



**GEOL-201**

**Carbonate Environments**

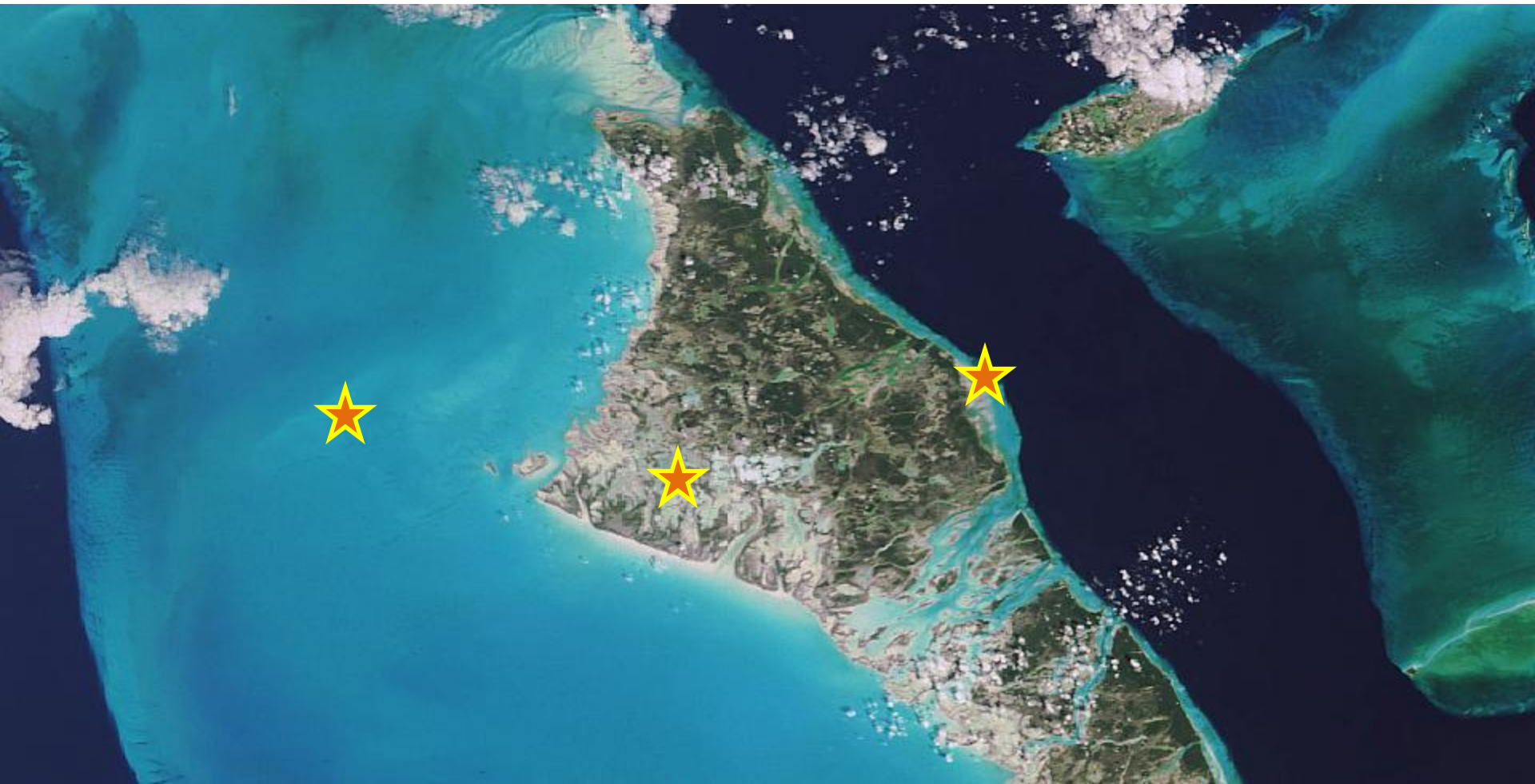
# Carbonate deposits accumulate under the following conditions:

- 1) where the water T is warm (typically above 20° C),
- 2) where the water is relatively shallow (typically less than a few tens of metres, but definitely less than 4000 m), and
- 3) where there isn't a significant amount of clastic material accumulating.



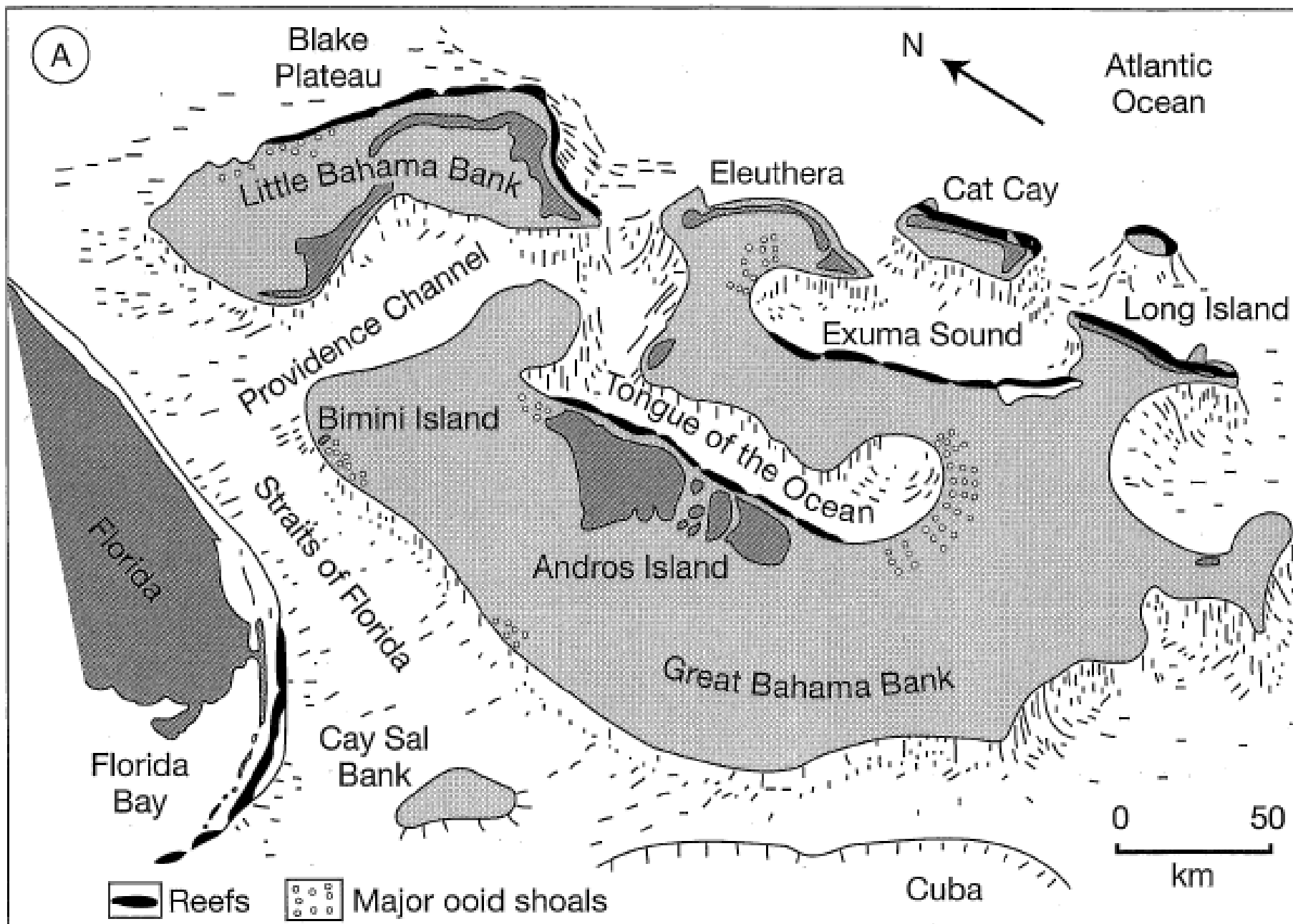
# Carbonate environments

- Peritidal carbonate environments
- Sub-tidal shelf carbonate environments
- Reef environments



There are currently only two major  
depositional sites for carbonates in the  
world:  
the Bahama Banks and the Gulf of  
Arabia area

In the past (e.g., during the  
Cretaceous) carbonate deposition has  
been much more extensive.



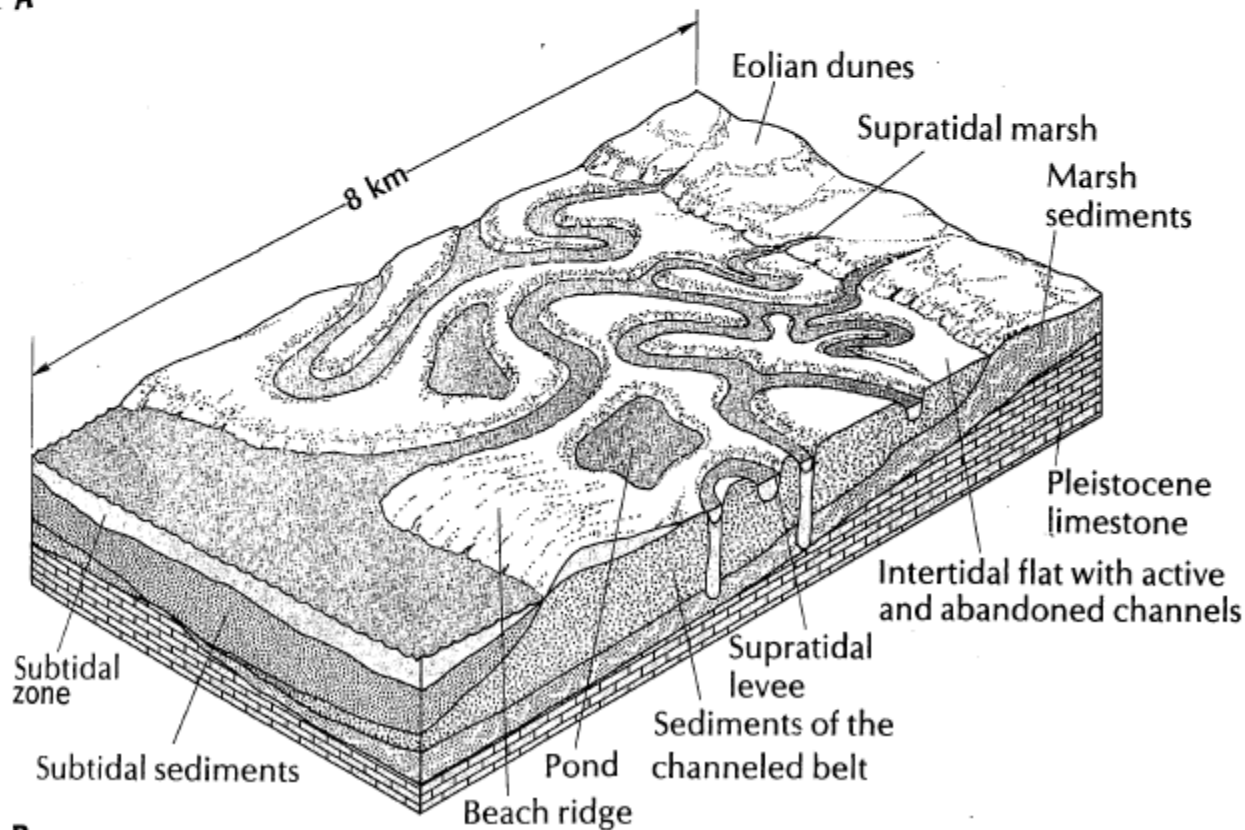
# Peritidal environments





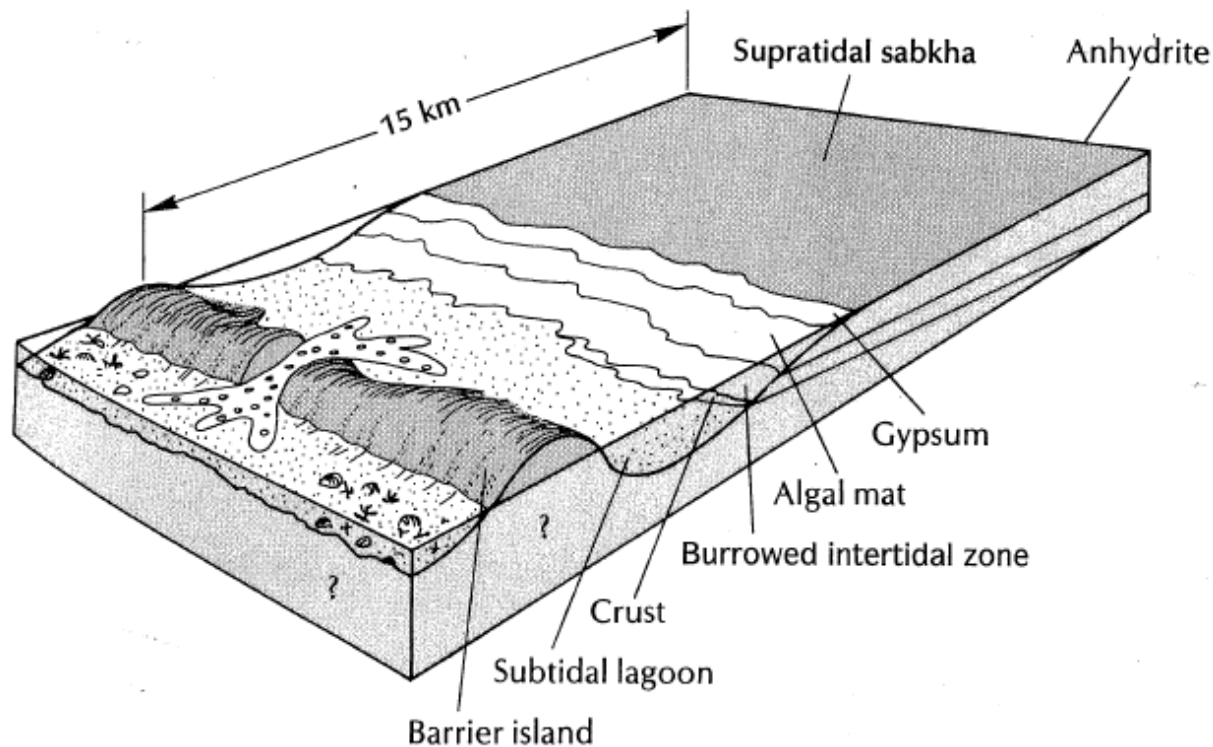
**Figure 12.2** (A) The Three Creeks area along the west coast of Andros Island, Bahamas. Tidal channels cut an intertidal marsh composed largely of algae, with some ponds in the intertidal areas. (Stanley, 1989: 1226.) (B) Major features of the peritidal environment. (After Stanley, 1989: 1226.)

**A**



**B**

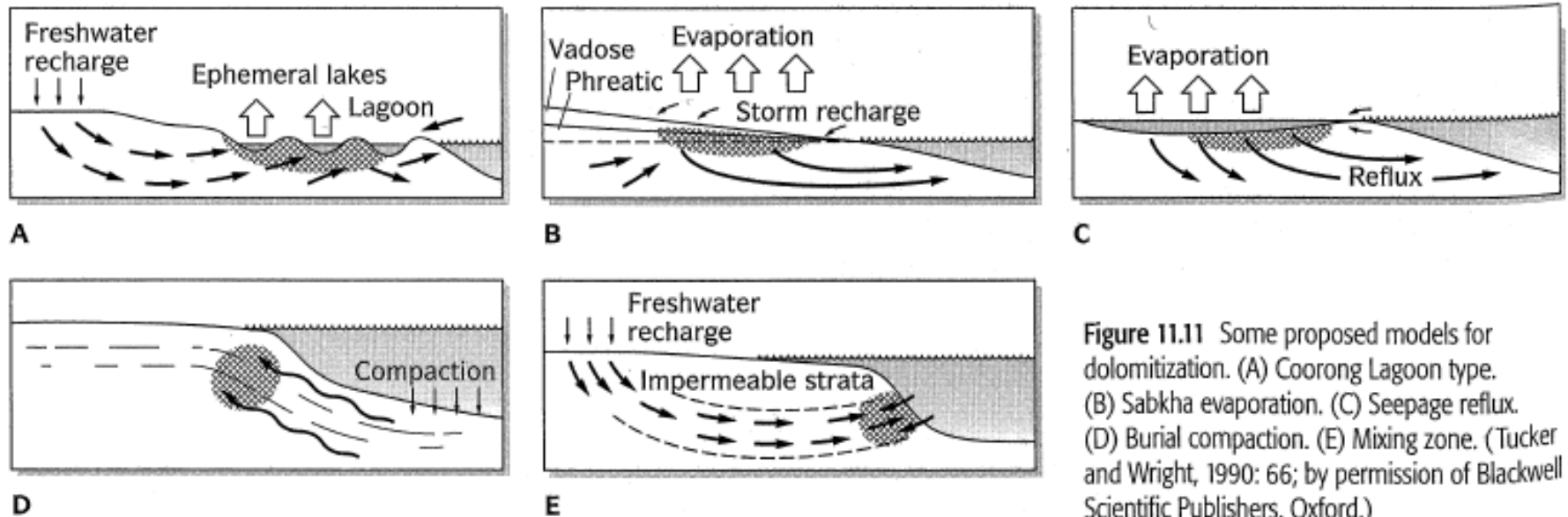




**Figure 12.3** The major facies of the regressive tidal flat on the Persian Gulf Trucial Coast. Supratidal sabkha is composed of algal mats with a gypsum crust, which have grown over burrowed subtidal lagoonal sediments. Tidal deltas, composed mainly of ooids, form around inlets cut into small barrier islands composed of mollusk shells, ooids, and coral fragments. Coral reefs can grow seaward of the island, away from the tidal inlets. (Scholle, Bebout, and Moore, 1983: 480; by permission of the American Association of Petroleum Geologists, Tulsa, Okla.)



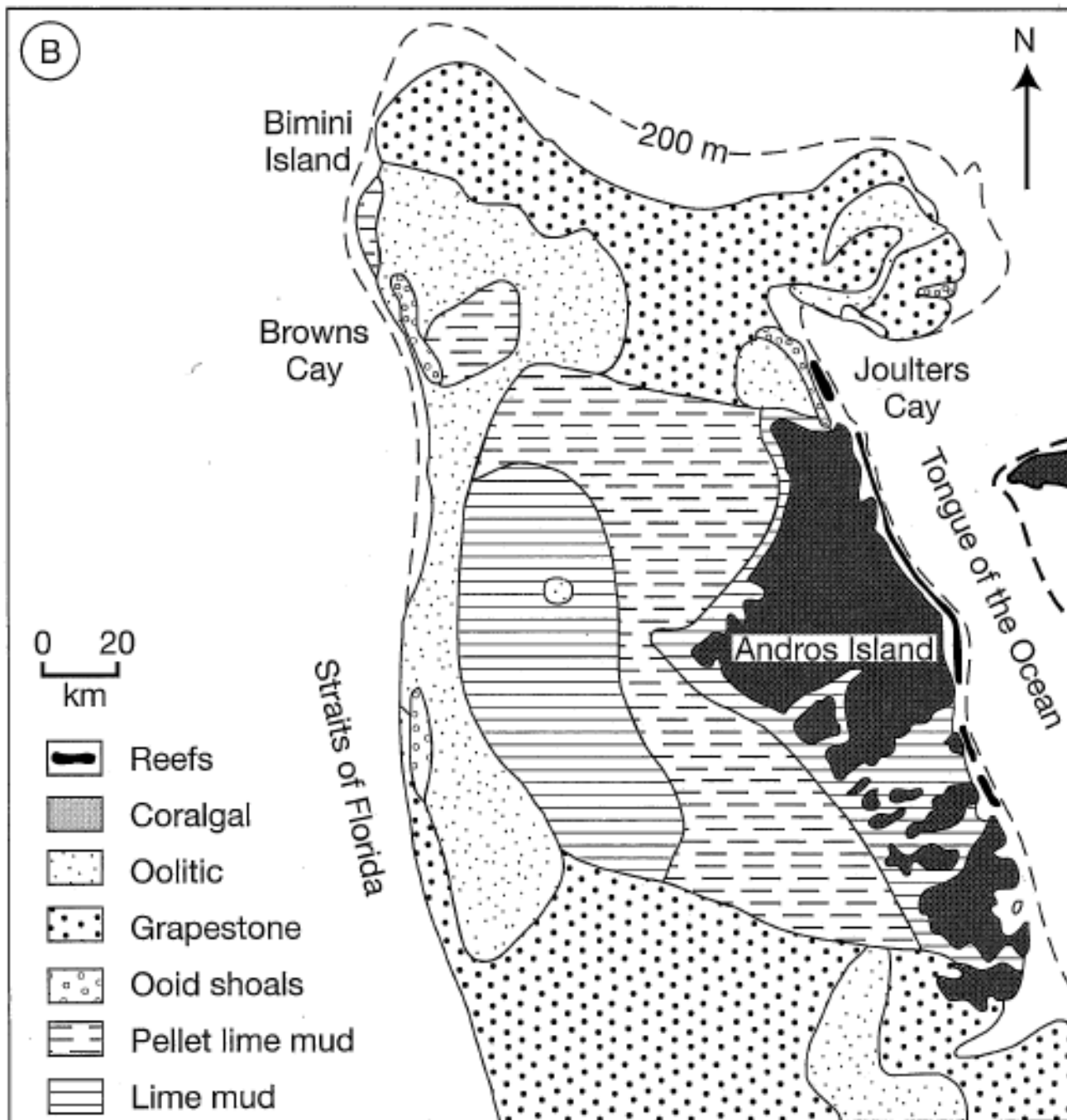
# Dolomitization

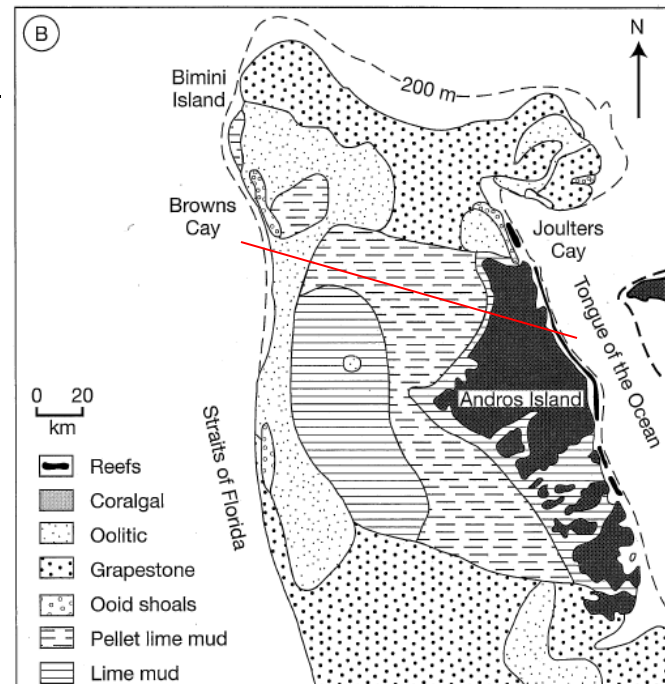
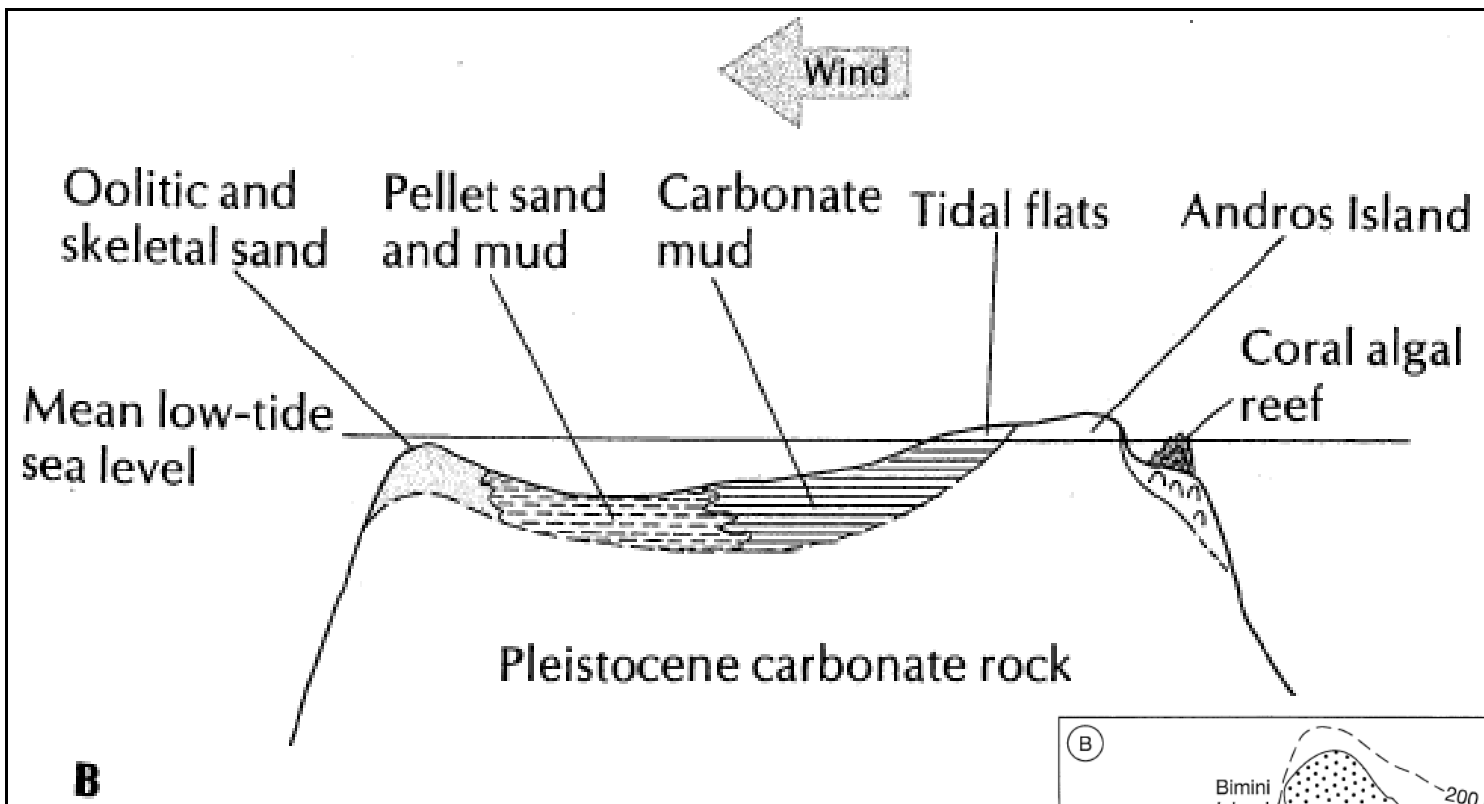


**Figure 11.11** Some proposed models for dolomitization. (A) Coorong Lagoon type. (B) Sabkha evaporation. (C) Seepage reflux. (D) Burial compaction. (E) Mixing zone. (Tucker and Wright, 1990: 66; by permission of Blackwell Scientific Publishers, Oxford.)

# Subtidal environments



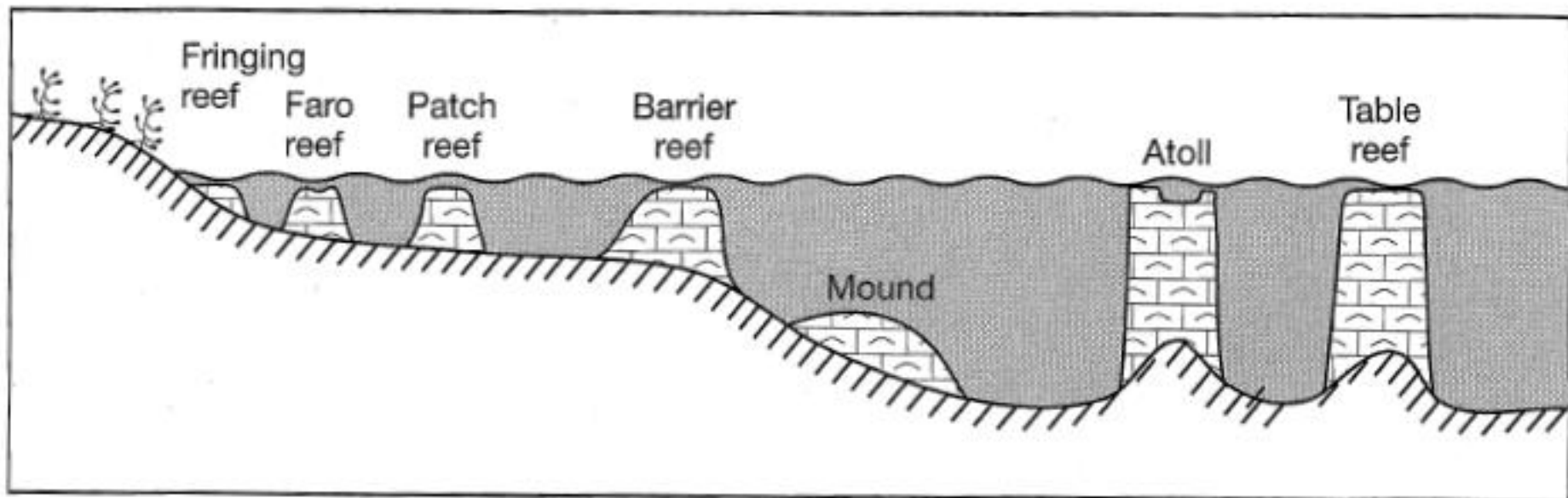


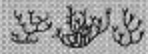
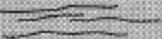









# Reef environments





A	Growth Forms	Environment	
		Wave Energy	Sedimentation
	Delicate, branching	low	high
	Thin, delicate, plate-like	low	low
	Globular, bulbous, columnar	moderate	high
	Robust, dendroid, branching	moderate-high	moderate
	Hemispherical, domal, irregular, massive	moderate-high	low
	Encrusting	intense	low
	Tabular	moderate	low

