

Eastern Caribbean Tour November 2019



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Eastern Caribbean Tour November 2019

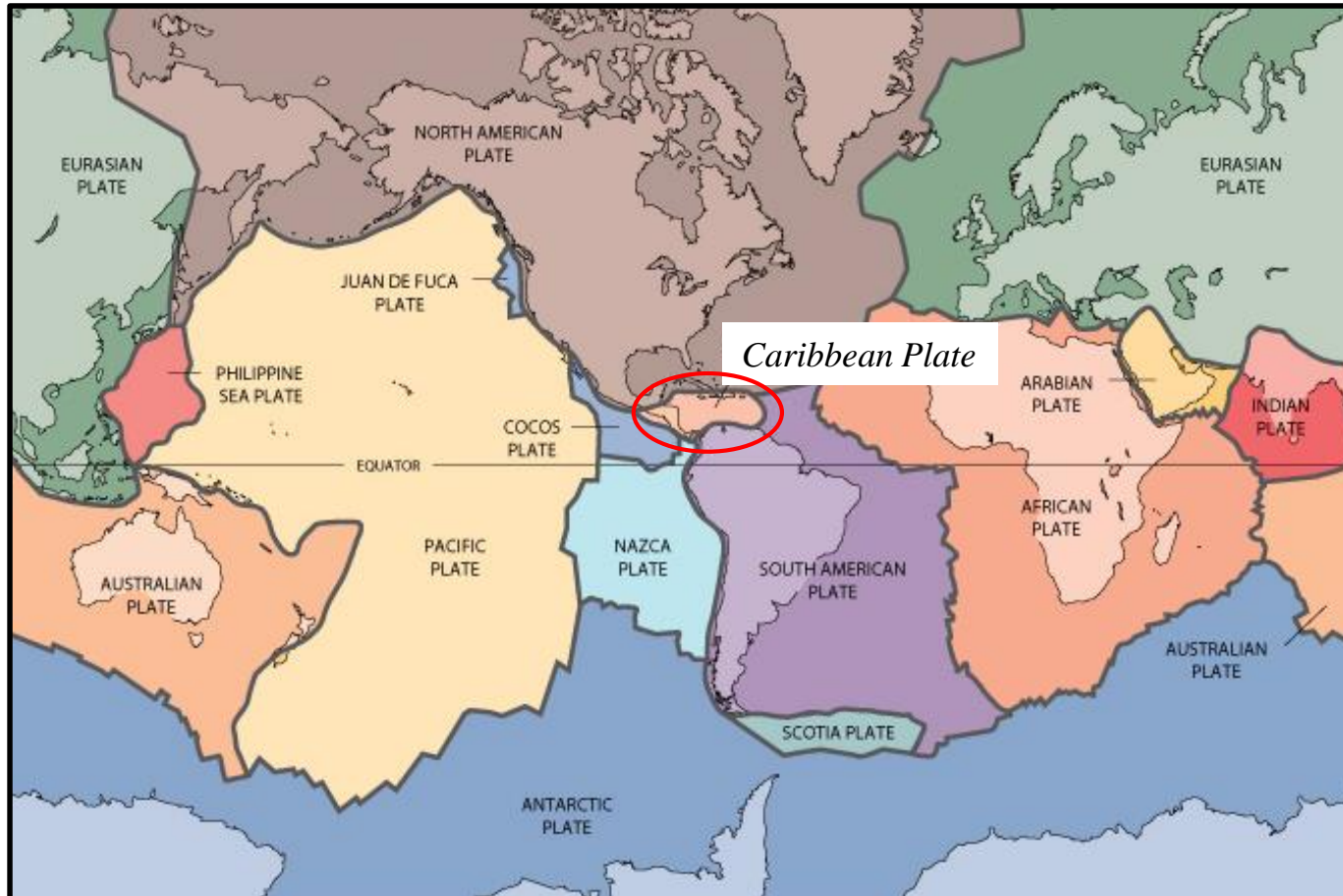


Silversea Whisper: 11/11/19 to 11/22/19

Science Lecture Topics:

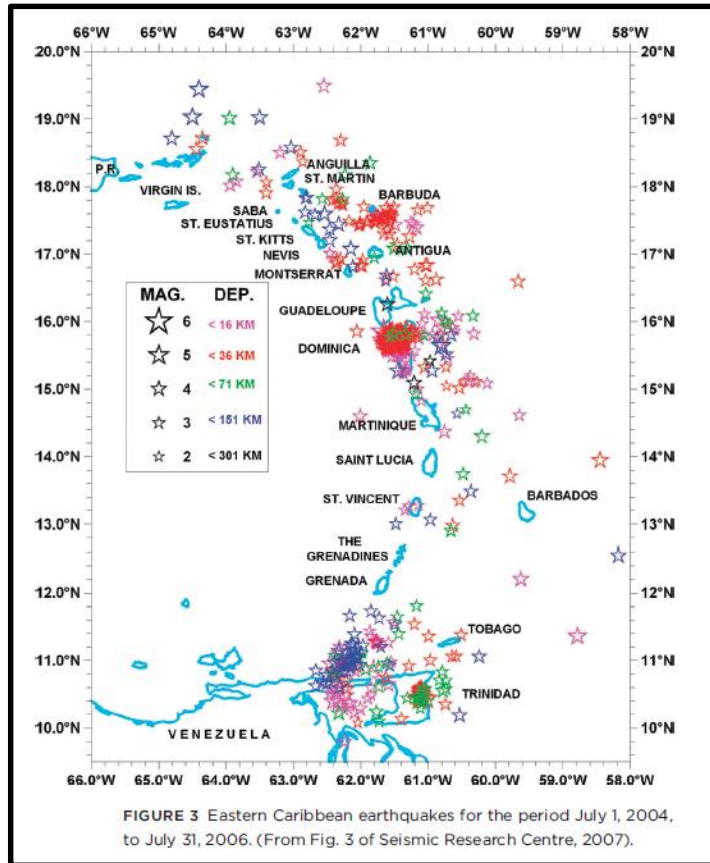
- *WWII in the Caribbean Sea*
- *Geology & Beer of the Caribbean*
- *Tsunamis in the Caribbean*
- *Caribbean Volcanoes*
- *Caribbean Coral Reefs*
- *Caves and Karst in the Caribbean*

Plate Tectonics: Geology's Unifying Theory and the Caribbean Plate

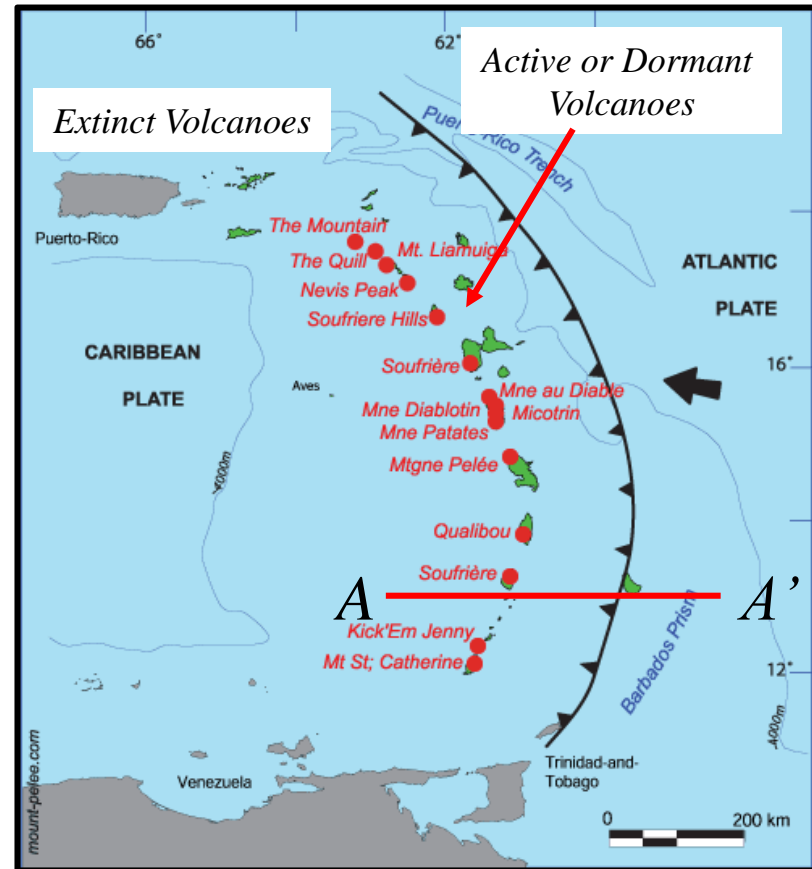


Lesser Antilles: Earthquakes and Volcanoes in the Eastern Caribbean

Earthquakes July 1, 2004 – July 31, 2006



Map of Volcanoes in Lesser Antilles

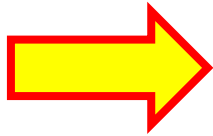


Eastern Antilles Volcanic Arc East-West Geologic Cross-Section

A

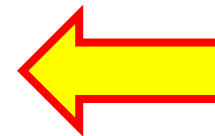
A'

Caribbean Plate

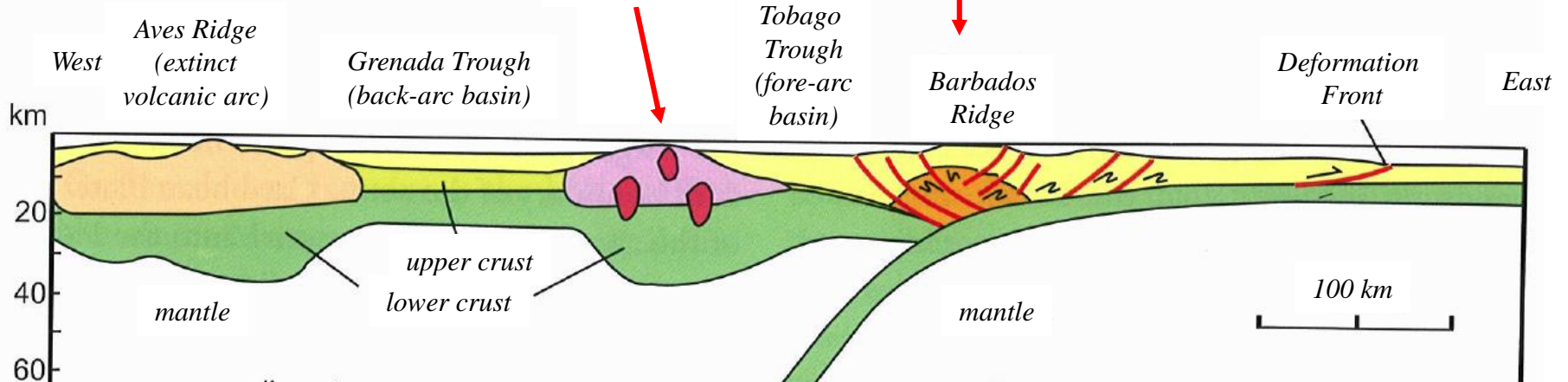


*Lesser
Antilles
Active
Volcanic
Arc*

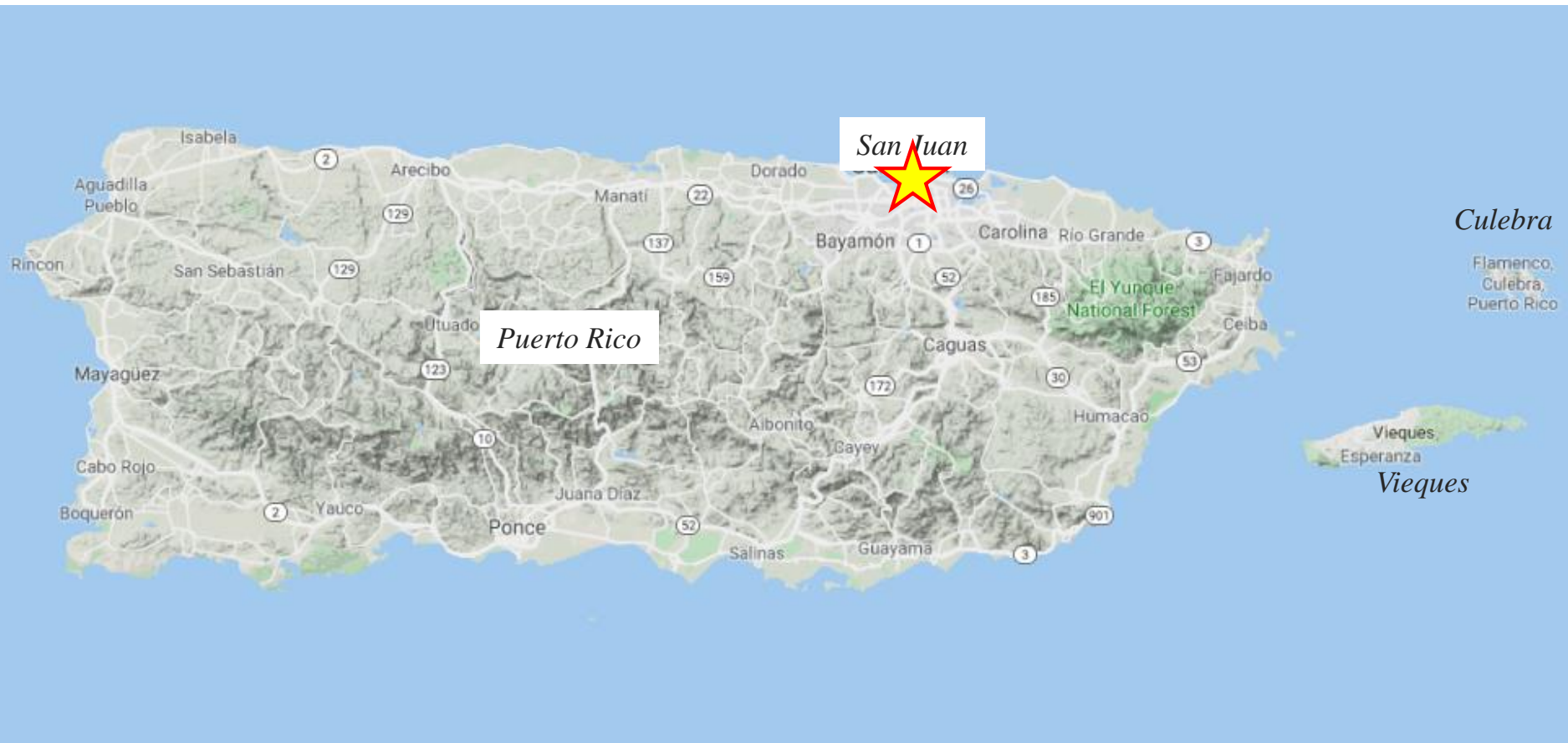
Barbados



North American Plate



San Juan, Puerto Rico



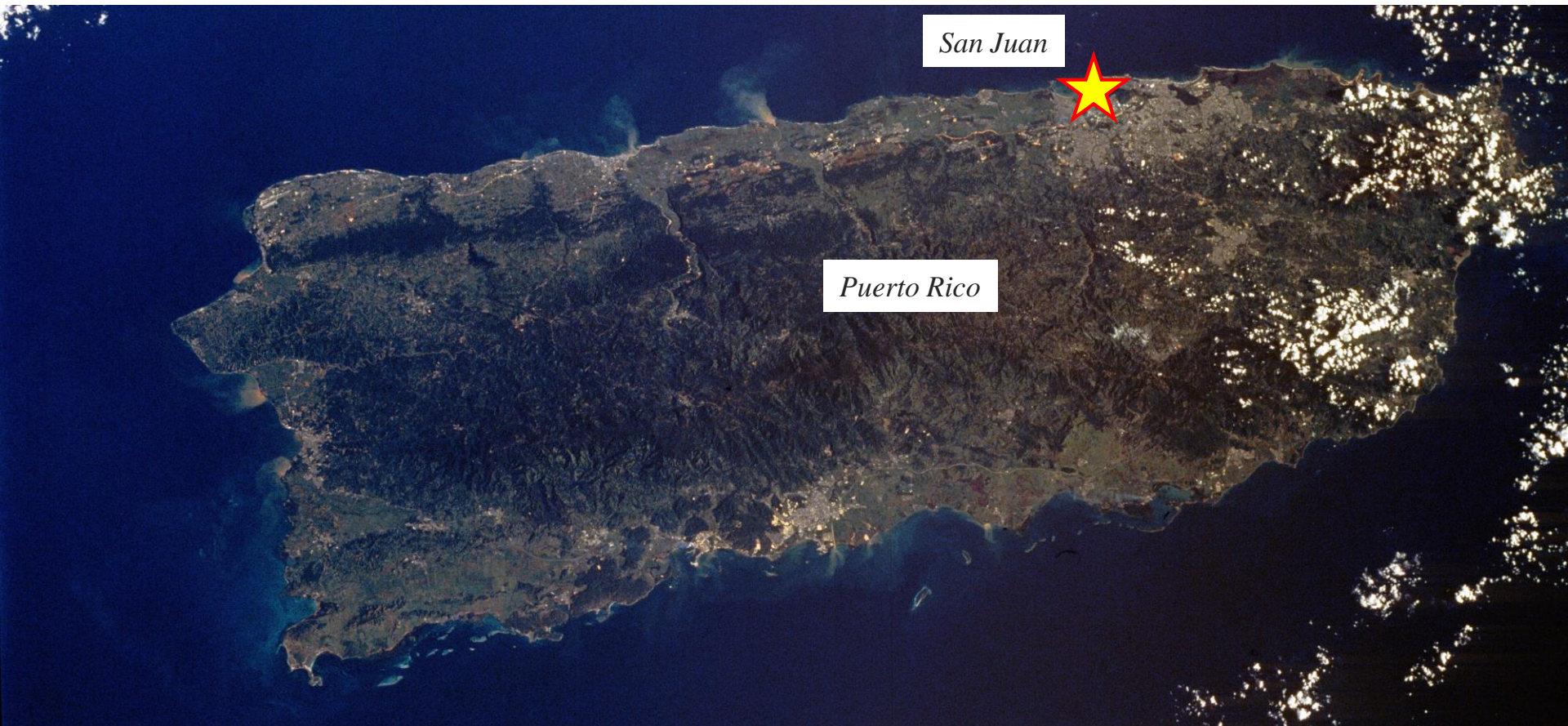
Isla Verde Beach, San Juan, Puerto Rico



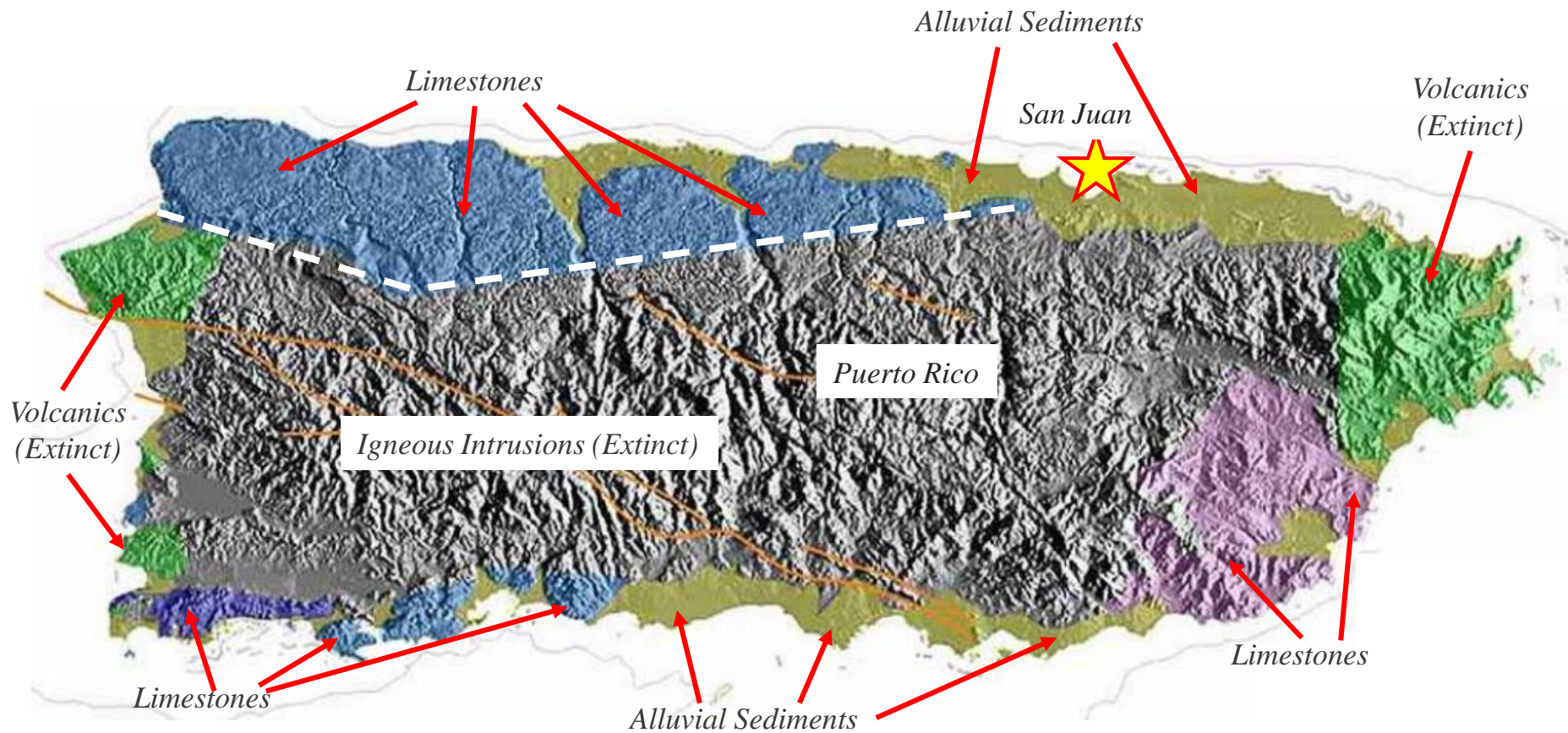
Castillo de San Cristóbal, San Juan, Puerto Rico



Puerto Rico from the Air (NASA Image)

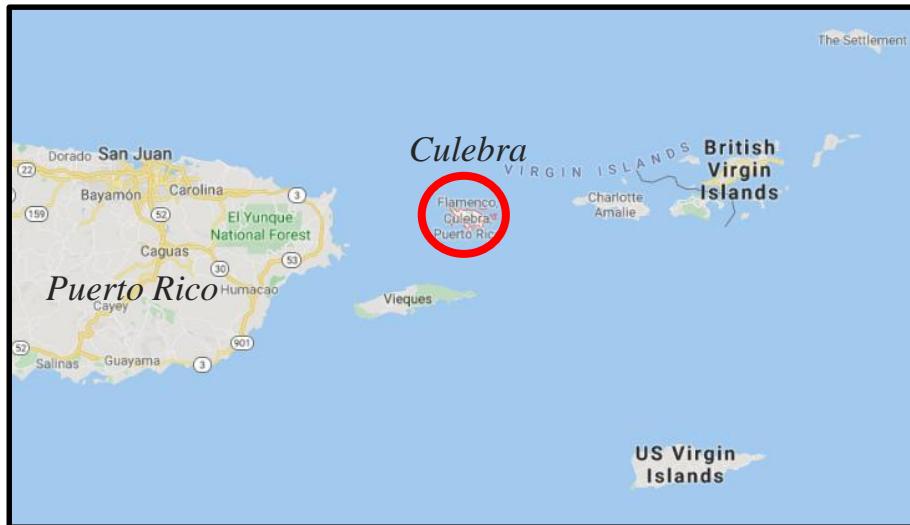


Eastern Caribbean Islands (like Puerto Rico) generally contain a mix of igneous rocks, limestones (from reefs), and alluvial sediments



Coral Reef Morphology, Puerto Rico

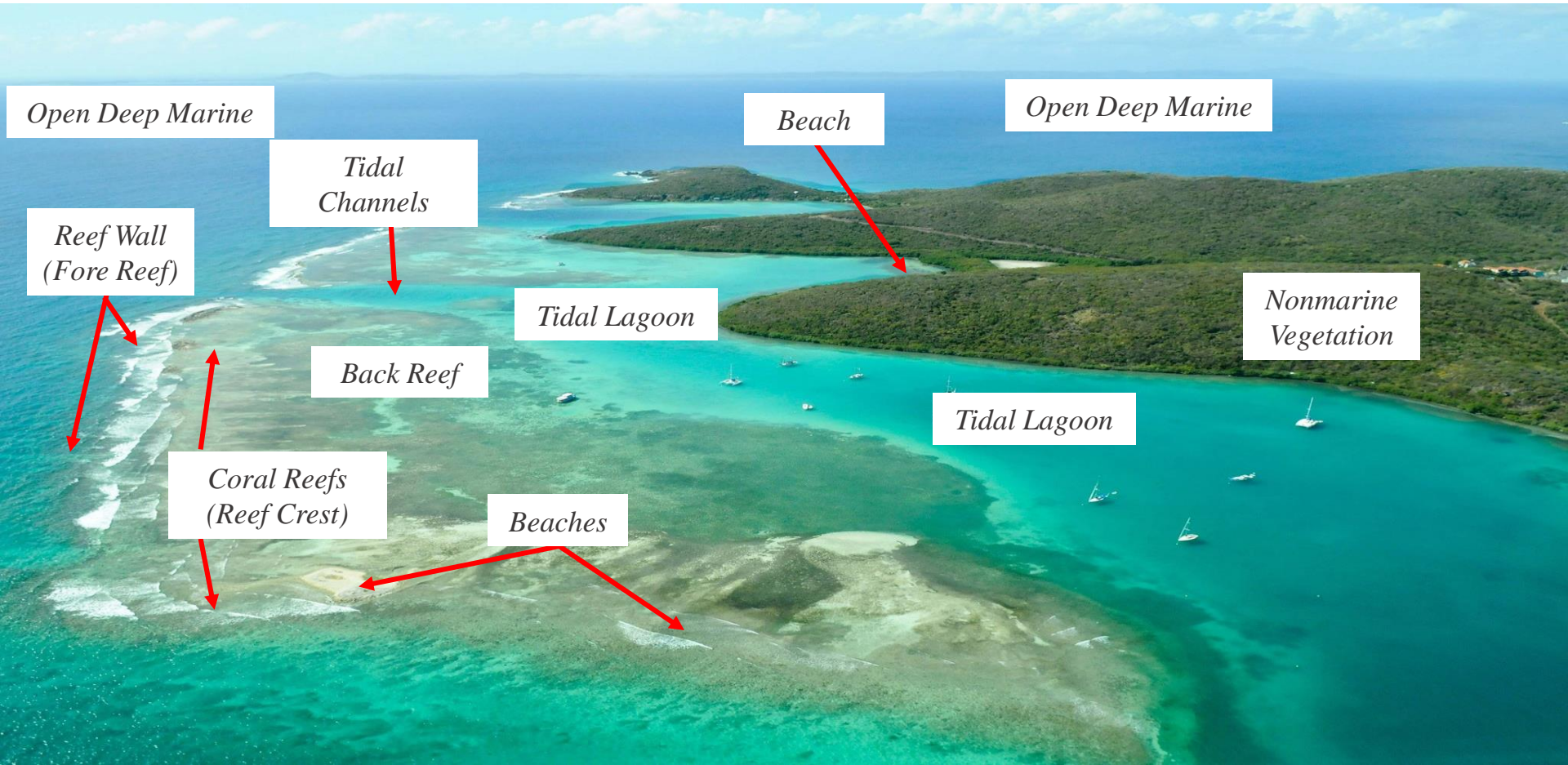
Culebra – 17 miles east of Puerto Rico



Luis Peña Channel Natural Reserve

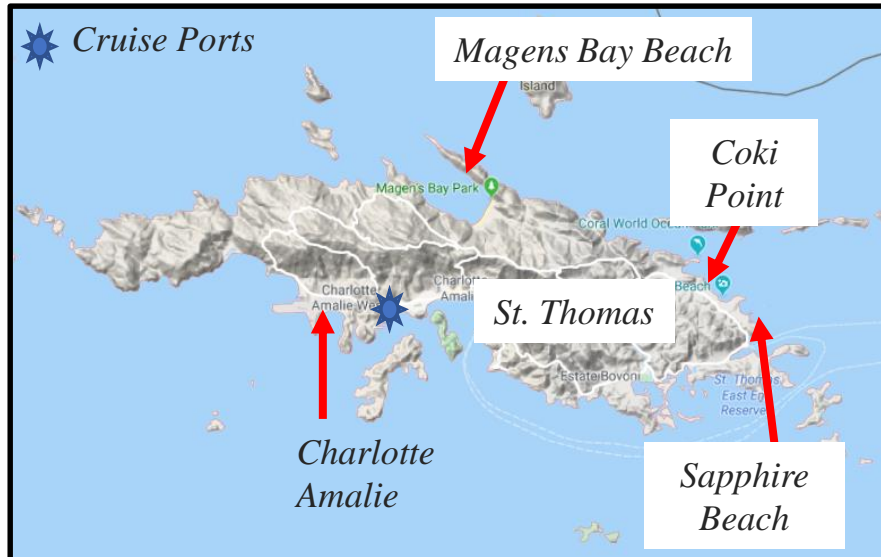


Typical Coral Reef Morphology, Culebra, Puerto Rico



Charlotte Amalie, St. Thomas Island, U.S. Virgin Islands

U.S. Virgin Islands and Beach Highlights

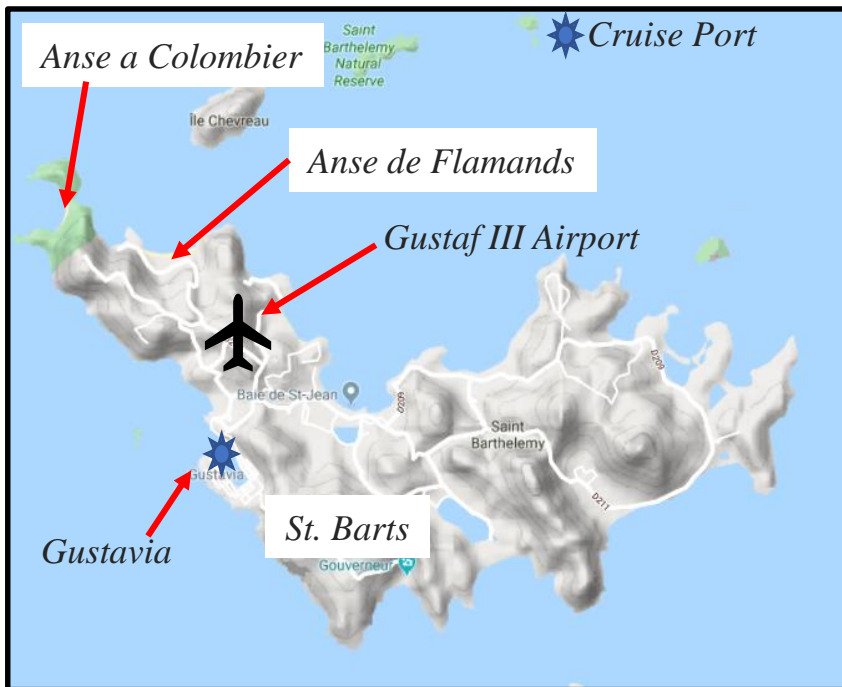


The warm waters of St. Thomas



Gustavia, St. Barts

Gustavia, St. Barthelemy (St. Barts)



Harbor at Gustavia, St. Barts



Originally named Le Carénage, the town was renamed to honor King Gustav III of Sweden

Fort Karl built 1787 by Sweden in Gustavia sits on volcanic rocks



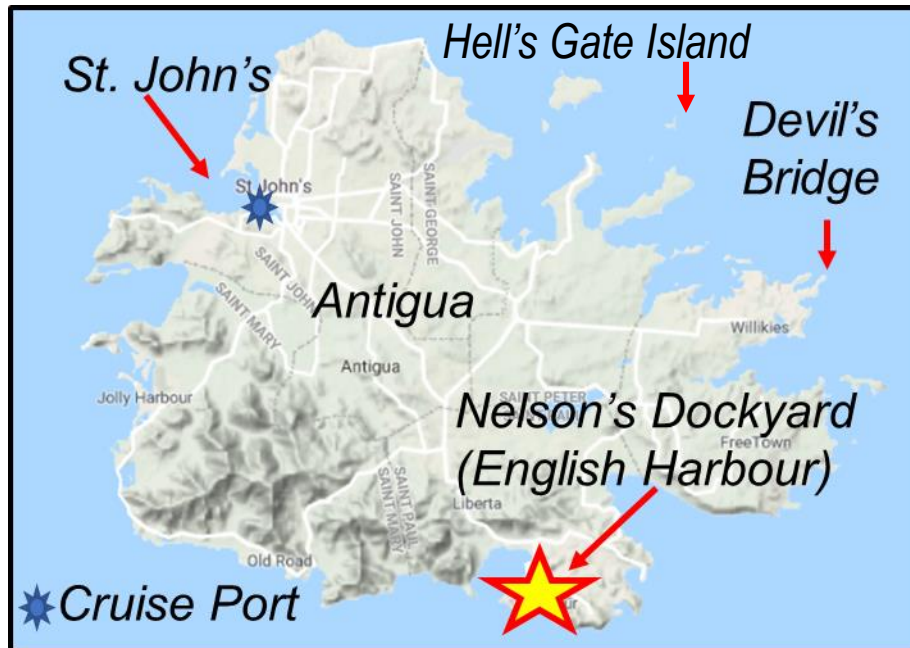
Silver Whisper at Dusk, Gustavia, St. Barts



St. John's, Antigua

St. Johns: Limestone caves and secret coves

St. John's Harbour, Antigua



Nelson's Dockyard (English Harbour), Southeast Antigua

Thin Basalt Layers, Nelson's Dockyard



Nelson's Dockyard, a World Heritage Site

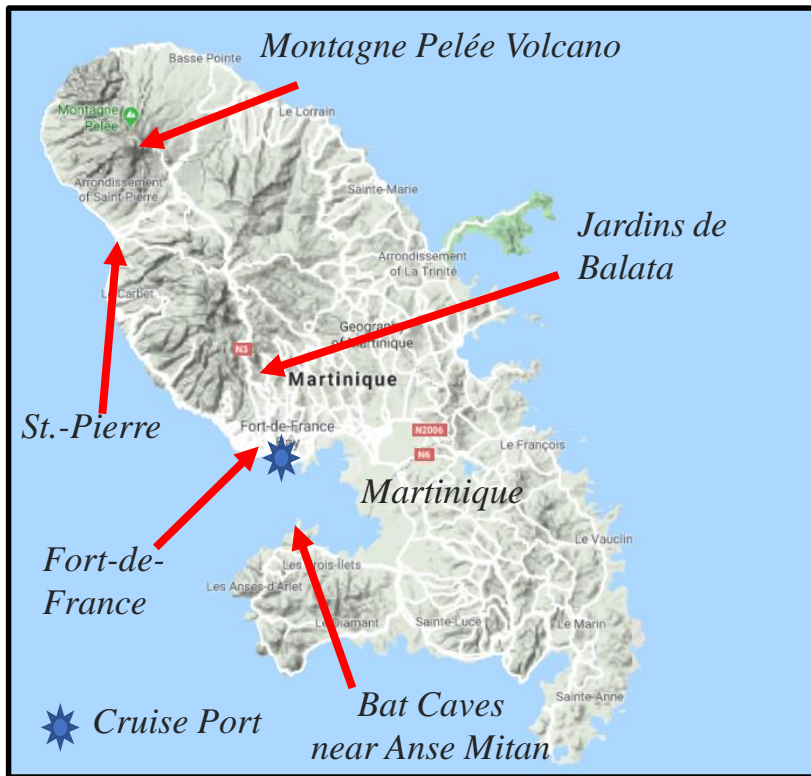


Looking down to English Harbour, Southeast Antigua



Fort-de-France, Martinique's Capital

Fort-de-France: the center of Martinique



The Fort in Fort-de-France, Martinique



Originally called “Port-Royale,” the city changed names to “Fort-La-Republique” during the French Revolution, and finally to Fort-de-France in the 19th century.

Dusk in Fort-de-France, Martinique



City Center and St. Louis Cathedral, Fort-de-France, Martinique



Street shops and cafes of Fort-de-France, Martinique



Old and New, Fort-de-France, Martinique
Silver Whisper, right side of the photo



Hillside Houses in Fort-de-France, Martinique



Sacred Heart (after Sacré-Cœur of Paris), a replica made with local volcanic basalt rocks, hills north of Fort-de-France, Martinique



The Exotic-Looking Pitons du Carbet in Martinique: Tropical Volcanic Spires



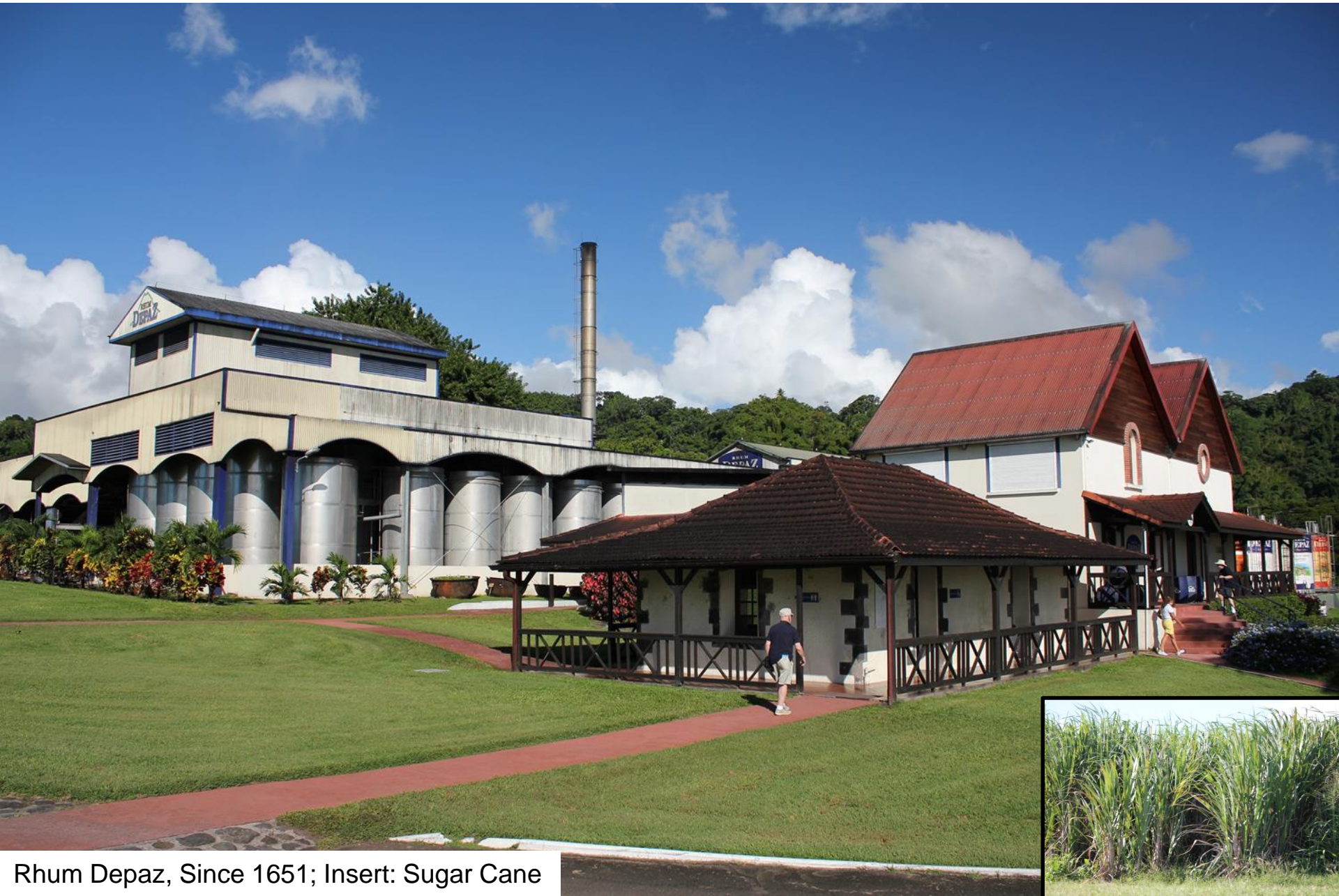
Mount Pelé above St. Pierre, Martinique:
the tranquil beauty falsely masks the subsurface dangers



Sugar cane in northern Martinique, with Mount Pelé in the clouds



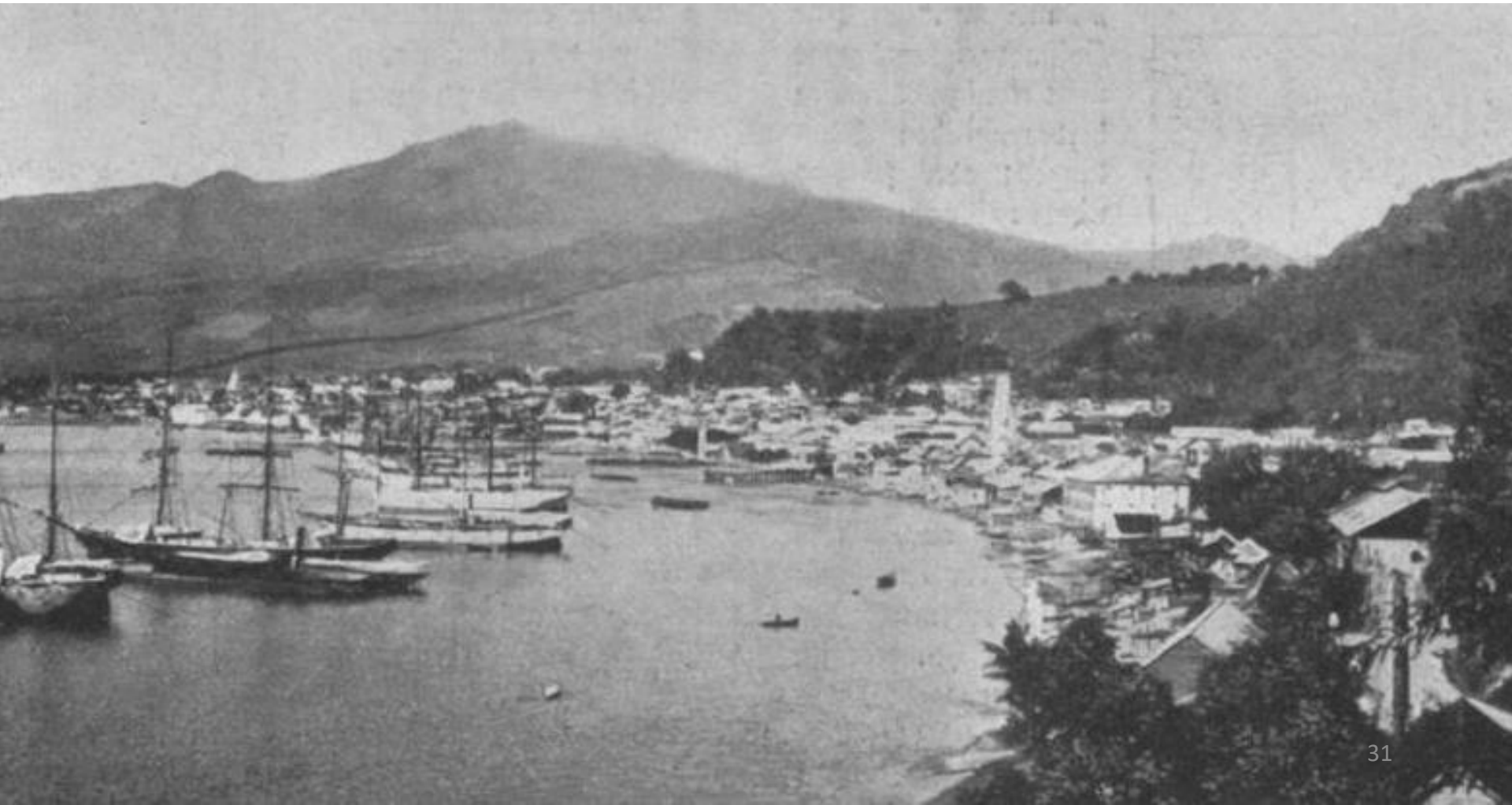
Sugar cane into rum: Martinique's Magical Elixir for the World



Rhum Depaz, Since 1651; Insert: Sugar Cane

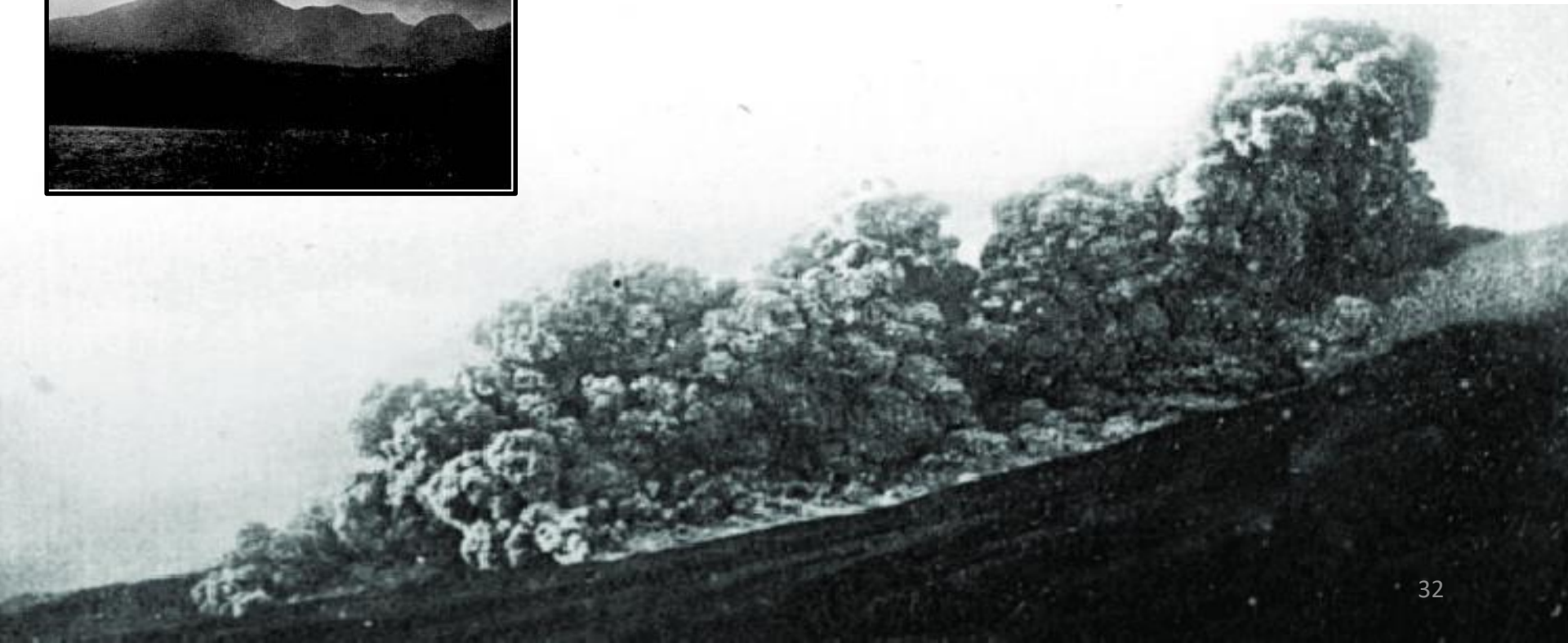
Saint Pierre, Northern Martinique before Pyroclastic Flow

Stratavolcano Mount Pelée erupted in 1902, destroying St. Pierre, killing 39,000 residents.



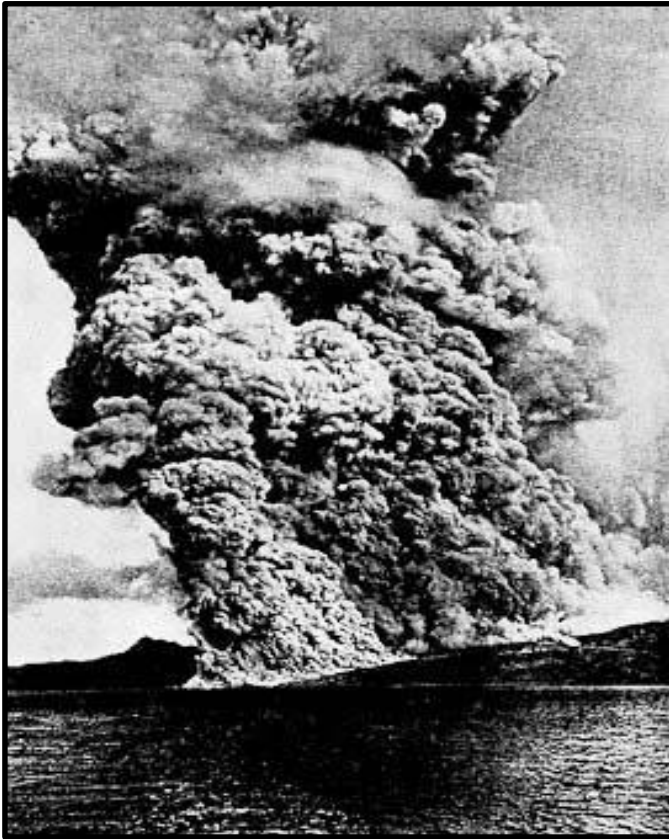
Pyroclastic flow destroyed St. Pierre in 1902

Stratavolcano Mount Pelée erupted with a gas and ash-rich fast-moving flow in 1902



Saint Pierre, Northern Martinique

Stratavolcano Mount Pelée and the destruction of the “Paris of the Caribbean.”



Fort St. Pierre-de la Martinique was built
from 1635-1695 but destroyed in 1902



Memorial to the Catastrophe is a Museum to the 39,000 Victims in St. Pierre, Martinique



Entrance to the St. Pierre Theatre, St. Pierre, Martinique



St. Pierre was called “the Paris of the Caribbean” and known for its cultural vibrancy and commercial power

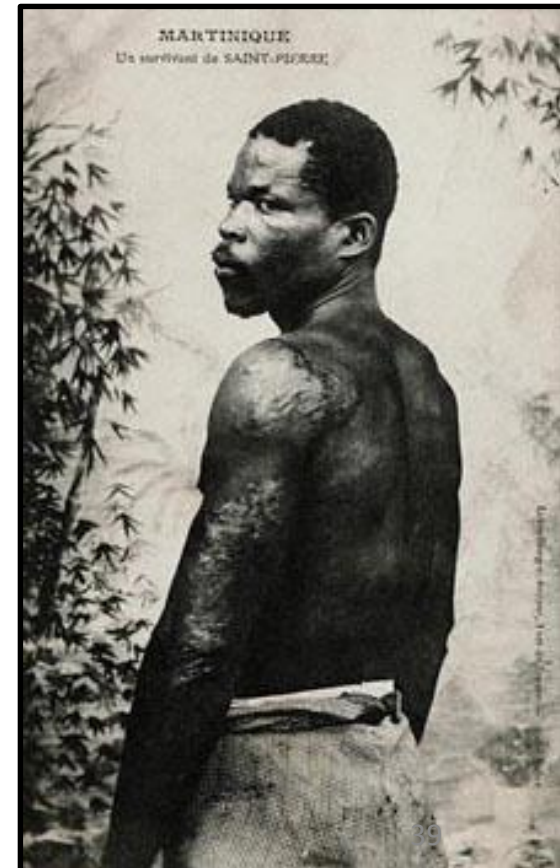
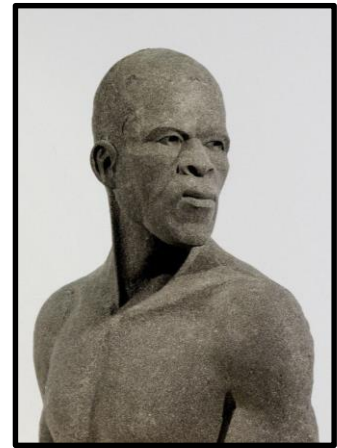


Prison Cell (center of photo) Saved a Man
St. Pierre is now known as the “Silent City of Death.”



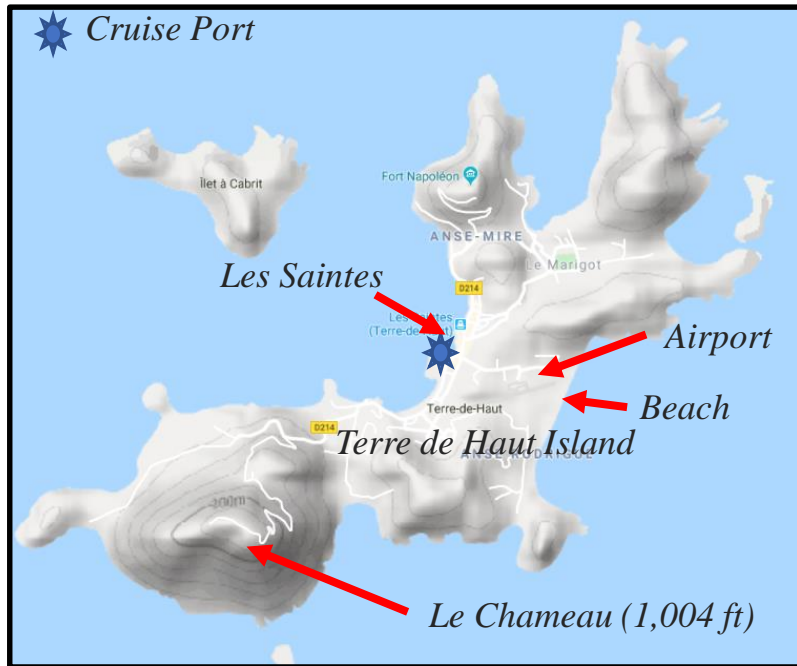
The Man Who Survived Was Serving Time In A Basement Solitary Confinement Cell

*Ludger Sylbaris: 1 of 3 Survivors
Later he joined the circus*



Terre-de-Haut, Guadeloupe Islands

Les Saintes on Terre-de-Haut



Terre-de-Haut south of main Guadeloupe Island



Terre-de-Haut, Guadeloupe Islands

Columnar basalts at Les Saintes



Terre-de-Haut, Guadeloupe Islands

Fort Napoleon des Saintes built in 1867 using local basalt rocks from local volcanoes on the island. The original Fort Louis was destroyed by the British in 1809.



Terre-de-Haut, Guadeloupe Islands

Guadeloupe Islands represent a volcanic archipelago encircled by shallow coral reefs. The volcanism lasted from about 4.7 to about 2 million years ago. Le Chameau is a former volcano.

Le Chameau (1,004 ft)



Terre-de-Haut looking North to Guadeloupe



Saint Martin (French) and Sint Maarten (Dutch)

*Marigot, Capital for Saint Martin and
Phillipsburg, Capital of Sint Maarten*

*Marigot, Capital for Saint Martin (French),
Fort Louis built in 1789 (background).*



Volcanic hills with tropical beaches, St. Maarten



On the St. Maarten Side: Volcanic Layers



Gray Tuff (Ash) and Black Basalt Layers (34-38 MYA)

St. Maarten/St. Martin: Volcanic island with andesite tuff (ash) and basalt lava flows (38-34 million years ago) surrounded by coral reefs



Volcanic rocks

Snorkeling and Diving: Spanish Town, British Virgin Islands

Spanish Town, British Virgin Islands



The Baths – Giant igneous boulders and pools

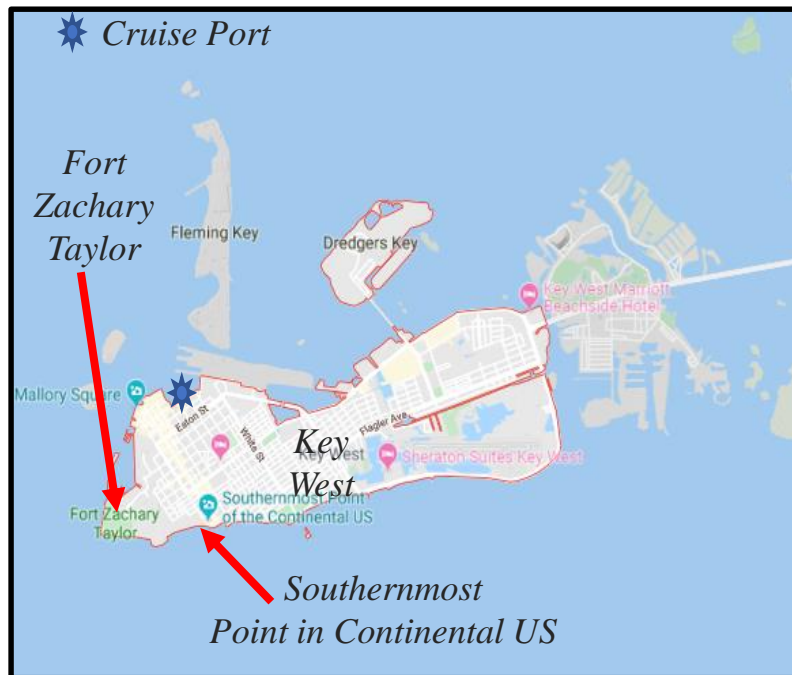


Spanish Town in center, British Virgin Islands



Key West and the Florida Keys, Florida

Key West

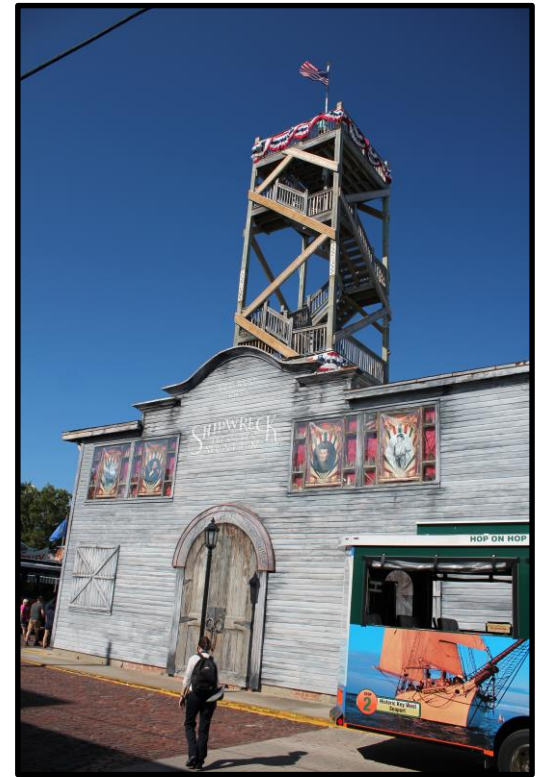
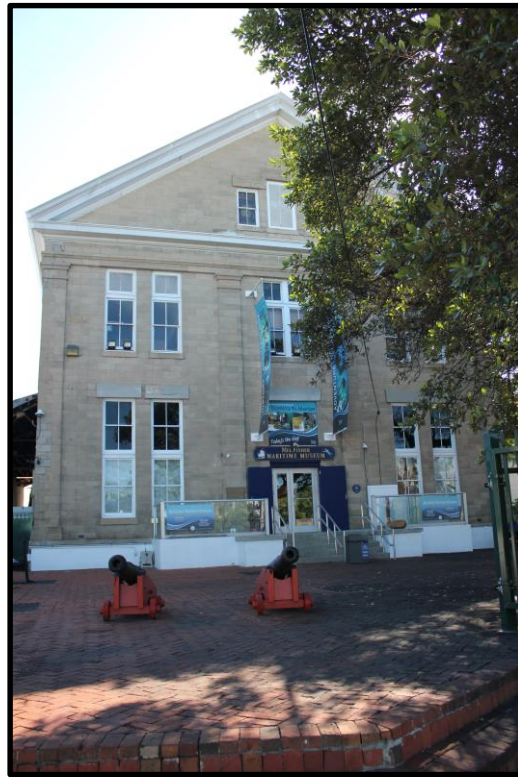


The City of Key West

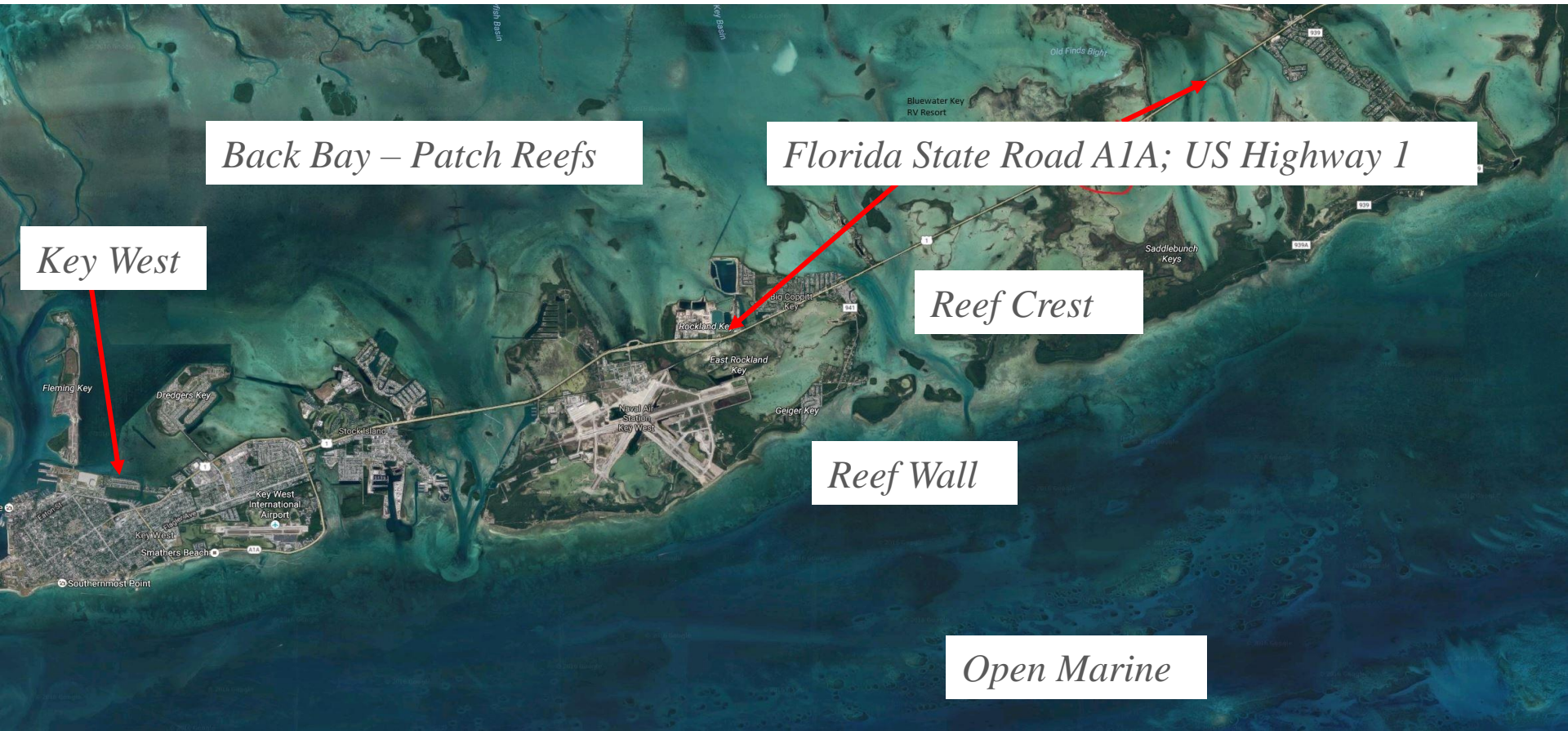


Street Scenes in Key West, Florida Keys, Florida

*Clockwise from the upper left:
Mel Fisher Maritime Museum,
Shipwreck Museum,
Custom House and Museum,
Street Scene at the intersection
of Whitehead Street and
Sunset Lane*

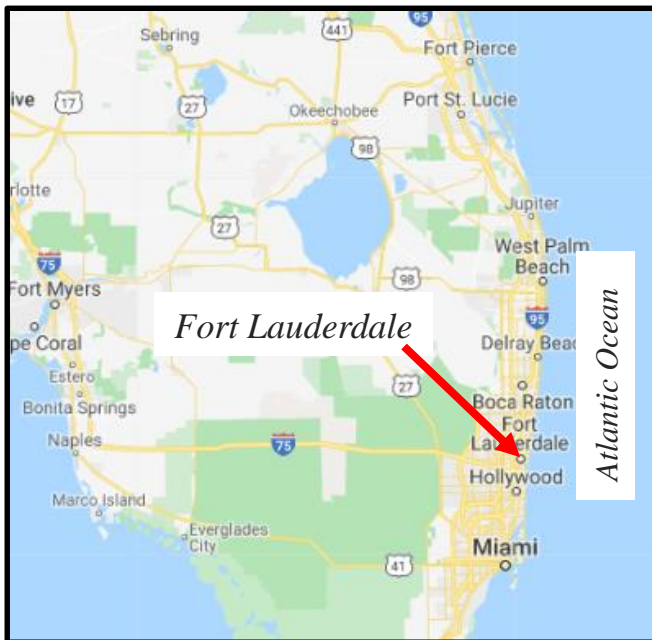


Key West and the Florida Keys, Florida (NASA Imagery)



Fort Lauderdale, Florida

Fort Lauderdale, Florida



Intercoastal Waterway in Fort Lauderdale



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