

GULF OF MEXICO

FLORIDA

NORTH AMERICAN PLATE

ATLANTIC OCEAN



# Overview of the Geology of Cuba

YUCATAN

PRE OLIGOCENE  
W-CARIB

CAYMAN TRENCH

Nicaraguan Rise

CARIBBEAN PLATE

**Manuel A. Iturralde-Vinent**  
**Cuban Academy of Sciences**

Maya Block

Chortis Block

Jamaica

Gonave Microplate

Hispaniola OROGEN

Puerto Rico Trench System

Cayman Ridge

Bartlett Trough

Northern Caribbean Transform Fault

Hispaniola Transform Fault System

YUCATAN Isthmus

YUCATAN Isthmus

ANTILLES

BAHAMAS

Greater Antilles

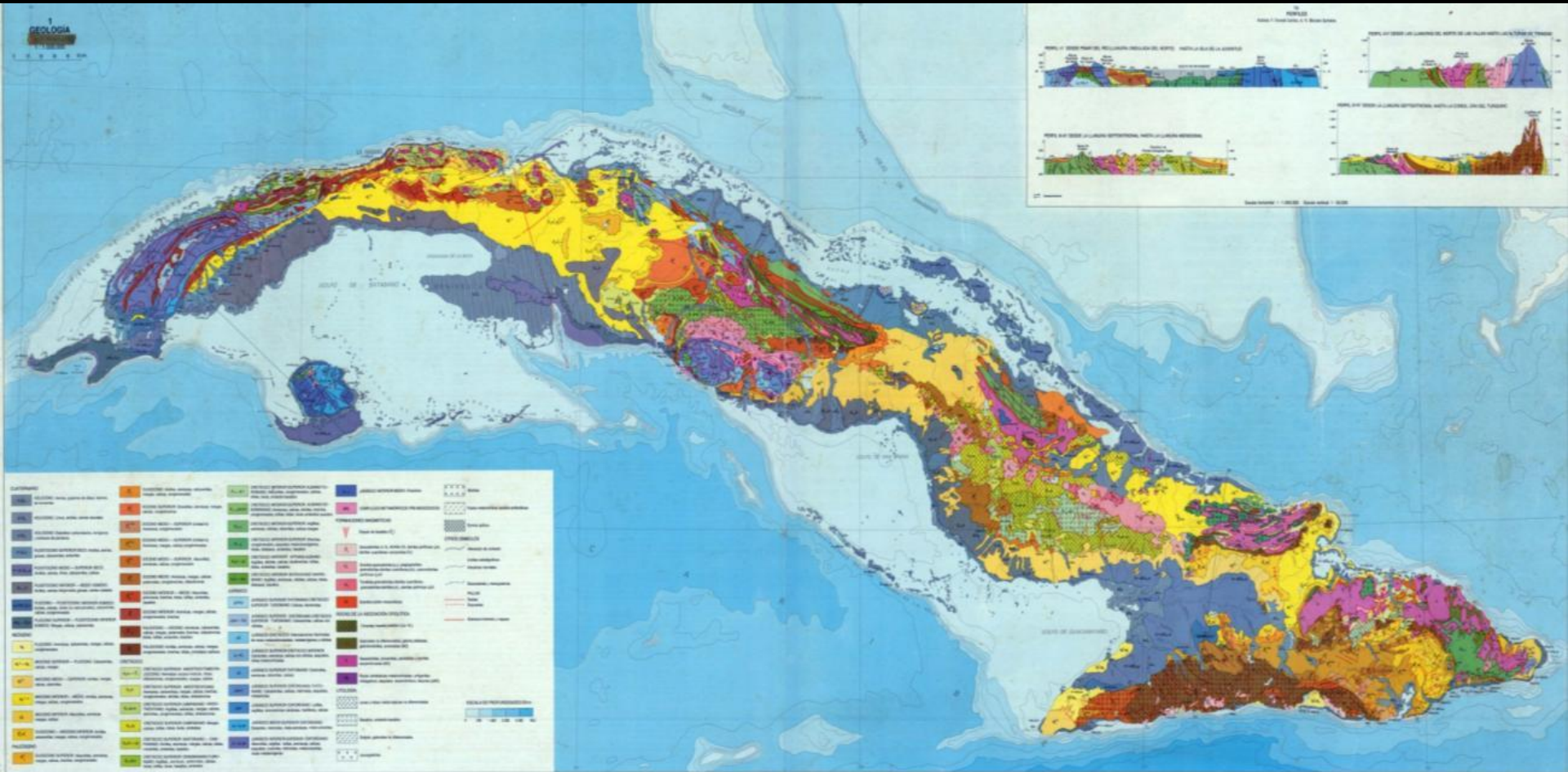


# Geological research and cartography started in the second half of the XIX Century



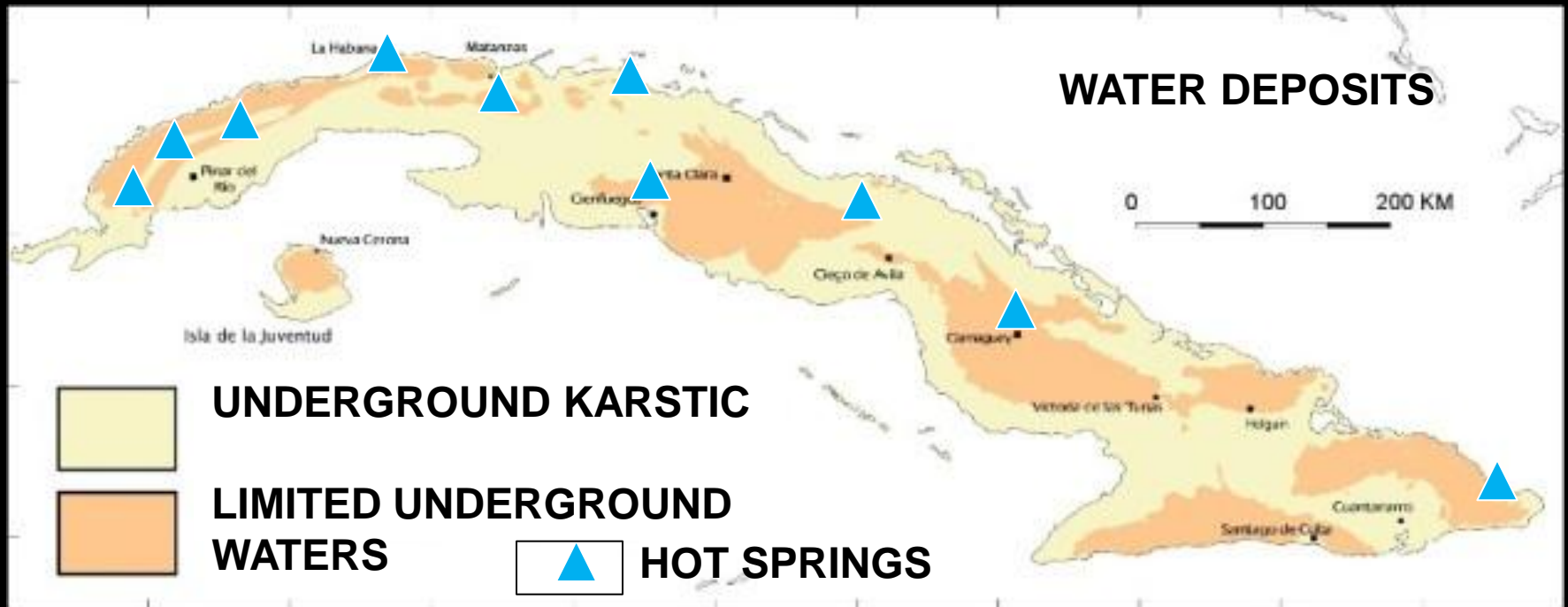


# Now the territory is covered by modern thematic digital maps

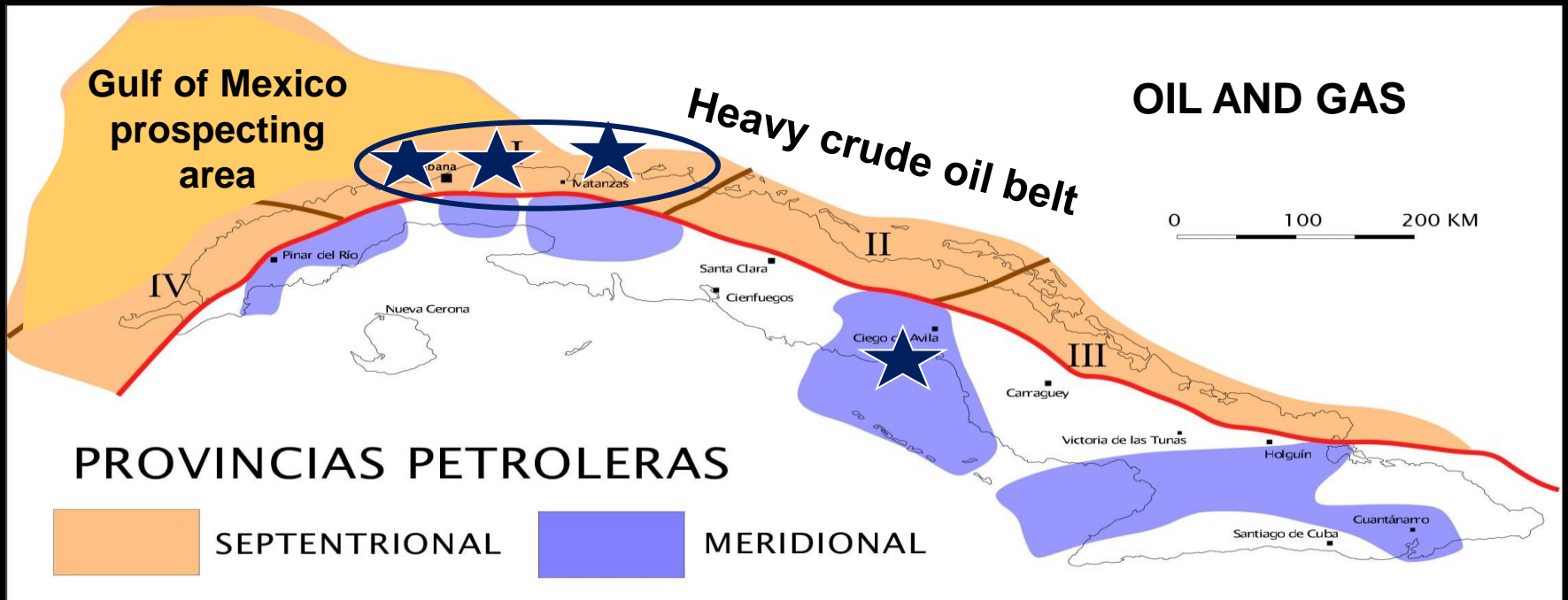


# **Main natural resources**

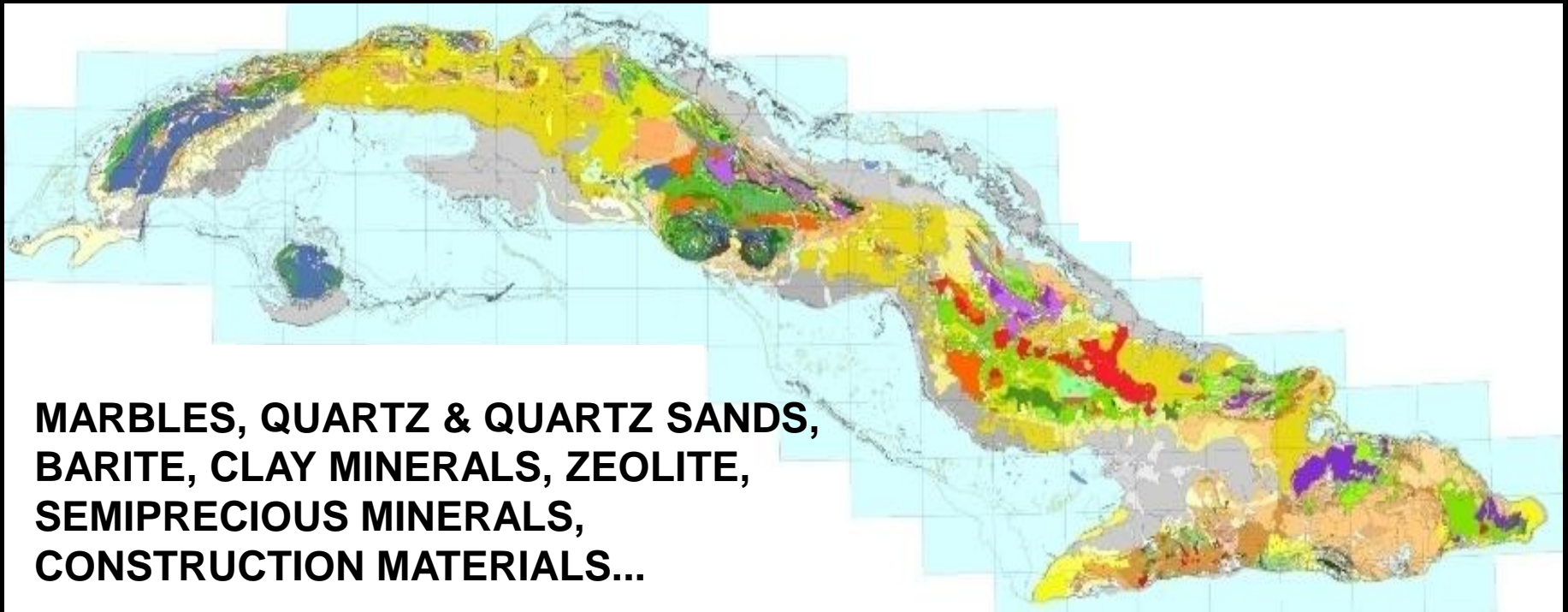
# Mineral waters



# Oil and Gas



# Industrial minerals





# Base Metals

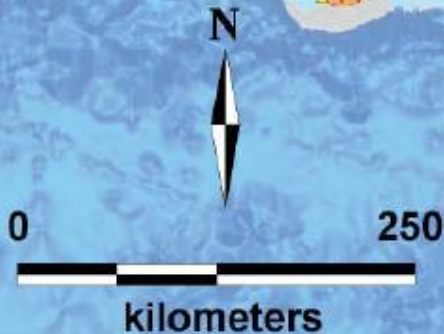
Fig. 2A



Fig. 2B



Fig. 2C



Deposit Type (shape)	Commodity (color)	Gross Contained Metal Value (size)
✕ SEDEX	Yellow circle: Precious Metals	▲ \$US 1,000,000,000 and up
● VMS	Green circle: Copper	▲ \$US 100,000,000 - 1,000,000,000
● Epithermal	Blue circle: Base Metals	▲ \$US 10,000,000 - 100,000,000
◆ High Sulfidation Epithermal	Orange circle: Aluminum	▲ \$US 1 - 10,000,000
■ Skarn	Purple circle: Nickel and Cobalt	▲ Prospects
▲ Orogenic	Green circle: Chromium	note: Gross contained metal values are provided for comparison purposes only. US dollar value is calculated using metal prices of Au: \$800/oz, Ag: \$10 /oz, Cu: \$1.50 /lb, Pb, Zn, Cr and Al: \$0.50 /lb, Ni: \$5 /lb and Co: \$10 /lb.
+ Porphyry	Brown circle: Manganese	
■ Volcanogenic	Grey circle: Iron	
▼ Orthomagmatic	Yellow circle with blue center: Polymetallic deposit symbols are nested to show base and precious metal content	
◆ Lateritic		
⌘ Alluvial		

**Nickel, cobals, iron, gold, cooper, etc.**



# Landscapes







GULF OF MEXICO

FLORIDA

NORTH AMERICAN PLATE

ATLANTIC OCEAN

200 KM

GREATER ANTILLES

Cuba

BAHAMAS

YUCATAN

YUCATAN BASIN

PRE OLIGOCENE W-CARIB

Cayman Rise  
Cayman Ridge

Oriente Fault  
Bartlett Trough

Northern Caribbean Transform Fault System

Puerto Rico Trench

Maya Block

CAYMAN TRENCH

Gonave Microplate

Jamaica

HISPANIOLA OROGEN

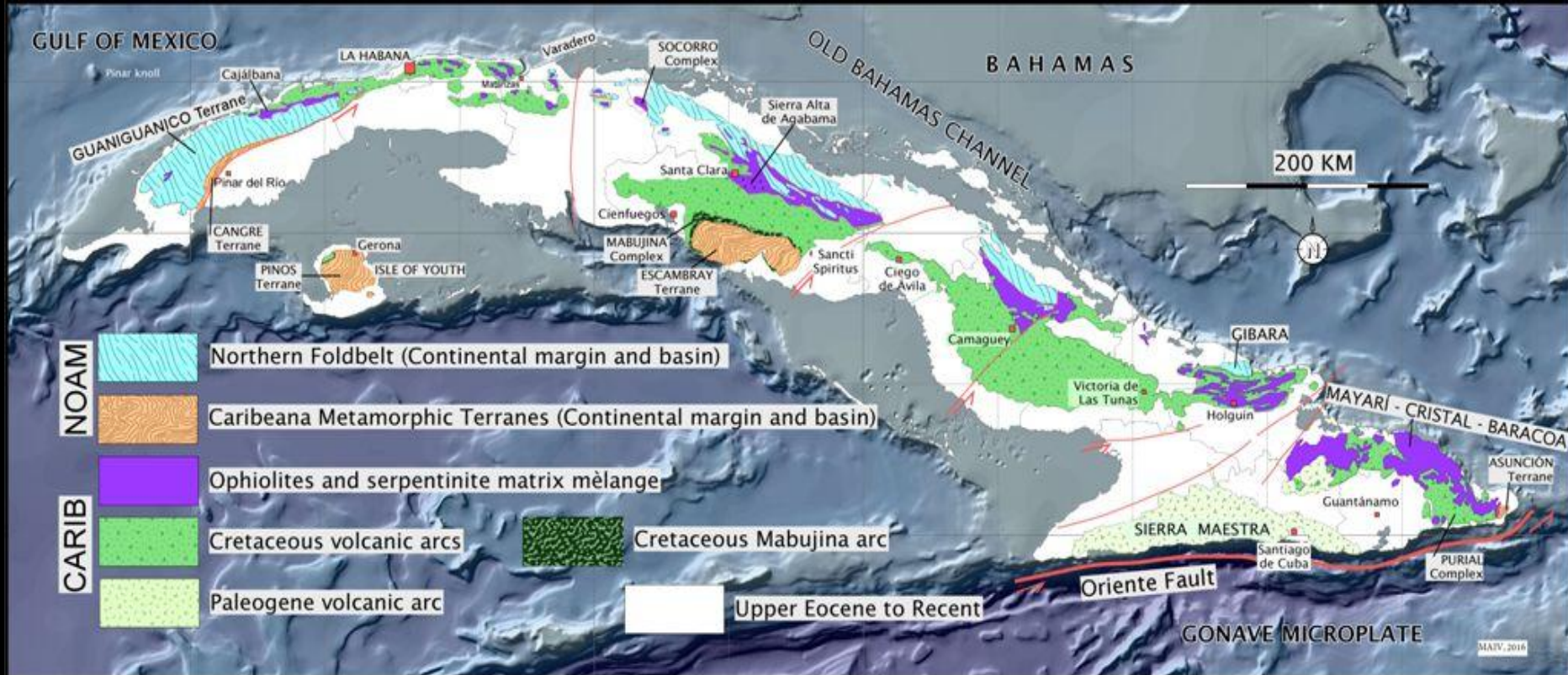
Puerto Rico

Chortis Block

**Cuban Geology conceals unique problems to be resolved**

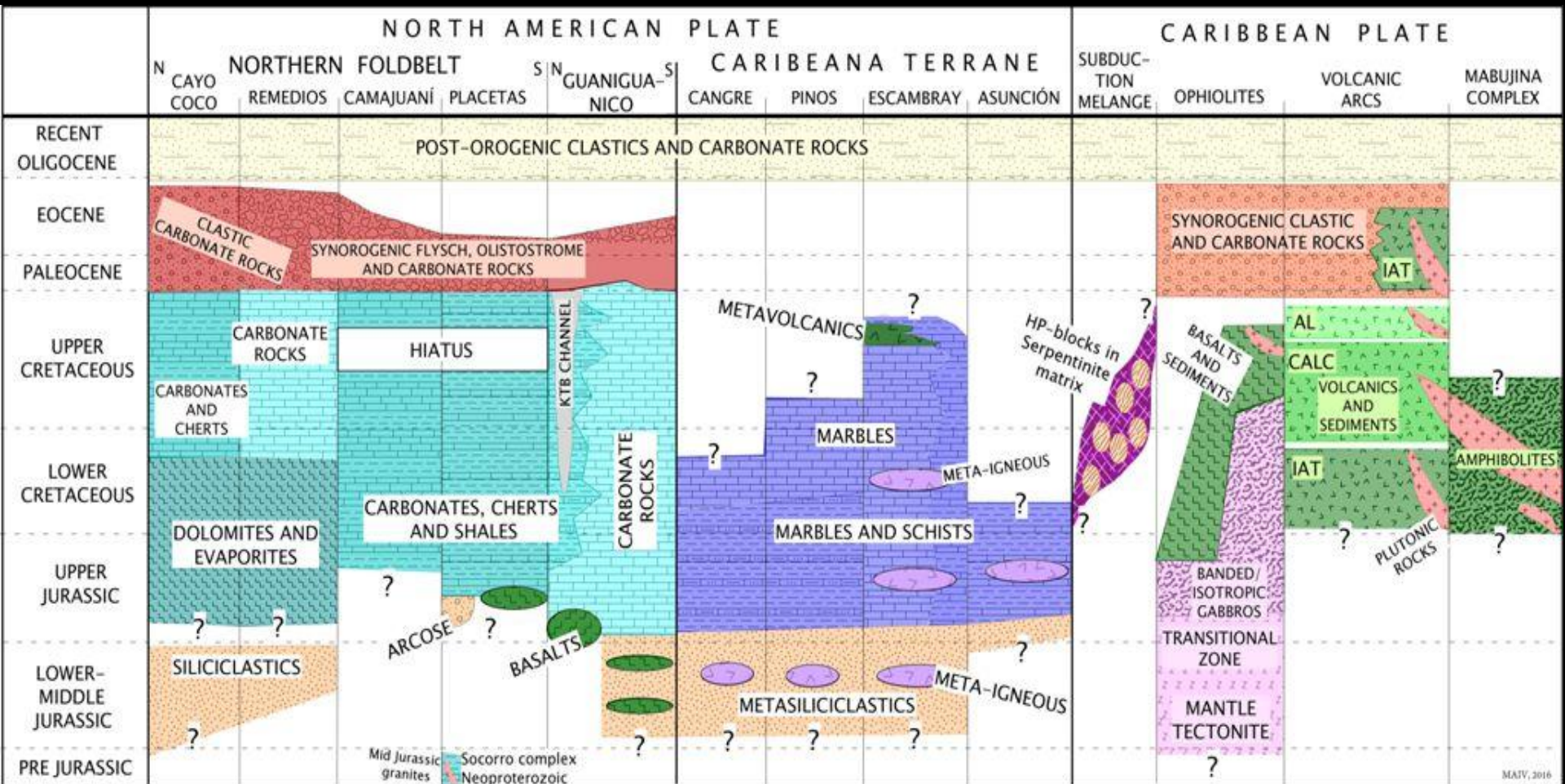


# Geological constitution

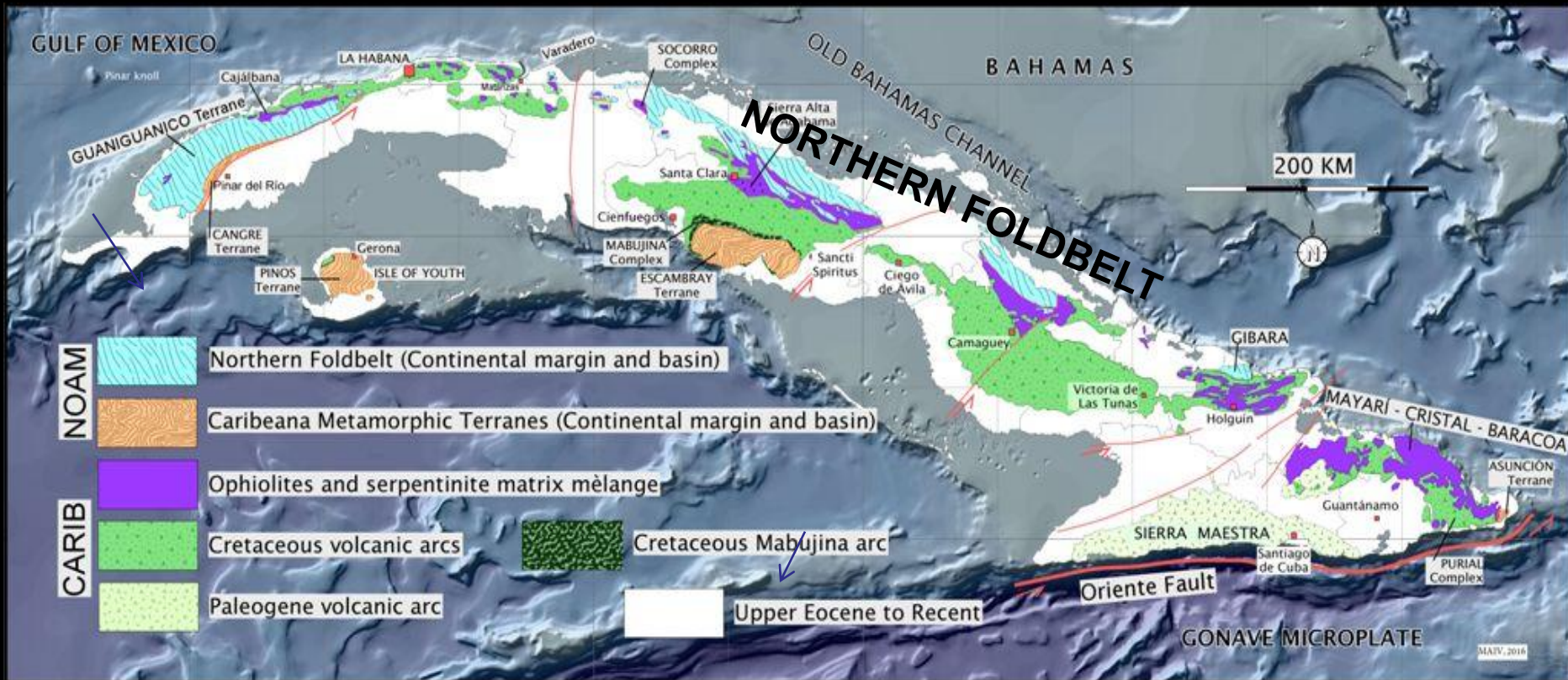




# Main lithotectonic units



# The Northern Foldbelt and the Guaniguanico terrane



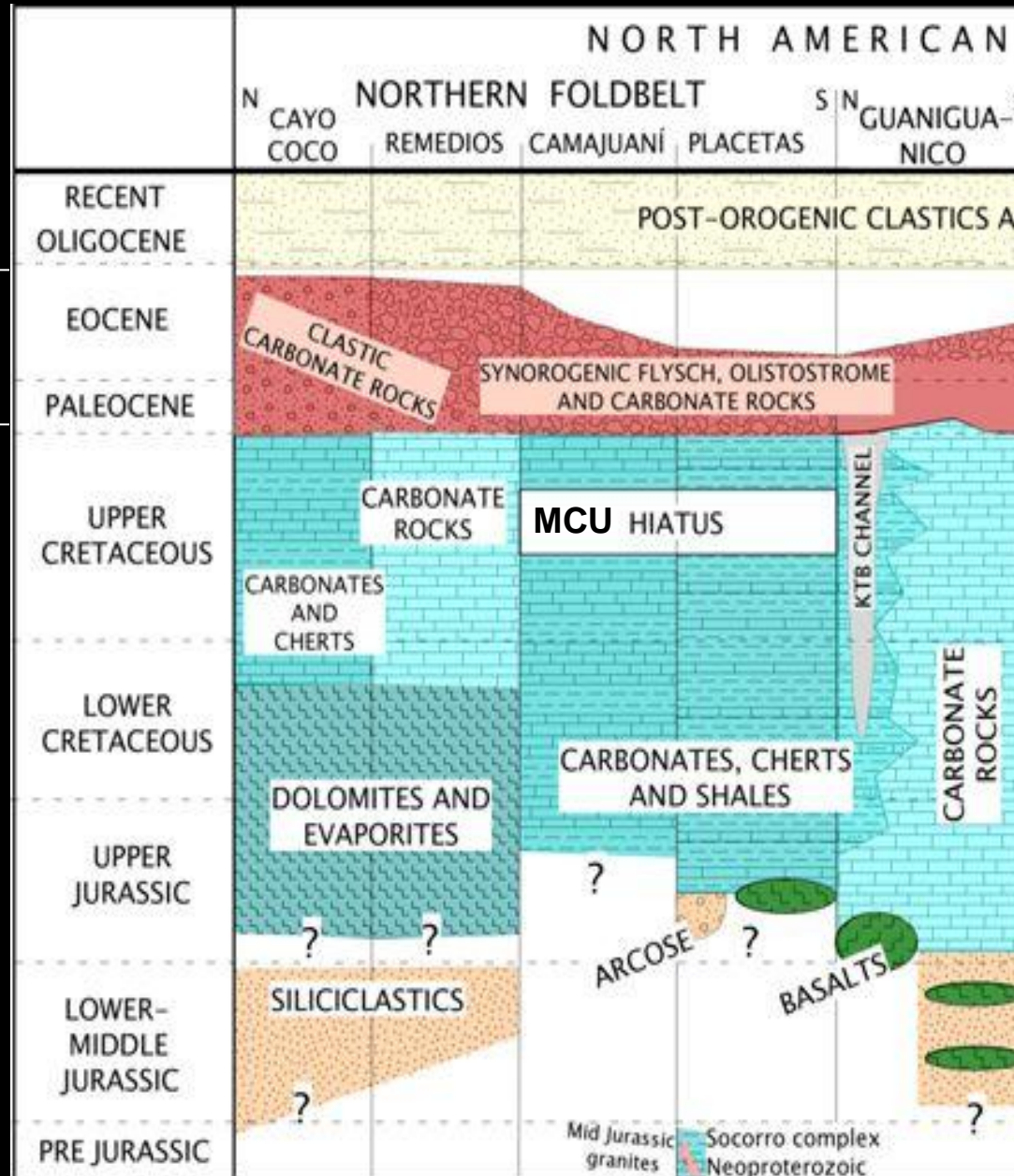


# The stratigraphy of the Northern Foldbelt and Guaniguanico

**POST OROGENIC**

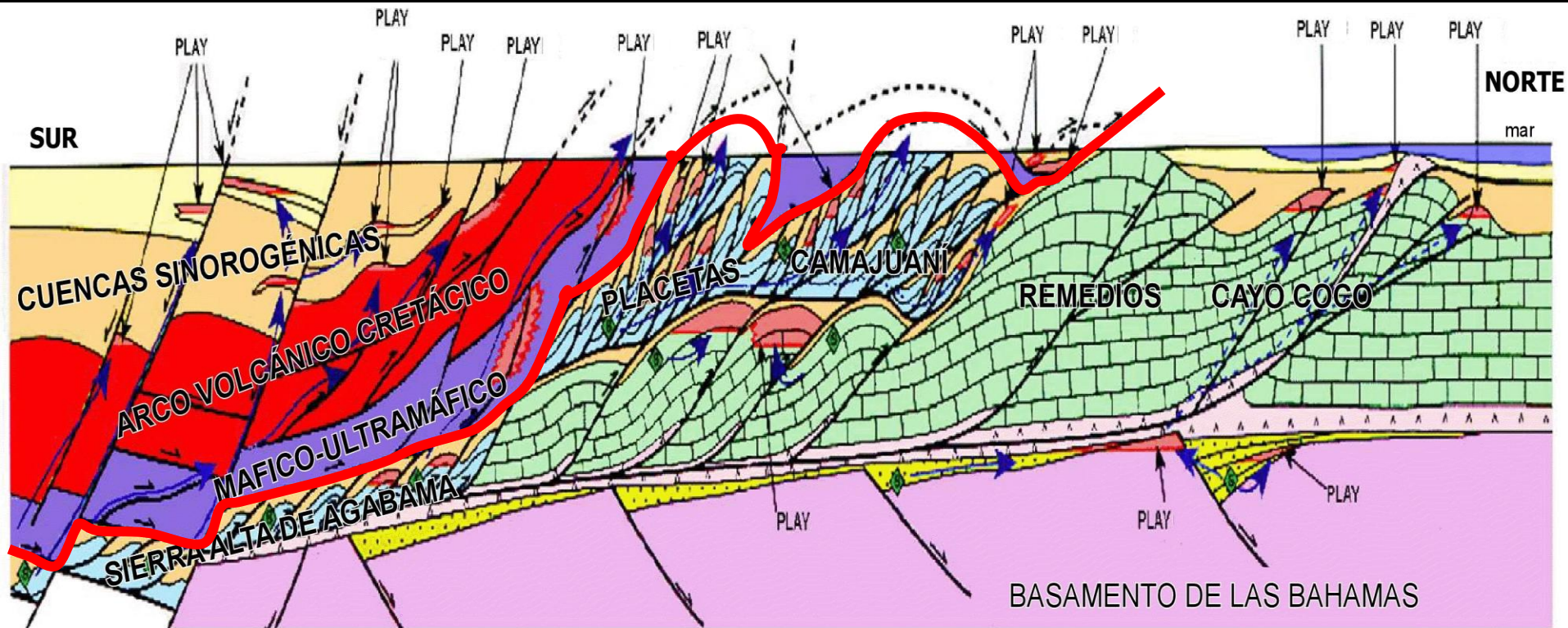
**FOREDEEP**

**CONTINENTAL MARGIN**



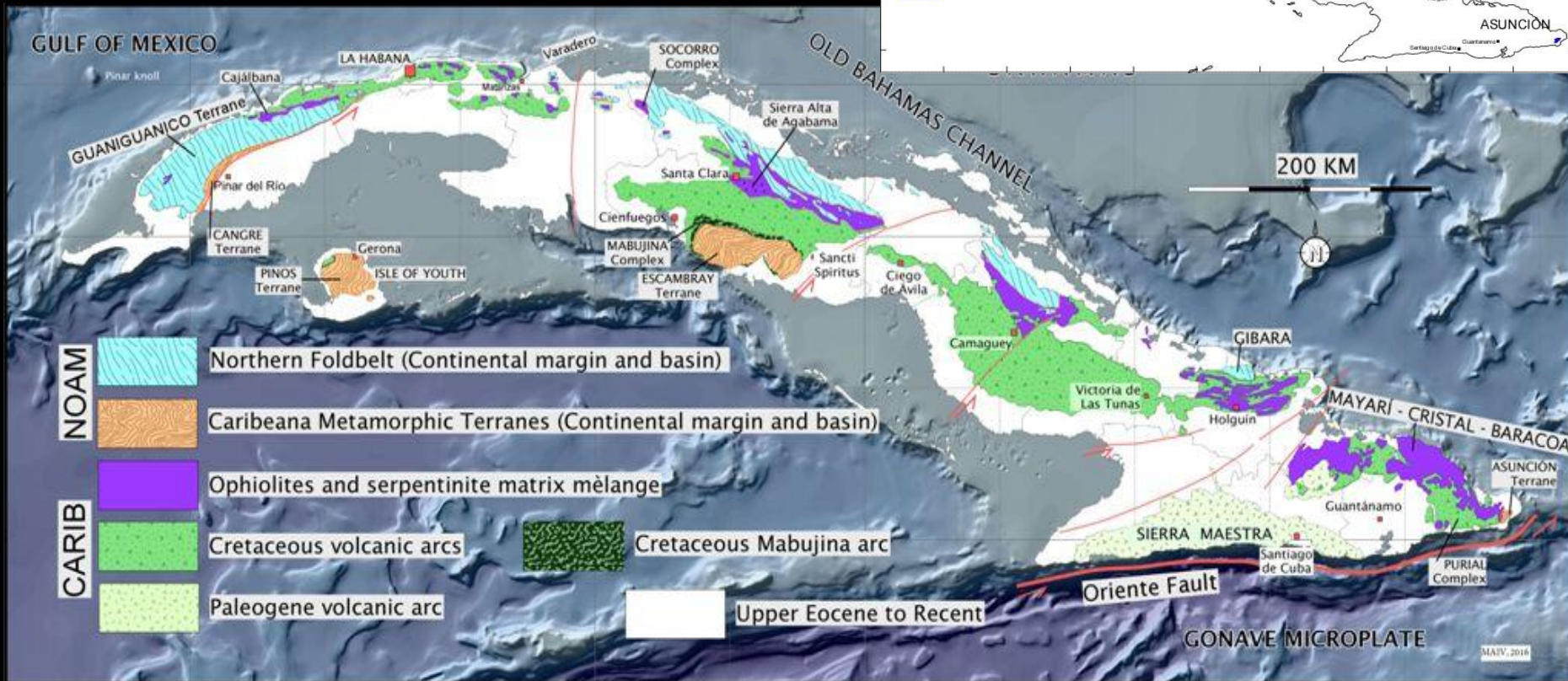


# Cross section of the Northern Foldbelt



# CARIBEANA

## metamorphic terranes



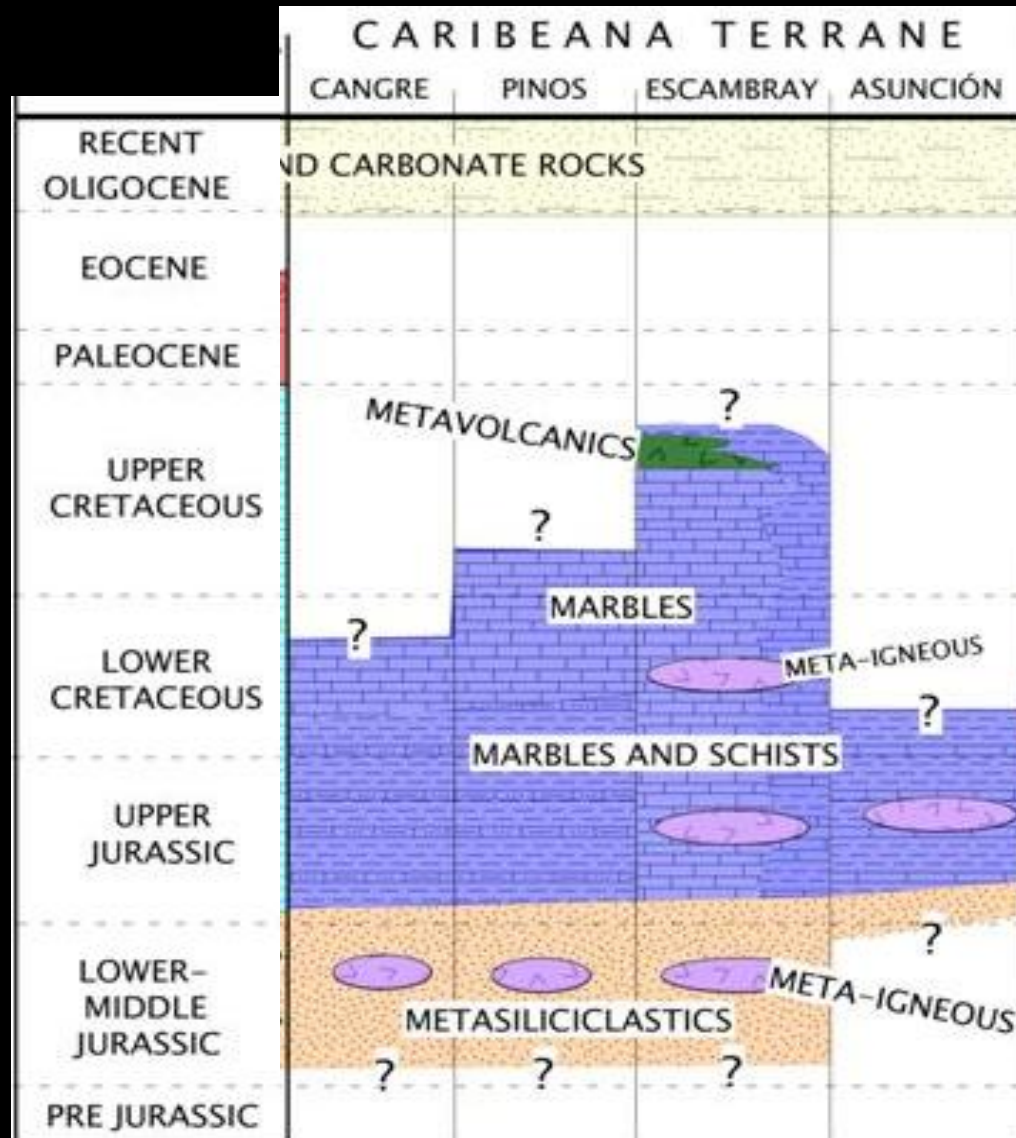


# Stratigraphy of Caribeana

**POST OROGENIC**

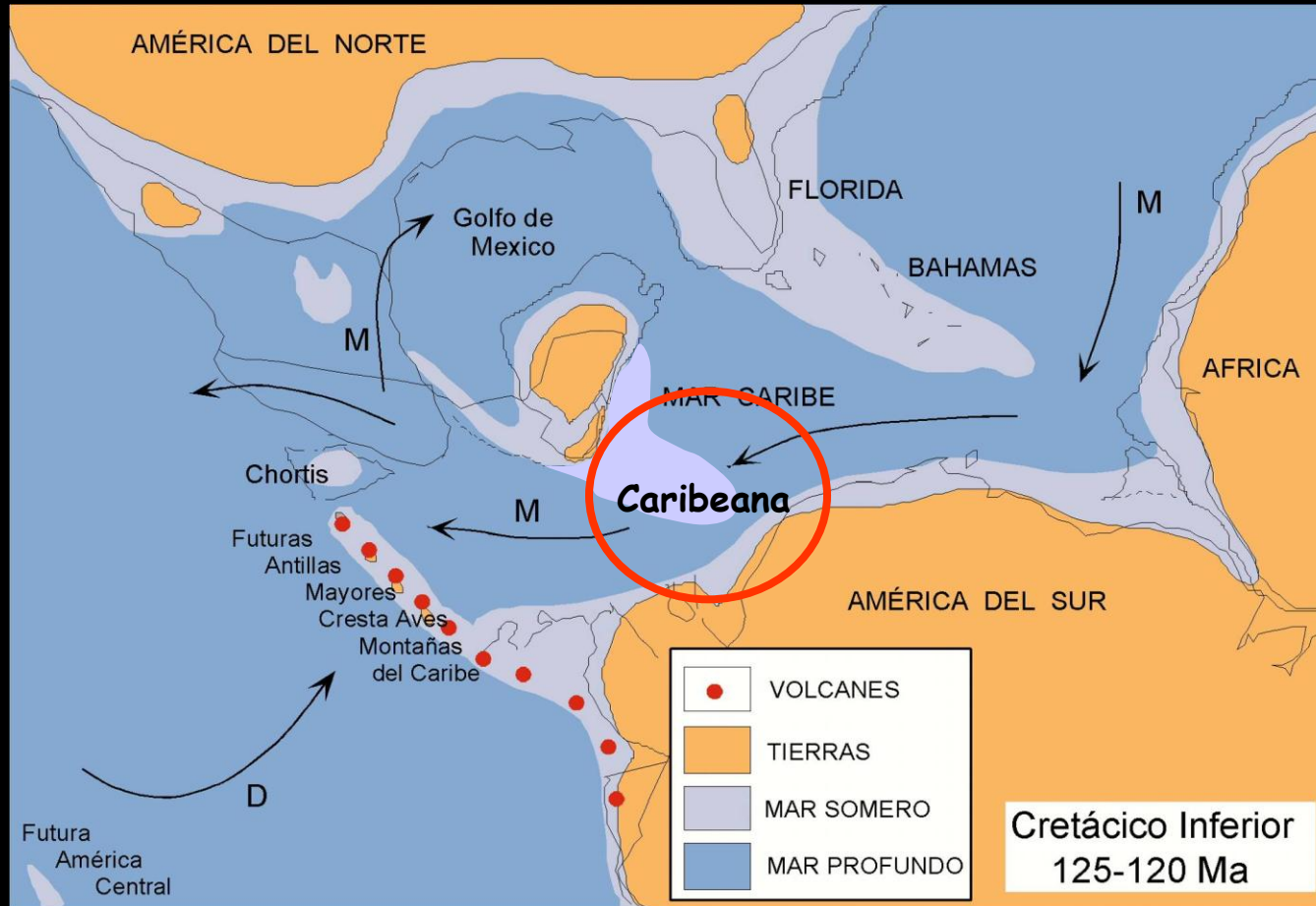
**SUBDUCTION / EXHUMATION**

**CONTINENTAL MARGIN**



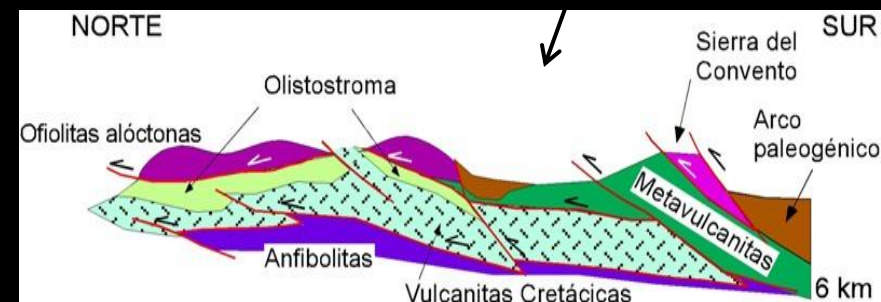
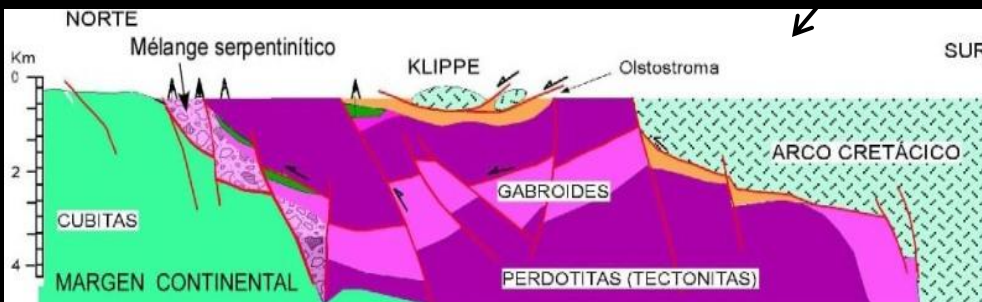
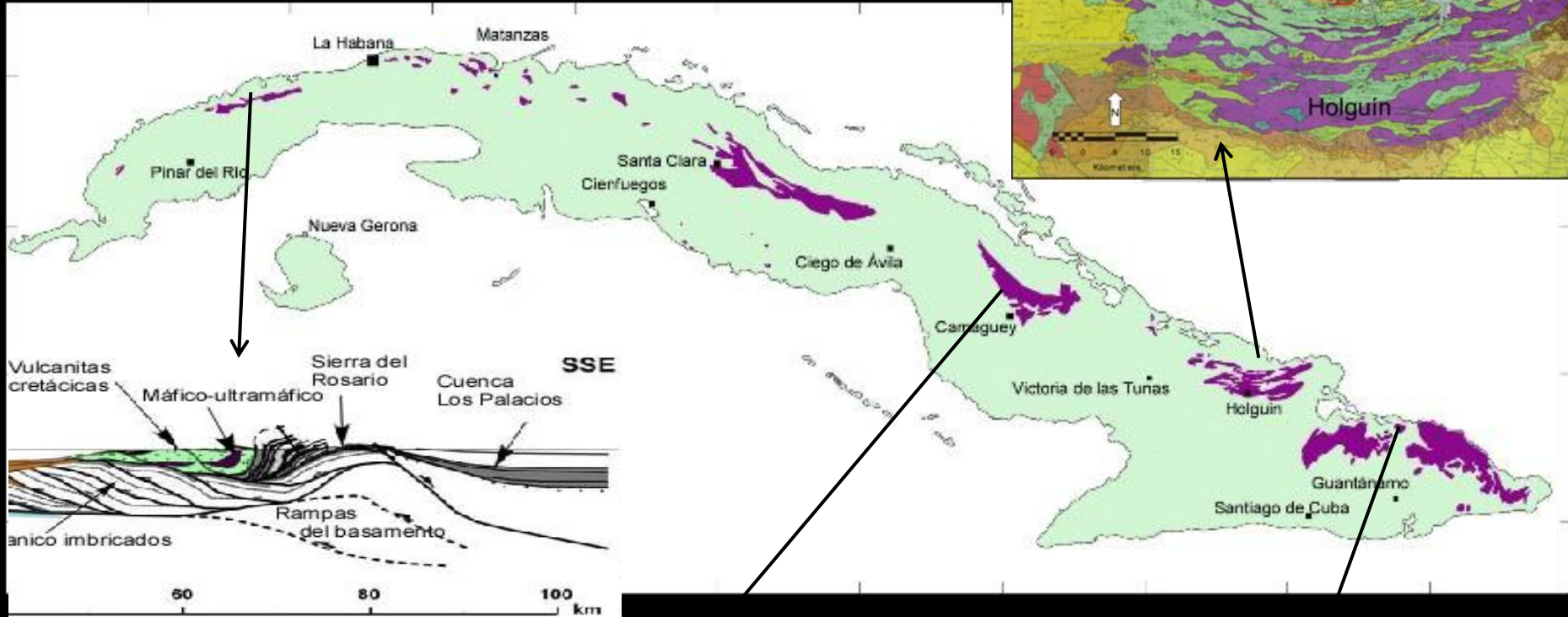


# Lower Cretaceous paleogeography



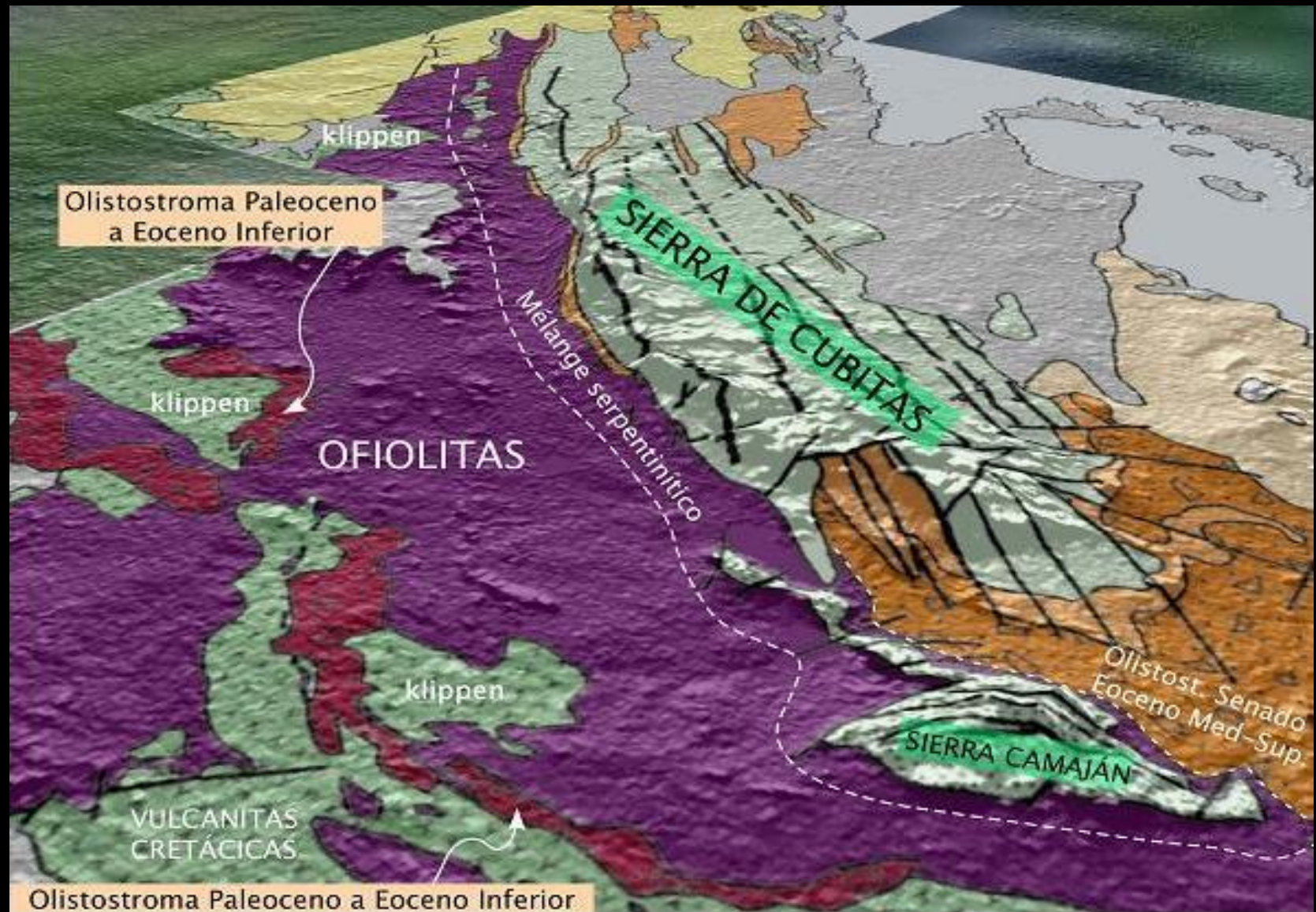
Location of the Caribeana submarine platform

# Allochthonous Ophiolites





# Camaguey: Serpentinite melange and Ophiolites





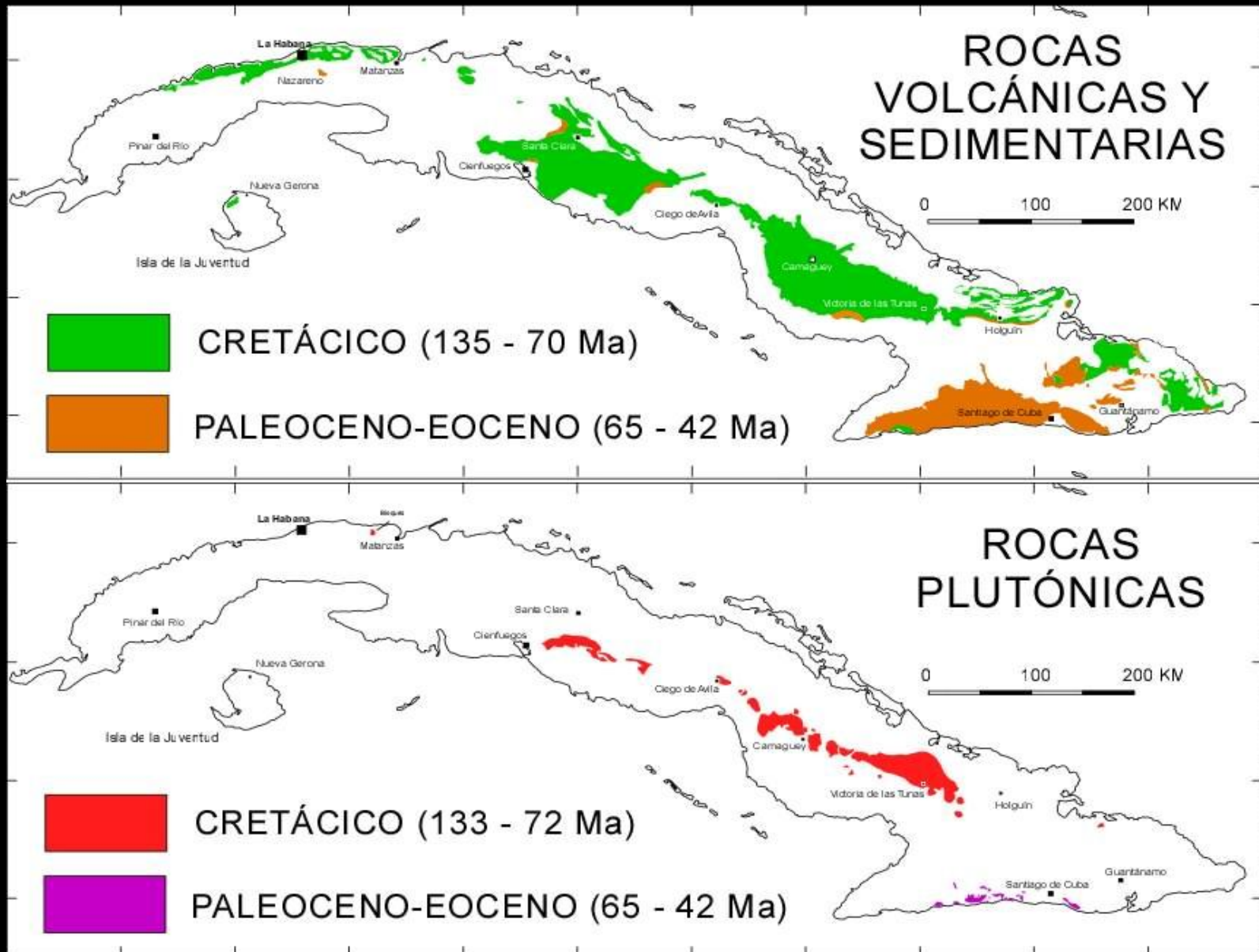
# The subduction melange with HP/LT rocks



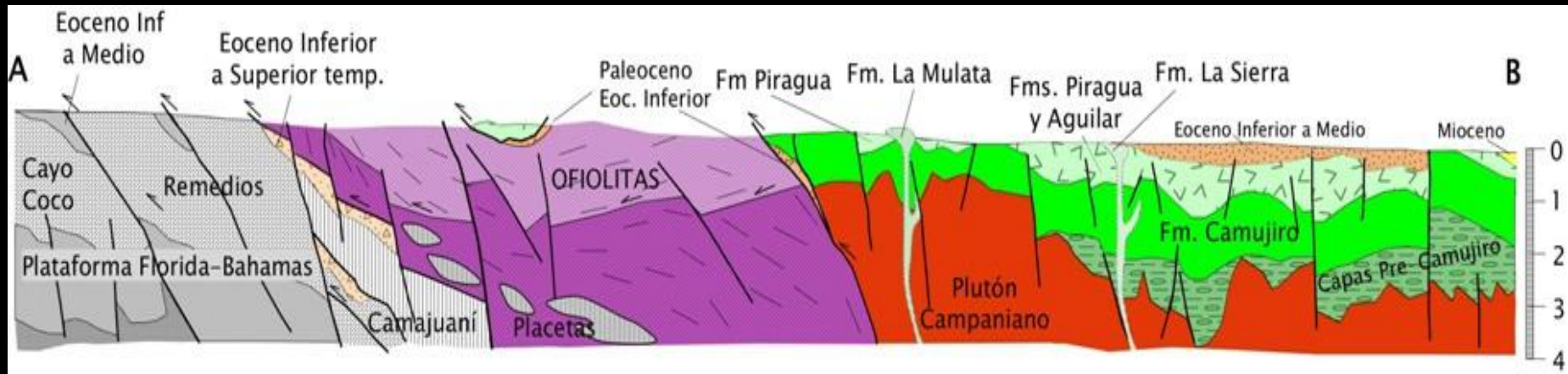
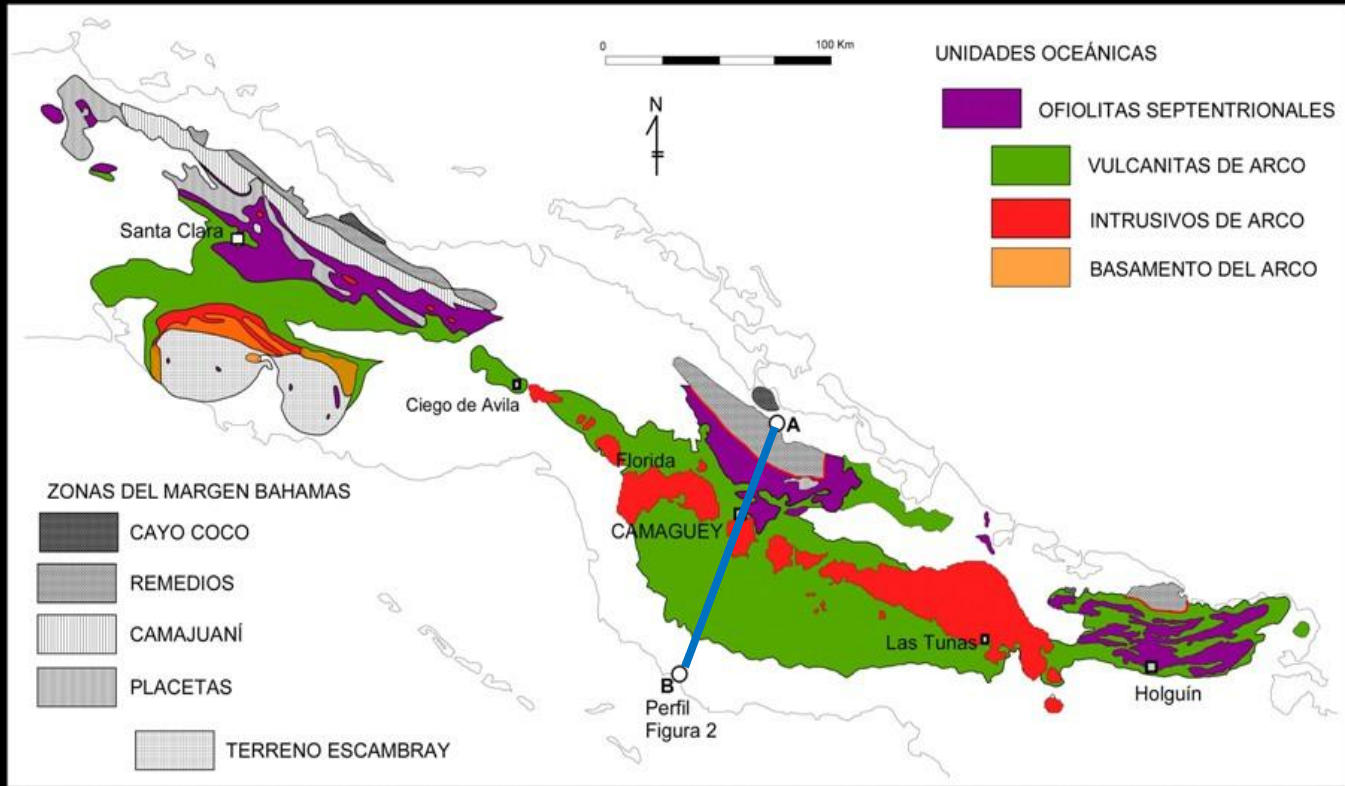
Some of this rocks are dated as 120 Ma.



# The volcanic arcs

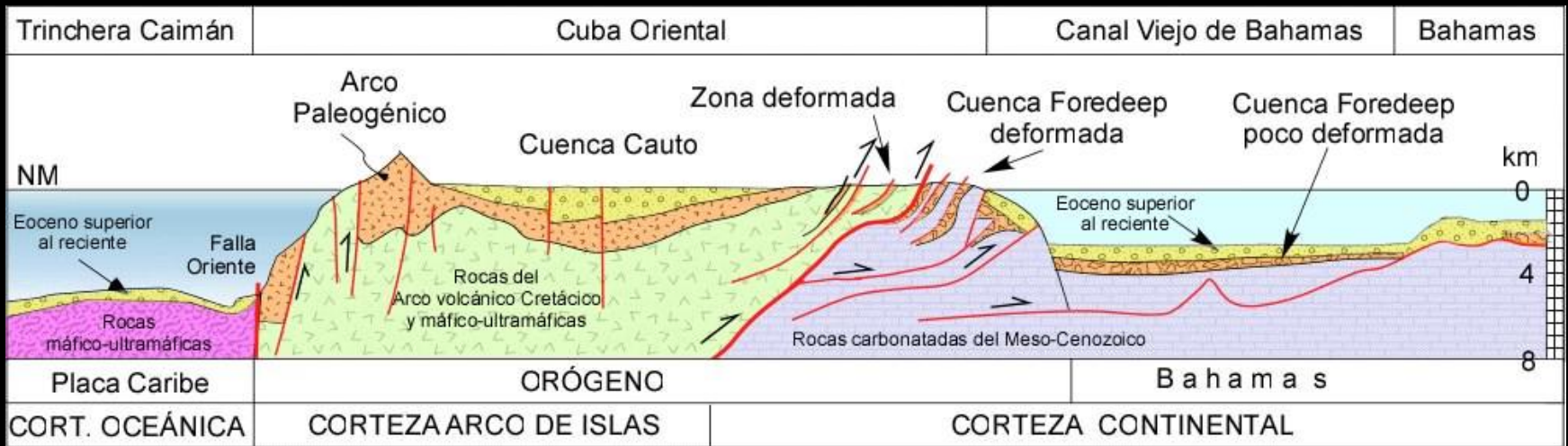
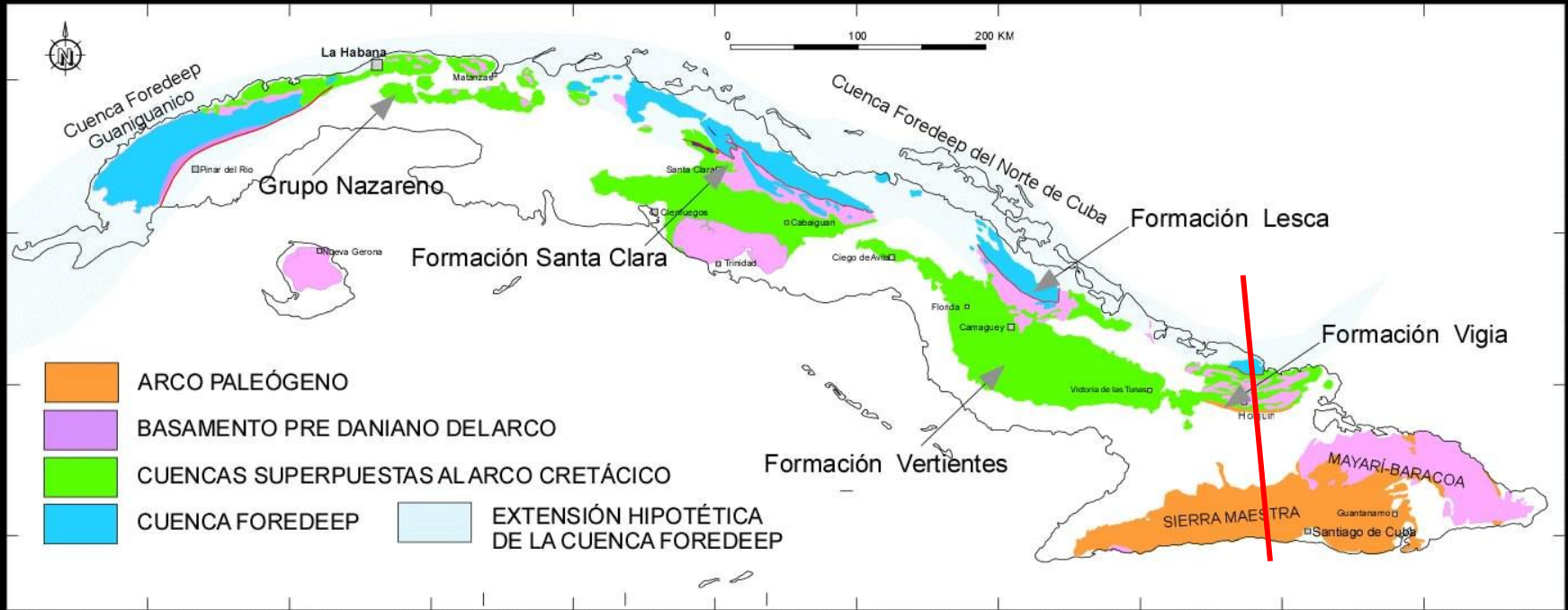


# The cretaceous volcanic arc in central cuba

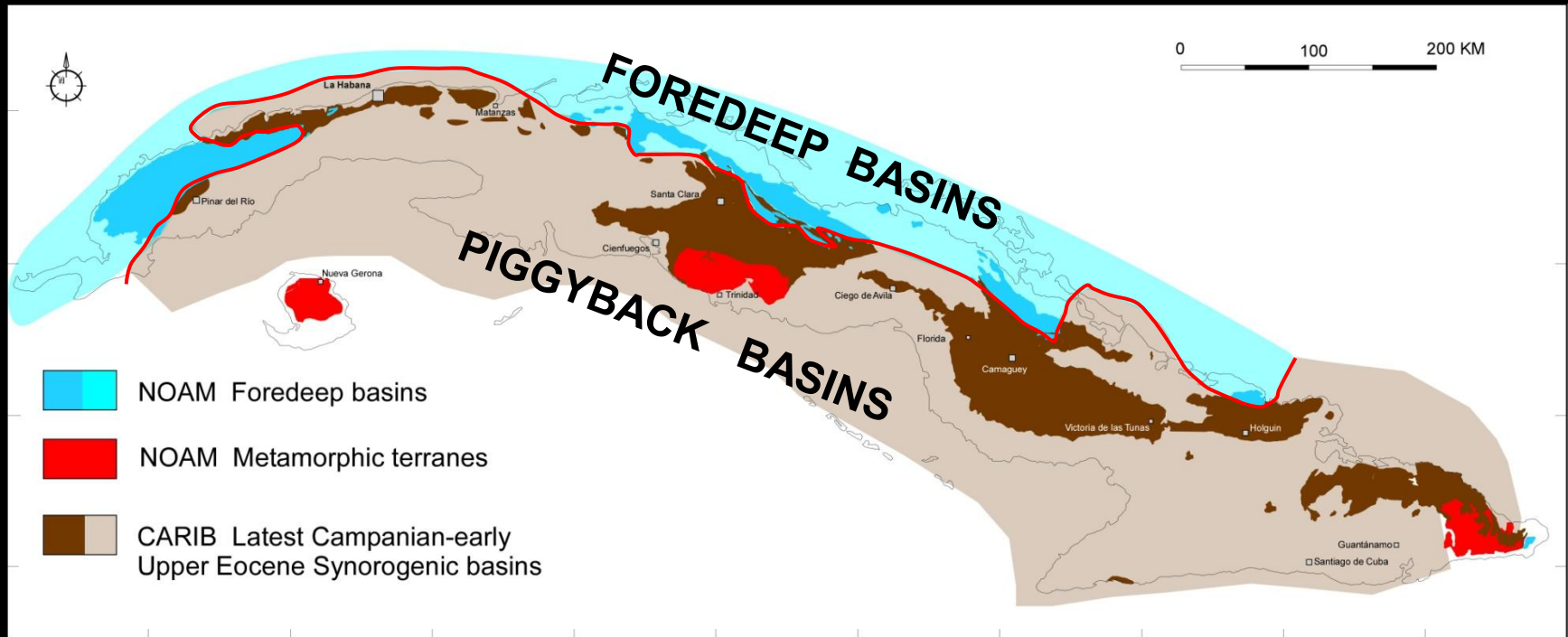




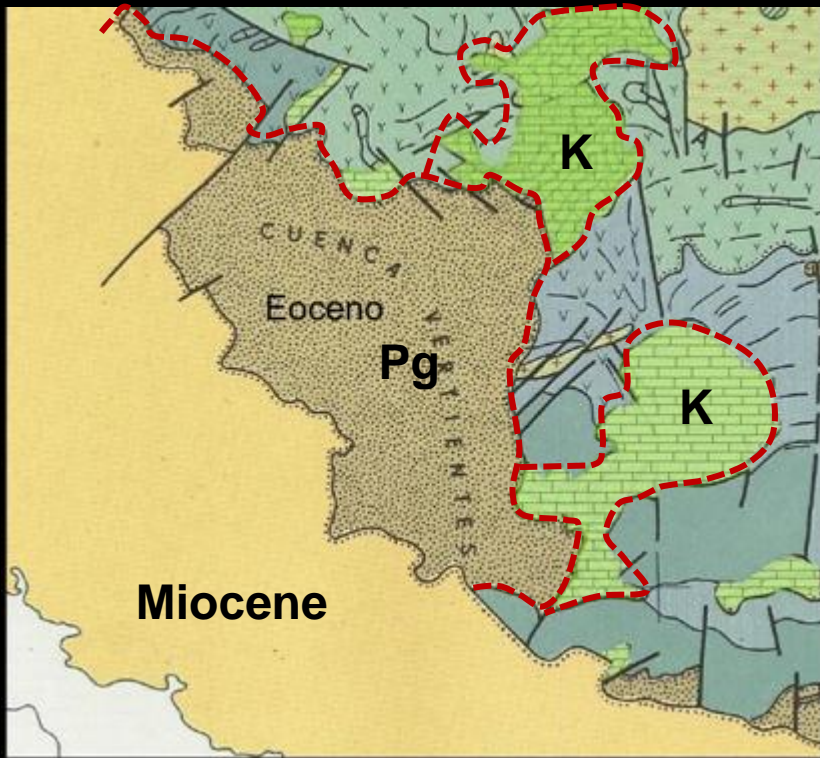
# THE PALEOGENE VOLCANIC ARC



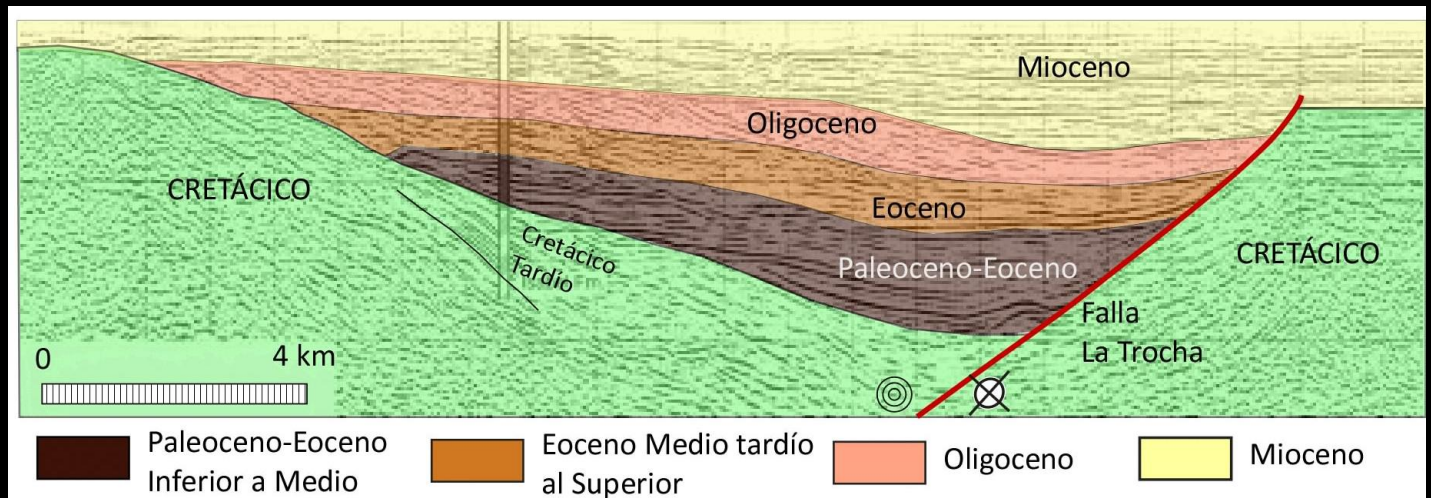
# Latest Cretaceous-late Eocene synorogenic basins



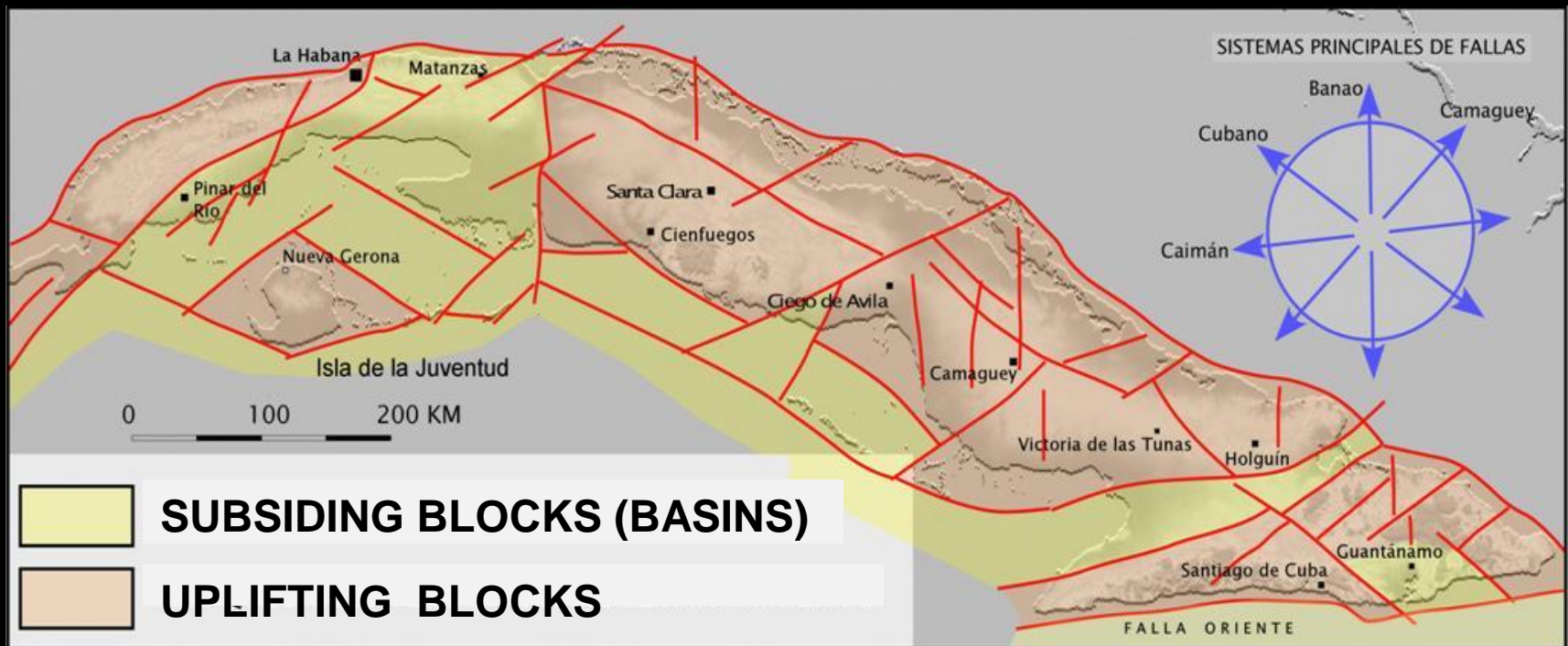




# SYNOROGENIC BASINS Onto the volcanics and mafic-ultramafic rocks



# Post-orogenic Latest Eocene to Recent





# RECENT: Evolution continues



# **The Origin of Cuba**

**Have been explained according to the theories of Geosyncline, Continental Drift, Oceanization, Tectonic Layering, Earth Expansion, Surge Tectonics and several models of Plate Tectonics.**





**If alien planetologists land on Earth, it will be in Cuba**

**VII International  
Earth Science Convention  
April 2017, La Habana**

**[www.cubacienciasdelatierra.com](http://www.cubacienciasdelatierra.com)**