

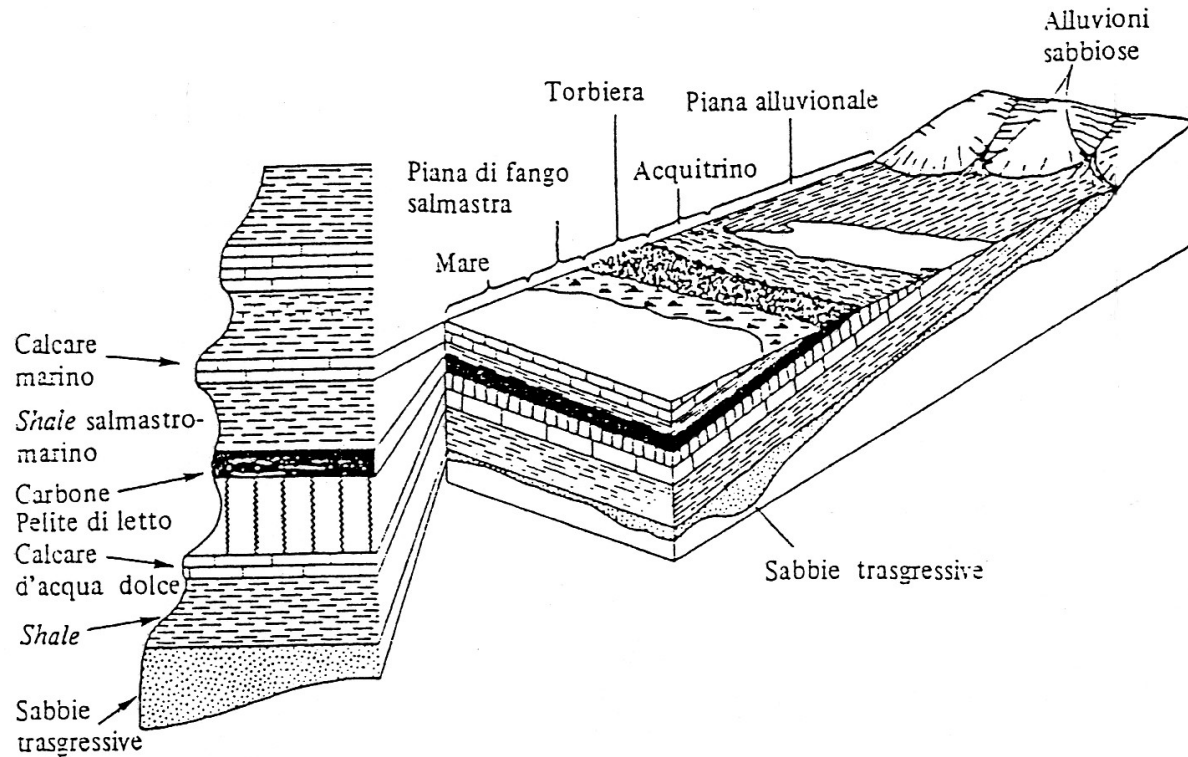
# Geologia 1

## 5. Ambienti

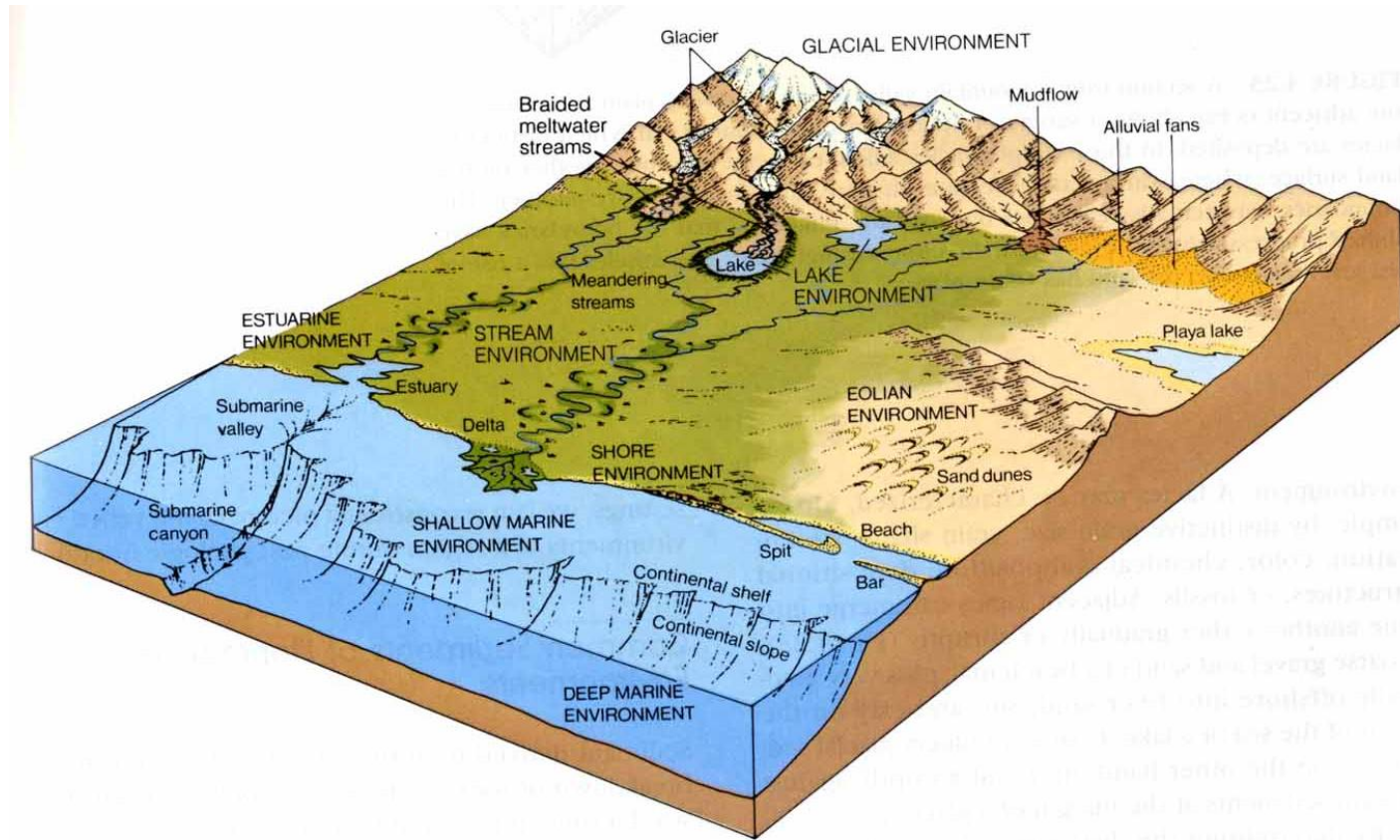
Michele Piazza  
DISTAV - Università degli Studi di Genova  
Corso Europa, 26  
16132 Genova  
tel.: 0103538286 - cell.: 3282155925  
e-mail: [mpiazza@dipteris.unige.it](mailto:mpiazza@dipteris.unige.it)

## Legge di Walther

Possono trovarsi sovrapposte in continuità di sedimentazione soltanto quelle facies che si depositano attualmente in ambienti contigui.



# Ambienti



## Ambienti continentali

### Ambiente continentale (nonmarine, terrestrial)

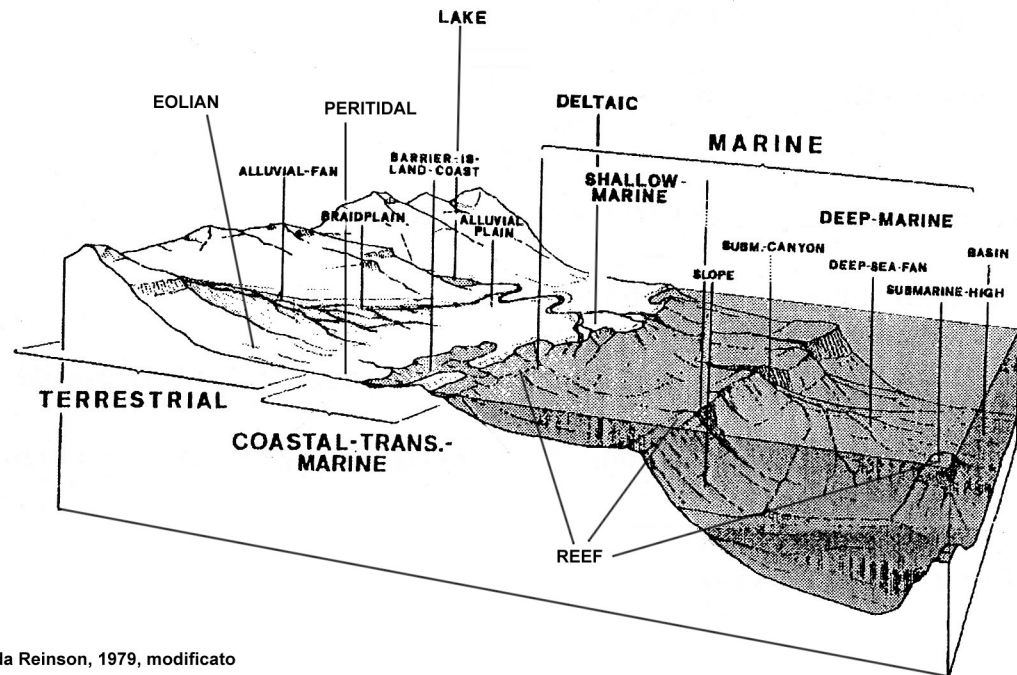
Conoide alluvionale (alluvial fan)

Fluviale anastomizzato (braidplain, braided system)

Fluviale meandriforme (alluvial plain, meandering systems)

Lago (lake, lacustrine)

Eolico (eolian, desert)

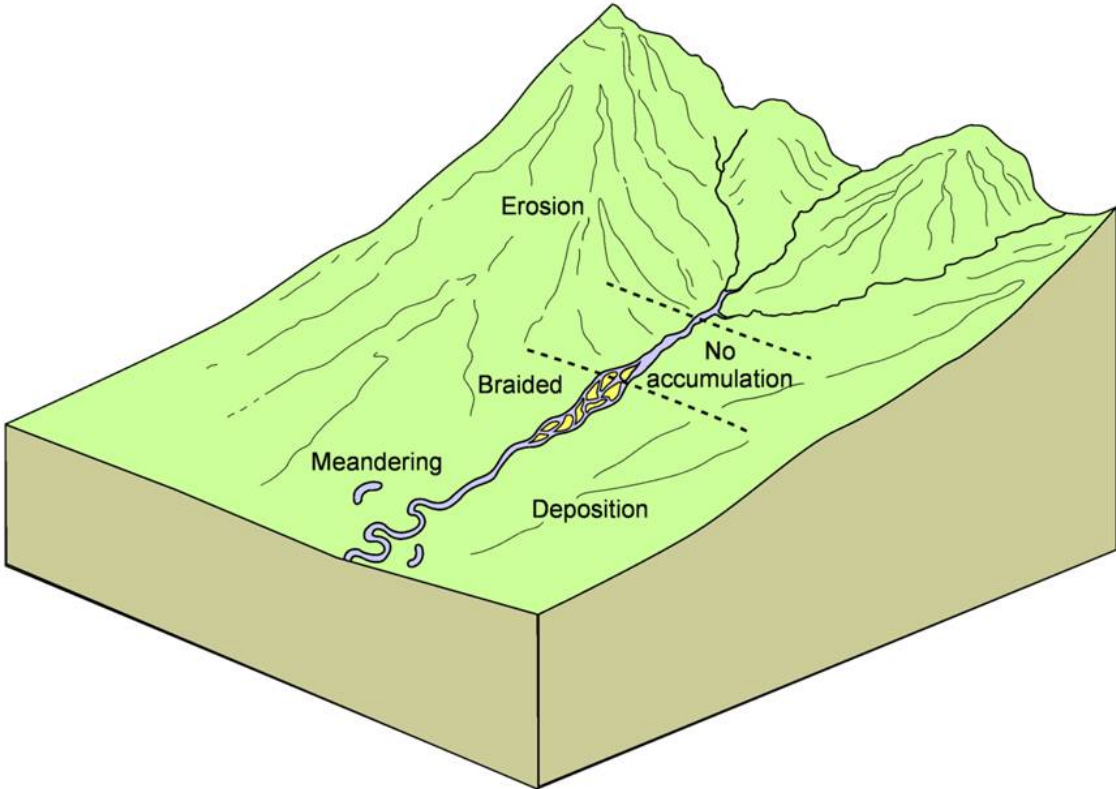


da Reinson, 1979, modificato

# Ambiente fluviale 1

9-2

## The geomorphic zones in alluvial and fluvial systems



Gary Nichols  
Sedimentology  
& Stratigraphy



WILEY-  
BLACKWELL

# Ambiente fluviale 2

9-39

## Types of alluvial fan

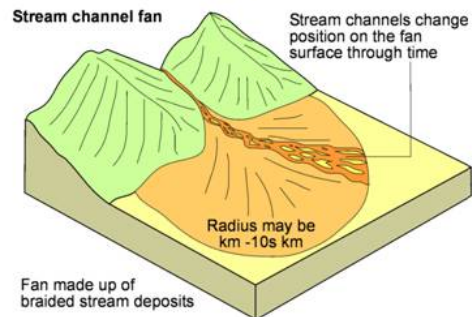
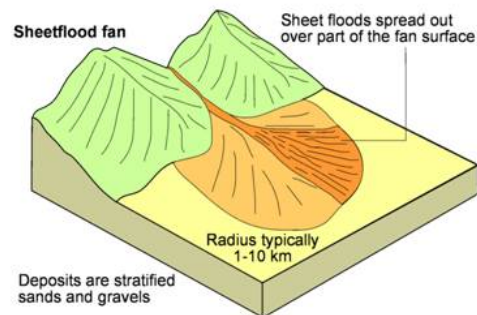
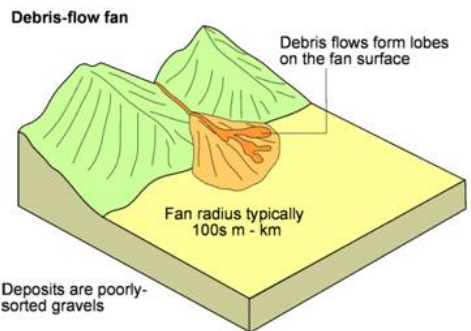
Mixtures of these processes can occur on a single fan



Gary Nichols  
Sedimentology  
& Stratigraphy

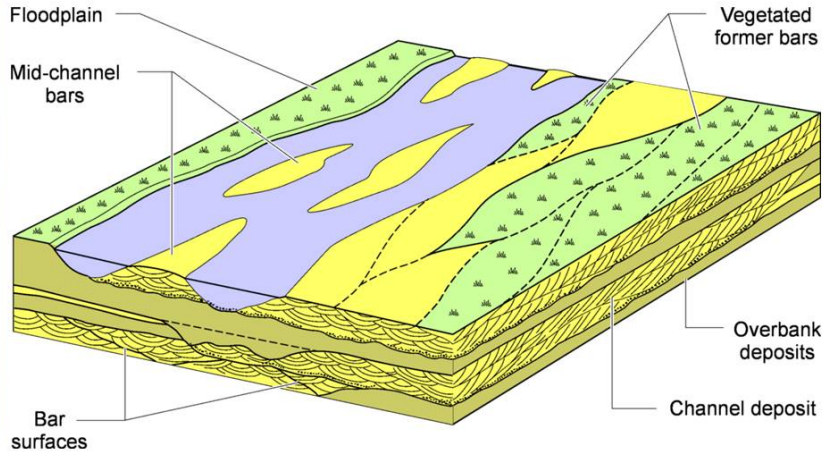


WILEY-  
BLACKWELL



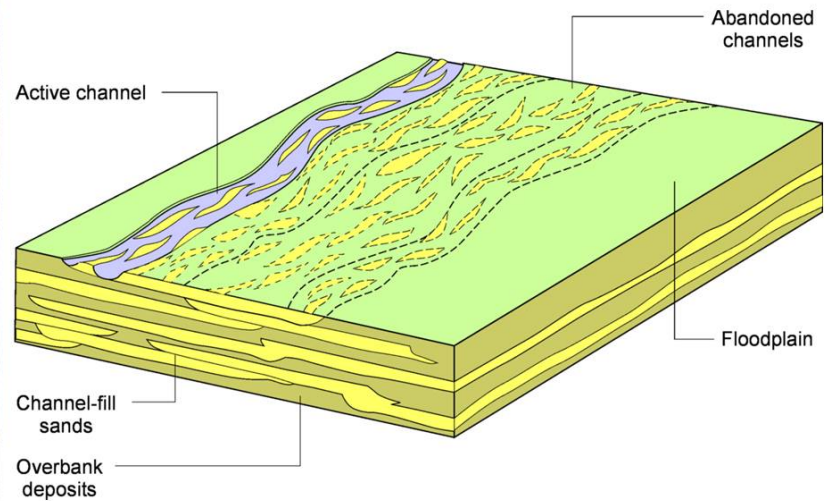


### Main morphological features of a braided river

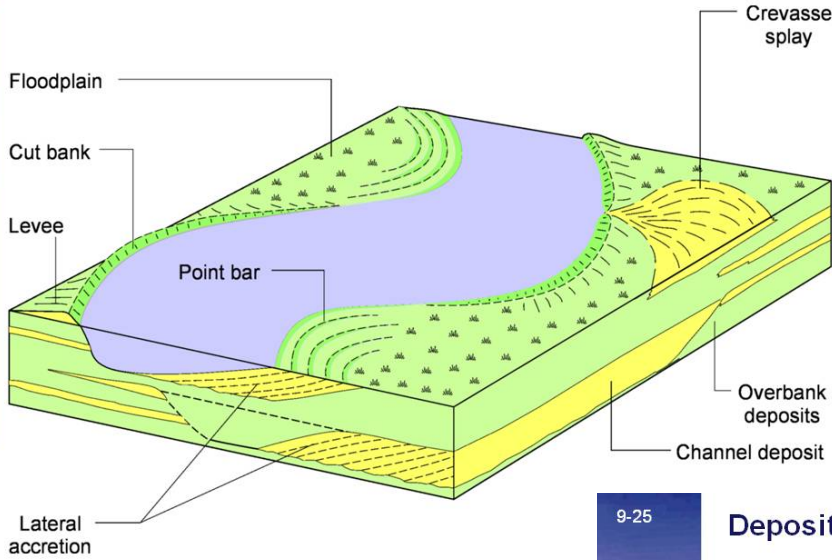


## Ambiente fluviale 3

### Depositional architecture of a braided river

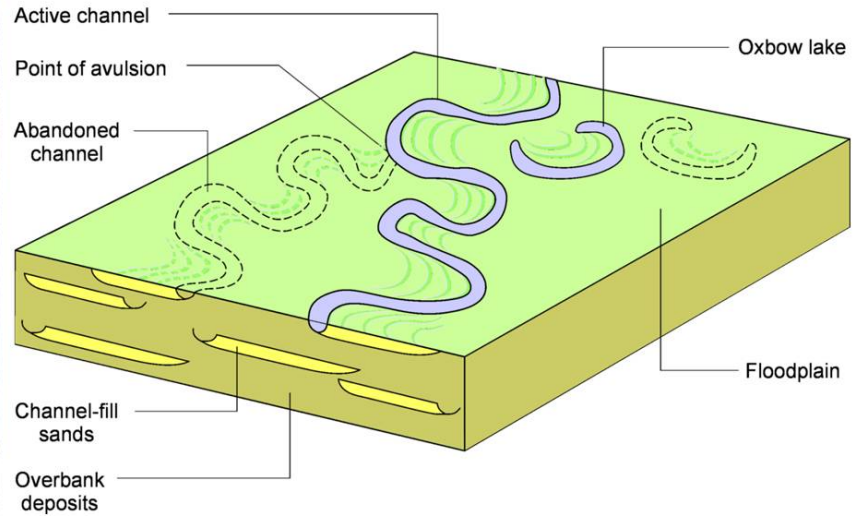


# Main morphological features of a meandering river



# Ambiente fluviale 4

# Depositional architecture of a meandering river

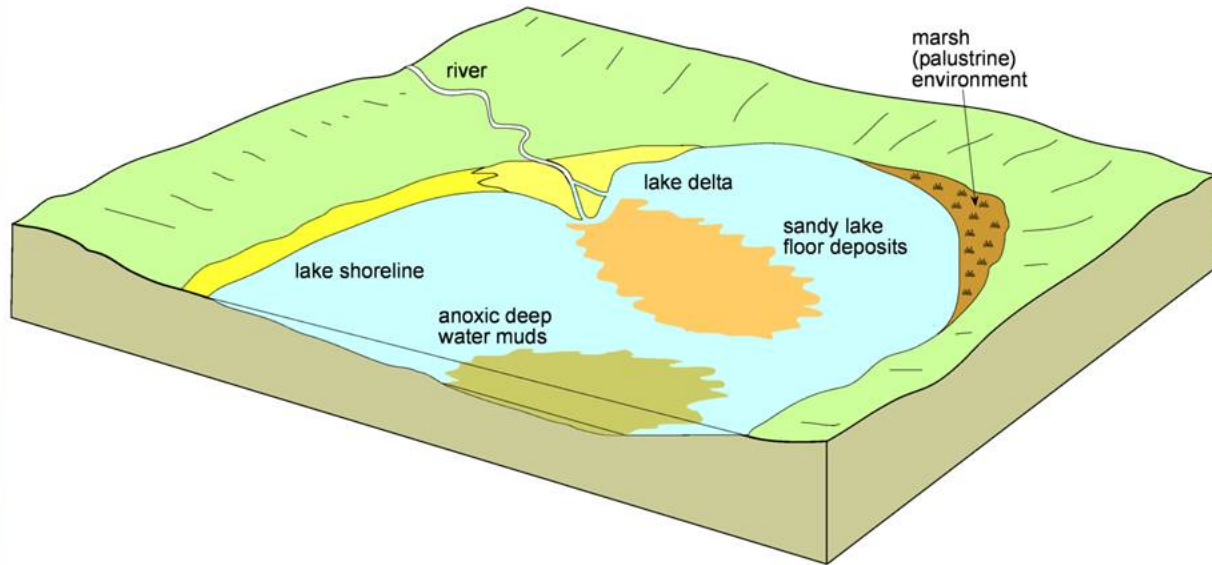




# Ambiente lacustre 1

10-5

## Facies distribution in a clastic freshwater lake



Gary Nichols  
Sedimentology  
& Stratigraphy

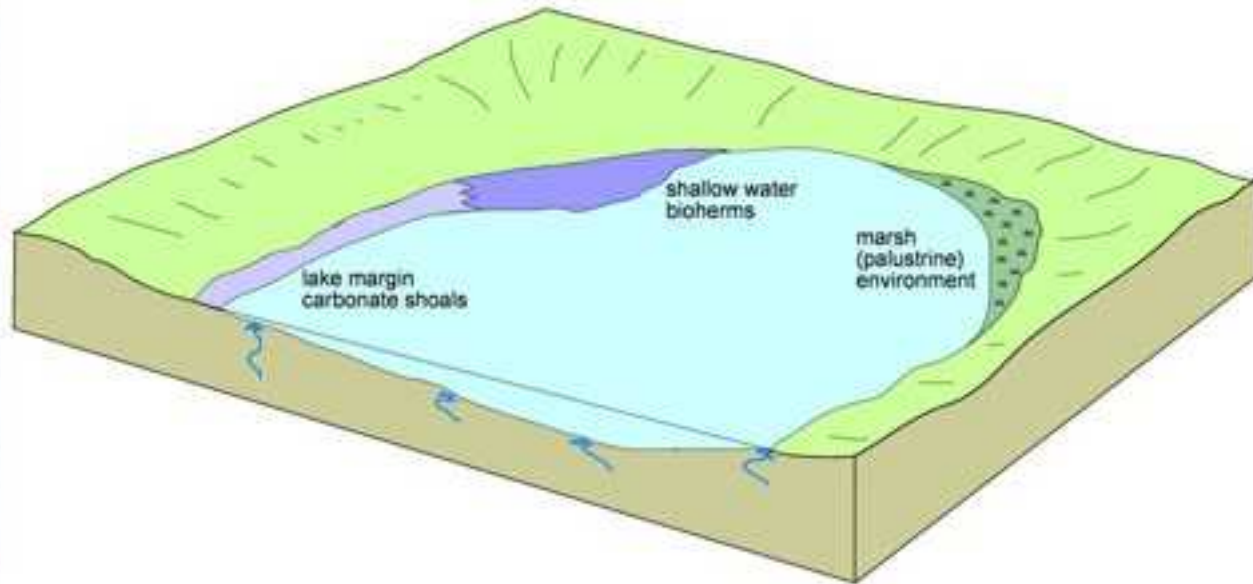


WILEY-  
BLACKWELL

## Ambiente lacustre 2

10-13

### Facies distributions in a carbonate freshwater lake



Gary Nichols  
Sedimentology  
& Stratigraphy



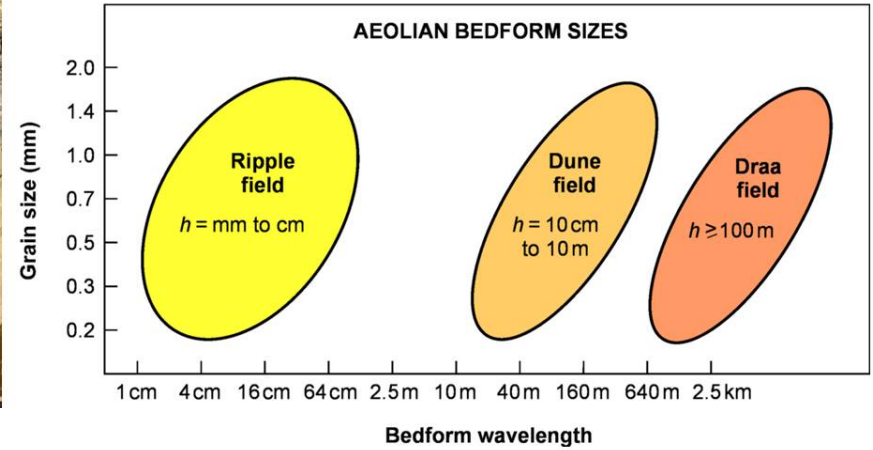
WILEY-  
BLACKWELL

# Ambiente eolico 1



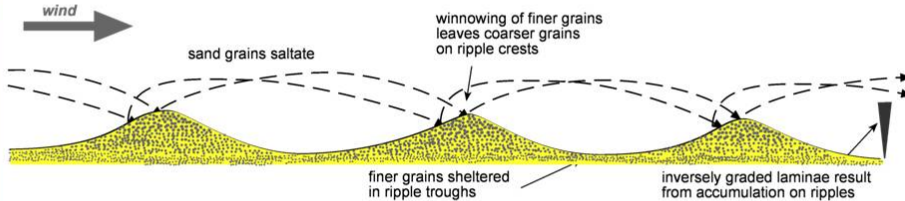
8-5

## Aeolian bedforms: ripples, dunes and draas



8-6

## Aeolian ripples form by sand grains saltating

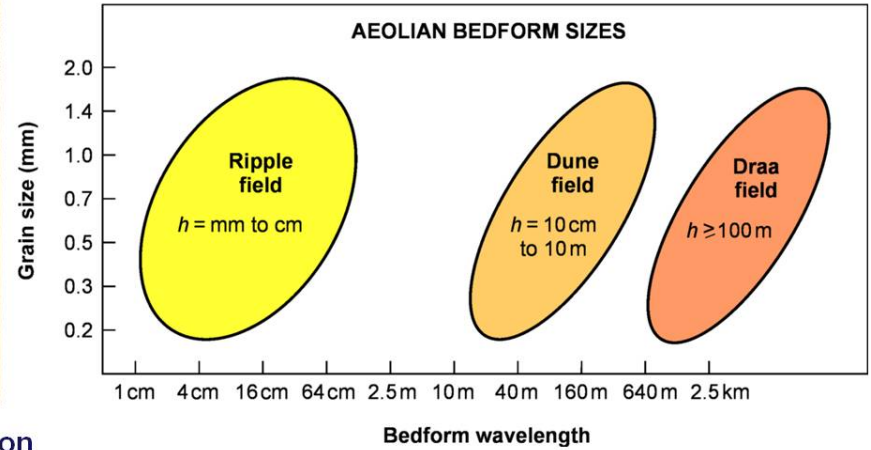


# Ambiente eolico 2

8-5

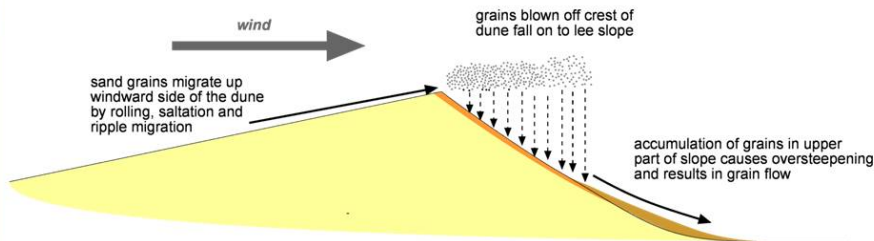


## Aeolian bedforms: ripples, dunes and draas



8-10

## Aeolian dune migration: grain fall & grain flow deposition



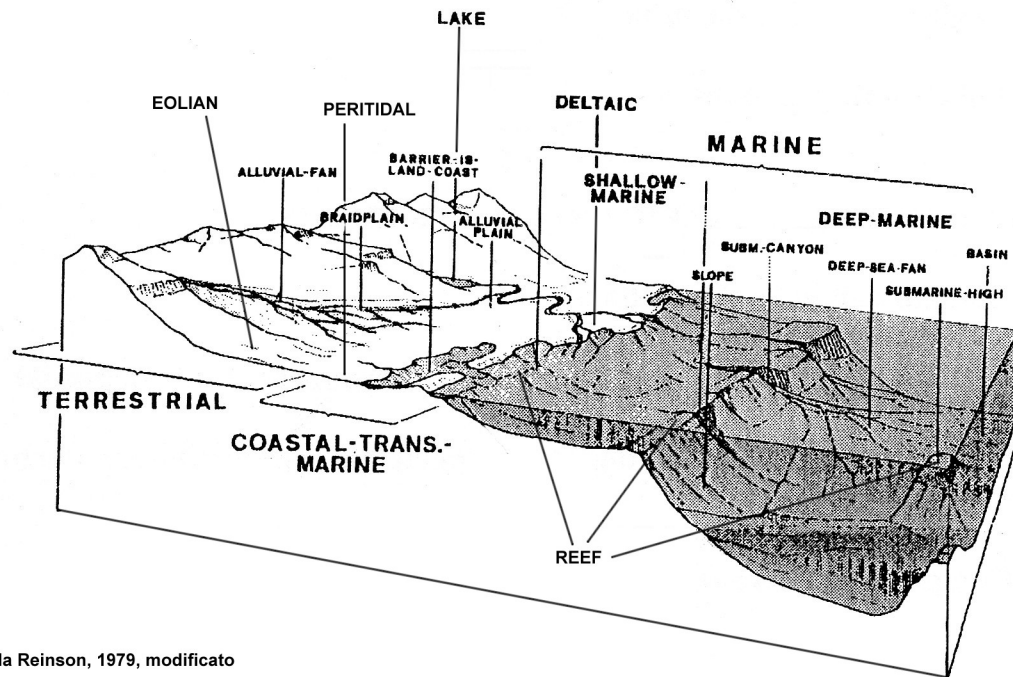
# Ambienti transizionali

## Ambiente transizionale (transitional, coastal)

Conoide deltaica (deltaic, fan delta)

Sistema peritidale (peritidal)

Complessi di barra, isola, litorale (bar, barrier, island, coast)



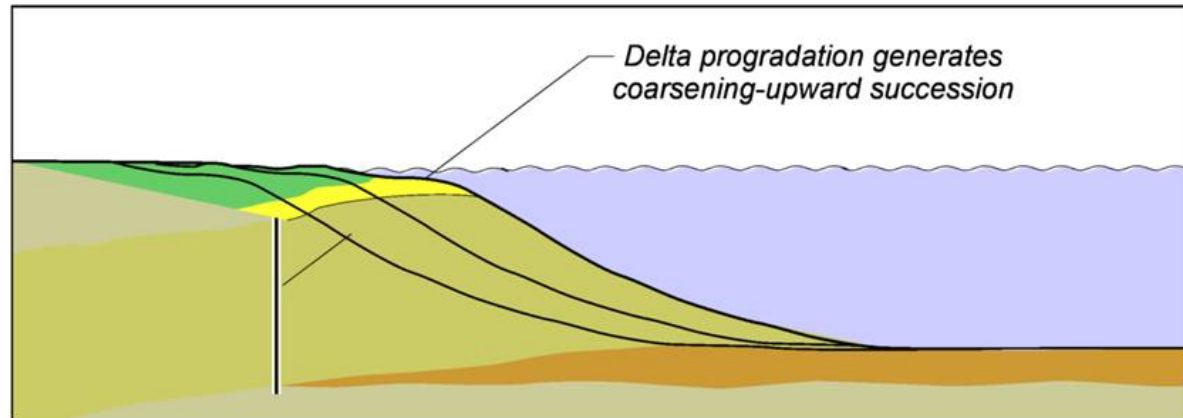
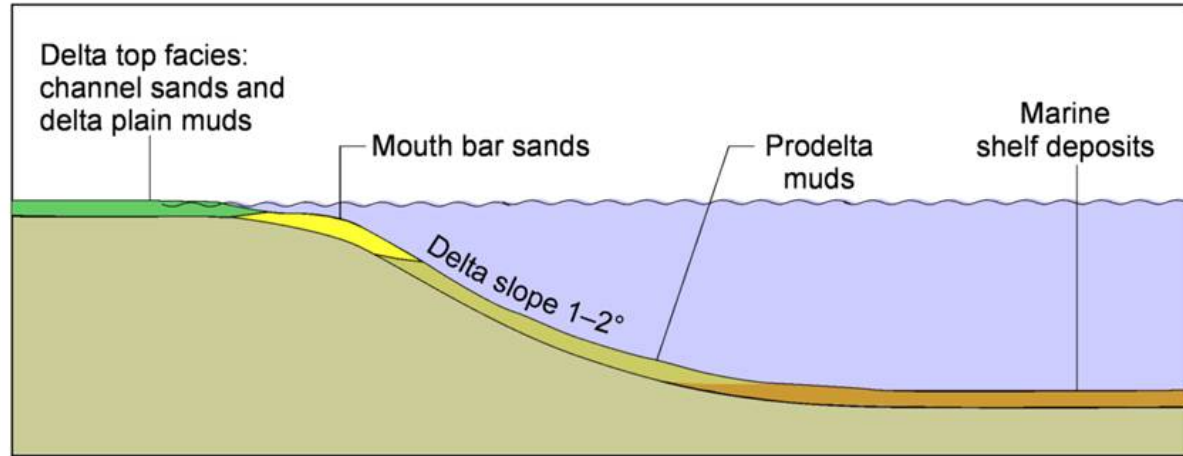
da Reinson, 1979, modificato



# Delta

12-14

## A cross section across a delta lobe



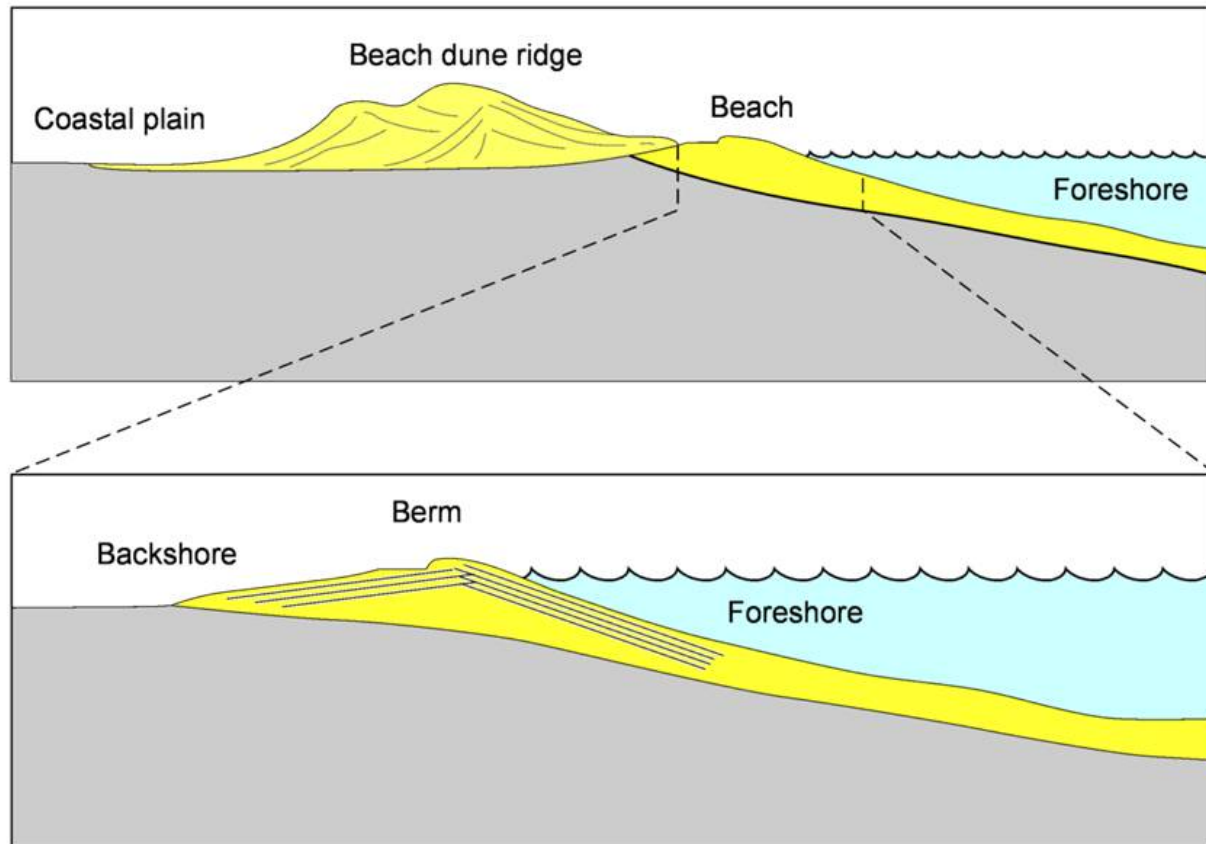
Gary Nichols  
Sedimentology  
& Stratigraphy



WILEY-  
BLACKWELL

13-8

## Morphological features of a beach



Gary Nichols  
Sedimentology  
& Stratigraphy



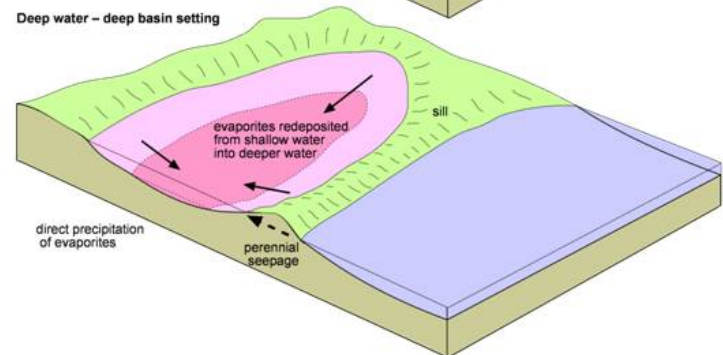
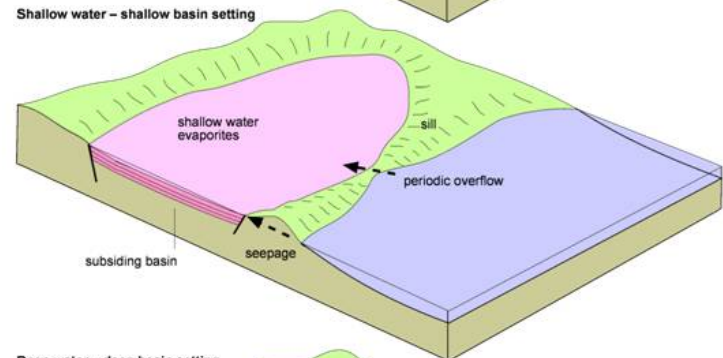
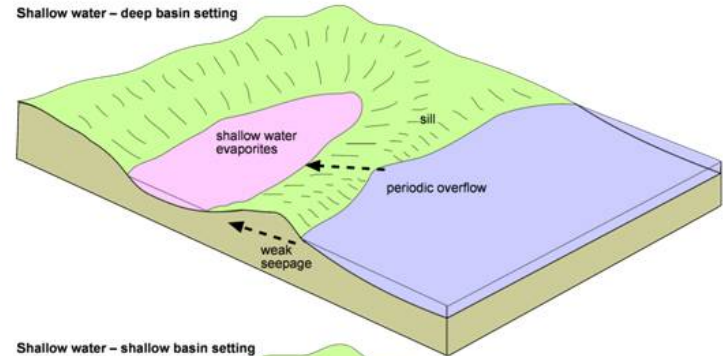
# Bacini evaporitici

15-33

Barred basins can result in thick evaporite successions



Gary Nichols  
Sedimentology  
& Stratigraphy



# Ambienti marini 1

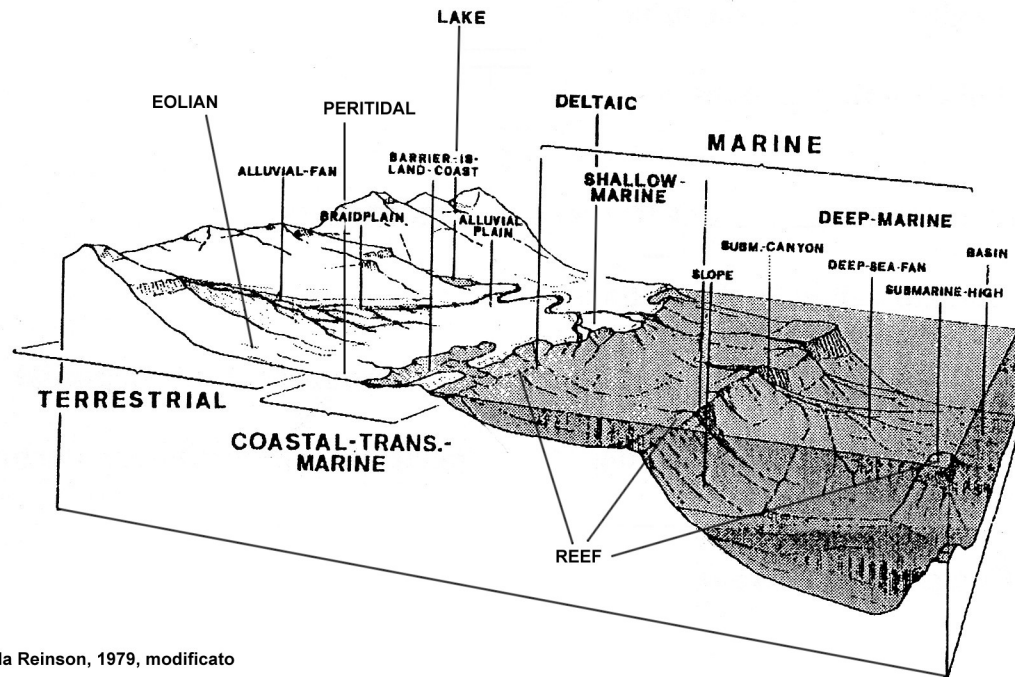
## Ambiente marino (marine)

Piattaforma (shallow-marine, shelf)

Scogliera di biocostruzione (reef)

Scarpata (continental slope and rise)

Pelagico (deep-marine, pelagic)

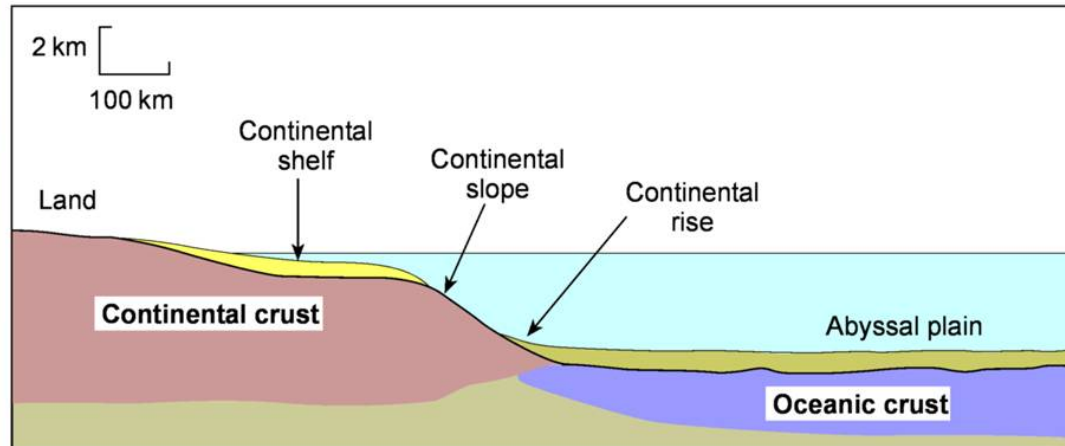


da Reinson, 1979, modificato

## Ambienti marini 2

11-2

### The continental shelf, slope and rise and the abyssal plain



Gary Nichols  
Sedimentology  
& Stratigraphy



WILEY-  
BLACKWELL

#### **Ambiente marino (marine)**

Piattaforma (shallow-marine, shelf)

Scogliera di biocostruzione (reef)

Scarpata (continental slope and rise)

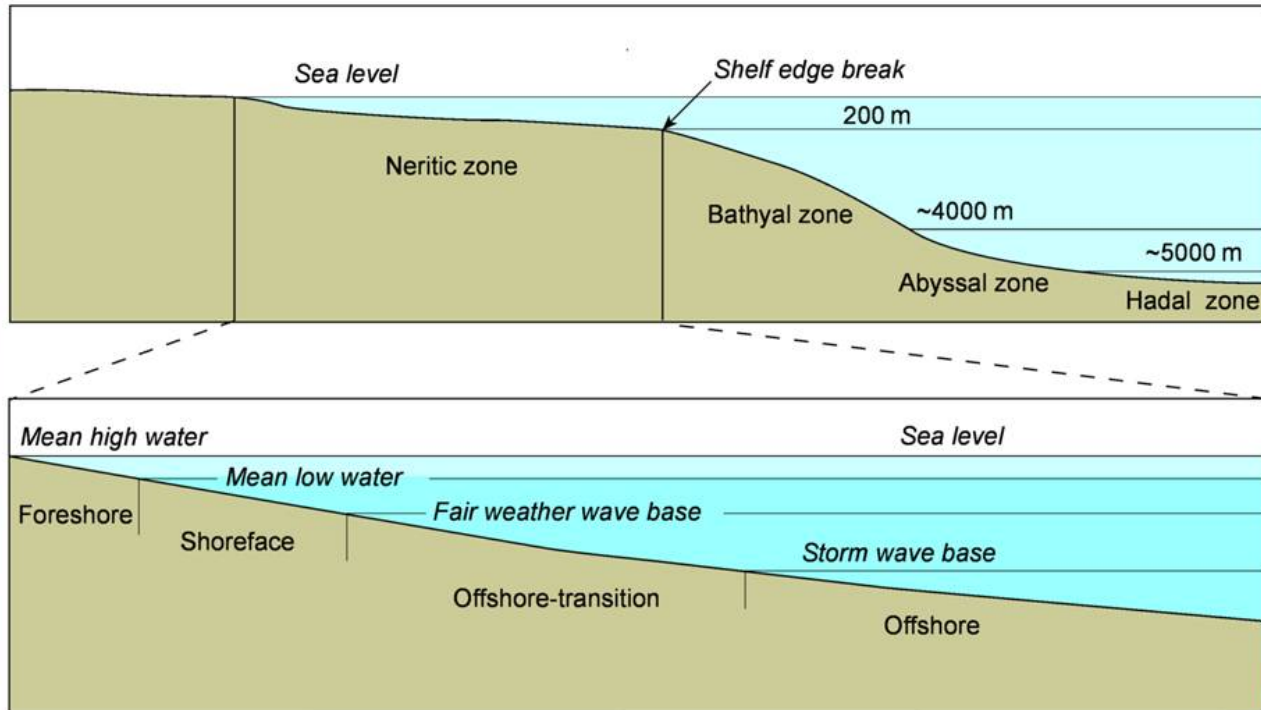
Pelagico (deep-marine, pelagic)



# Ambienti marini 3

11-3

## Depth-related divisions of the marine realm

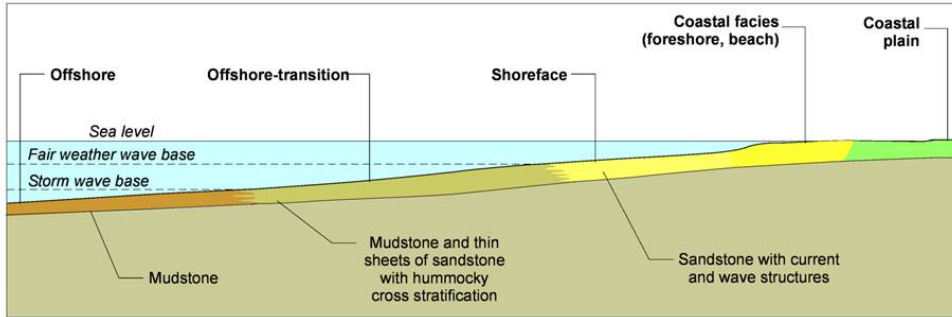


Gary Nichols  
Sedimentology  
& Stratigraphy

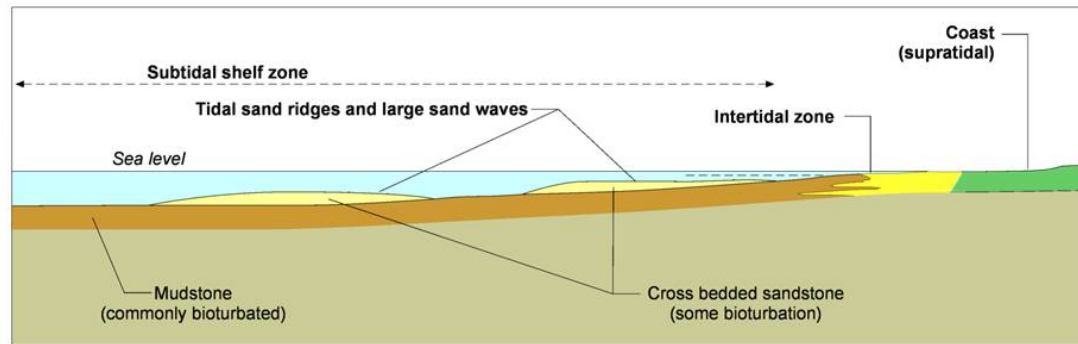


# Characteristics of a storm-dominated shelf environment

Piattaforme terrigene



# Characteristics of a tidally-dominated shelf environment

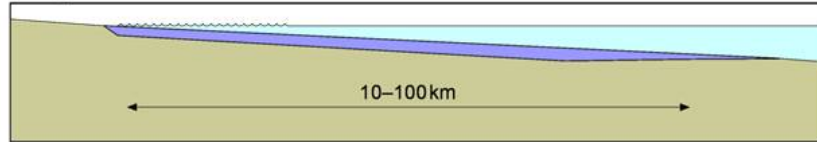


# Piattaforme carbonatiche 1

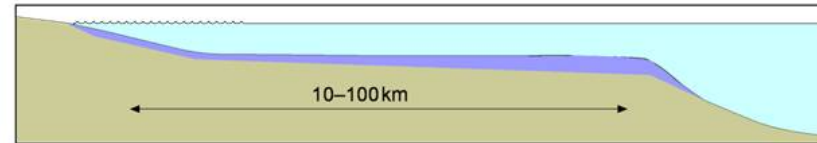
15-3

## Types of shallow marine carbonate platform

Ramp



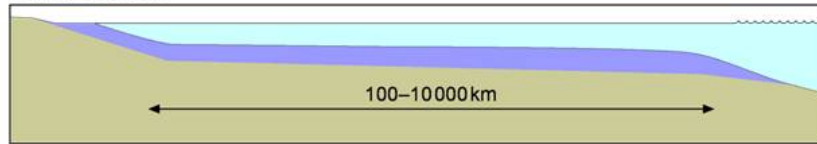
Non-rimmed shelf



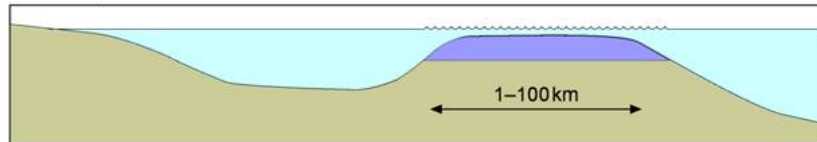
Rimmed shelf



Epeiric platform



Isolated platform



Gary Nichols  
Sedimentology  
& Stratigraphy



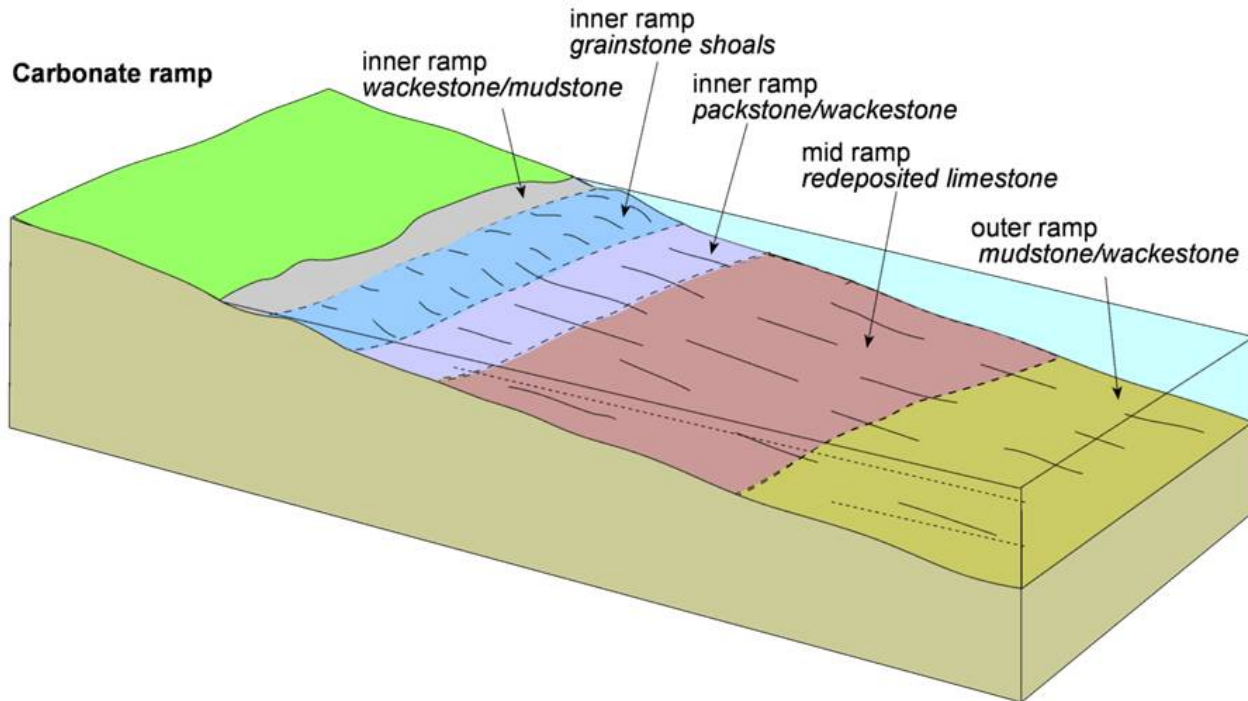
WILEY-  
BLACKWELL

# Piattaforme carbonatiche 2

15-27

## Generalised facies distributions on carbonate platforms

### Carbonate ramp



Gary Nichols  
Sedimentology  
& Stratigraphy

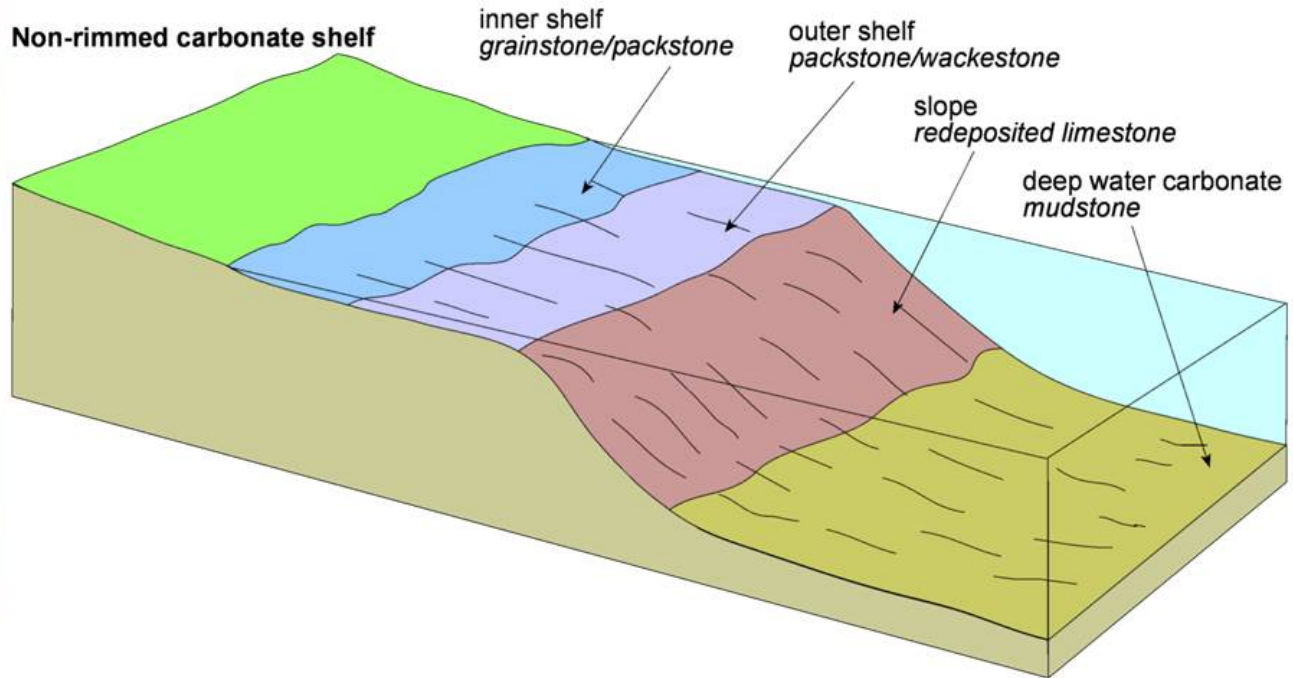


# Piattaforme carbonatiche 3

15-28

## Generalised facies distributions on carbonate platforms

### Non-rimmed shelf



Gary Nichols  
Sedimentology  
& Stratigraphy



WILEY-  
BLACKWELL

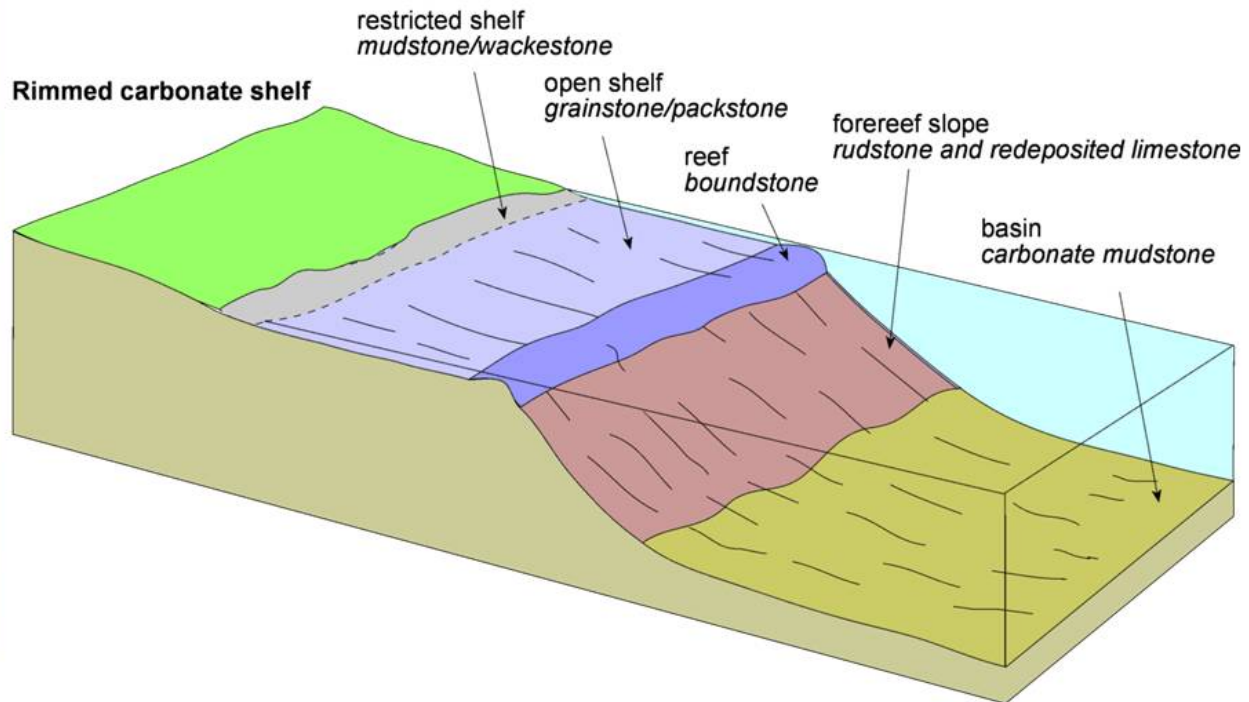


# Piattaforme carbonatiche 4

15-29

## Generalised facies distributions on carbonate platforms

### Rimmed carbonate shelf



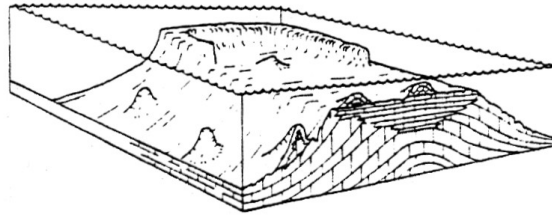
Gary Nichols  
Sedimentology  
& Stratigraphy



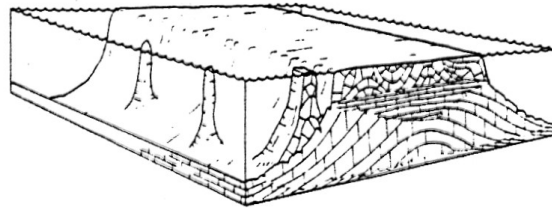
WILEY-  
BLACKWELL

## Piattaforme carbonatiche 5

ISOLATED PLATFORM (KEEP-UP GROWTH AT RIMS, CATCH-UP IN INTERIOR)



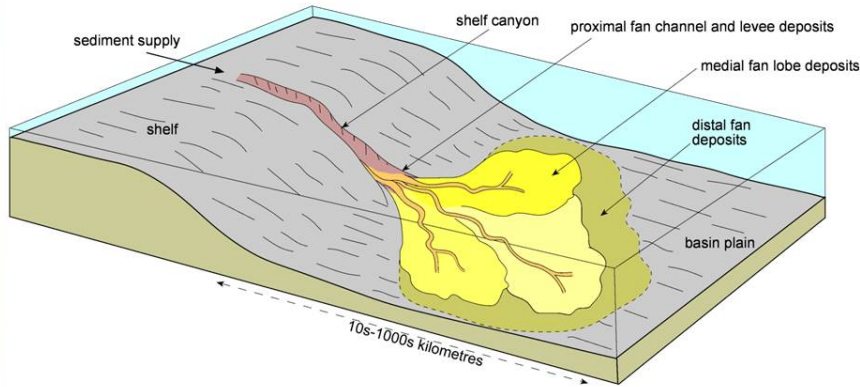
ISOLATED PLATFORM (KEEP-UP TYPE GROWTH)



**Fig. 12.** Vertical growth patterns on isolated carbonate platforms. (1) Keep-up type growth along the rims, where growth rates may be able to keep pace with rapidly rising sea level. If the platform interior cannot keep pace with the rise, it displays a catch-up type growth pattern: (2) when the growth rate on the platform can keep pace with relatively slow rise of sea level, the entire platform may show a keep-up type growth pattern (after Kendall & Schlager, 1981).

da Haq, 1991

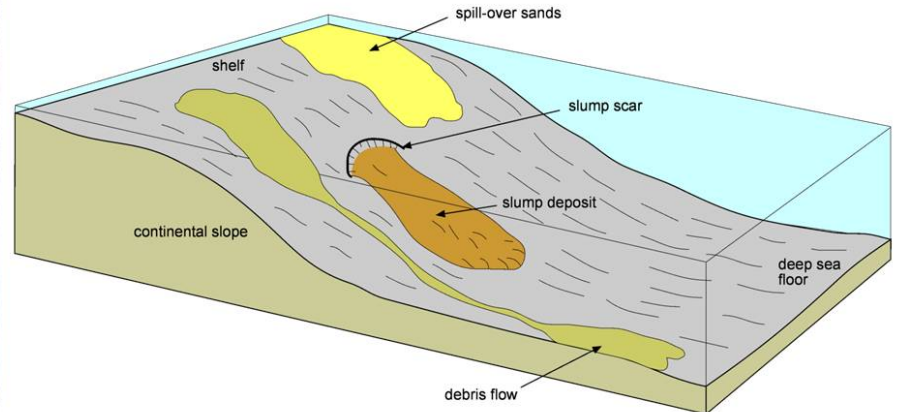
### Depositional environments on a submarine fan



## Ambiente batiale

### Slope apron deposits

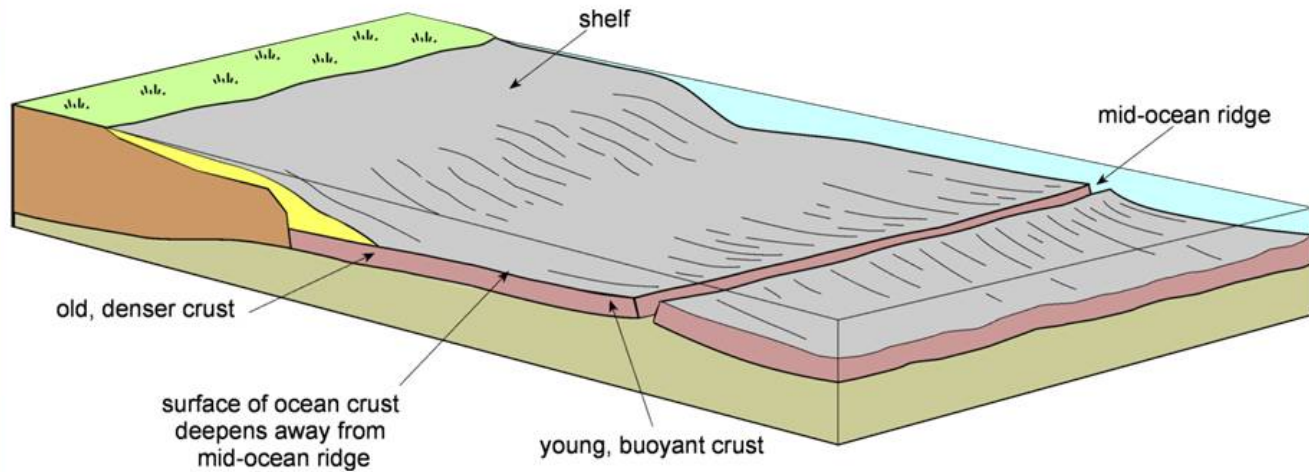
Pelagic sediment, slumps, debris flows and sands from the shelf edge



16-2

## Deep water environments

Floored by ocean crust, the most widespread areas of deposition worldwide



Gary Nichols  
Sedimentology  
& Stratigraphy

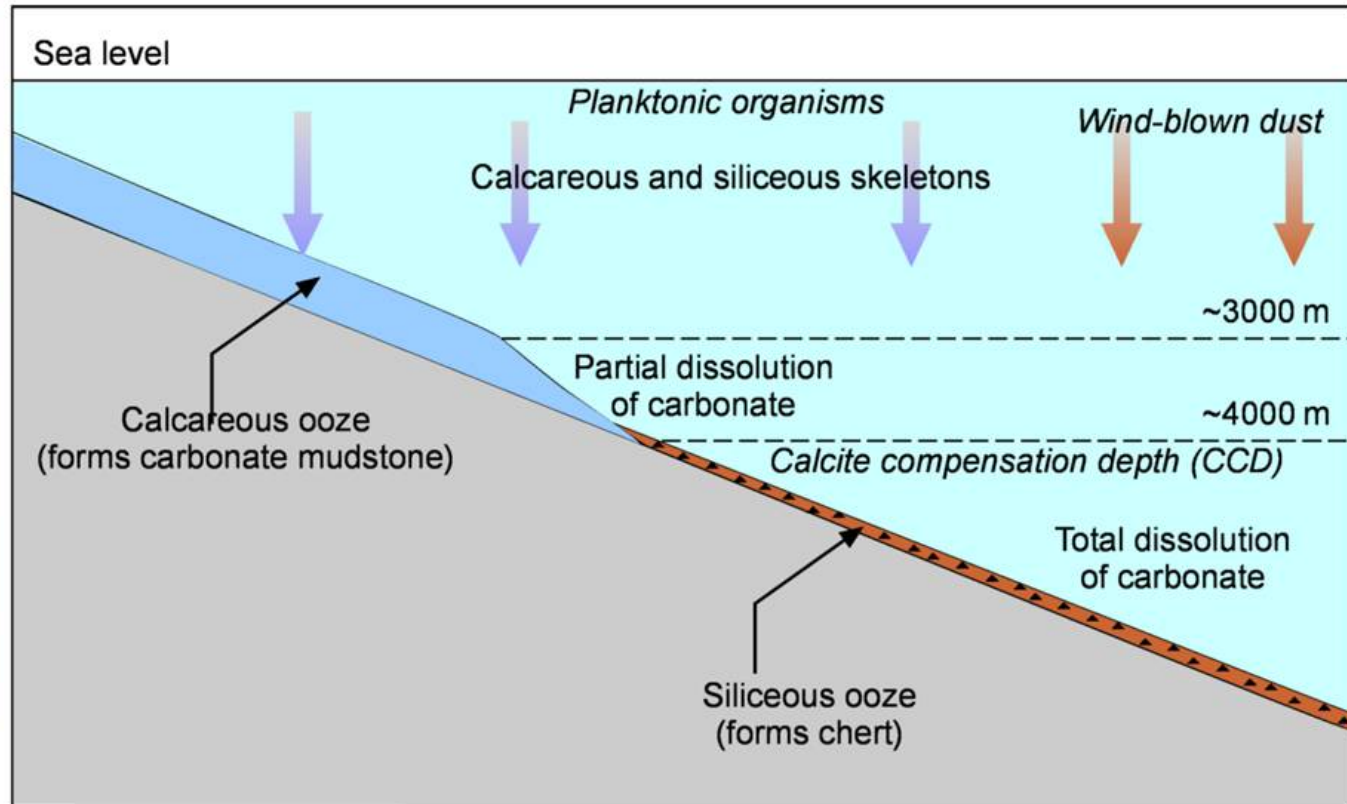


WILEY-  
BLACKWELL

## Ambiente marino profondo 2

16-20

### The distribution of pelagic sediment in the oceans



Gary Nichols  
Sedimentology  
& Stratigraphy



WILEY-  
BLACKWELL