

Geomorphology is the Study of Landforms
and the Processes that Create Them,
Usually by Erosion, Transportation and Deposition

Fluvial = running water, rivers and floodplains

Glacial = flowing ice in cold environments, moraine

Aeolian = wind, usually in deserts, sand dunes

Shoreline = wave action, beach and cliff

Lacustrine = lakes are temporary features, peat bog

Rivers Flood in a Perfectly Natural Process. Its Just Inconvenient for People



(b)

They Spend Billions \$\$\$ Trying to Control Rivers



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The River Floods the Floodplain, the Flat Area on Either Side of the River

So, people build levees to protect the floodplain



(b)

In Spite of All the Money Spent, They Still Flood When the Big One Happens.



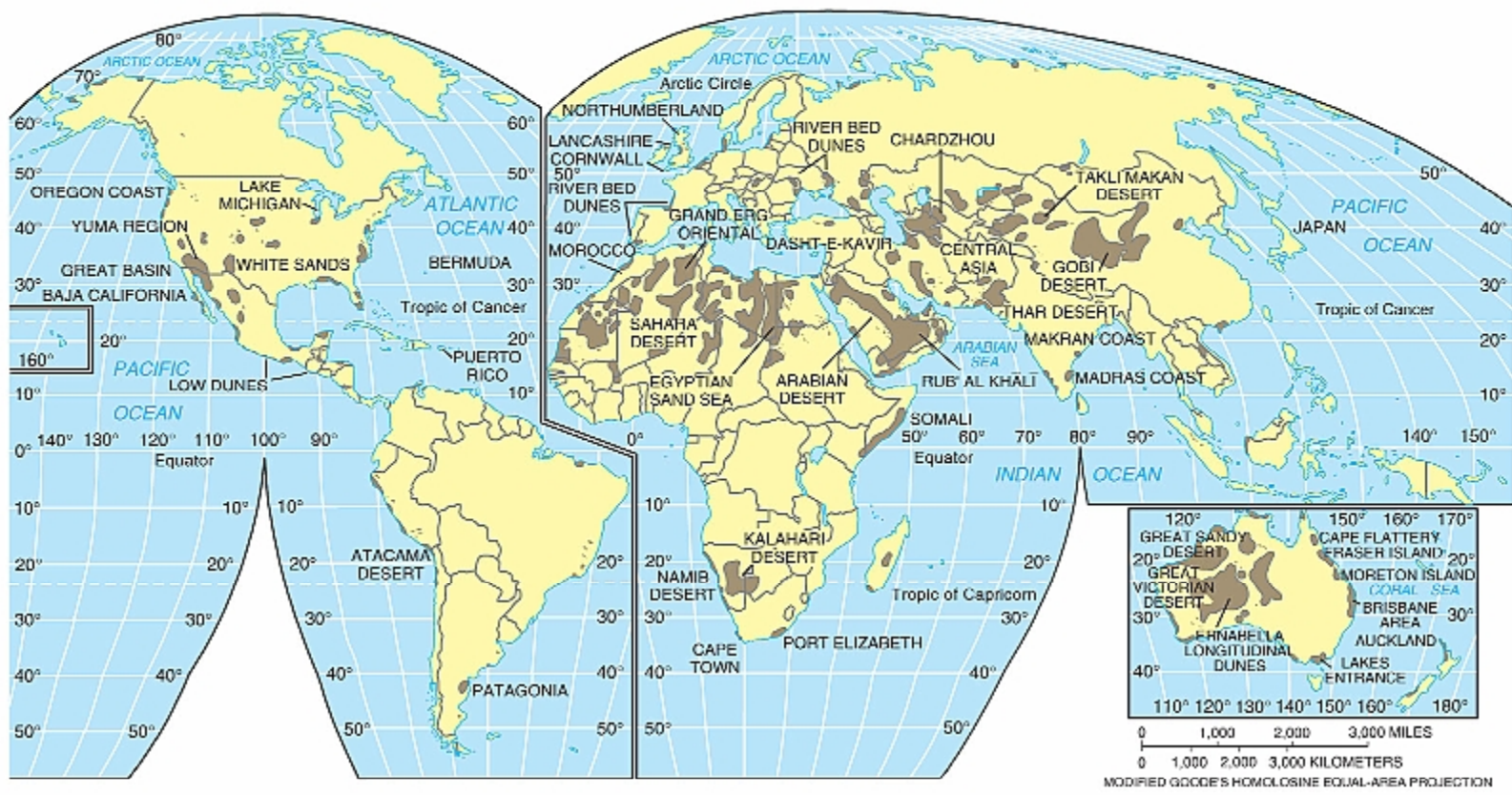
17th St. Canal

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The Colorado River is One of the Most Manipulated Rivers on Earth, Primarily for Water Supply for Growing Cities and Agricultural Interests of the Southwest.



Aeolian Processes Occur Primarily in Deserts



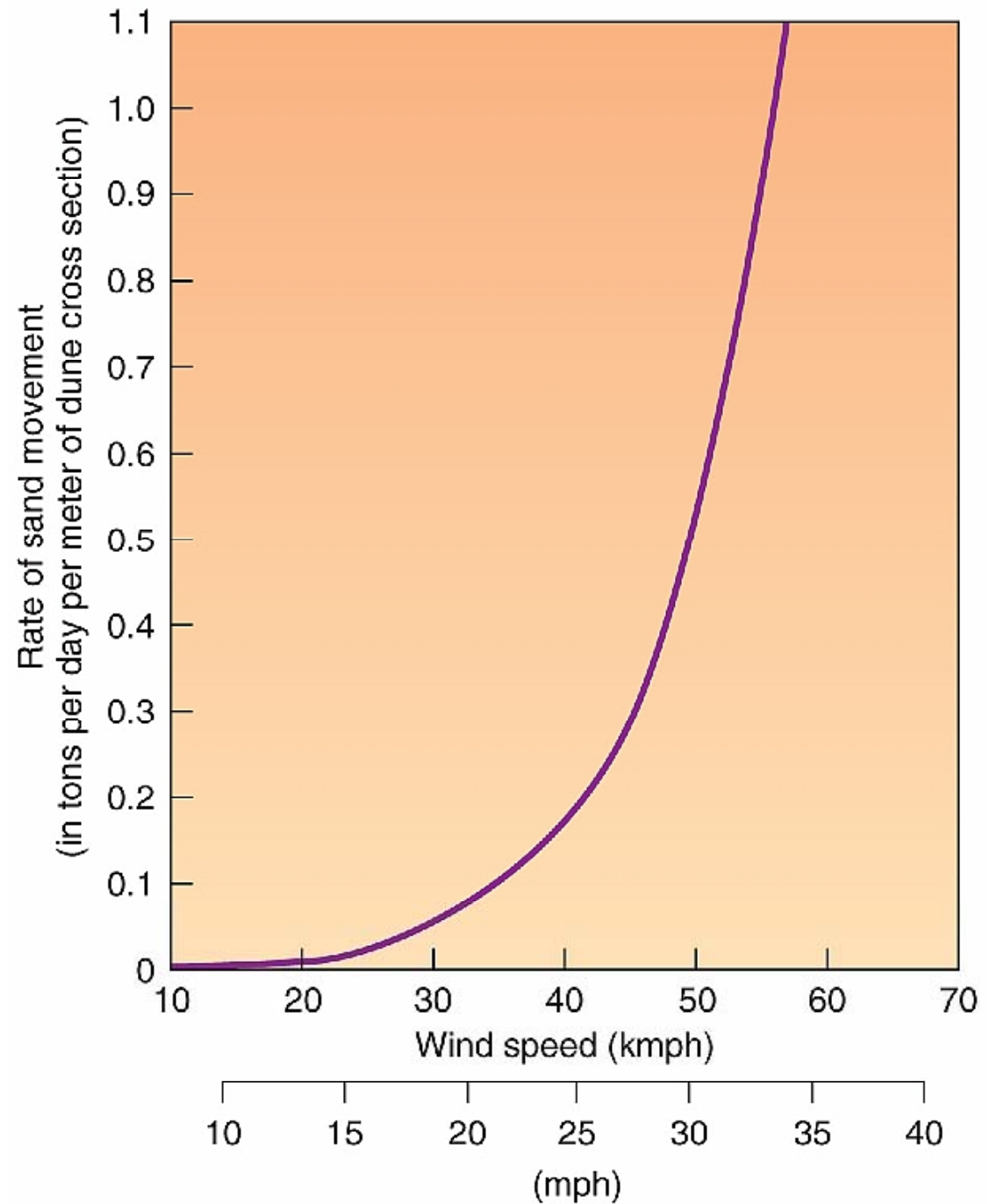
(a)

The Classic Image of a Desert is a Sea of Sand called an Erg as in this Part of the Sahara. On the Left is a Rock Desert called a Reg.

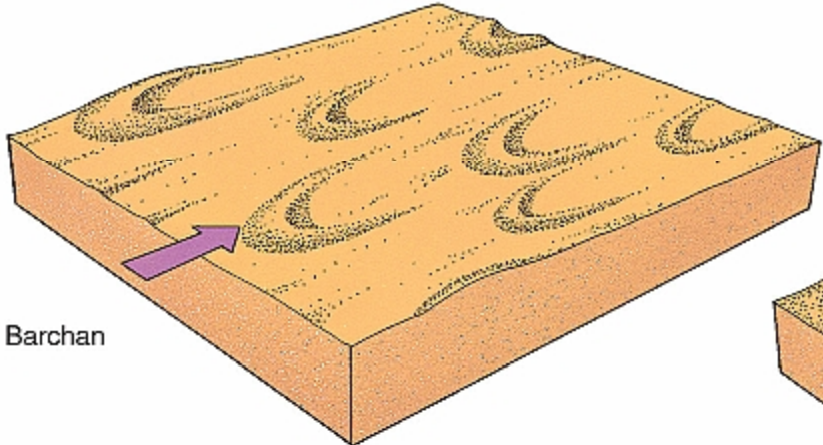


(a)

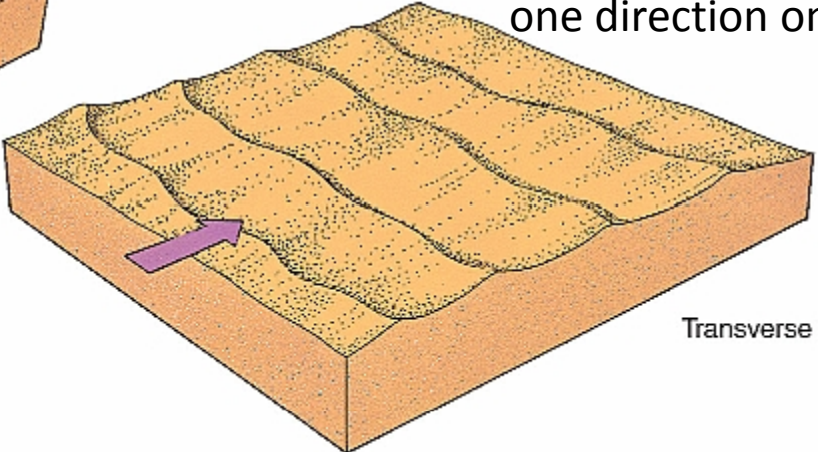
Winds Can Move Tons of Sand Each Day



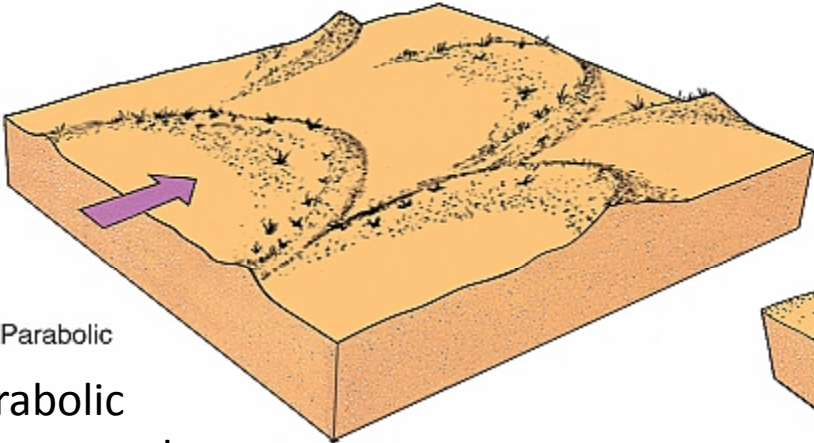
The Exact Form of the Sand Dune Is Determined by Type/Amount of Sand and Type of Prevailing Winds.



Barchan

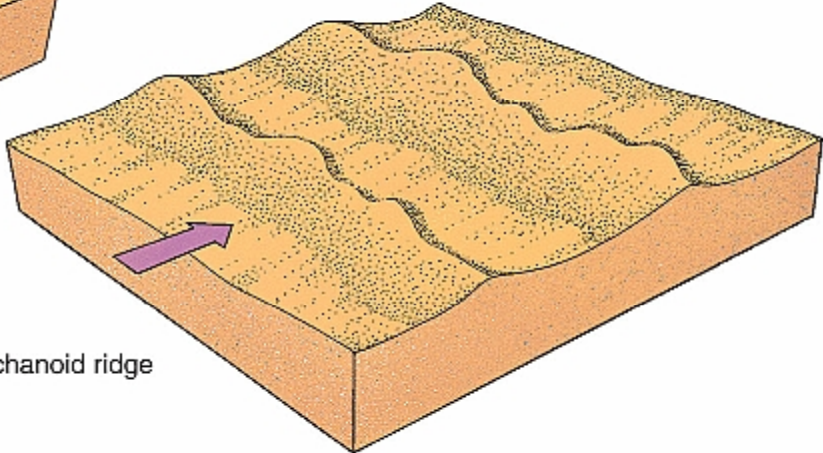


Transverse



Parabolic

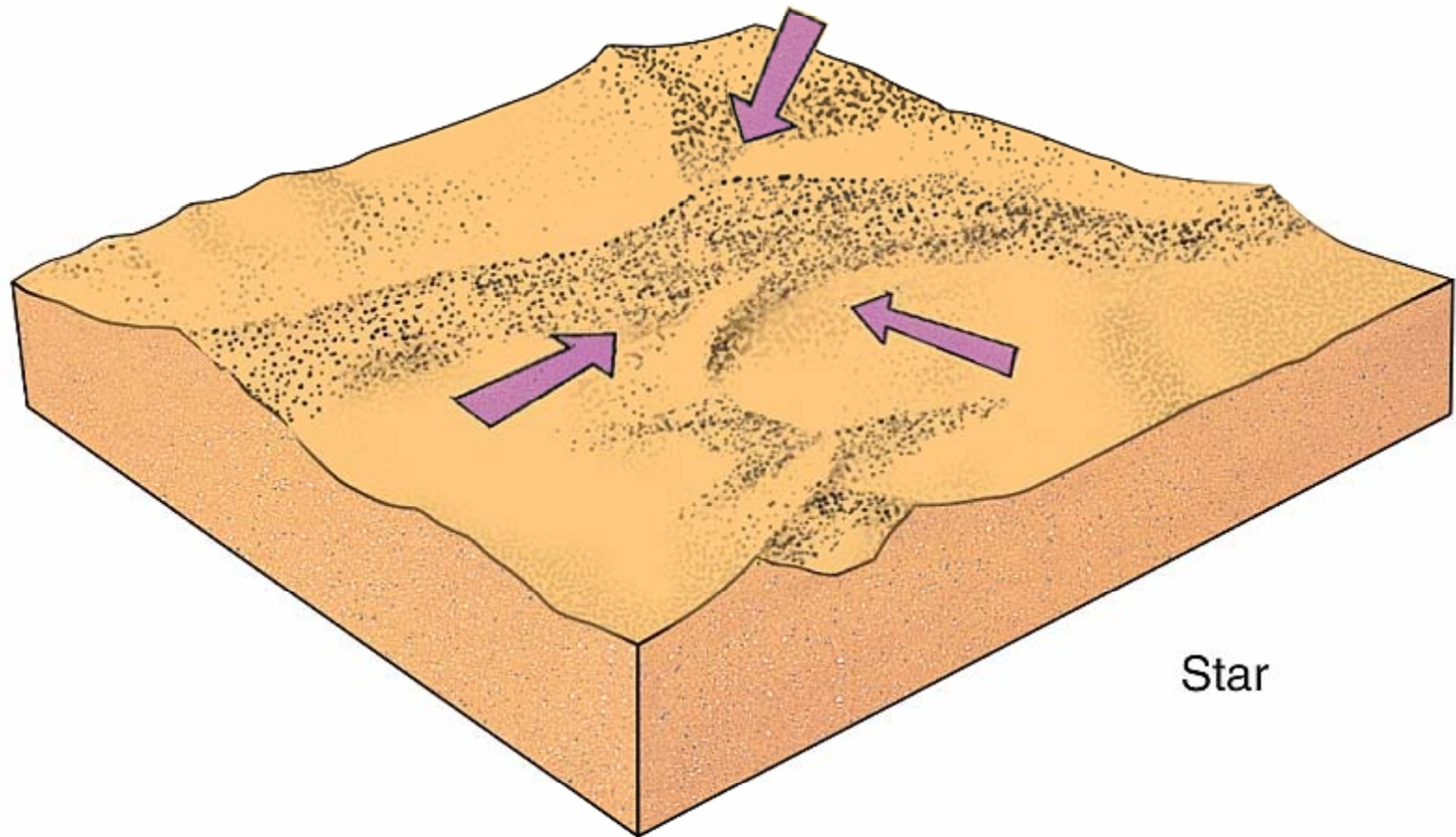
Parabolic where sand is anchored by vegetation



Barchanoid ridge

Transverse where winds prevail from one direction only

The Star Dune Forms Where the Direction of the Winds Change with the Seasons. It Can Look Like a Starfish on an Air Photo

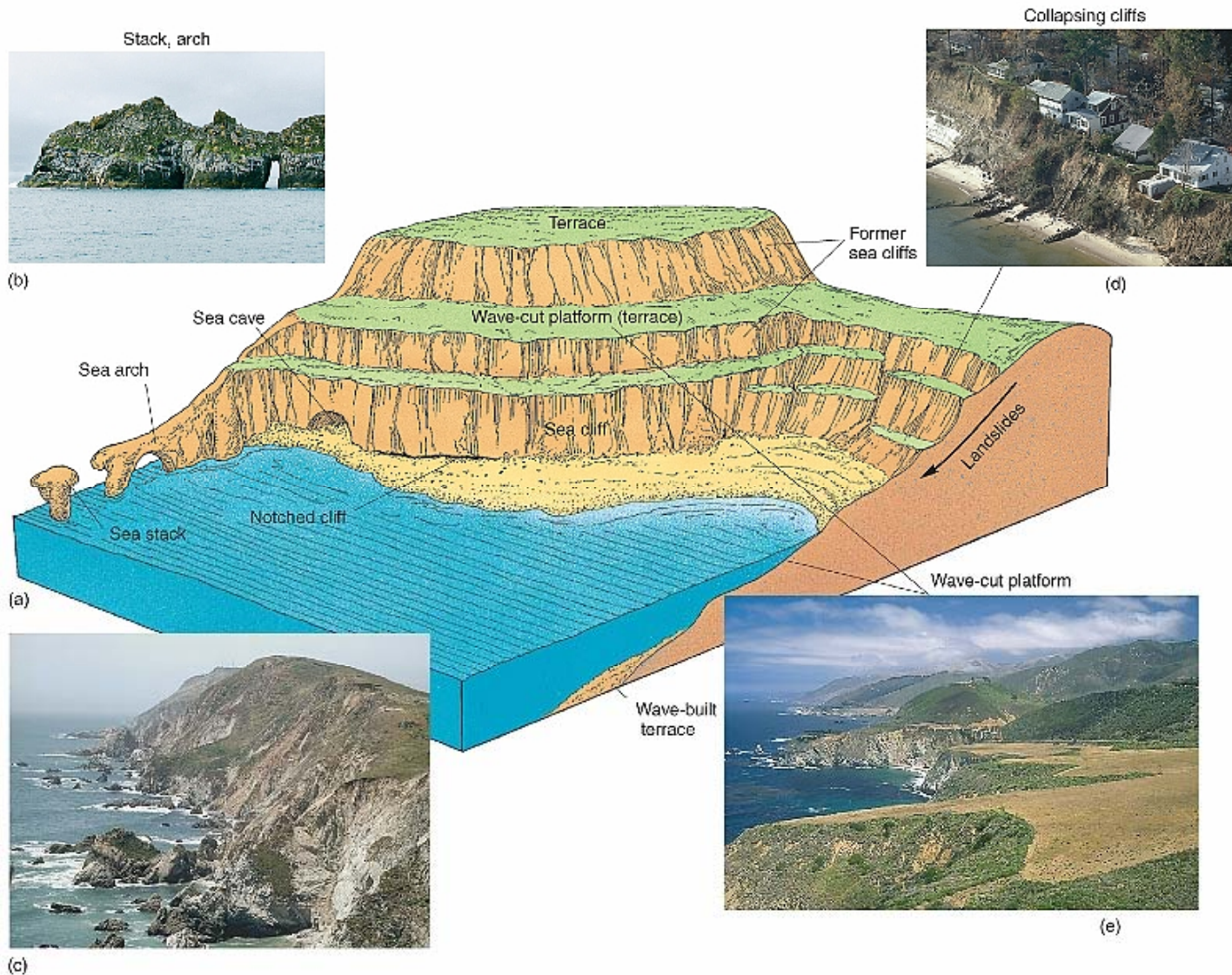


Sand Dunes Have Been Compared to Ocean Waves.
Both are Formed by Wind
But the Processes are Very Different

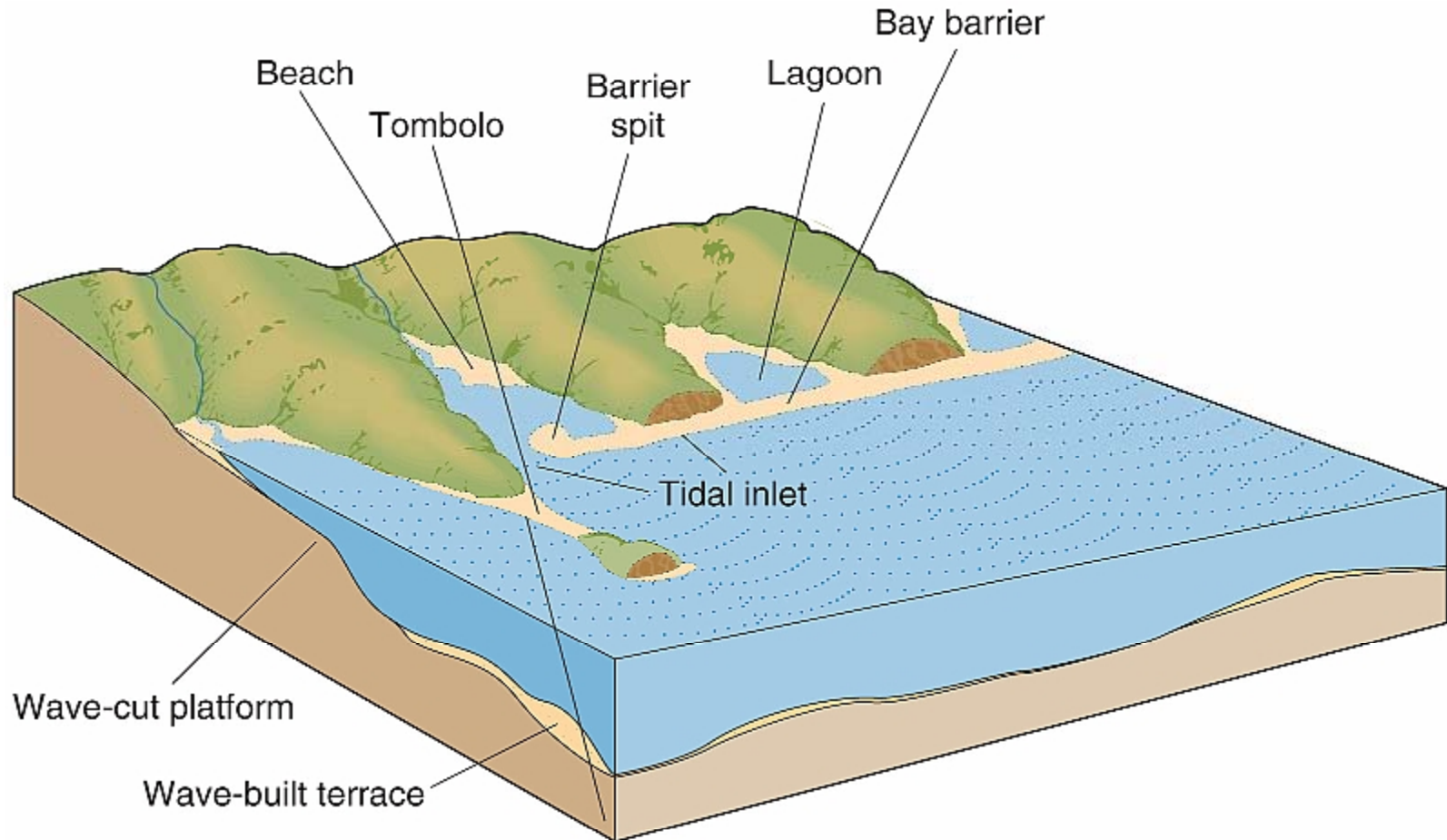


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Action of Waves Along a Shoreline Can Erode Rock Making a Cliff and Deposit Sand Making a Beach



Coastal Landforms Are Usually Due to a Combination of Local Topography and Wave Action



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Lighthouse on headland bluff



(d)

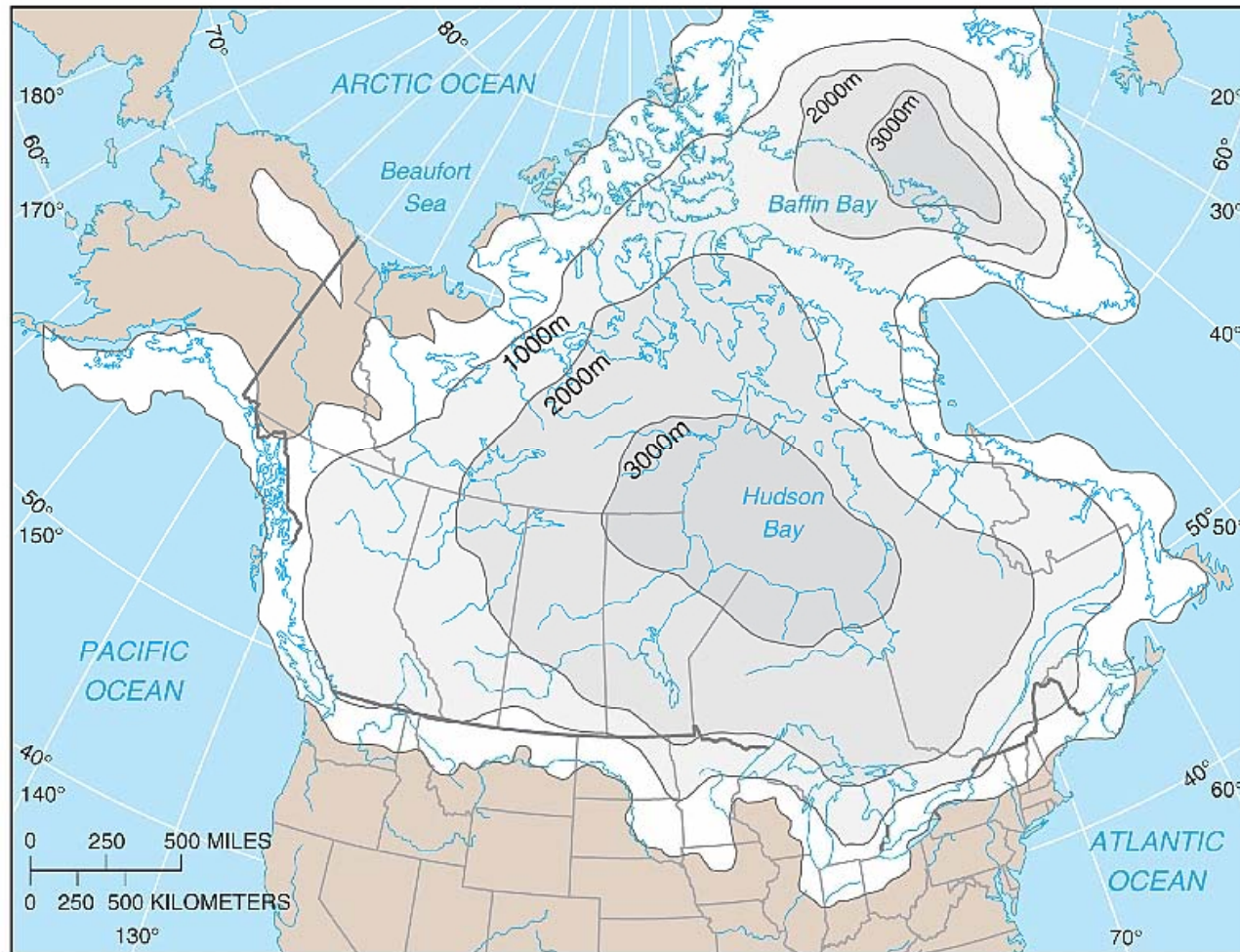
Two Types of Glaciers

Continental Glaciers Can Cover Thousands of Square Miles of Land to Depths of Thousands of Feet. The Antarctic Glacier and the Former North American Glacier Are Examples.

The Alpine Glacier is Smaller and Creates the Spectacular Landforms of Some Mountains.

Each Creates Their Own Characteristic Set of Landforms

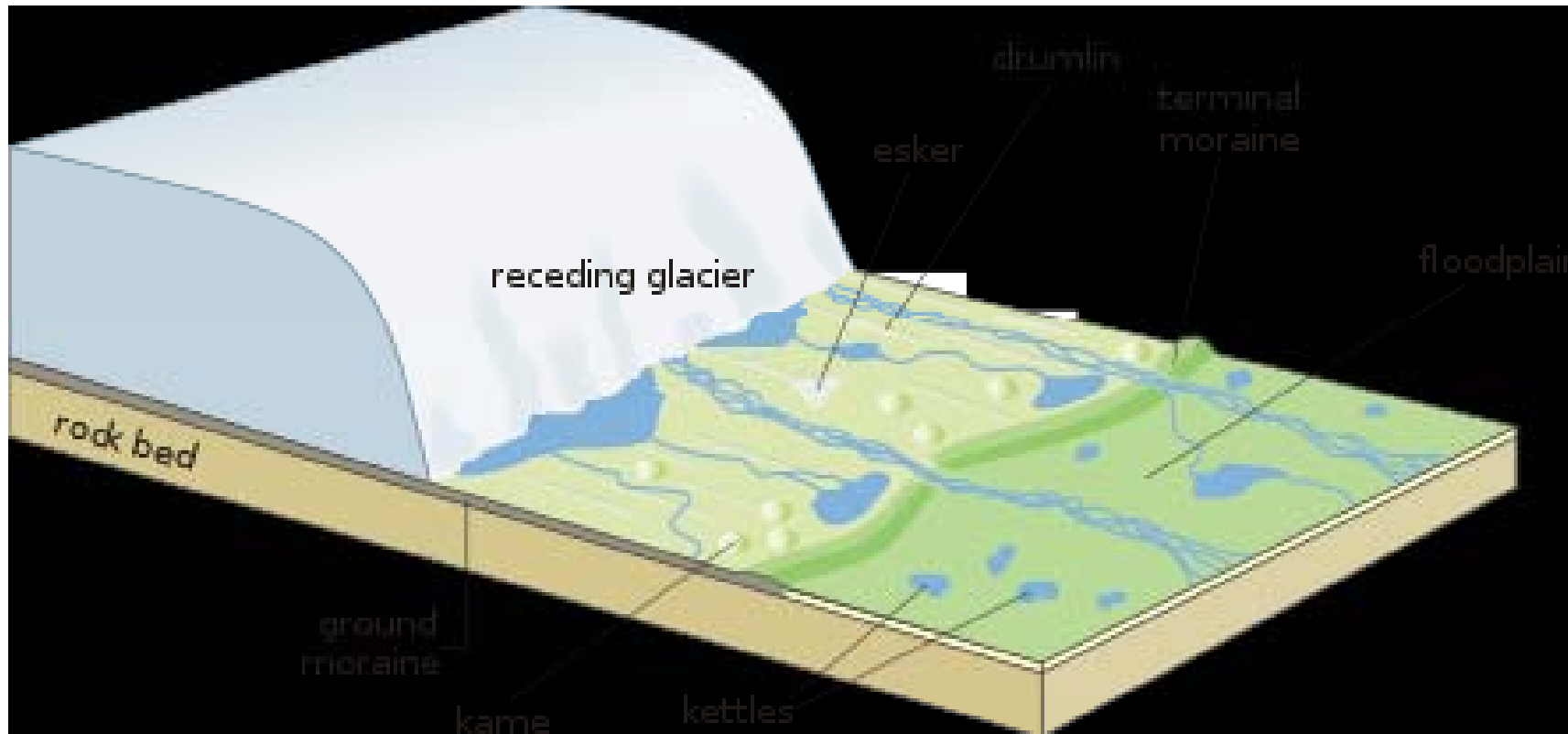
18 Thousand Years Ago, This Glacier Covered 1/3 of the Continent. Some Depths of Ice Were 2 Miles Thick, Comparable to Antarctica Today



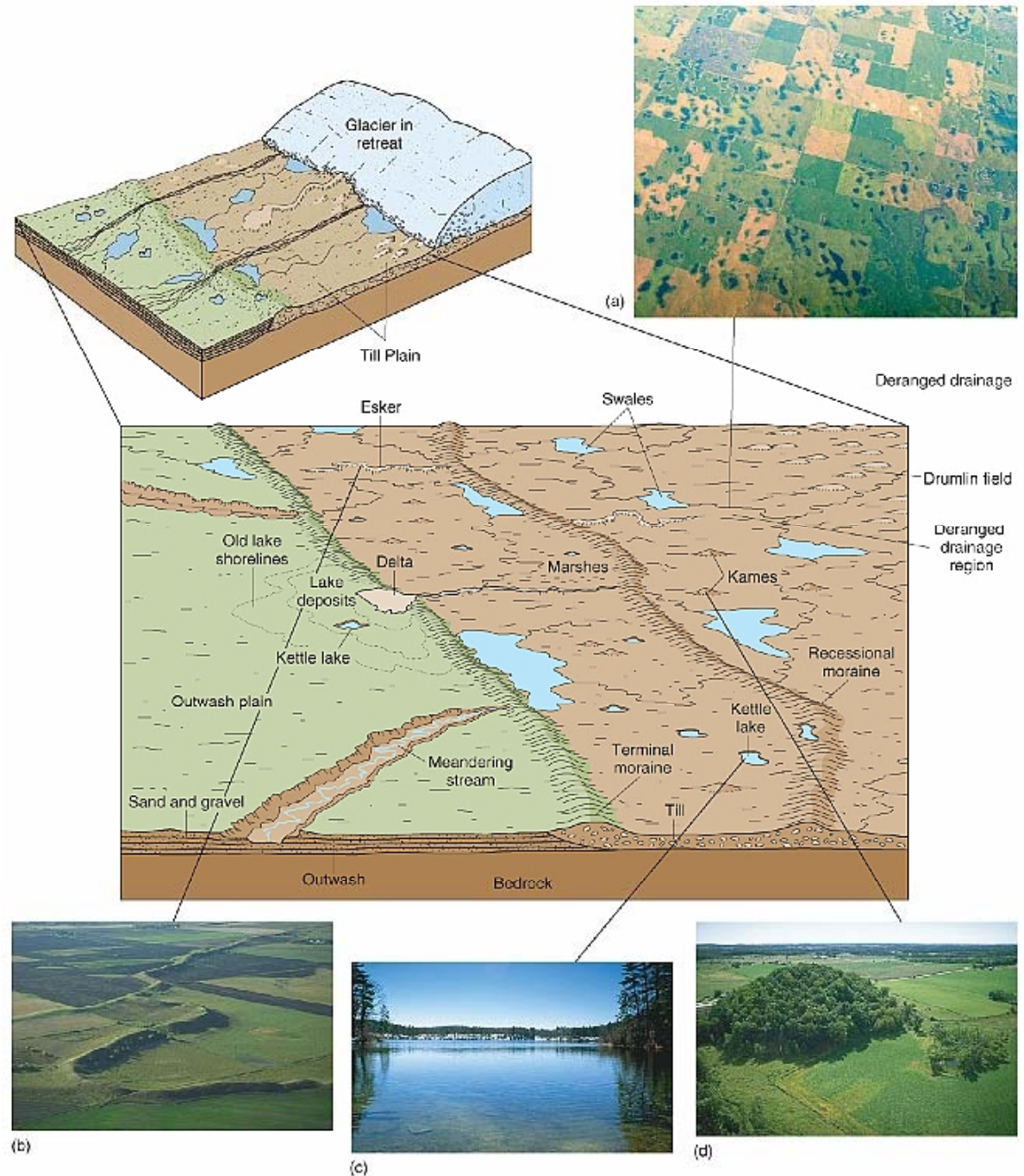
18,000 years ago

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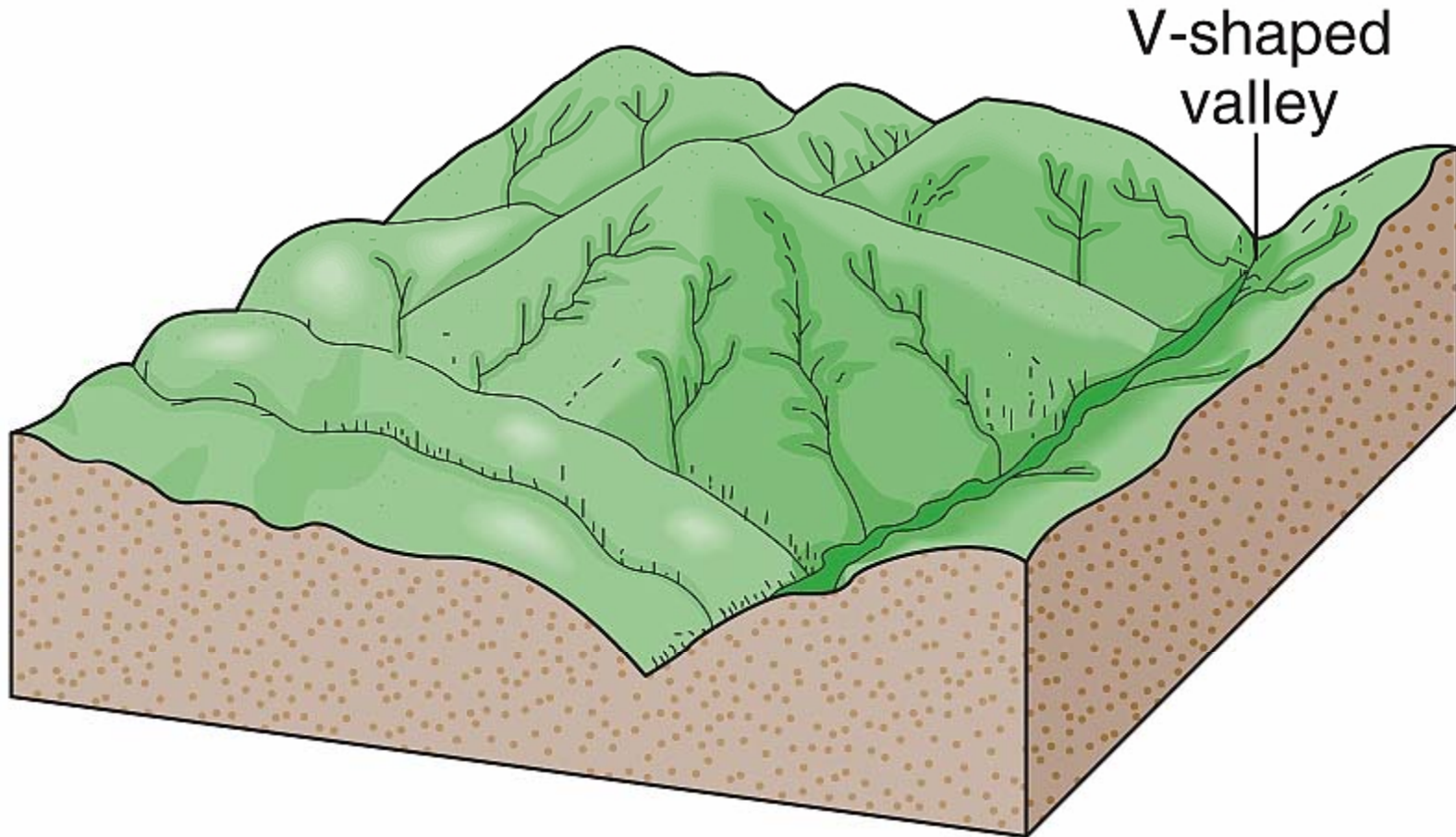
In the U.S., the Glacier Pushed South to the Ohio River and then Melted, Retreating Northward Leaving Glaciofluvial Landforms Including the Great Lakes



Glacialofluvial landforms Are Still Evident on the Landscape of the Mid-west.



An Alpine Landscape Formed By Water Has a Rounded, Smooth Appearance



(a) Preglacial

Alpine Landscapes formed by Glaciers Has a Sharp Jagged, Craggy Appearance



The Horn is a
Classic Feature
of Alpine
Glaciers



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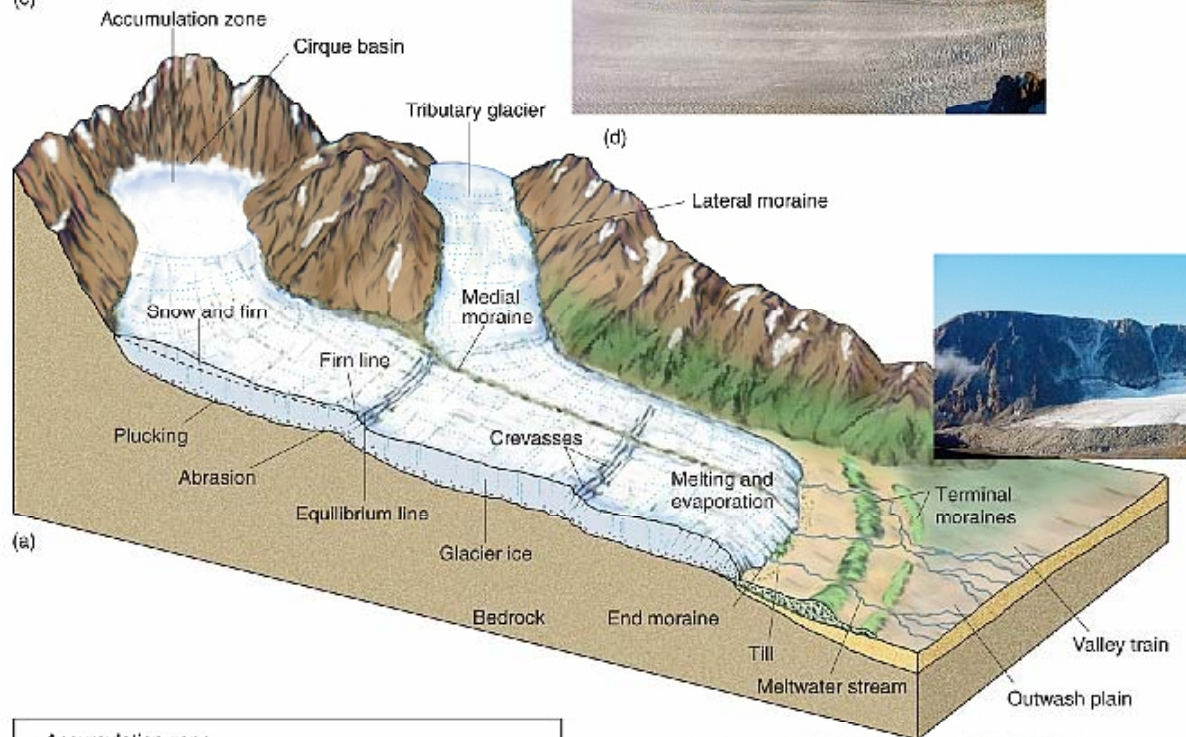
Alpine Glaciers Flow Slowly Down Valleys Until They Melt. They Erode and Transport Tremendous Amounts of Rock and Soil called Till. Often Till Is Deposited at the End of the Glacier as a Terminal Moraine. These Can Be Hundreds of Feet Tall.



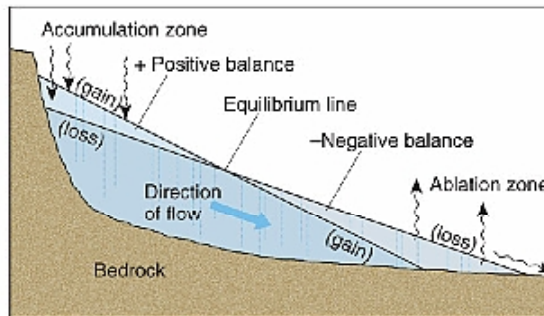
(c)



(d)



(a)



(b)



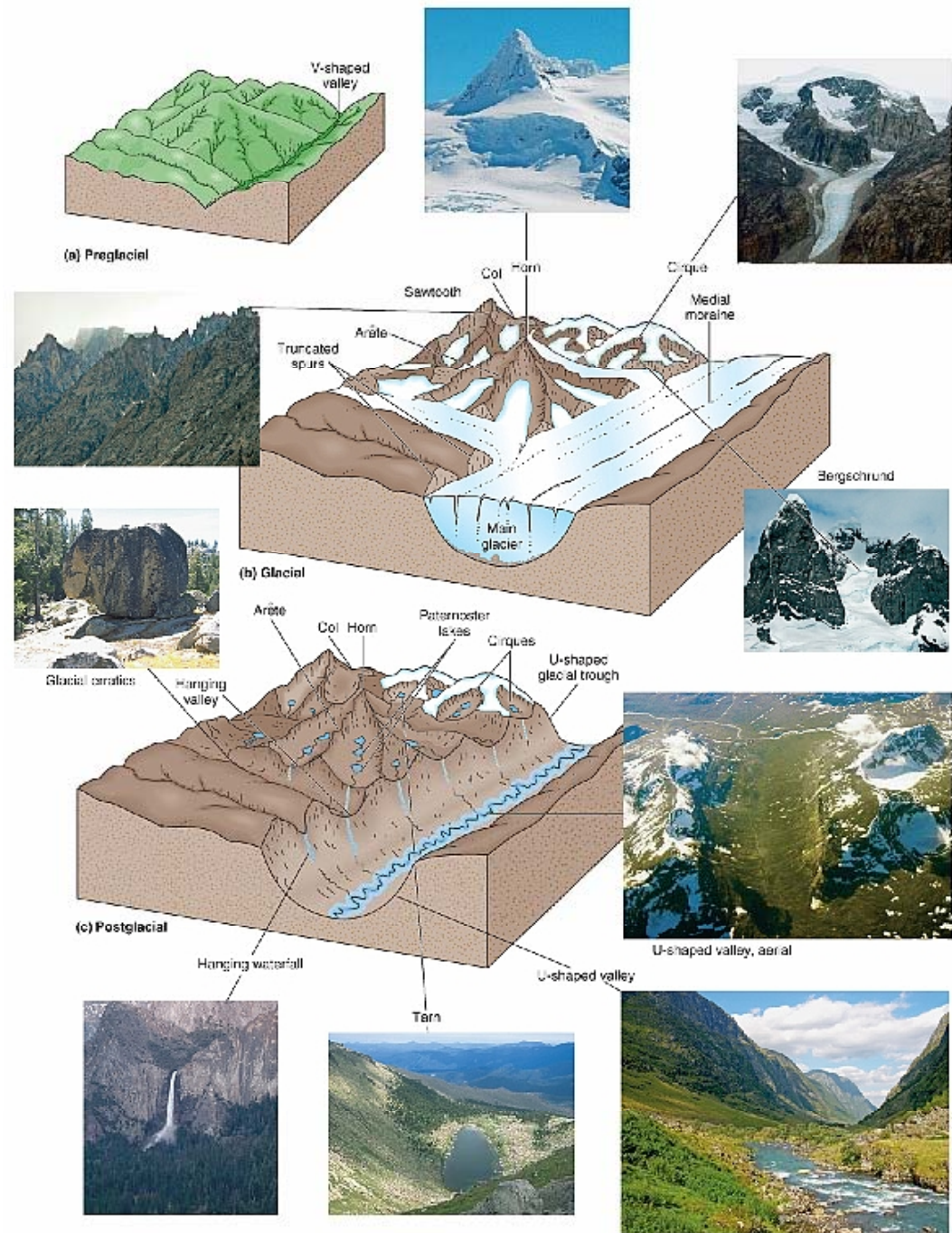
(f)

Moraines Are Deposits of Rock and Mud Scraped Up and Moved by a Glacier.



(e)

Alpine Landscapes Modified by Glacial Action Are Instantly Recognizable. The Horn, U-Shaped Valley and Hanging Valley All Examples.



The U-Shaped Valley with Flat Bottom and Steep Side Walls is a Classic Feature of Alpine Glaciers



Yosemite National Park Is Famous for Its
Spectacular Glacial Landforms.

The Valley Was Filled with Ice as High as the Cliff

