

# The Post-Break Up Sedimentary Platform of Florida\*

\* Limestone, limestone everywhere



# Geologic Map of the State of Florida

by

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<b>Quaternary</b>		<b>Tertiary</b>		<b>Oligocene/Miocene</b>	
<b>Holocene</b>		<b>Pliocene</b>		<b>Oligocene</b>	
Qh	Holocene sediments	Tc	Cypresshead Formation	Tha	Hawthorn Group, Arcadia Formation
<b>Pleistocene/Holocene</b>		Tci	Citronella Formation	That	Hawthorn Group, Arcadia Formation, Tampa Member
Qal	Alluvium	Tmc	Micosulee Formation	<b>Oligocene</b>	
Qbd	Beach ridge and dune	Tic	Intracoastal Formation	Tro	Residium on Oligocene sediments
Qu	Undifferentiated sediments	Tt	Tamiami Formation	Ts	Suwannee Limestone
<b>Pleistocene</b>		Tjb	Jackson Bluff Formation	Tsm	Suwannee Limestone - Manatee Limestone undifferentiated
Qa	Anastasia Formation	<b>Miocene/Pliocene</b>		<b>Eocene</b>	
Qk	Key Largo Limestone	Thcc	Hawthorn Group, Coosawatchie Formation, Charlton Member	Tre	Residium on Eocene sediments
Qm	Miami Limestone	Thp	Hawthorn Group, Peace River Formation	To	Ocala Limestone
Qtr	Trail Ridge sands	Thpb	Hawthorn Group, Peace River Formation, Bone Valley Member	Tap	Avon Park Formation
<b>Tertiary/Quaternary</b>		<b>Miocene</b>			
<b>Pliocene/Pleistocene</b>		Tm	Residium on Miocene sediments		
TQsu	Shelly sediments of Plio-Pleistocene age	Tab	Alum Bluff Group		
TQu	Undifferentiated sediments	Th	Hawthorn Group		
TQd	Dunes	Thc	Hawthorn Group, Coosawatchie Formation		
TQuC	Reworked Cypresshead sediments	Ths	Hawthorn Group, Stateville Formation		
		Tht	Hawthorn Group, Torreya Formation		
		Tch	Chatahochee Formation		
		Tsmk	St. Marks Formation		

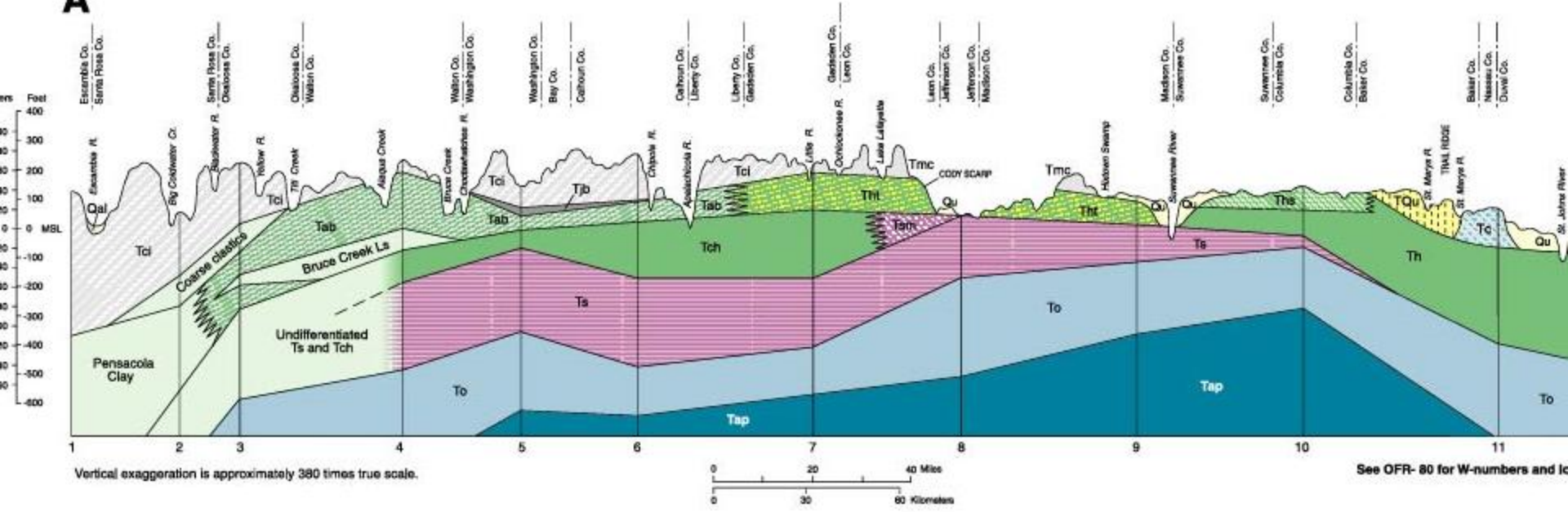


Geological Map of Florida available on website. Useful to download.

No rocks older than middle Eocene outcrop at the surface.

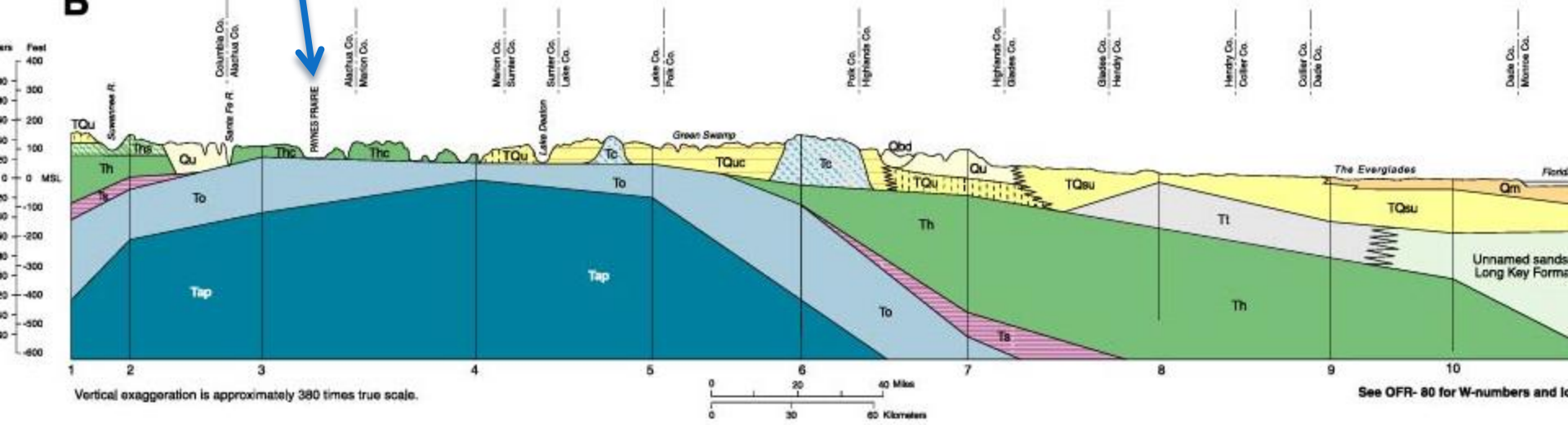
Middle Eocene < 50 Ma

**A**



Payne's Prarie

**B**



# Geologic Map of the State of Florida - Geologic Units

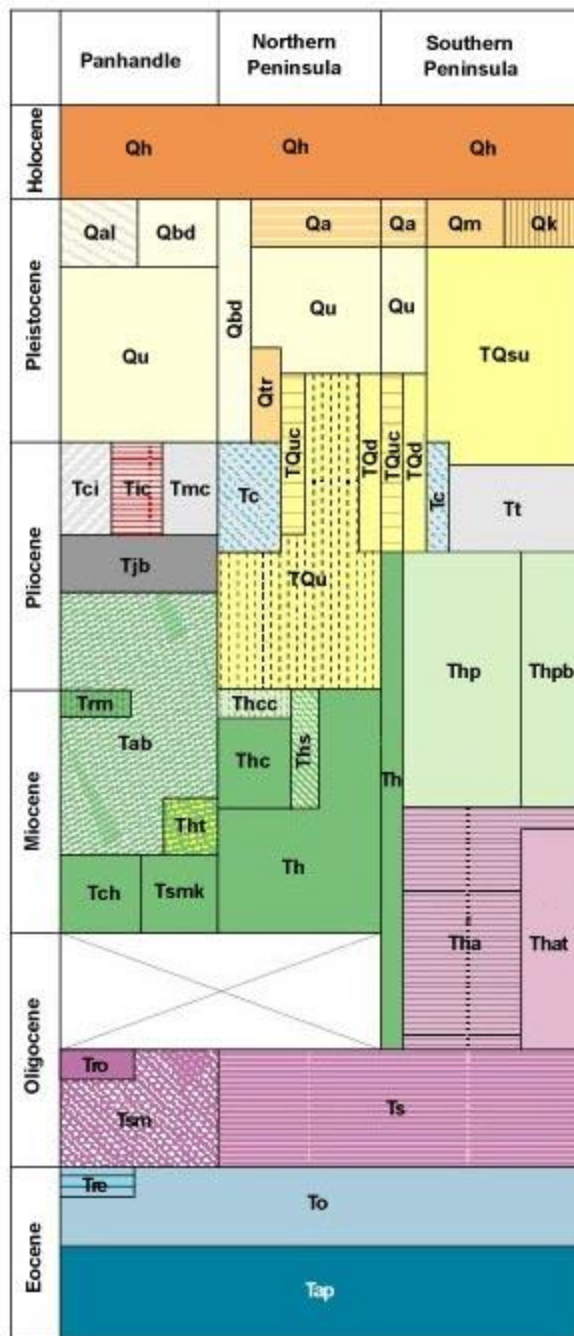
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David B. Struhs, Secretary



Walter Schmidt  
State Geologist and Chief



## Quaternary

### Holocene

Qh Holocene sediments

### Pleistocene/Holocene

Qal Alluvium  
Qbd Beach ridge and dune  
Qu Undifferentiated sediments

### Pleistocene

Qa Anastasia Formation  
Qk Key Largo Limestone  
Qm Miami Limestone  
Qtr Trail Ridge sands

## Tertiary/Quaternary

### Pliocene/Pleistocene

TQsu Shelly sediments of Plio-Pleistocene age  
TQu Undifferentiated sediments  
TQd Dunes  
TQuc Reworked Cypresshead sediments

## Tertiary

### Pliocene

Tc Cypresshead Formation  
Tci Citronelle Formation  
Tmc Miccosukee Formation  
Tic Intracoastal Formation  
Tt Tamiami Formation  
Tjb Jackson Bluff Formation

### Miocene/Pliocene

Thcc Hawthorn Group, Coosawhatchie Formation, Charlton Member  
Thp Hawthorn Group, Peace River Formation  
Thpb Hawthorn Group, Peace River Formation, Bone Valley Member

### Miocene

Trm Residuum on Miocene sediments  
Tab Alum Bluff Group  
Th Hawthorn Group  
Thc Hawthorn Group, Coosawhatchie Formation  
Ths Hawthorn Group, Statenville Formation  
Tht Hawthorn Group, Torreya Formation  
Tch Chatahoochee Formation  
Tsmk St. Marks Formation

### Oligocene/Miocene

Tha Hawthorn Group, Arcadia Formation  
That Hawthorn Group, Arcadia Formation, Tampa Member

### Oligocene

Tro Residuum on Oligocene sediments  
Ts Suwannee Limestone  
Tsm Suwannee Limestone - Marianna Limestone undifferentiated

### Eocene

Tre Residuum on Eocene sediments  
To Ocala Limestone  
Tap Avon Park Formation

# Paleocene Rocks

Cedar Keys Formation-dolostone and evaporites (gypsum and anhydrite) with minor limestone; forms the base of the Floridan Cenozoic rocks over most on the State except NW Florida where the Oldsmar Formation (Eocene) forms the base.

# Early Eocene Rocks (subsurface)

(1) Lower to Middle Eocene Claiborne Group of NW Florida-glaucinitic to clayey sand; usually about 100m below the surface with a thickness of 100m; unconformably overlain by the Ocala Limestone.

**Glaucinite-** bluish green sandstone or mudstone typical of continental shelf deposits

(2) **Oldsmar Formation**-Lower to Middle Eocene in South and Peninsular Fla.; limestone with vuggy dolostone; bottom of the Floridan in some areas.

# Eocene Facies in Florida

Oldest Unit is the Avon Park Limestone

The Avon Park Formation is composed of cream to light-brown or tan fossiliferous marine limestone interbedded with dolostone.

In a few areas of west-central Florida, evaporites may be present in the dolostone.

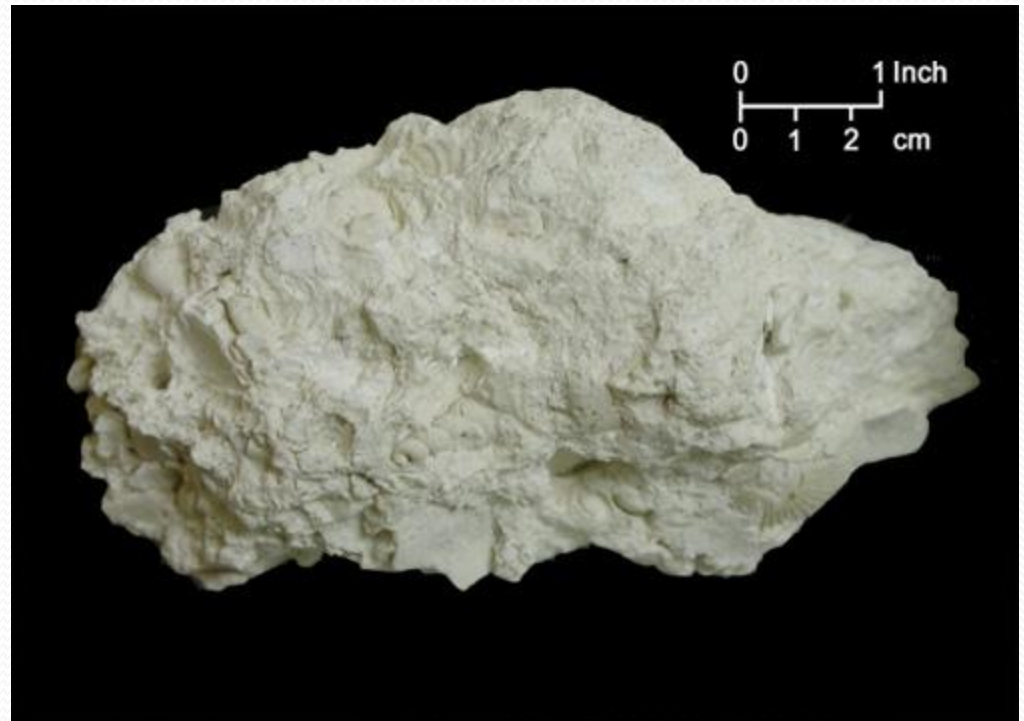
The Avon Park Formation occurs throughout the Florida peninsula and the eastern panhandle. It comprises the oldest rock cropping out in Florida.

These sediments are locally exposed in sinks and quarries near the crest of the Ocala Platform in Citrus and Levy Counties.

Avon Park fossils include mollusks, foraminifera, echinoids, algae, and carbonized plant remains.

# Ocala Limestone-Late Eocene

The Ocala two units differing textures (lower unit granular; upper muddy limestone); major component of Floridan aquifer; characteristic North American biota; surface and thickness highly irregular due to karst development.





# Ocala Limestone Continued..

- (1) The limestone is remarkable in that it is composed of almost pure calcium carbonate: shells of sea creatures and very tiny chalky particles.
- (2) Ocala Limestone underlies almost all of Florida, but it is found at the surface of the land only in a small portion of the state.
- (3) It is mined for use as roadbase and cement where it is close to the surface in west-central Florida and the northwestern peninsula.
- (4) Fossils present in the Ocala Limestone include abundant large and smaller foraminifers, echinoids, bryozoans, mollusks and rare vertebrates.

# Oligocene of Florida (33-23 Ma)

Rocks are more clastic than earlier limestones due to Appalachian uplift; Ocala Platform active; first land vertebrates occur.

**Suwanee Limestone**-in Peninsular and part of the Panhandle, interbedded dolostone and limestone; absent in northern and central Peninsula due to erosion; scattered outliers; part of the Floridan where present.

**Bucatanna Clay**- Limited distribution in western Panhandle

**Marianna Limestone**-Lateral equivalent of the Suwanee Ls (western and central panhandle)

**Chickasawhay Formation**- Limited to western Panhandle (maybe Miocene in age).

# Miocene of Florida (23-5.9 Ma)

Mostly Clastics- Missing in the Ocala Platform area.

(1) **Chattahoochee Formation**-lower silty and sandy dolostone; occurs in central Panhandle; laterally gradational

(2) **St Marks Formation**-Limestone; occurs in Apalachicola Embayment

(3) **Hawthorn(e) Group**-Middle Miocene sand, silt, and clay; irregular karstic and erosional surface; aquitard for Upper Floridan; much more later

(4) **Bruce Creek Limestone**-Middle Miocene; occurs in the Apalachicola Embayment of west Fla.

(5) **Alum Bluff Group**-west of the Apalachicola River, Hawthorn replaced by Alum Bluff; clays, sands, and shell beds; locally in the intermediate aquifer

# Miocene Continued

(6) **Pensacola Clay**-silty, sandy clays with plant remains

(7) **Intracoastal Formation**-sandy with abundant microfossils; Middle Miocene at the base to Late Pliocene at the top (Panhandle)

# Plio-Pleistocene (5.9-Last Glacial)

- a. **"Coarse Clastics"**-sands and gravels that occur in a variety of locations
- b. **Tamiami Formation**-widespread in south Fla.; complex depositional history; part of the surficial aquifer
- c. **Citronelle Formation**-fine to very coarse clastics; covers much of central and western Panhandle
- d. **Miccosukee Formation**-grades laterally from Citronelle Fm; clayey unit occurring from Gadsden to Madison Counties
- e. **Cypresshead Formation**-siliciclastic clayey sands; occurs in the Central Highlands to Highlands County; surficial aquifer in many places
- f. **Nashua Formation**-calcareous to clayey sand; extent not well known; grades laterally to Cypresshead Fm; local aquifer

# Plio-Pleistocene (cont)

- g. **Caloosahatchee Formation**-quartz sand and interbedded, freshwater ls; occurs along the west coast from Tampa to Lee County, then north along the east coast; undifferentiated from Ft Thompson as an aquifer
- h. **Fort Thompson**-marine and freshwater limestone and shell beds
- i. **Key Largo Limestone**-coralline limestone occurs from Miami to low Keys; grades laterally to Miami Ls
- j. **Miami Limestone-oolitic-bryozoan** Ls; covers Dade and parts of Broward and Monroe Counties; grades laterally to Key Largo and Anastasia Fms; part of the Biscayne aquifer
- k. **Anastasia Formation**-interbedded sands and coquinoid Ls; forms that Atlantic Coastal Ridge; outcrops from St Augustine to Boca Raton

# Recent

**Undifferentiated Pleistocene-Holocene**  
Sediments-dunes, fluvial deposits. Aeolian  
deposits, carbonates, peats; locally important  
components of shallow aquifers