SATUS AND NEEDS OF SOIL MANAGEMENT IN CENTRAL AMERICA

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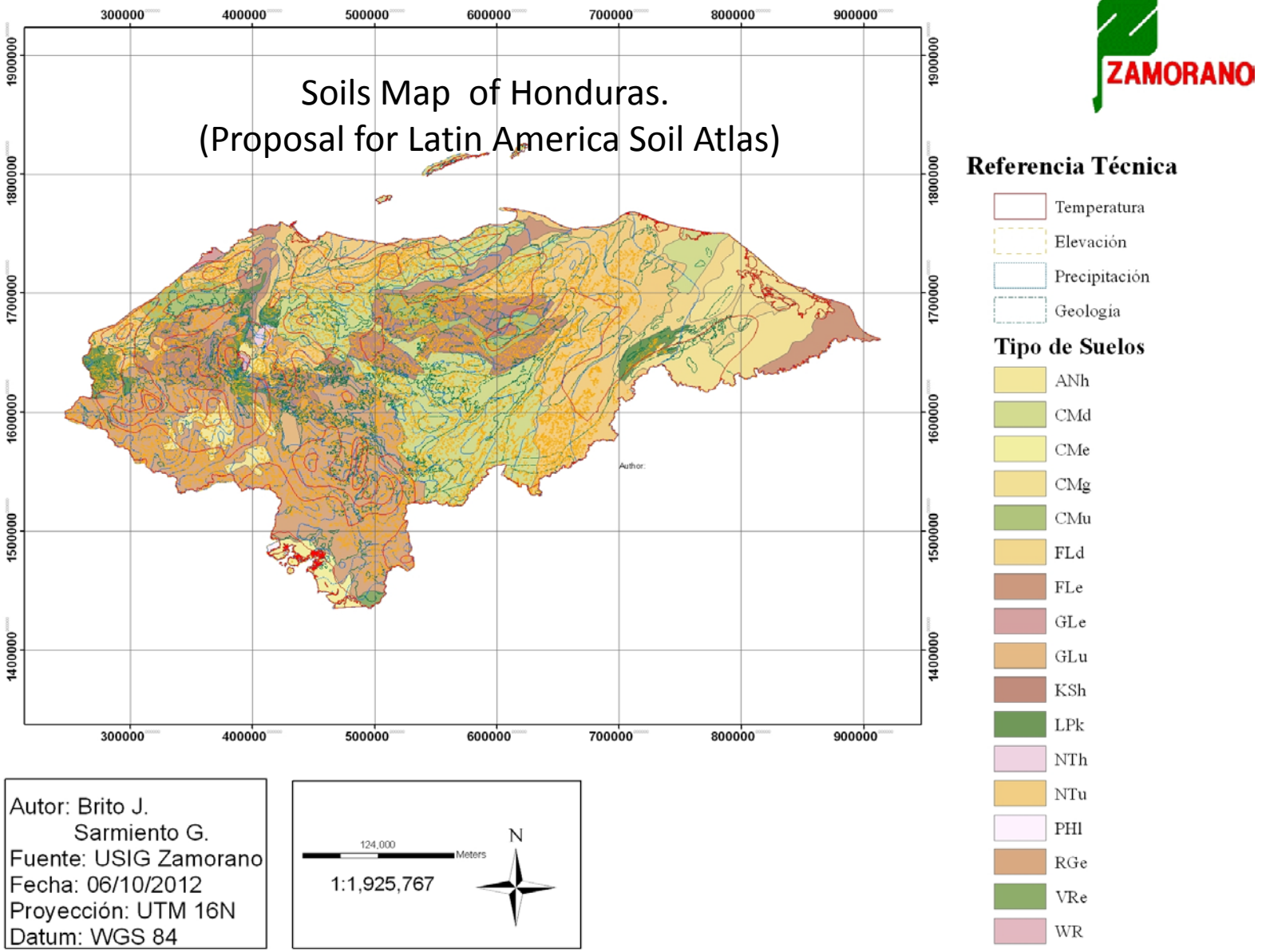
CENTRAL AMERICA, SOIL STATUS AND NEEDS

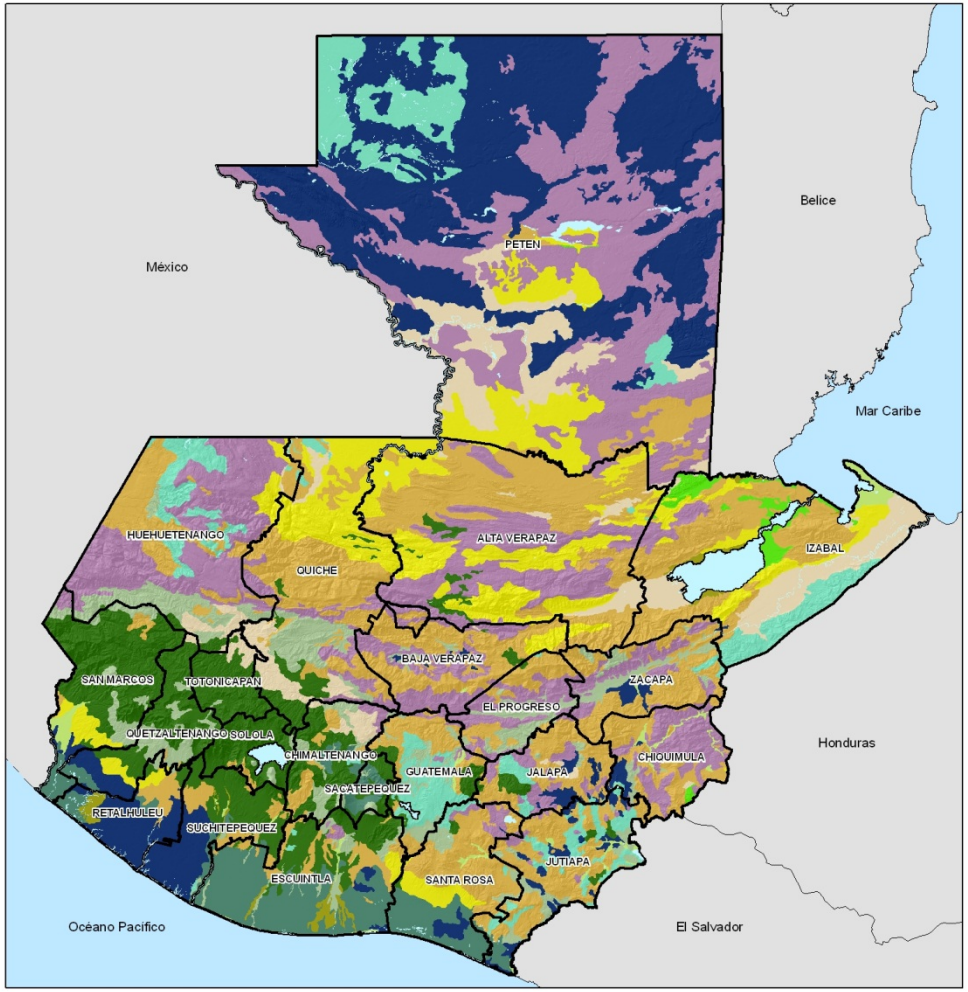
- Land Resources.
- Government policies on land use, ownership and agrarian reform.
- Demand of agricultural land according to agricultural products and products demand in the market.
- Local policies: each government has its own legislation and land management policies.
- Limited to free market economy in some crops.


Bay of Campeche
Yucatán Peninsula
MEXICO
BELMOPAN
Usumacinta
BELIZE
Bay Is.
Gulf of Honduras
JAMAICA
Caribbean Sea
GUATEMALA
Motagua
Aguán
Patuca
Tajumulco Volcano
Ulúa
HONDURAS
Coco
GUATEMALA CITY
TEGUCIGALPA
SAN SALVADOR
EL SALVADOR
MOSQUITO COAST
NICARAGUA
Gulf of Fonseca
Lake Managua
Río Grande
MANAGUA
Escondido
Lake Nicaragua
CENTRAL AMERICA
San Juan
COSTA RICA
SAN JOSÉ
Panama Canal
Gatún Lake
PANAMA CITY
North Pacific Ocean
ISTHMUS OF PANAMA
PANAMA
SOUTH AMERICA



Arévalo, Gauggel, Manueles, Brito, Sarmiento,. 2012.Propuesta para la actualización del mapa de suelos de Honduras como base para diagnóstico de uso del suelo y contenido de carbón orgánico. Zamorano, Honduras.

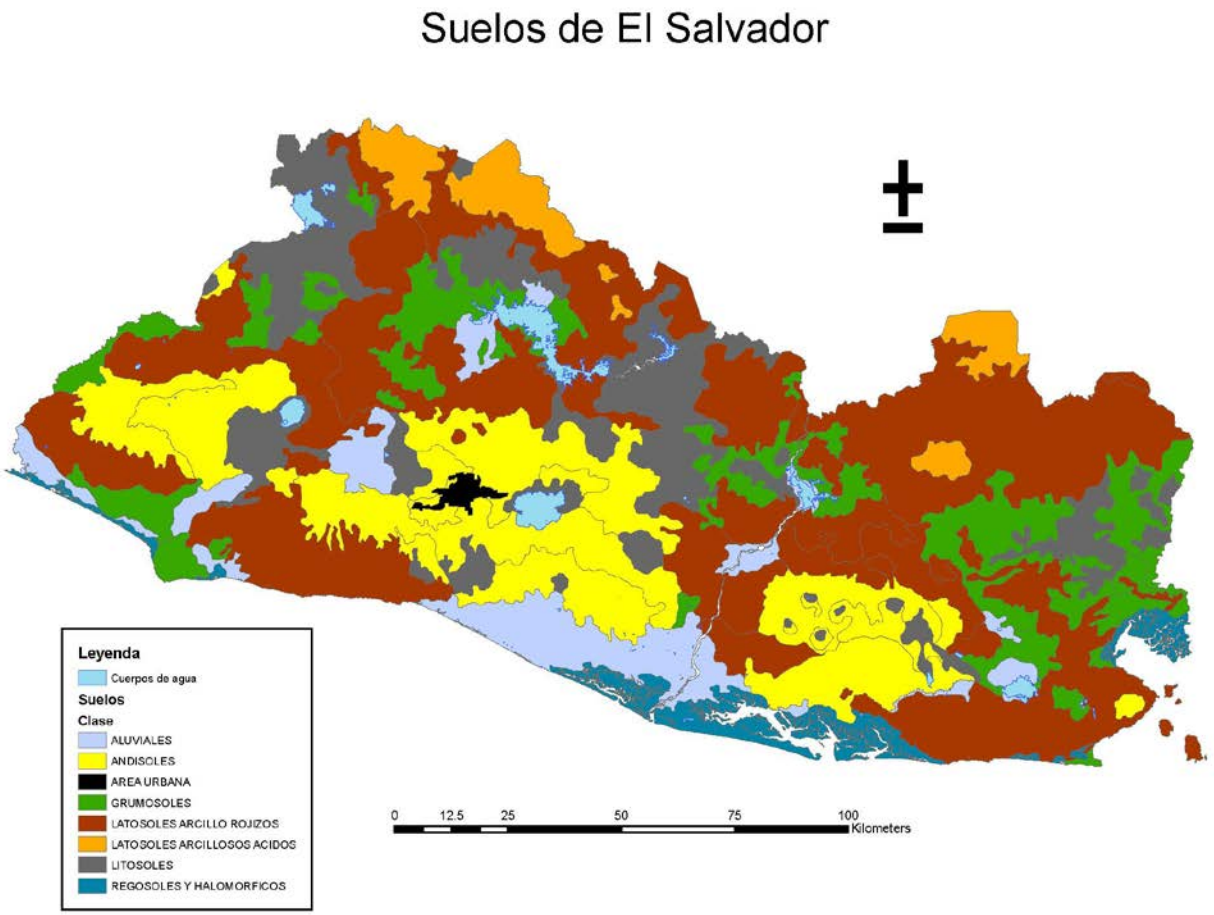
Soils map of Guatemala (Proposal for Latin American Soil Atlas)



MAPA WRB

CODIGO_WRB		WRB
AC	ACcr	Chromic Acrisol
AC	ACfe	Ferric Acrisol
AC	ACha	Haplic Acrisol
AC	AChu	Humic Acrisol
AC	ACpf	Profondic Acrisols
AC	ACum	Umbric Acrisol
AGUA	AGUA	AGUA
AL	ALpl	Plintic Alisol
AL	ALum	Umbric Alisol
AN	ANsn	Silandic Andosol
AN	ANvi	Vitric Andisol
AR	ARdy	Dystric Arenosol
AR	AReu	Eutric Arenosol
AR	ARgl	Gleyic Arenosol
AR	ARpr	Protic Arenosol
CM	CMcr	Chromic Cambisol
CM	CMdy	Dystric Cambisol
CM	CMel	Epileptic Cambisol
CM	CMeu	Eutric Cambisol
CM	CMgl	Gleyic Cambisol
CM	CMha	Haplic Cambisol
CM	CMle	Leptic Cambisol
FL	FLdy	Dystric Fluvisol
FL	FLeu	Eutric Fluvisol
FL	FLgl	Gleyic Fluvisols
FL	FLst	Stangic Fluvisol
GL	GLdy	Dystric Gleysol
GL	GLeu	Eutric Gleysol
GL	GLha	Haplic Gleysol
LP	LPca	Cambic Leptosols
LP	LPdy	Dystric Leptosol
LP	LPeu	Eutric Leptosol
LP	LPha	Haplic Leptosol
LP	LPli	Lithic Leptosol
LP	LPum	Umbricl Leptsol
LV	LVcr	Chromic Luvisol
LV	LVha	Haplic Luvisol
LV	LVro	Rhodic Luvisol
LV	LVvr	Vertic Luvisol
PH	PHeu	Eutric Phaeozem
PH	PHgl	Gleyic Phaeozem
PH	PHha	Haplic Phaeozem
PH	PHvr	Vertic Phaeozem
RG	RGdy	Dystric Regosol
RG	RGek	Skeletic Regosol
RG	RGel	Epileptic Regosol
RG	RGeu	Eutric Regosol
RG	RGha	Haplic Regosol
RG	RGle	Leptic Regosol
VR	VRha	Haplic Vertisol
VR	VRpe	Pellic Vertisol

Soils map of El Salvador (Proposal for Latin American Soil Atlas)



CENTRAL AMERICA AND LAND OWNERSHIP, AND USE AND DIVERSITY

- Under a free market economy , the land is available for companies or individuals that own the economic resources to purchase the best land and water resources.
- Agrarian Laws (Land Reform Laws) differs from country to country but in the C-4 countries (Guatemala, Honduras, El Salvador and Nicaragua), they are somewhat similar.
- Land use depends no so much on the law, but in the governments in power and influential groups of interest, The Law becomes secondary to particular interests.

LAND USE POLICIES AND STRATEGIES

- It depends and crops for demands on the international market.
- Prime farm land that was producing food in the past is now producing bio-fuels or crops for exportation.
- The key factor is a lack of government plans for food production an security, from one degree to another, all countries have to import food and are not self-sufficient in food production.

USE OF LAND RESOURCES

- It is aimed to export and agro-industrial use:
- Coffee.
- Sugarcane.
- Vegetables.
- Bananas.
- Bio-fuels
- Oil palm

DEMOGRAPHICS AND LAND USE

- National or foreign investors acquire the best lands/water resources.
- Most governments can be manipulated except for Costa Rica.
- There is a great mass of displaced rural population pushed to either cities, leave the country or crop in very marginal lands/soils that required soil conservation and intensive inputs (fertilizer and irrigation, etc), and technical support.
- No or little government support can be seen in real case scenarios.
- NGOs, cooperatives, and international institutions help in the effort as well as foreign governments.

DIFERENTIATIONS AMONG COUNTRIES

- Costa Rica has the most advance legislation and working programs in land use and management. Also research institutes that transfer technology to the farmers and users.
- In the C-4 countries the government support goes from nothing like in Honduras, in this case private institutions and companies do the needed soil research and generate information, but in most cases it does not reach the small farmer.

OTHER CASES

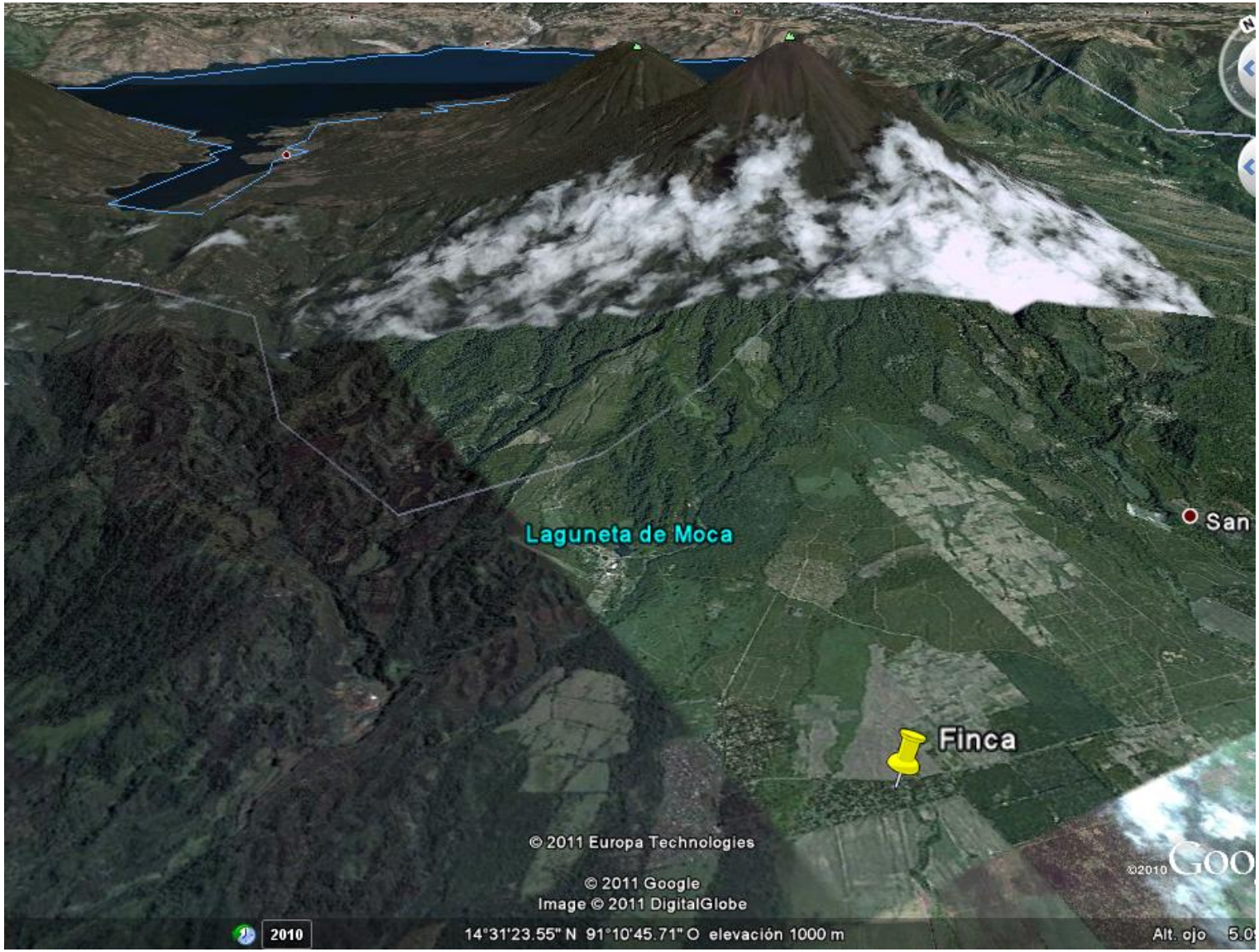
- GUATEMALA HAS UNDRTAKEN A SOILS MAPPING A THE DETAIL LEVEL COUNTRY WISE THAT WILL BE VERY USEFULL IN SOIL MANAGEMENT AND AGRICULTURAL DEVELOPMENT.
- NATIVE PEOPLE HAS DEVELOP SINCE ANCESTRAL TIMES METHODS OF SOIL CONSERVATION AND SUTAINABILITY PROGRAMS.
- IN BOTH, GUATEMALA AND EL SALVADOR, SOME GOVERMENT AND PRIVATE EFFORTS HAVE BEEN AIMED TO SOIL PRODUCTIVITY AND SUSTAINABILITY.
- THE TREND IS TO SEE THE SOIL AND WATER RESOURCES AS NOT ONLY SUSTAINABLE BUT TO IMPROVE THEM THROUGH TIME; UNFORTUNATELY THIS IS NOT THE CASE OF HONDURAS

LAND US AND MANAGEMENT EXAMPLES

VARIOUS COMMON CROPS THROUGHOUT THE AREA


FRONT. AGUA CALIENTE
ESQUIPULAS
GUATEMALA

Guatemala, Suchitepéquez



Representación del ojo del huracán Mitch, Octubre, 1998 fuente: Manuel de Diego

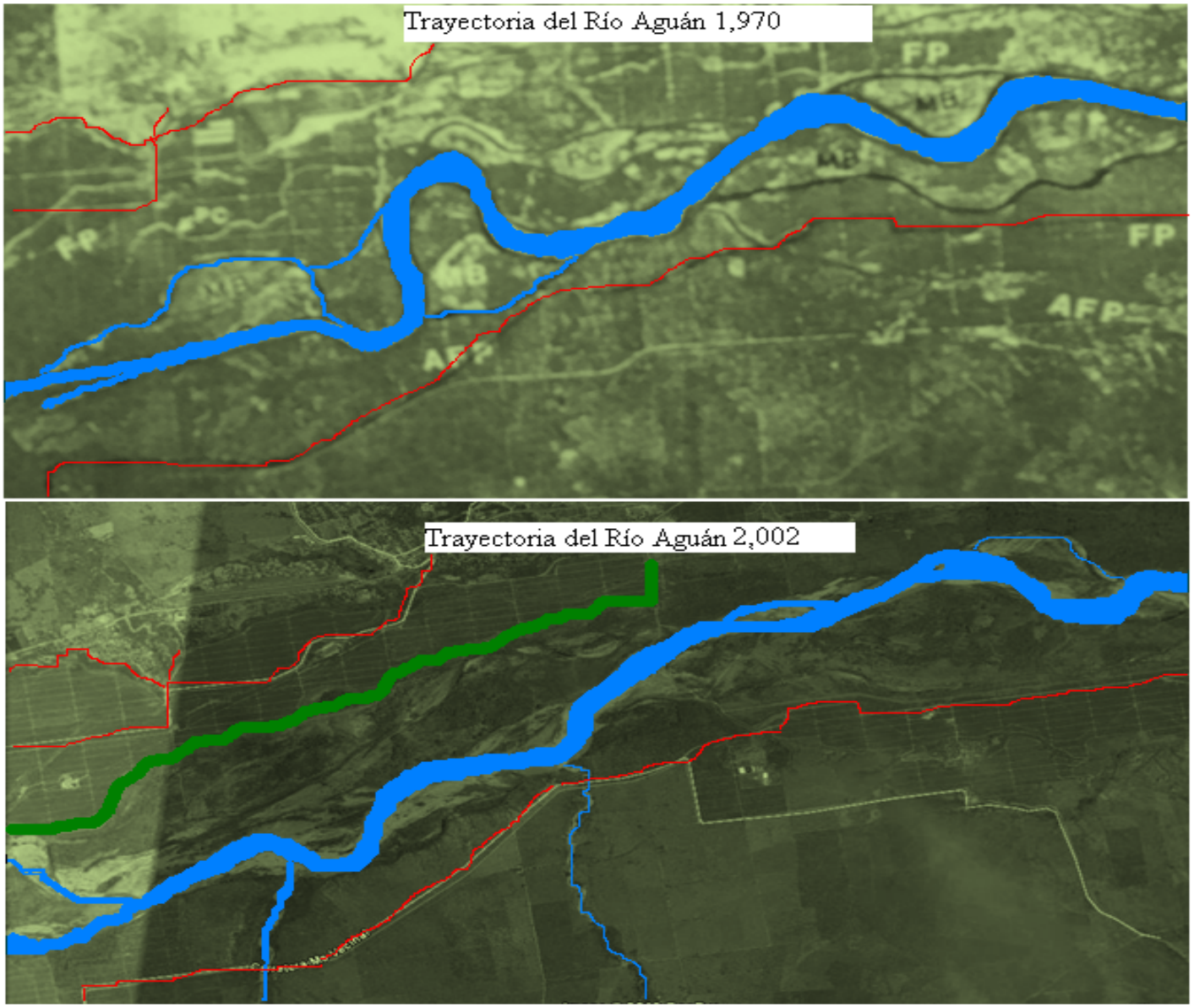


Figura 3. Trayectoria del río Aguán en 1,970 y 2,002 (líneas azules). Carreteras dentro de las fincas bananeras (líneas rojas) y borda de contención artificial **(**línea verde). Fuente (Martínez 1993), (Google Earth 2002) modificación José Reyes 2010.


Digicel

Suelos del Valle de Zamorano

Ápice de abanico

Base de abanico

Terraza alta

Terraza antigua

Planicie aluvial antigua

Planicie aluvial reciente

Vega

Río Yeguare

Lithic Troporthent

Lithic Haplustept

Lithic Haplustalf

Typic Albaqualf

Typic Haplustalf

Fluventic Haplustoll

Natric Argiustoll

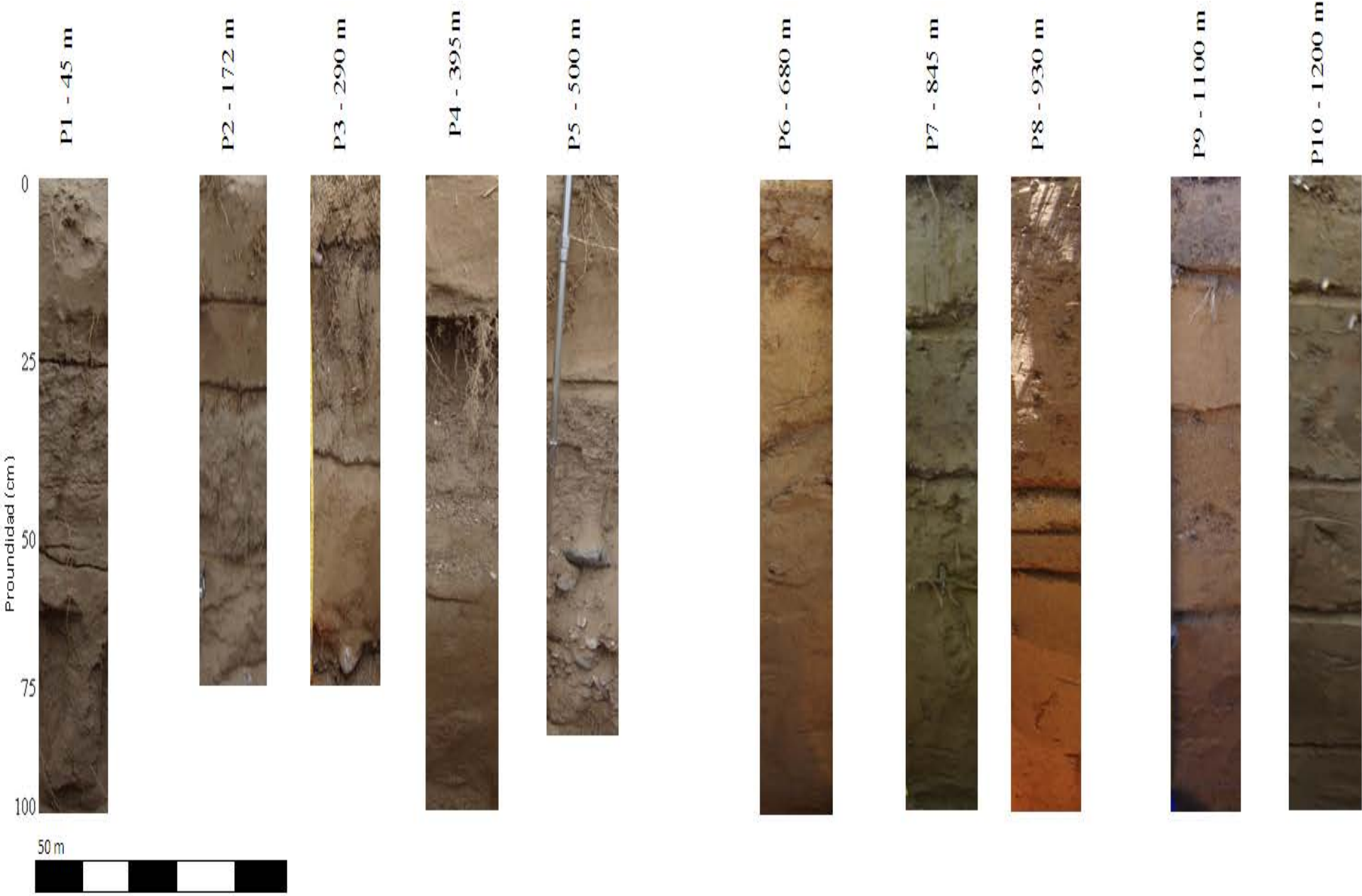


Figura 5. Representación morfológica y secuencia de fotos de los perfiles de suelo descritos en la planicie aluvial activa del río Aguán, Coyoles, Olanchito, Yoro, Honduras. (Distancia en metros en dirección perpendicular desde el eje central del río hacia el norte)

Guatemala, Suchitepéquez

Perfiles de suelos

1

2

3

4

Perfiles de suelos (2)

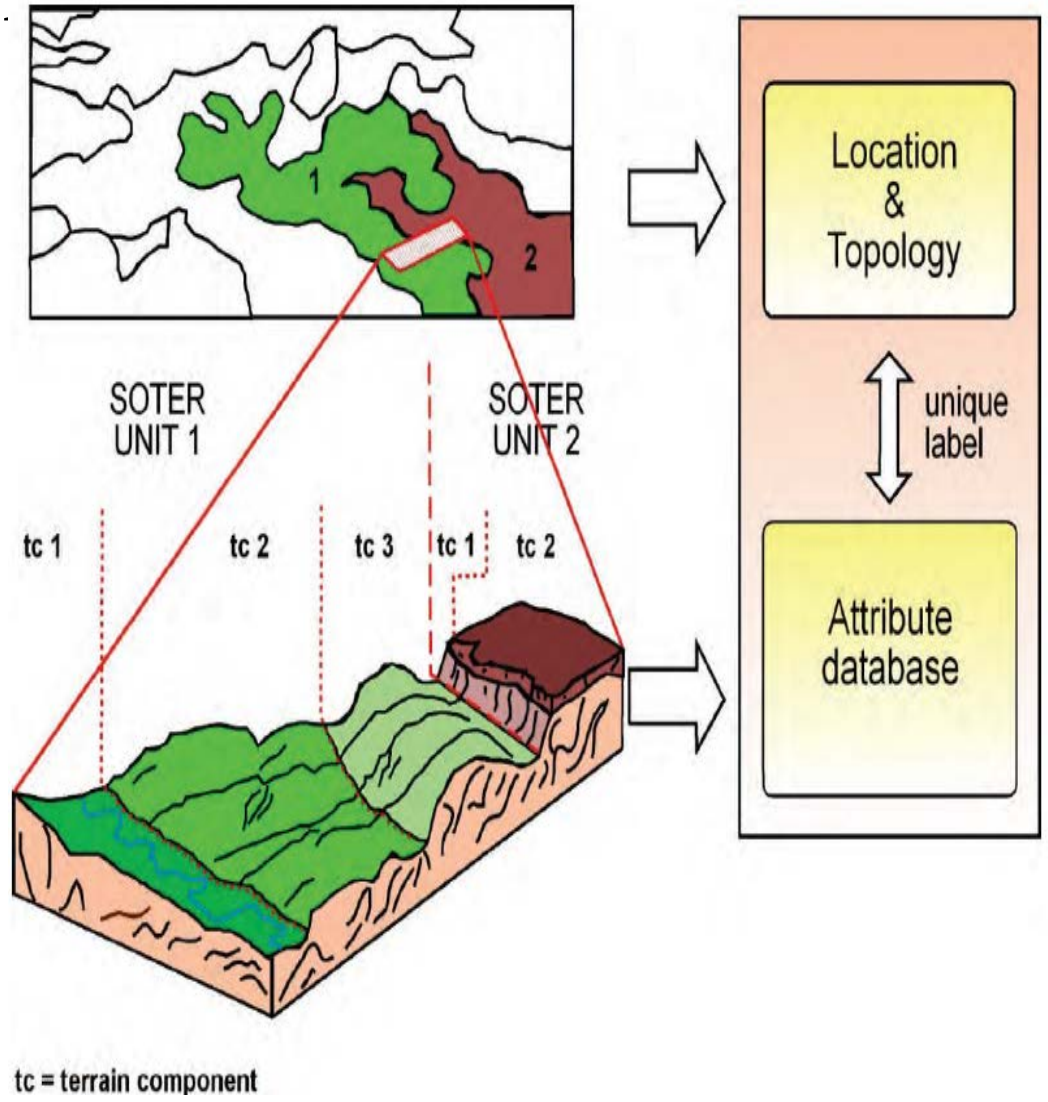
5

6

7

1. Base de datos SOTERLAC Honduras

- 139 Perfiles
- 501 Horizontes
- Unidad de SOTERLAC



(Summer 2000)

SOIL MANAGEMENT NEEDS

- MORE INFORMATION ON SOIL RESOURCES.
- ZONIFICATION OF LANDS FOR THEIR PROPER USE.
- COMPLIANCE WITH THE LAND USE LAWS.
- TECHNICAL ASSITANCE IN SOIL MANAGEMENT QUALITY, AND AS A SOURCE OF CO2 STORAGE.
- MAKE ECONOMIC RESOURCES AVAILABLE TO FARMERS AND USERS.