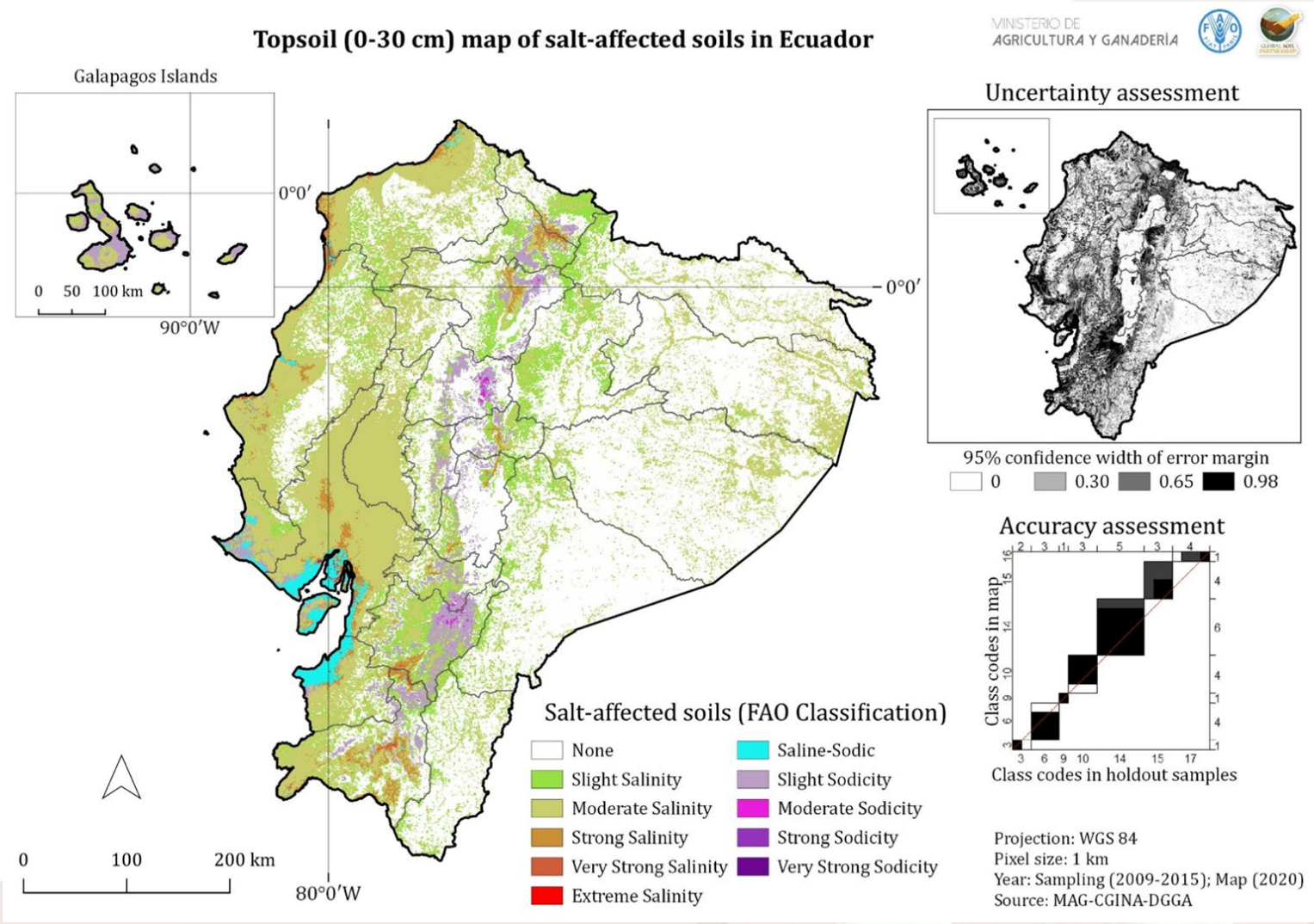
High granularity mapping requires increased interoperability (technological, organizational and cultural)





Courtesy of Hernan Figueredo who is also supporting Caribbean countries

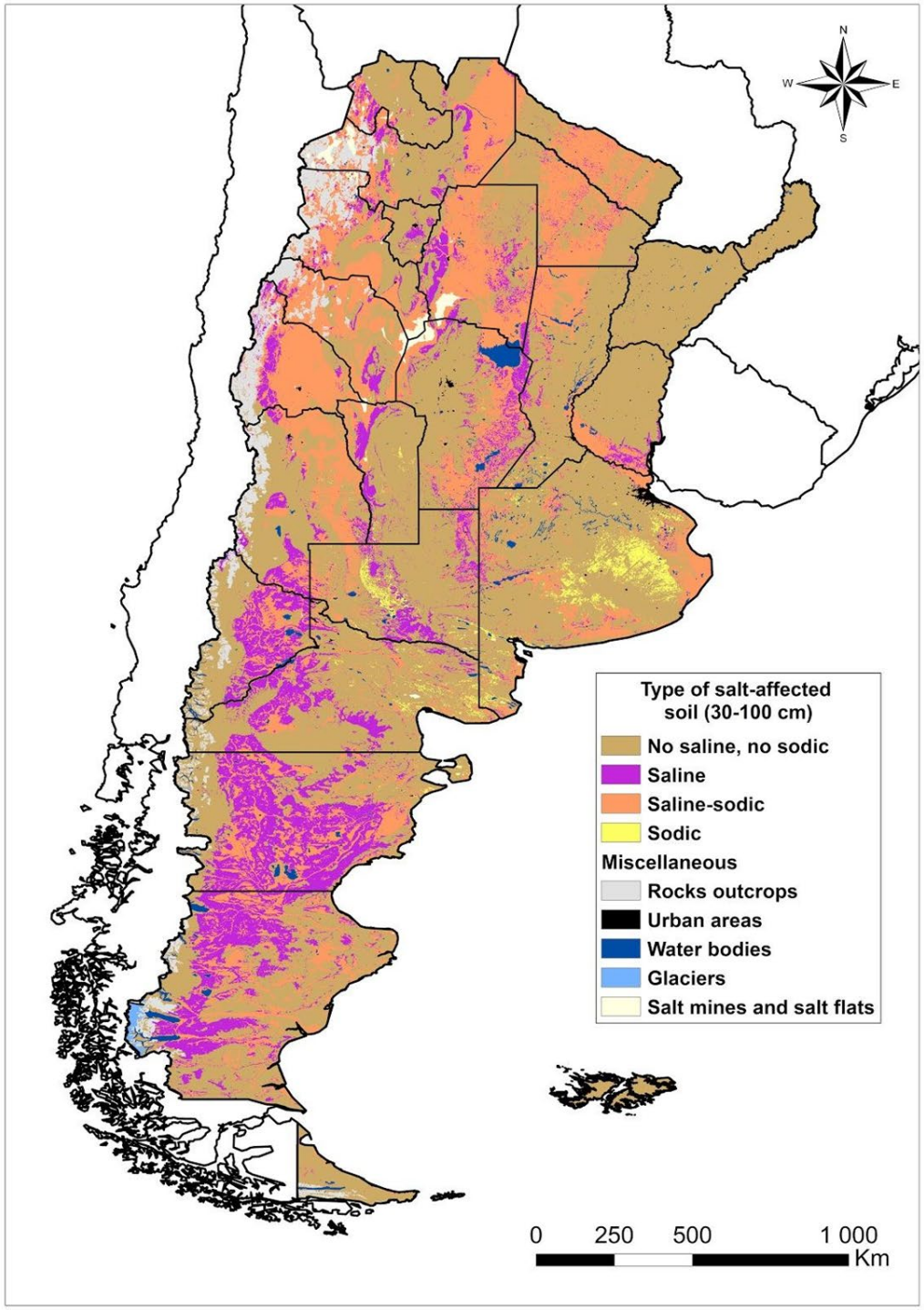
Latin America has high interoperability



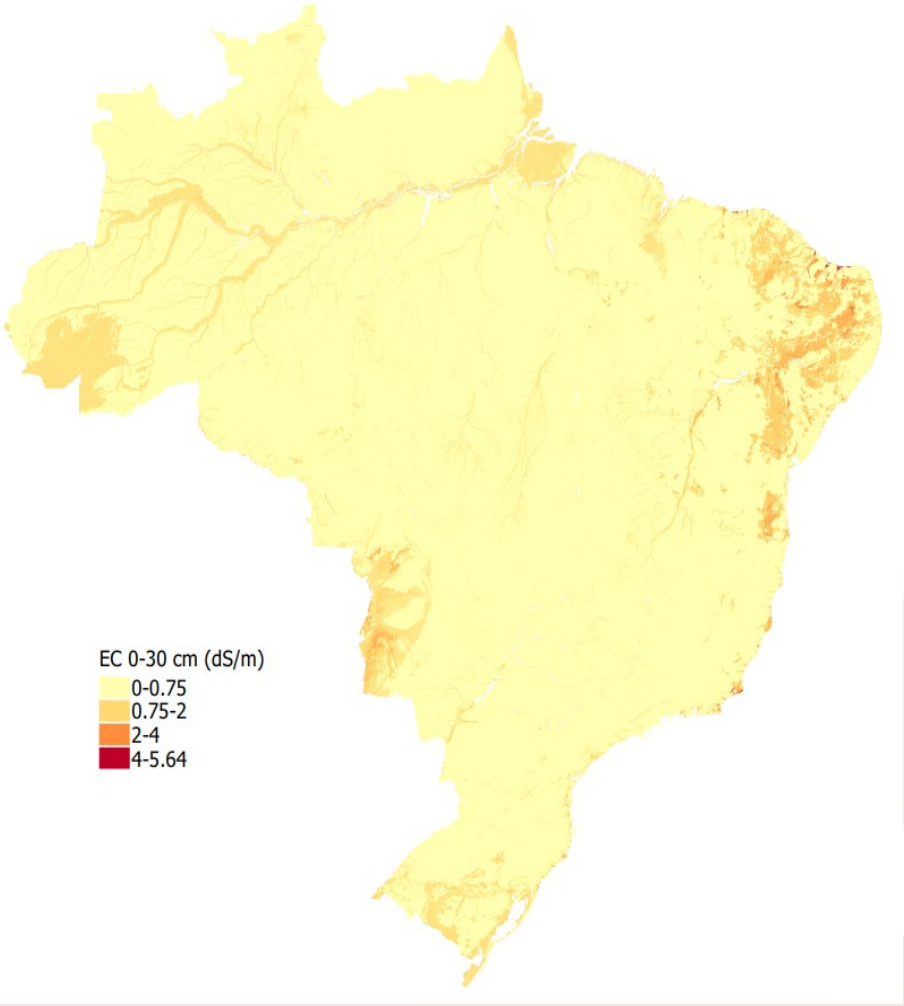
Courtesy of Wilmer Jimenez, MAG, ECU

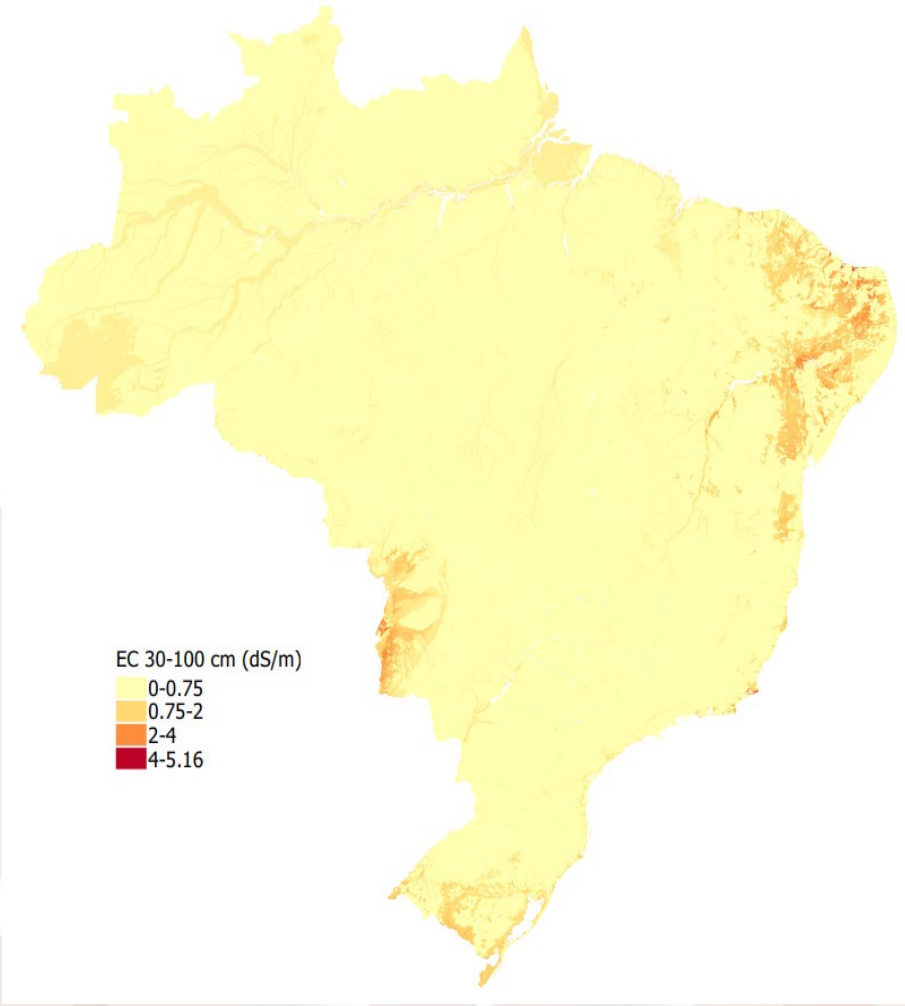
Big data management strategies across large countries

Courtesy of Dario Hernandez, INTA ARG.



Improved prediction frameworks for big soil salinity datasets that increase accuracy

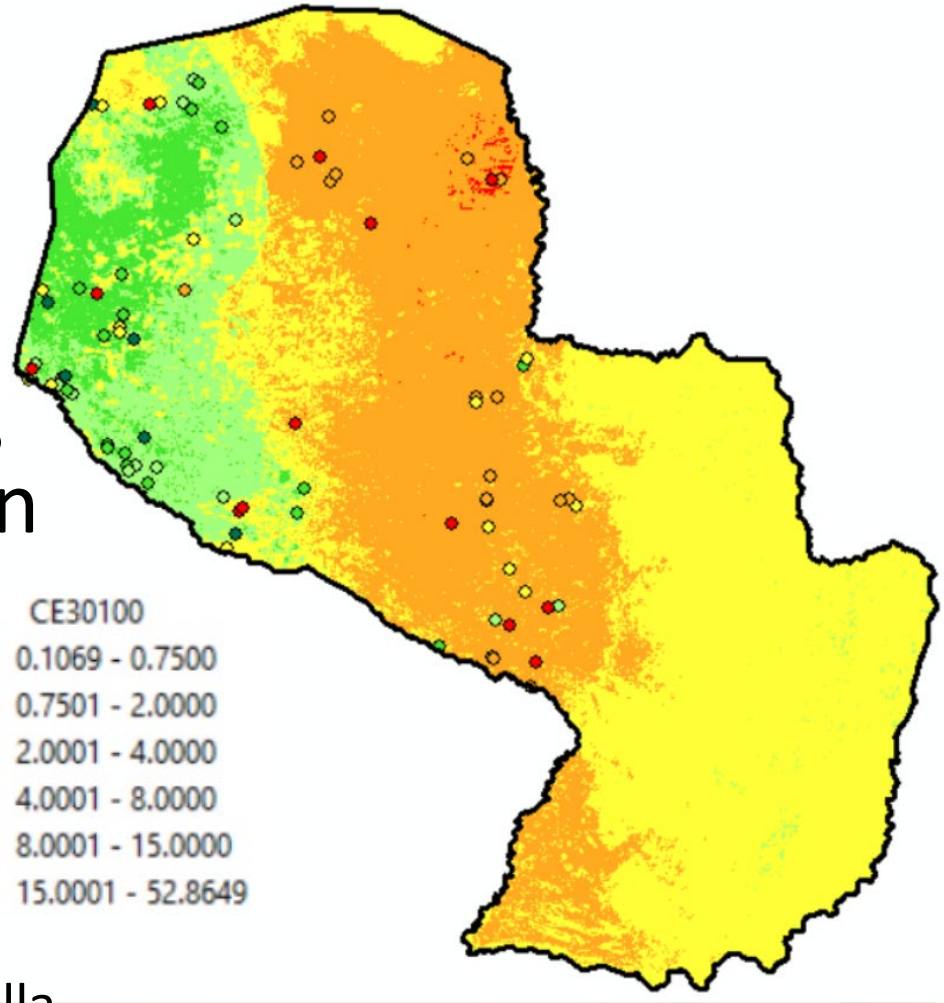




Courtesy of Gustavo Vázquez EMBRAPA BRA.

Revealing patterns of soil salinity with reduced uncertainty by increasing quality, quantity and access to soil datasets

Enabling country to regional soil salinity monitoring frameworks and effective prevention strategies



Courtesy of Arnulfo Encina, Victor Sevilla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