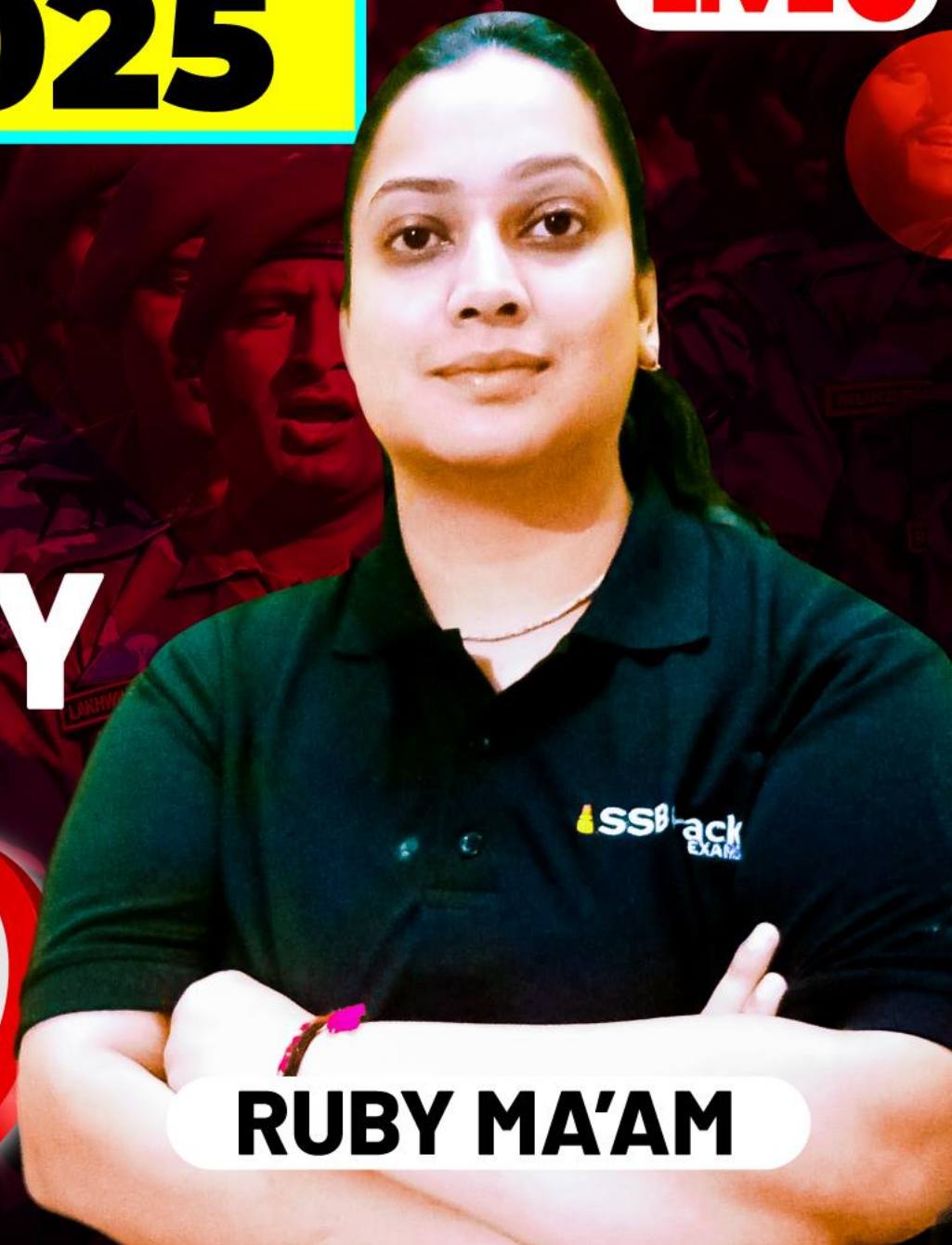


NDA-CDS 1 2025

LIVE

GK

OCEANOGRAPHY



RUBY MA'AM



27 Sep 2024 Live Classes Schedule

8:00AM	27 SEP 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM
9:00AM	27 SEP 2024 DAILY DEFENCE UPDATES	DIVYANSHU SIR

NDA 1 2025 LIVE CLASSES

11:30AM	GK - OCEANOGRAPHY	RUBY MA'AM
1:00PM	BIOLOGY - HUMAN BODY - CLASS 4	SHIVANGI MA'AM
4:00PM	MATHS - INEQUALITIES - CLASS 2	NAVJYOTI SIR
5:30PM	ENGLISH - PARTS OF SPEECH - CLASS 3	ANURADHA MA'AM

CDS 1 2025 LIVE CLASSES

11:30AM	GK - OCEANOGRAPHY	RUBY MA'AM
1:00PM	BIOLOGY - HUMAN BODY - CLASS 4	SHIVANGI MA'AM
2:30PM	MATHS - INEQUALITIES - CLASS 2	NAVJYOTI SIR
5:30PM	ENGLISH - PARTS OF SPEECH - CLASS 3	ANURADHA MA'AM

AFCAT 1 2025 LIVE CLASSES

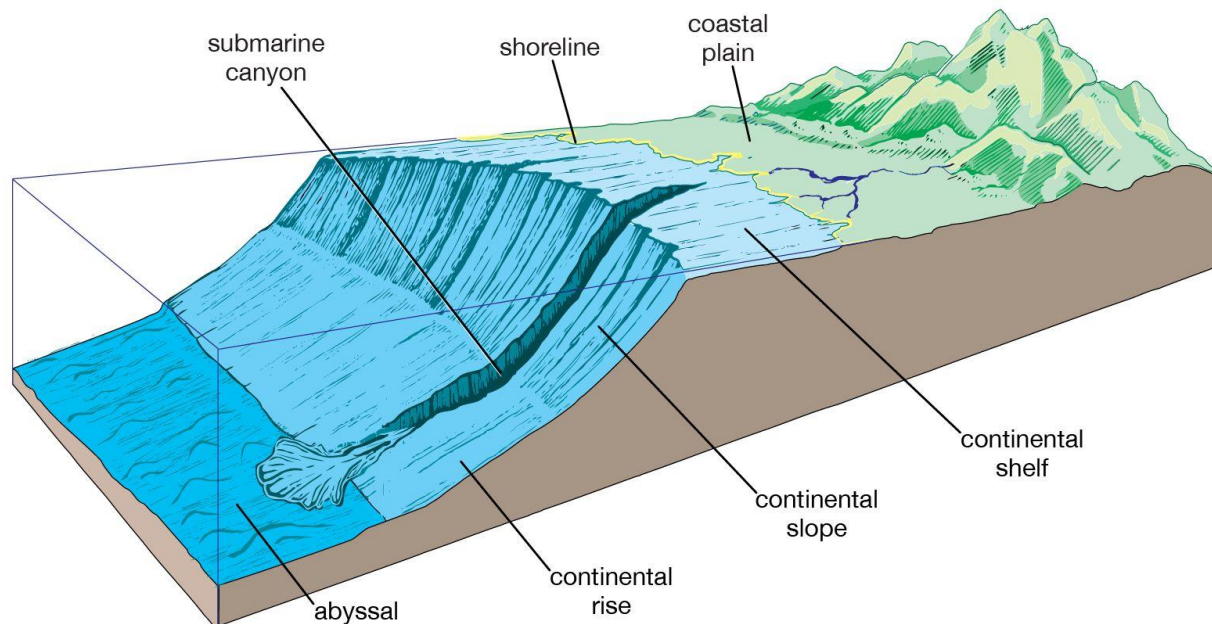
10:00AM	REASONING - FIGURE ANALOGY	RUBY MA'AM
2:30PM	MATHS - PROFIT & LOSS - CLASS 2	NAVJYOTI SIR
4:00PM	STATIC GK - MAJOR DEFENCE EQUIPMENT & DEALS	DIVYANSHU SIR
5:30PM	ENGLISH - PARTS OF SPEECH - CLASS 3	ANURADHA MA'AM



Ocean Relief

Ocean Relief Is Largely Due To **Tectonic, Volcanic, Erosional And Depositional Processes And Their Interactions.**

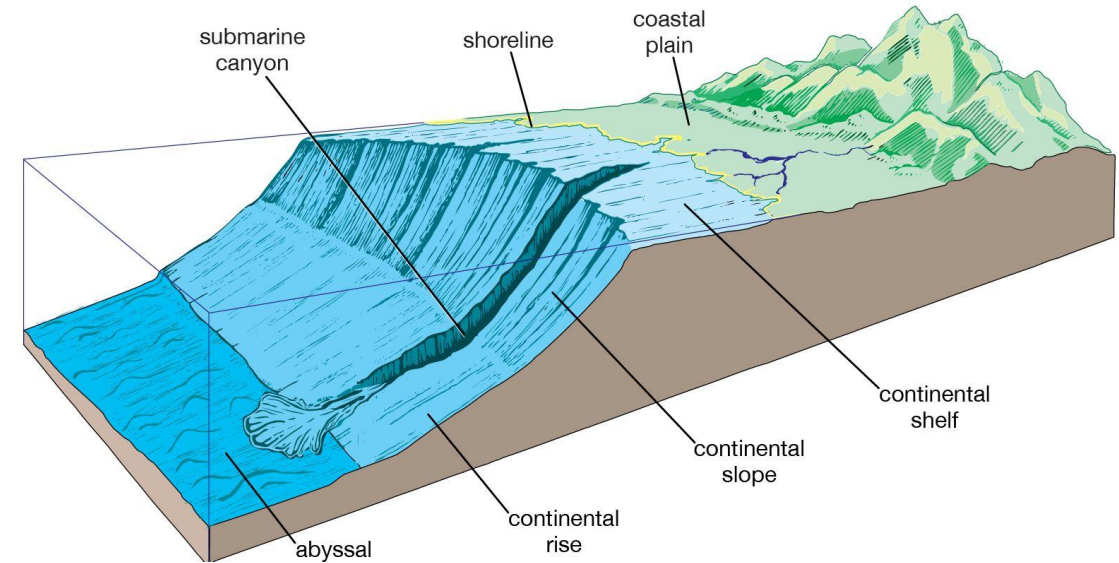
Ocean Relief Features Are Divided Into **Major And Minor Relief Features.**

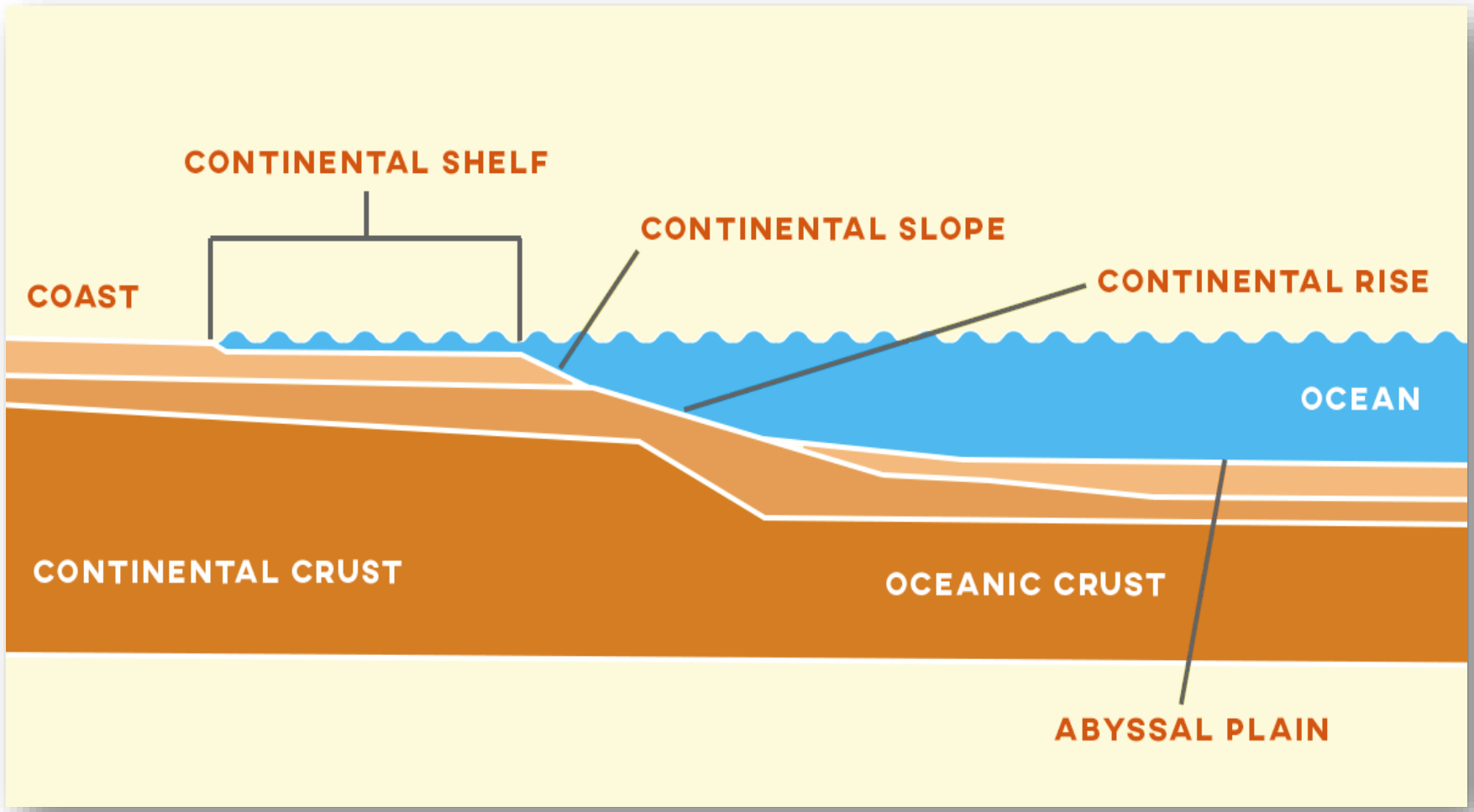


Major Ocean Relief Features

Four Major Divisions In The Ocean Relief Are:

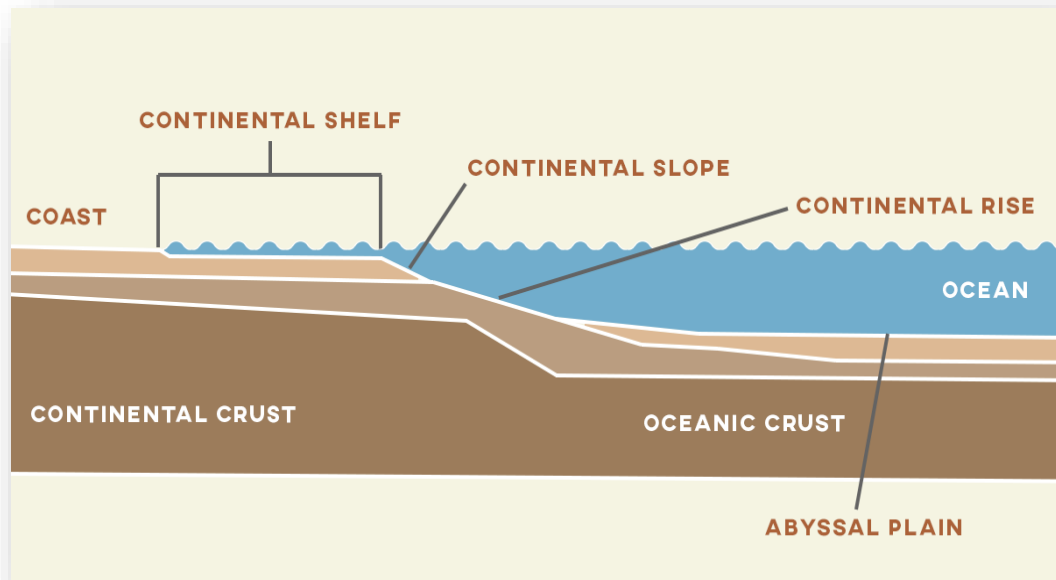
1. The Continental Shelf,
2. The Continental Slope,
3. The Continental Rise,
4. The Deep Sea Plain Or The Abyssal Plain.

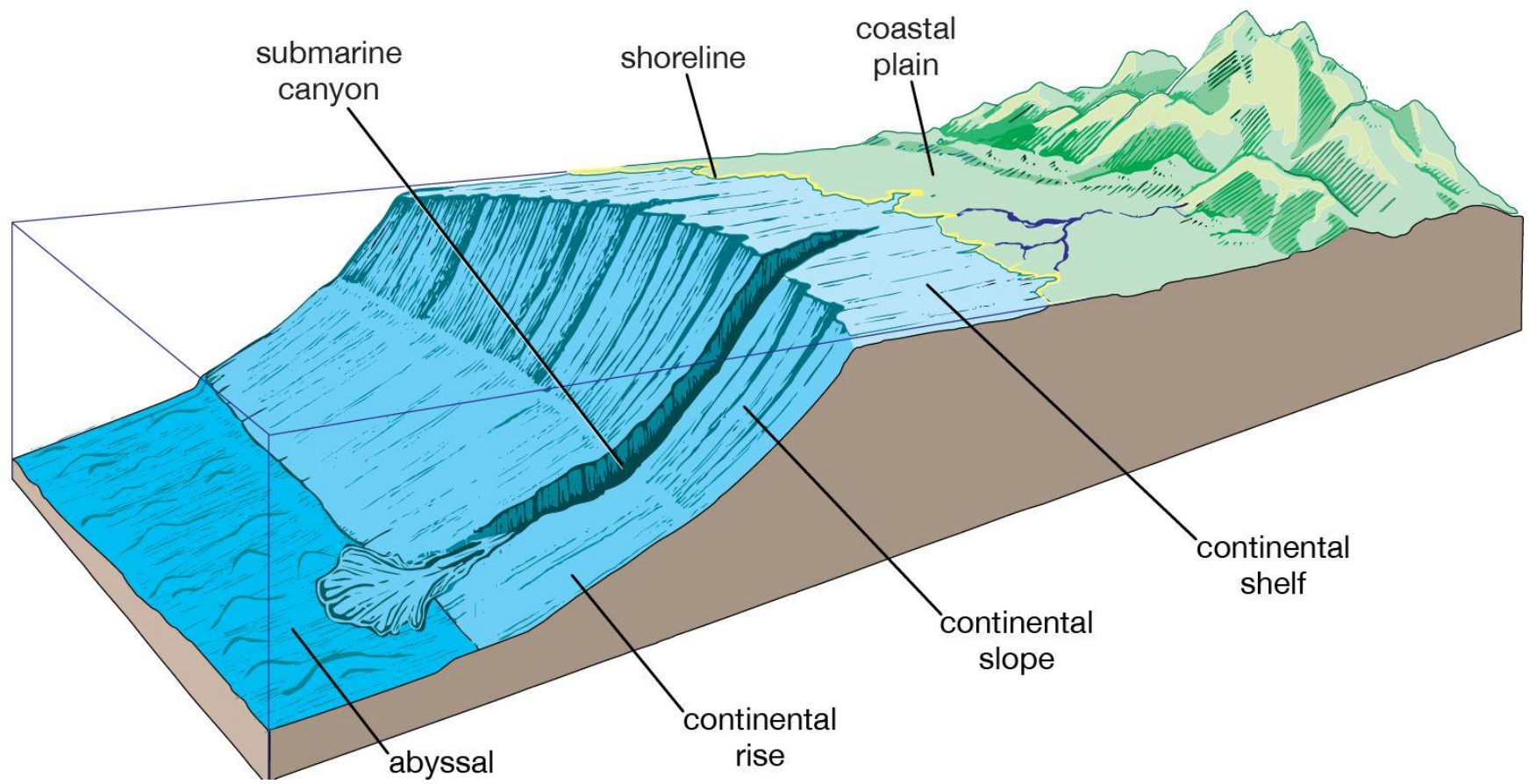




Continental Shelf

Continental Margin Submerged Under Ocean Water Upto 600 Feet With Slope Of 1° To 3° And Often Determined By The Coastal Reliefs. High Mountainous Coast Have Narrow Shelf. In Atlantic Ocean It Is 2 Km To 80 Km. Continental Shelf Of All Oceans Together Cover 7.5% Of The Total Area Of The Oceans.



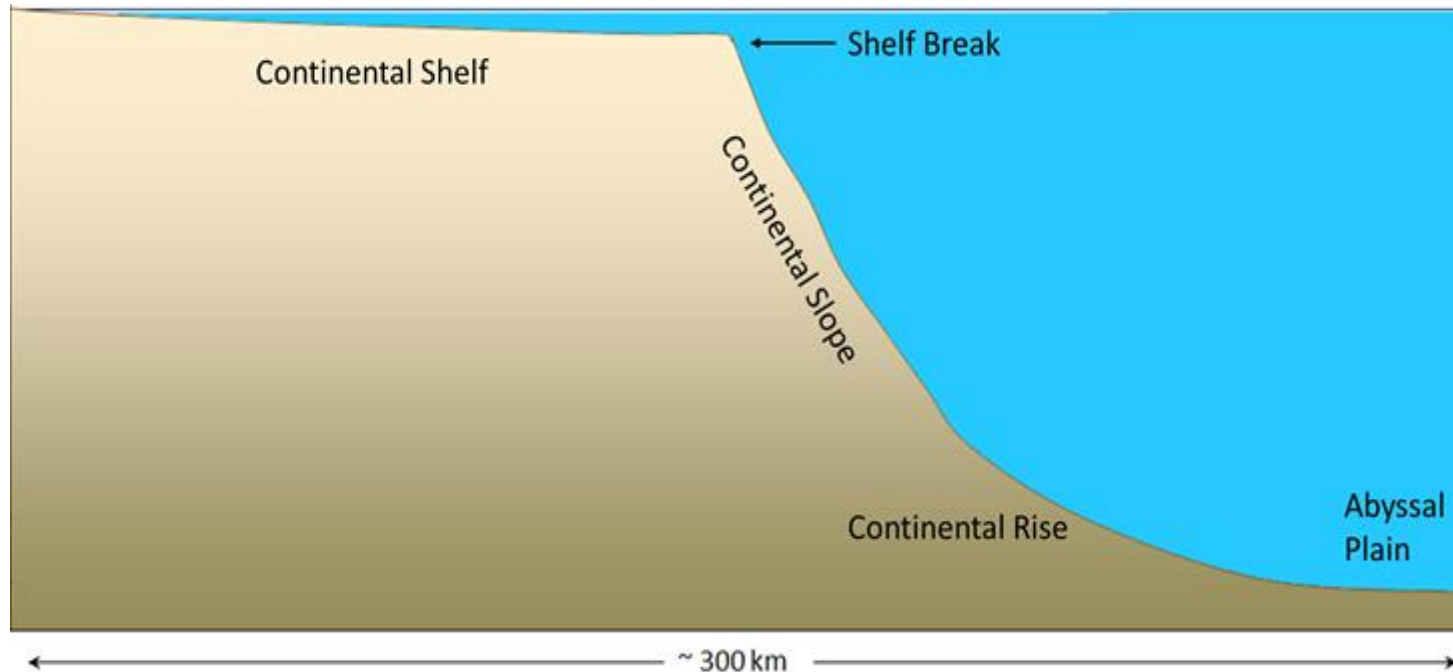


Continental Shelf

The Shelf Typically **Ends At A Very Steep Slope**, Called The **Shelf Break**.

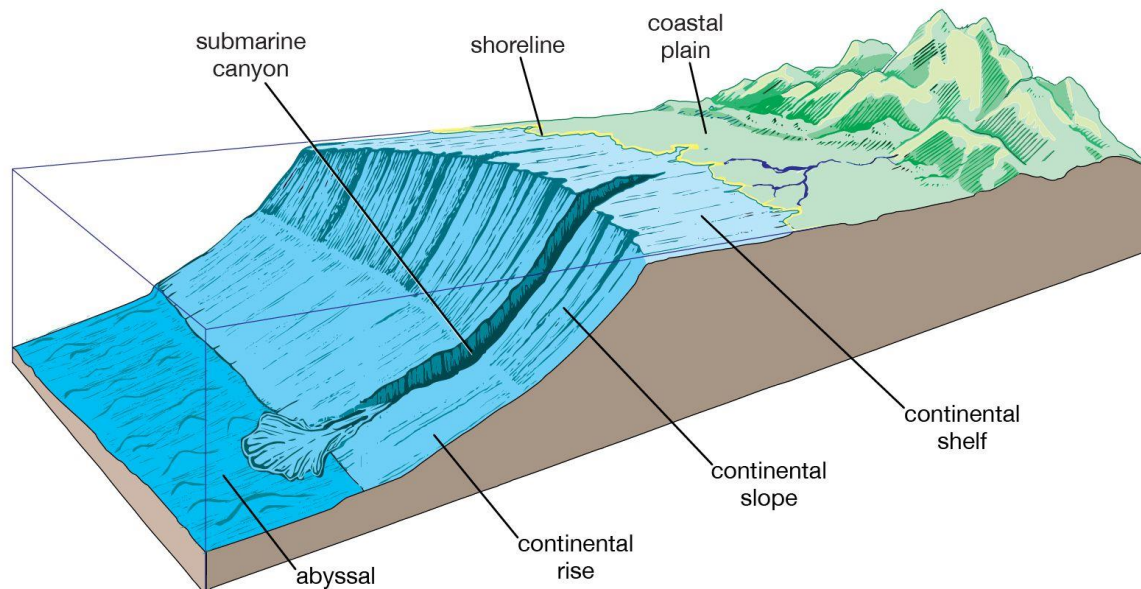
Examples: Continental Shelf Of **South-east Asia**, **Great Banks** Around

Newfoundland, Submerged Region Between **Australia And New Guinea**.

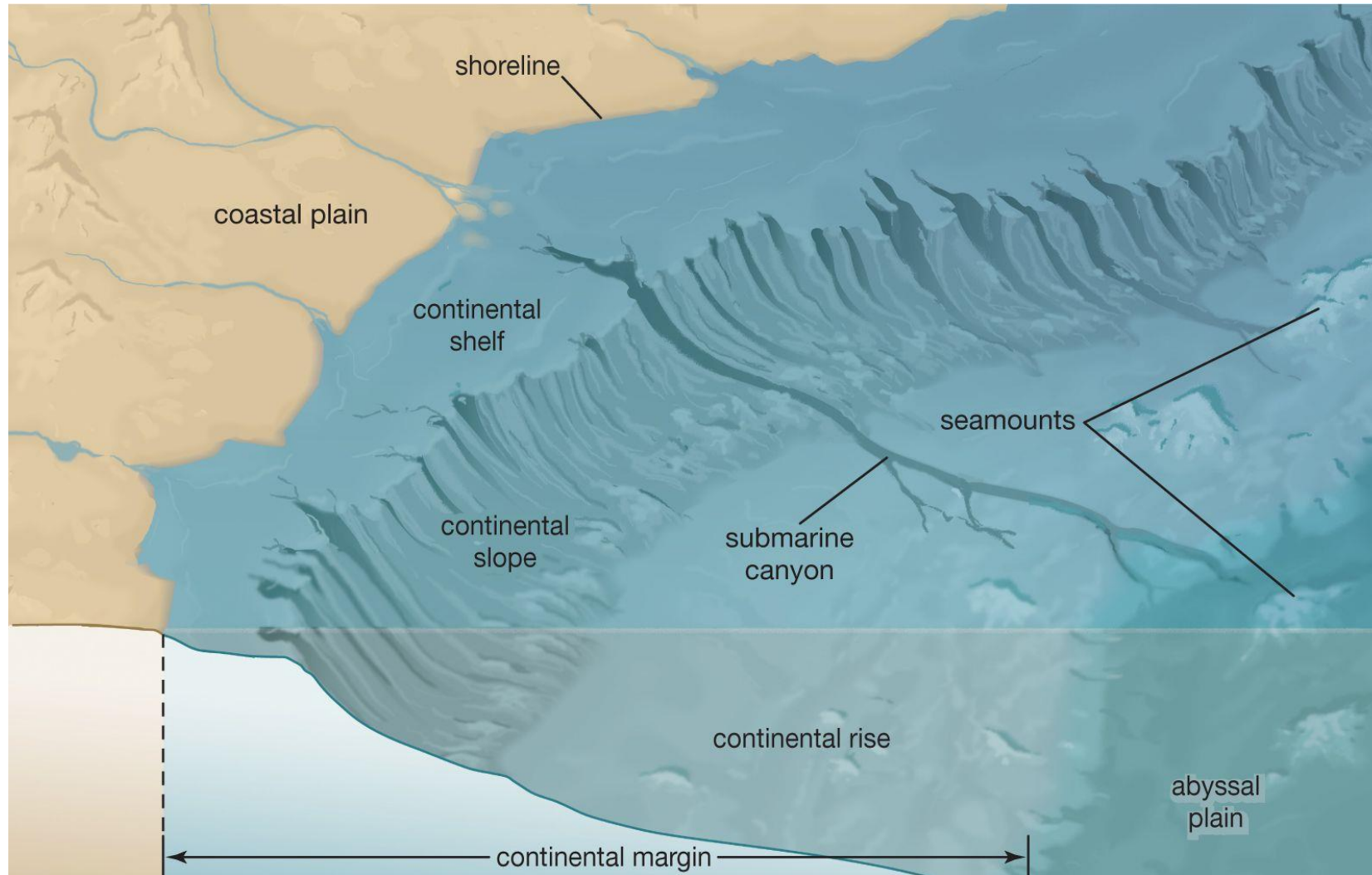


Continental Slope

It Connects **The Continental Shelf** And **The Ocean Basins**. It Begins Where The **Bottom Of The Continental Shelf Sharply Drops Off** Into A **Steep Slope**. The **Gradient Of The Slope Region Varies Between 2-5°**. The **Depth Varies Between 200 And 3,000 M**.

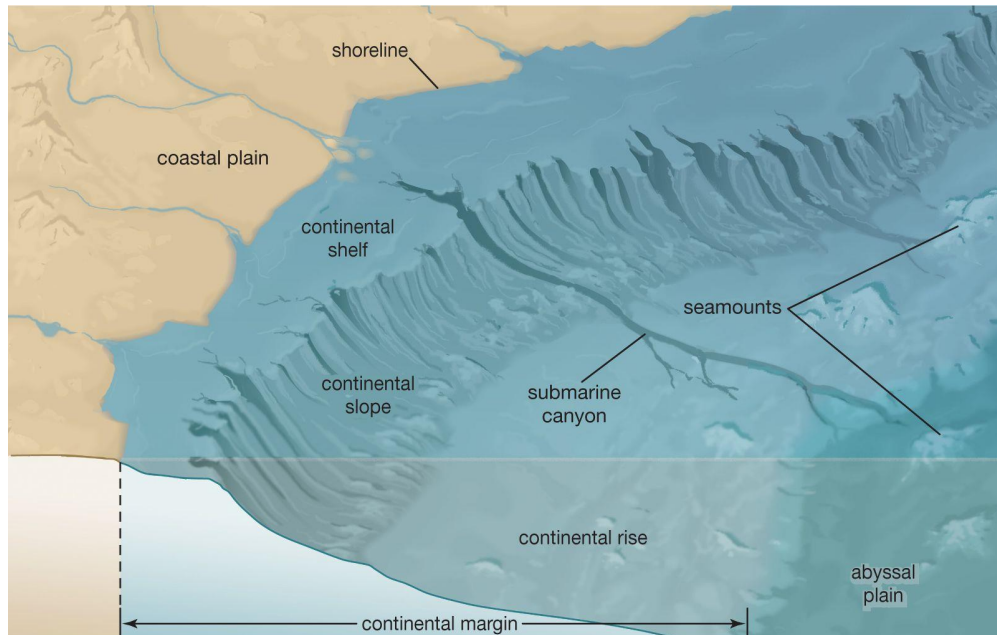


Continental Slope



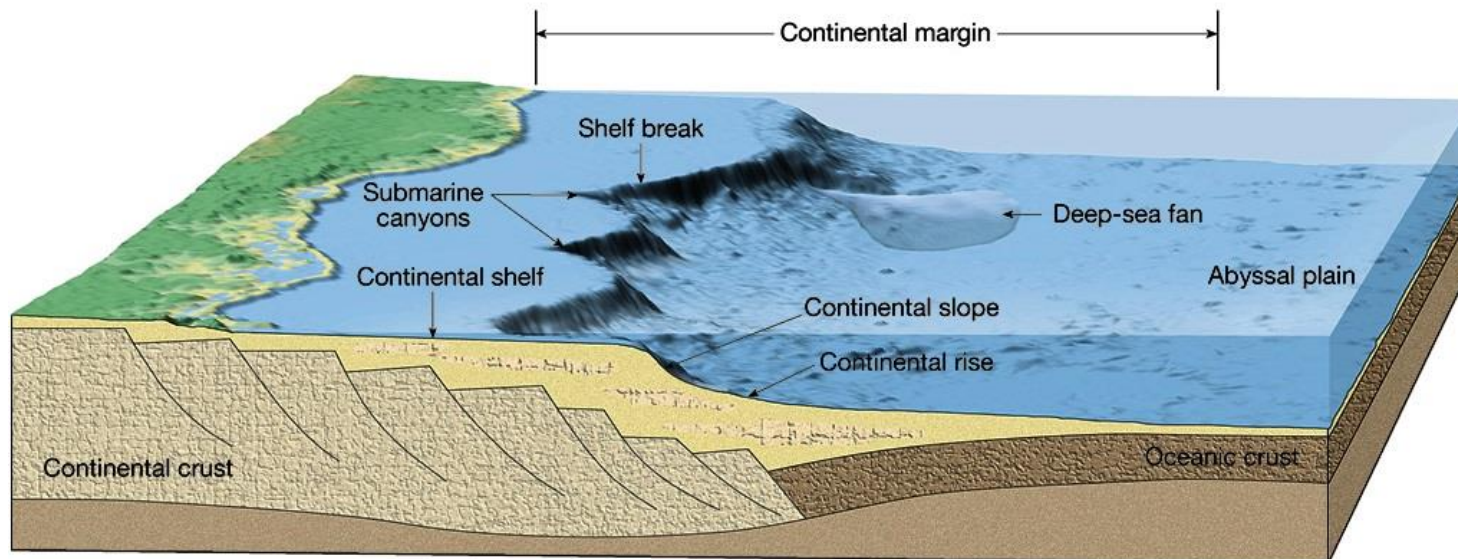
Continental Rise

The **Continental Slope Gradually Loses Its Steepness With Depth**. When The Slope Reaches A Level Of Between **0.5° And 1°**, It Is Referred To As The **Continental Rise**. With **Increasing Depth The Rise Becomes Virtually Flat And Merges With The Abyssal Plain**.



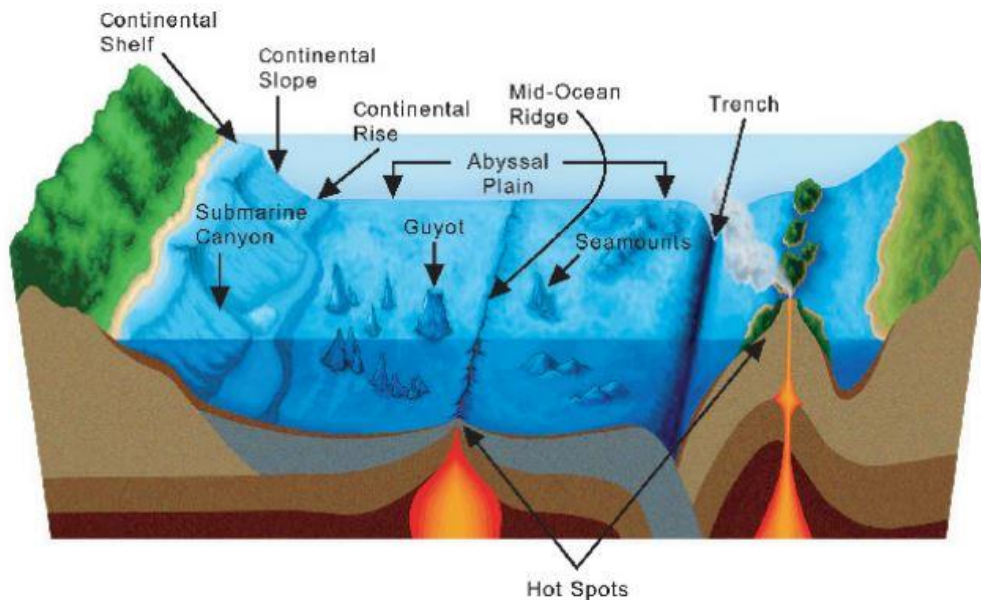
Deep Sea Plain/Abyssal Plain

Most Extensive Relief, Covering 40% Of The Total Area Of Ocean Basin. Flat And Rolling Submarine Having Depth Of 3000 M To 6000 M. The Depths Vary Between 3,000 And 6,000 M. These Plains Are Covered With Fine-grained Sediments Like Clay And Silt.



Oceanic Deeps Or Trenches

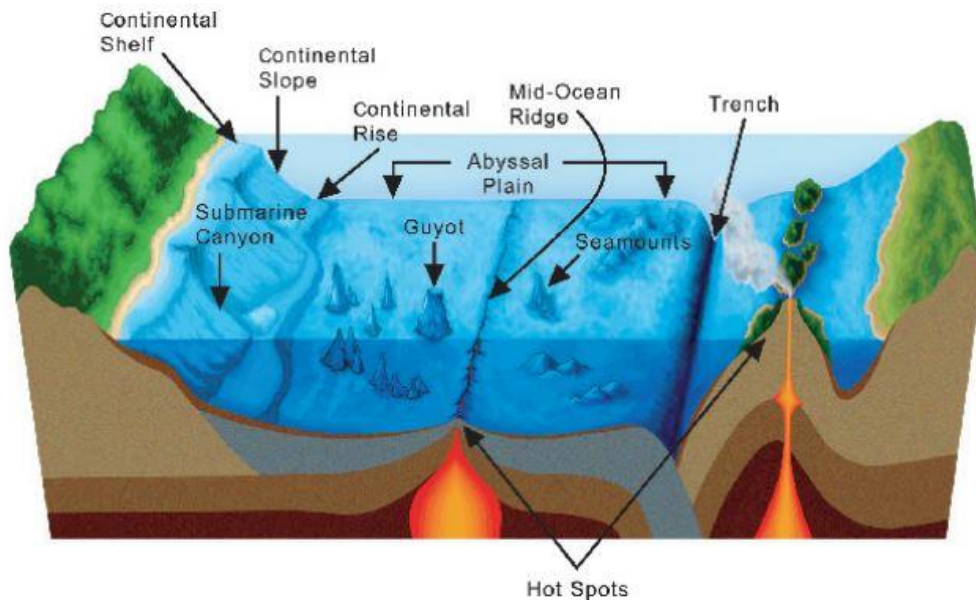
They Are Relatively **Steep Sided, Narrow Basins (Depressions)**. They Are Of **Tectonic Origin** And Are Formed During **Ocean – Ocean Convergence** And **Ocean Continent Convergence**. These Areas Are The **Deepest Parts Of The Oceans**. They Are Some **3-5 Km Deeper** Than The Surrounding Ocean Floor.



Oceanic Deeps Or Trenches

The Trenches Are Very Common In The Pacific Ocean And Form An Almost Continuous Ring Along The Western And Eastern Margins Of The Pacific.

The **Mariana Trench** Off The **Guam Islands** In The **Pacific Ocean** Is The **Deepest Trench** (Depth Of More Than **11 Kilometres**).

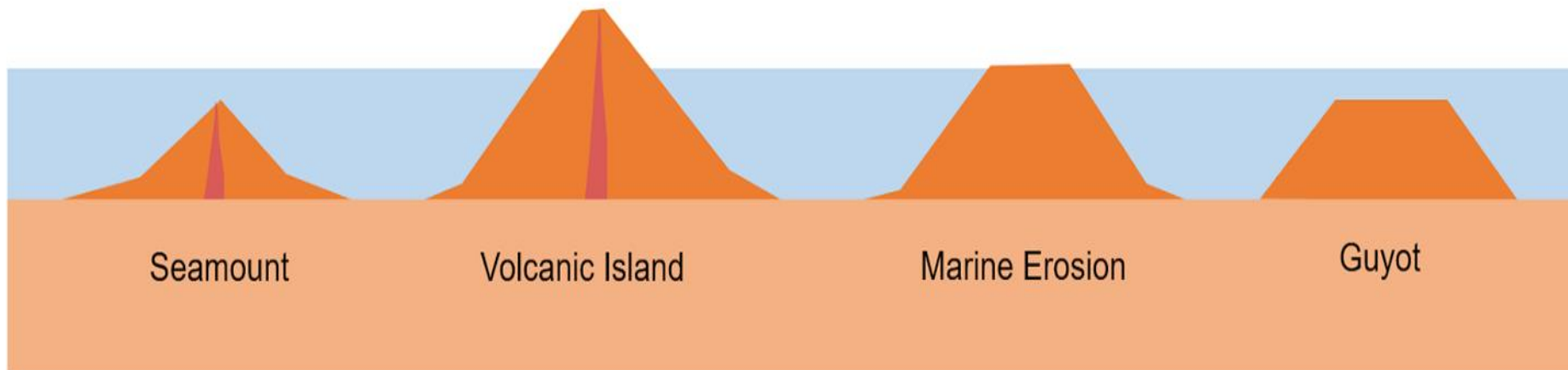


Abyssal Hills

Seamount: It Is A Mountain With **Pointed Summits**, Rising From The **Seafloor** That **Does Not Reach The Surface** Of The Ocean. They Are **Volcanic In Origin**.

These Can Be **3,000-4,500 M Tall**. Example: The **Emperor Seamount**, An Extension Of The **Hawaiian Islands [Hotspot]** In The **Pacific Ocean**.

Guyots: The **Flat Topped Mountains (Seamounts)** Are Known As **Guyots**.



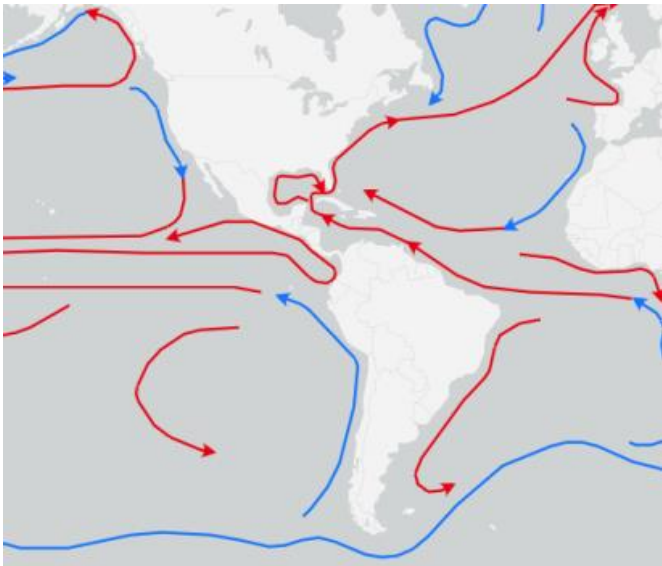
Ocean Movement

The **Movements** That Occur In **Oceans** Are Categorized As: **Waves, Tides And Currents**. Waves Are Formed Due To **Friction** Between **Wind And Surface Water** Layer. **The Stronger The Wind, The Bigger The Wave**. They **Die Out Quickly** On Reaching The **Shore Or Shallow Waters**.

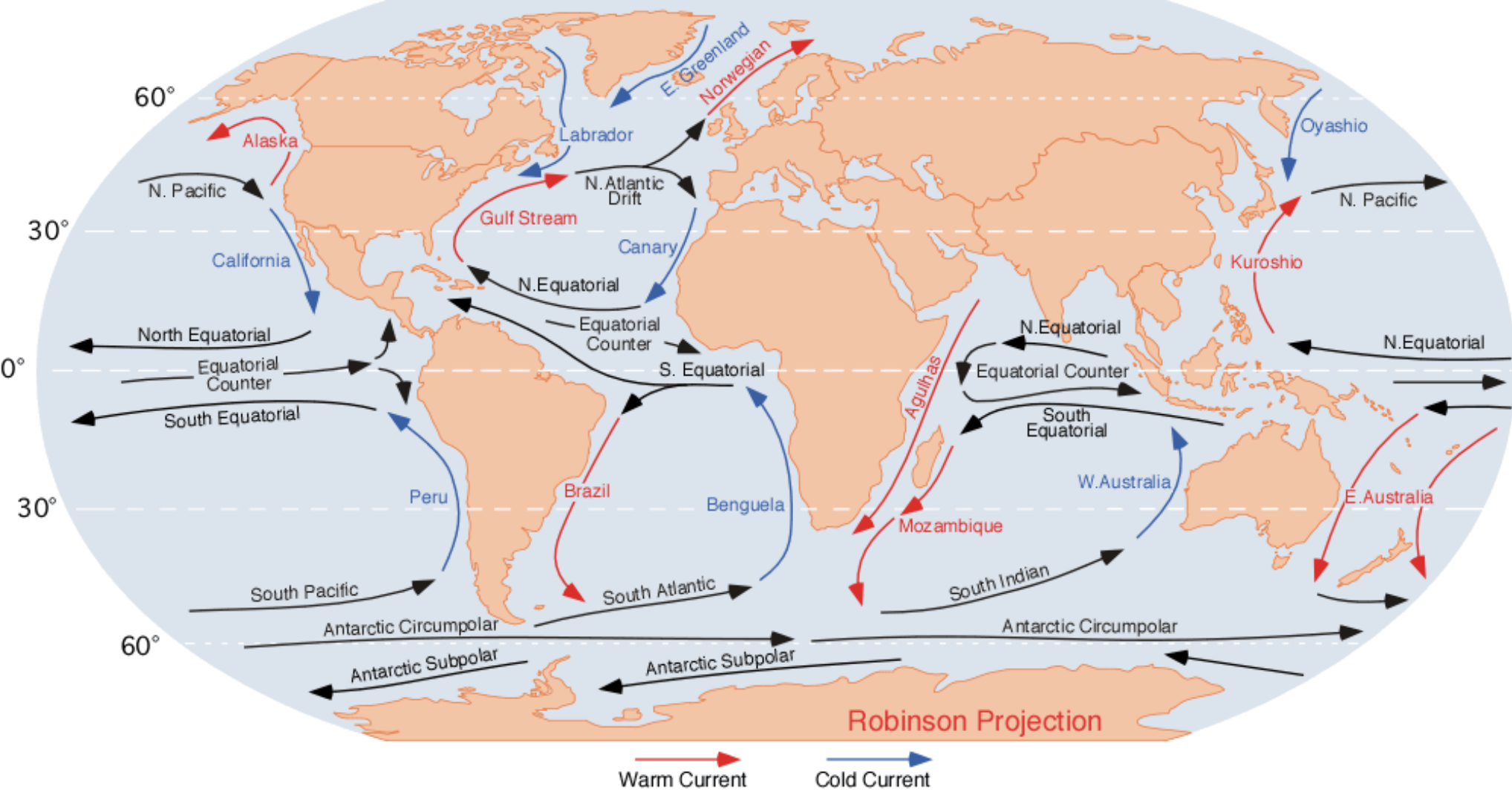


Ocean Movement

Horizontal Currents Happens Mainly Due To **Friction** Between **Wind And Water**. **Rotation Of Earth, Coriolis Force & Differences In Water Level Gradient** Also Play A Important Role. **Vertical Currents** Happens Mainly Due To **Density Differences** Caused By **Temperature And Salinity Changes**



Ocean Currents



Primary Forces Responsible For Ocean Currents

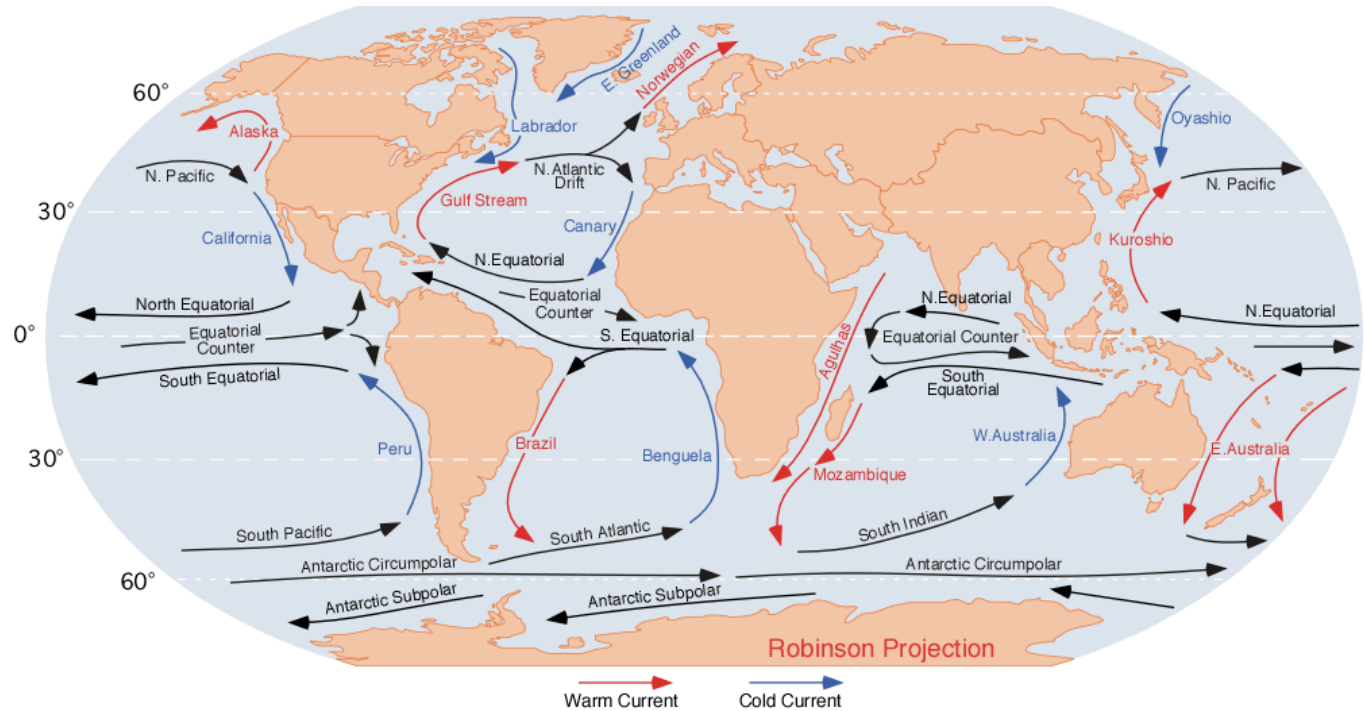
The Primary Forces Are:

Heating By Solar Energy

Wind

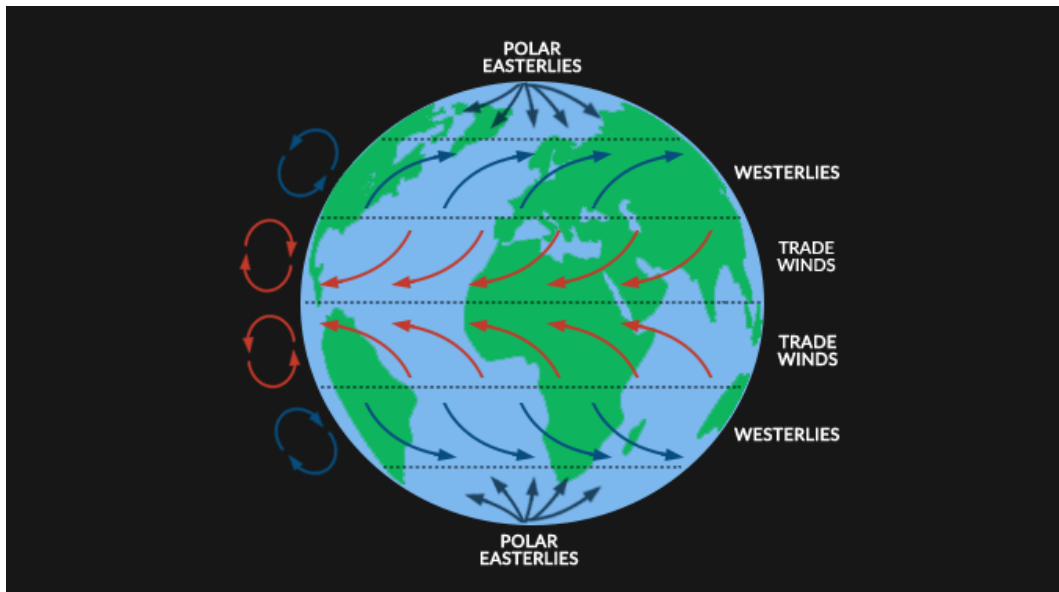
Gravity

Coriolis Force



Coriolis Force

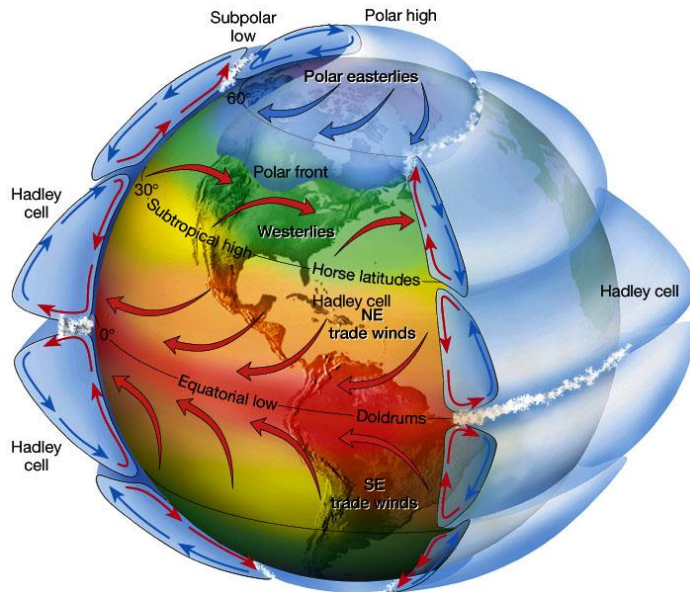
It Intervenes And Causes The **Water To Move To The Right** In The **Northern Hemisphere** And To The **Left** In The **Southern Hemisphere**. These Large Accumulations Of Water And The Flow Around Them Are Called **Gyres**. These Produce **Large Circular Currents** In All The **Ocean Basins**. E.g. **Sargasso Sea**



Wind (Atmospheric Circulation)

Wind Blowing On The Surface Of The Ocean Pushes The Water To Move.

Friction Between The Wind And The Water Surface Affects The Movement Of The Water Body In Its Course. Winds Are Responsible For Both Magnitude And Direction Of The Ocean Currents. Example: Monsoon Winds.

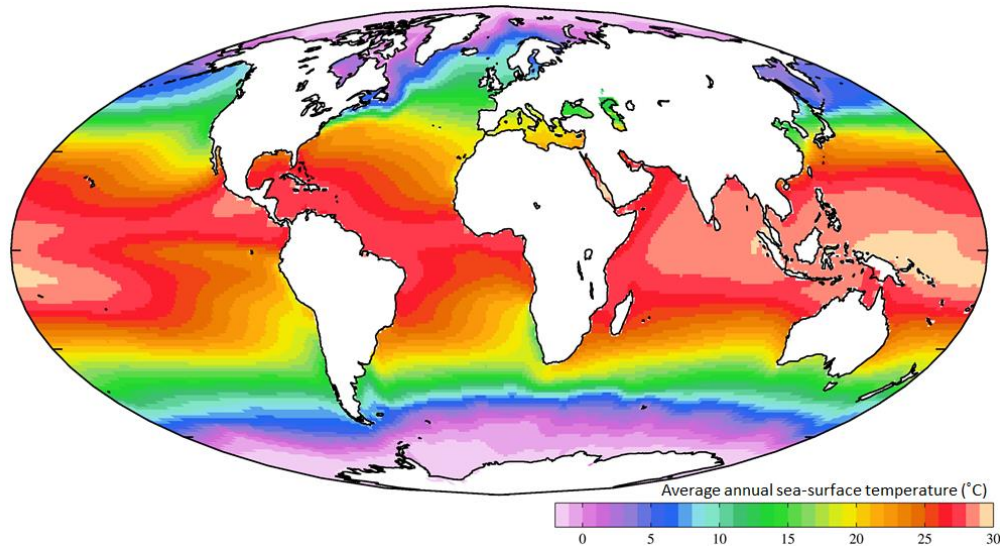


Secondary Forces Responsible For Ocean Currents

Temperature Difference And Salinity Difference Are The Secondary Forces.

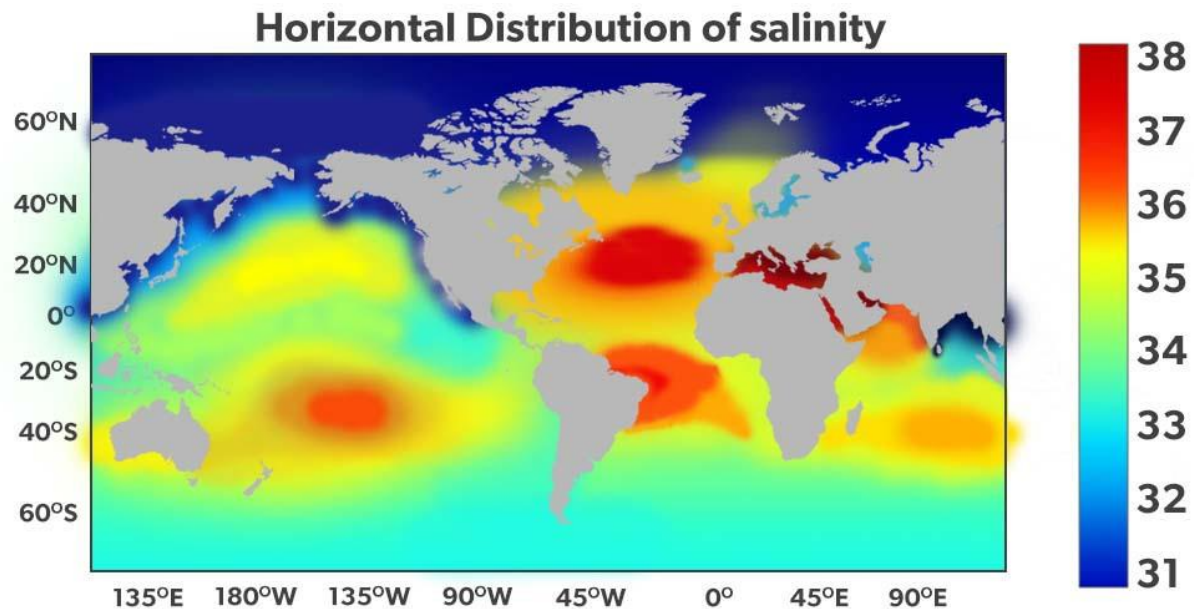
Differences In Water Density Affect Vertical Mobility Of Ocean Currents.

Water With High Salinity Is Denser Than Water With Low Salinity And In The Same Way Cold Water Is Denser Than Warm Water.



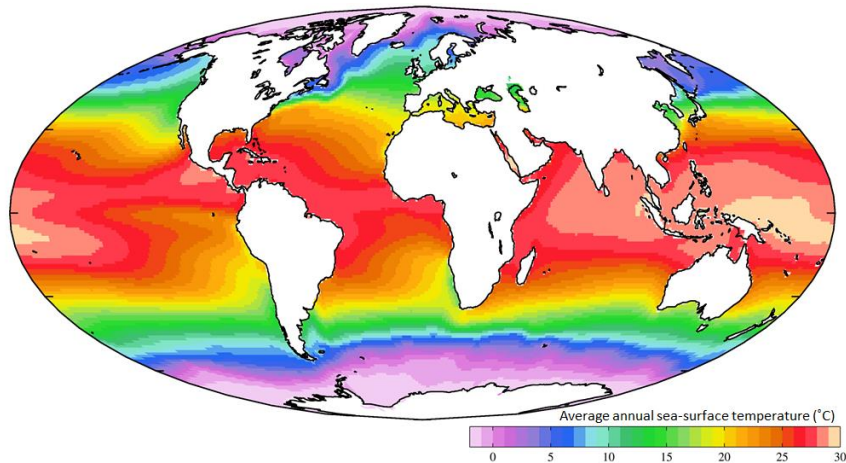
Secondary Forces Responsible For Ocean Currents

Denser Water Tends To Sink, Lighter Water Tends To Rise. Cold-water Ocean Currents Occur When The Cold Water At The Poles Sinks And Slowly Moves Towards The Equator. Warm-water Currents Travel Out From The Equator Flowing Towards The Poles To Replace The Sinking Cold Water.



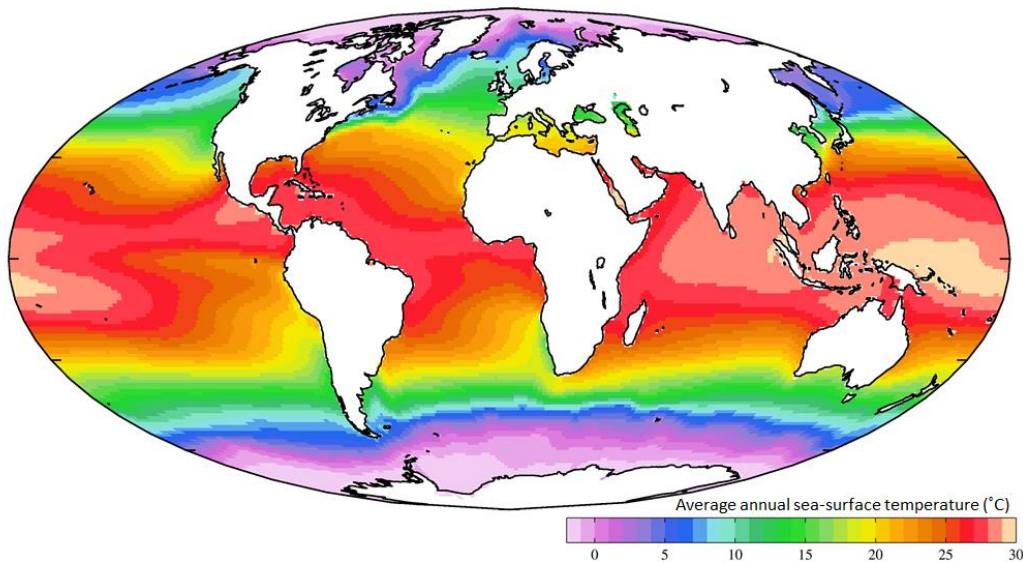
Based On Temperature

Cold Currents: Bring **Cold Water Into Warm Water Areas** From **High Latitudes To Low Latitudes**. Found On The **West Coast Of The Continents (Clockwise Direction In Northern Hemisphere & Anti-clockwise Direction In Southern Hemisphere)** In The **Low And Middle Latitudes** (And On The **East Coast In The Higher Latitudes In The Northern Hemisphere**).



Based On Temperature

Warm Currents: It Bring **Warm Water** Into **Cold Water Areas** From **Low To High Latitudes** And Are Observed On The **East Coast Of Continents** In The **Low And Middle Latitudes**. In The **Northern Hemisphere** They Are Found On The **West Coasts Of Continents** In **High Latitudes**.



Pacific Ocean Currents

Kuroshio current

Oyashio Current and Okhotsk current

North-Pacific current

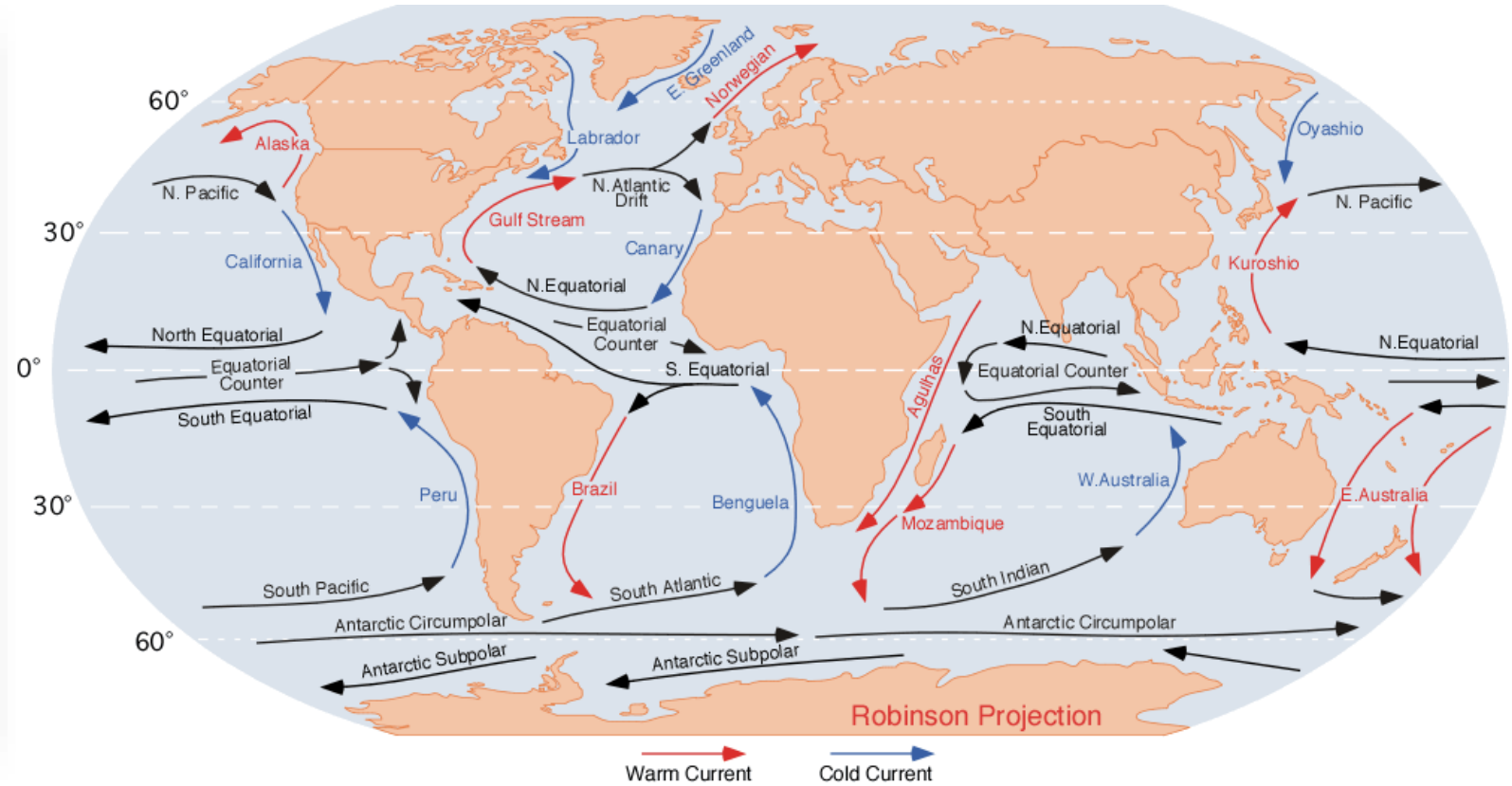
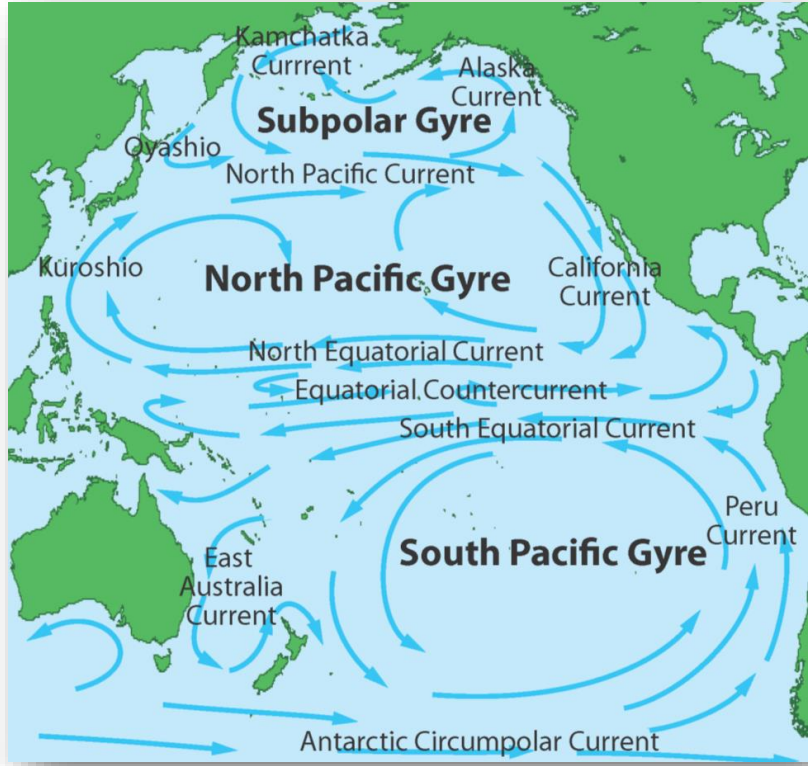
Alaska and Californian current

East Australian current

Peru current or Humboldt Current



Pacific Ocean Currents



Atlantic Ocean Currents

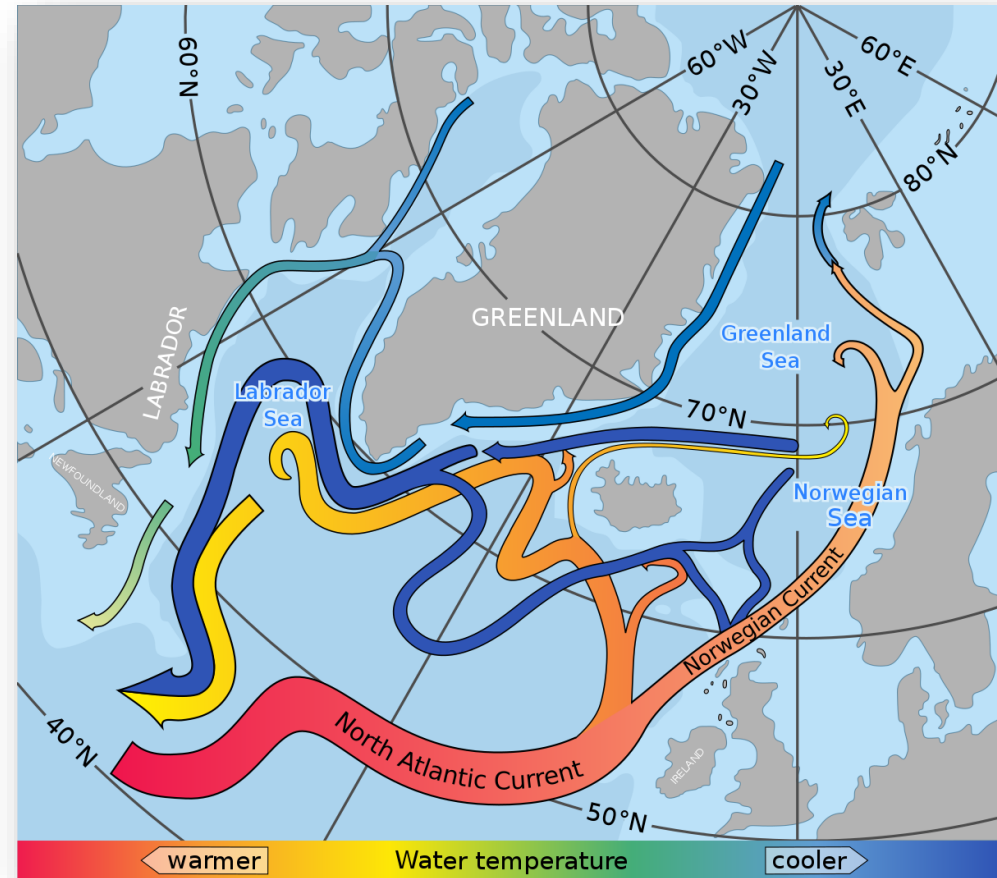
Equatorial Atlantic Ocean Currents

Antilles current

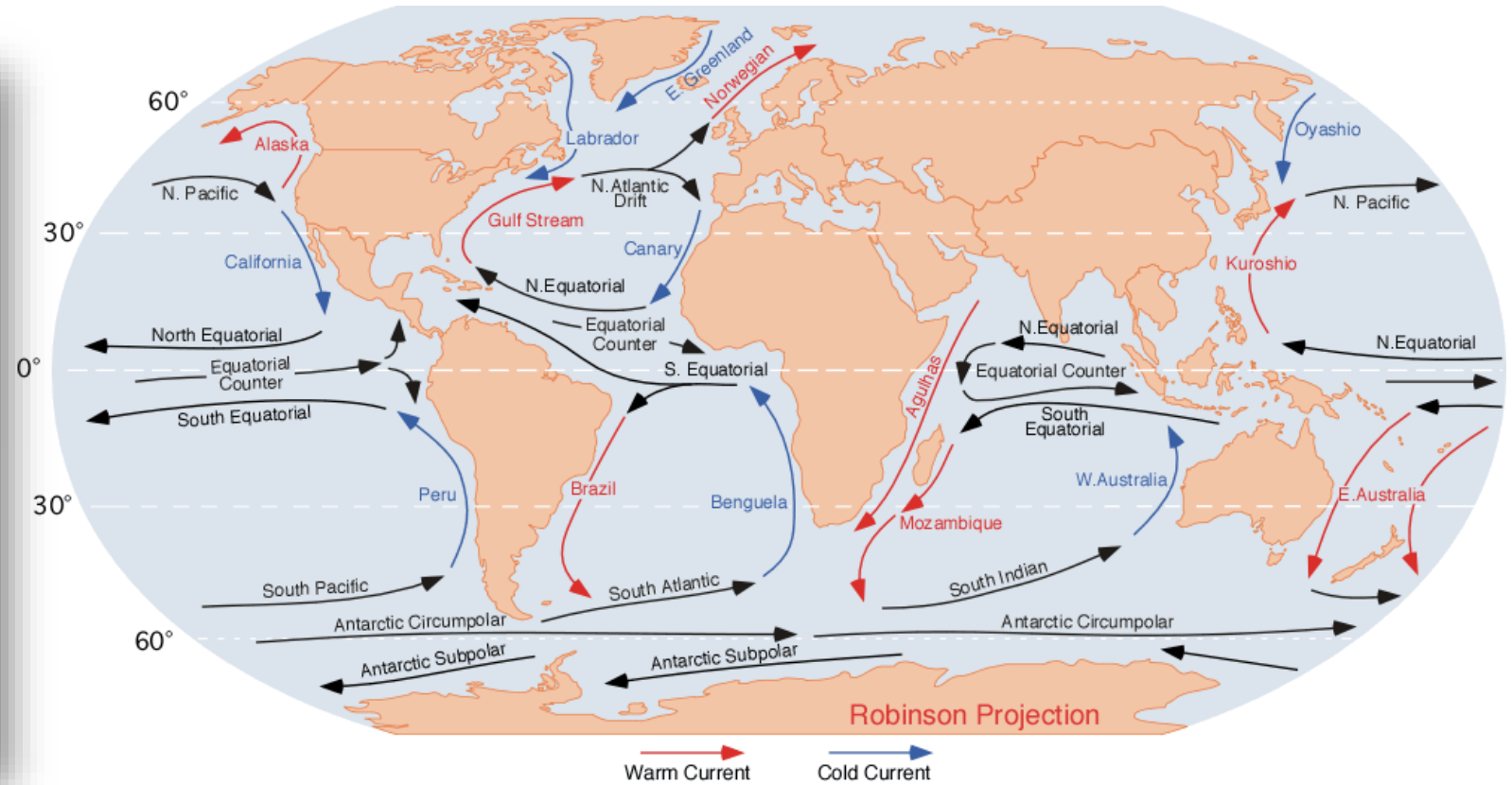
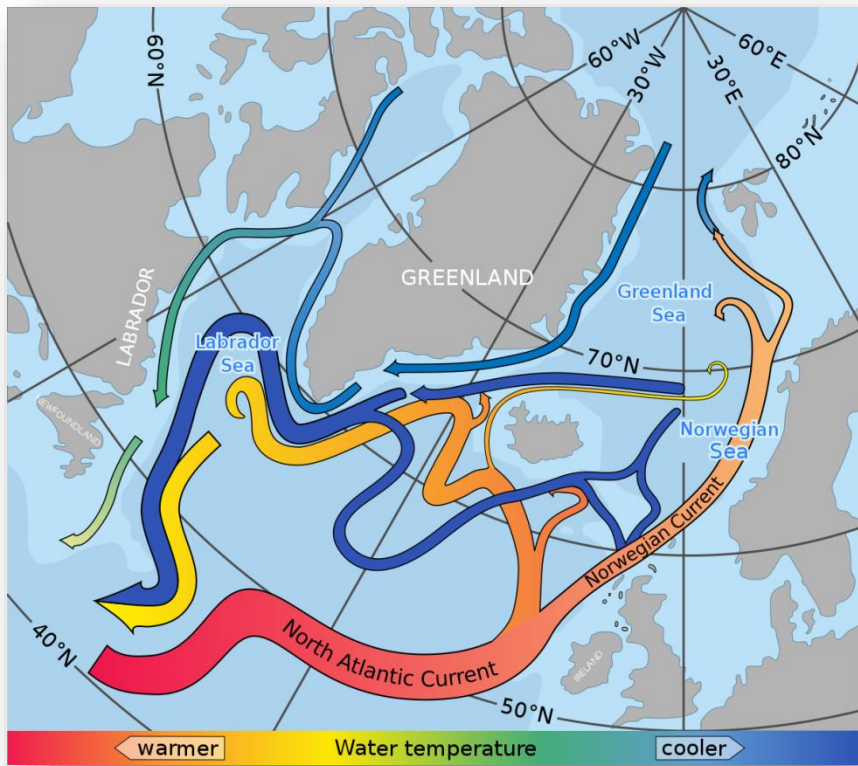
Norwegian current

Brazil current

Benguela current



Atlantic Ocean Currents



Indian Ocean Currents

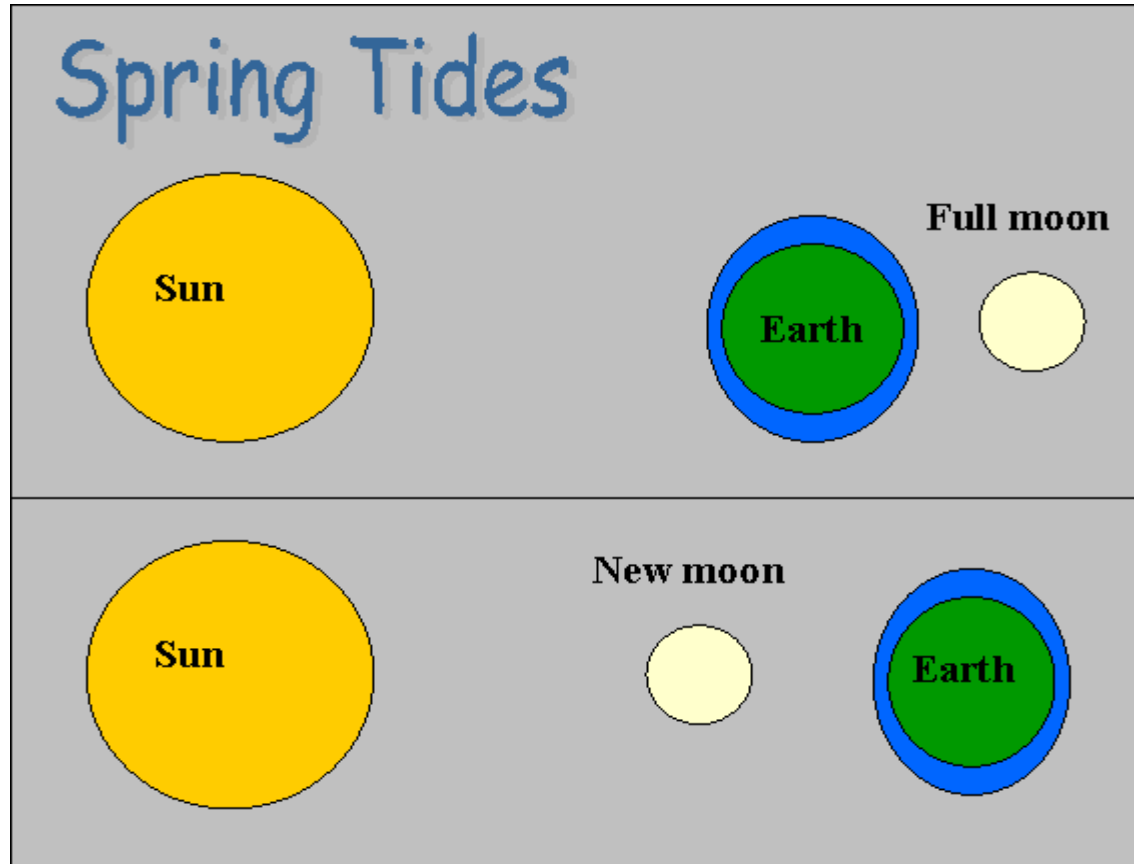
Agulhas current

Mozambique current

West Australian current



Spring Tides

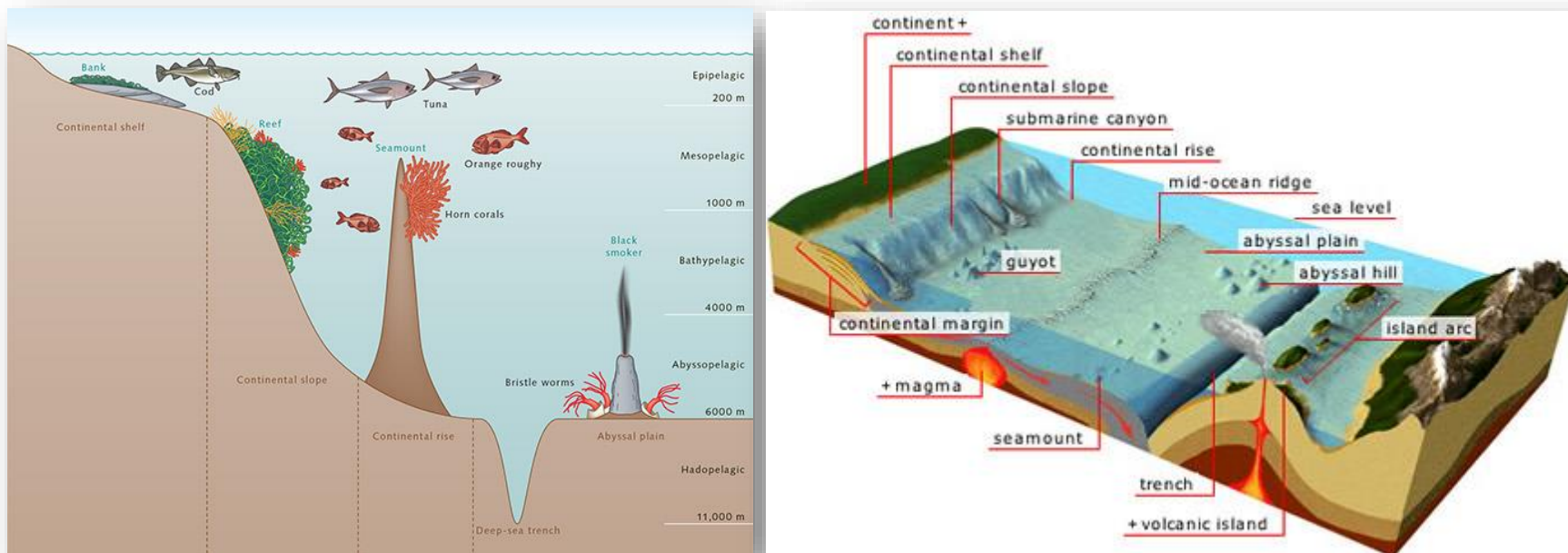


Neap Tides



Ocean Structure

It Can Be Divided Into 2 Main Groups (I) The Ocean (II) The Sea. Ocean Covers 70% Of The Earth Surface And Has An Average Depth Of More Than 12,400 Feet. An Ocean Is A Large Body Of Water That Is Saline. The World Is Divided Into 5 Different Oceans.



Major Gulfs And Their Location

Gulf of Aden of the southwestern corner of the Arabian Peninsula

Gulf of Alaska in the Pacific Ocean south of the state of Alaska

Amundsen Gulf in the Arctic Ocean northwest of Canada

Gulf of Aqaba in the northern end of the Red Sea, leading to Israel and Jordan

Gulf of Bahrain, part of the Persian Gulf

Gulf of Bothnia, part of the Baltic Sea between Sweden and Finland

Gulf of Cádiz, part of the Atlantic Ocean off the southern border of Spain and Portugal

Gulf of California, in the Pacific Ocean in northwestern Mexico

Gulf of Carpentaria, a large bay off northern Australia

Q.The Panama Canal Joins—

- I. Pacific Ocean
- II. Atlantic Ocean
- III. Columbia
- IV. Costa Rica

- (A) I And II
- (B) III And IV
- (C) II, III And IV
- (D) I, II, III And IV

Q.The Panama Canal Joins—

- I. Pacific Ocean
- II. Atlantic Ocean
- III. Columbia
- IV. Costa Rica

(A) I And II

(C) II, III And IV

(B) III And IV

(D) I, II, III And IV



Q. Choose The Incorrect One:

(River)

A. Danube

B. Rhine

C. Rhone

D. Loire

(Mouth of the river)

1. Black sea

2. North sea

3. Mediterranean sea

4. Bay of Fundy

Q. Choose The Incorrect One:

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1. Black sea

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Q. Isohalines are lines joining equal :

- (a) temperature.
- (b) pressure.
- (c) rainfall.
- (d) salinity.

Q. Isohalines are lines joining equal :

- (a) temperature.
- (b) pressure.
- (c) rainfall.
- (d) salinity.

Answer: D

- **Explanation:**
- **Isohalines Are Lines (Or Contours) That Join Points Of Equal Salinity In An Aquatic System.**

Q. Humboldt Current Flows

- (A) Southwards In Western Pacific Ocean
- (B) Northwards In Eastern Pacific Ocean
- (C) Southwards In Eastern Pacific Ocean
- (D) Northwards In Western Pacific Ocean

Q. The Horizontal Distribution Of Temperature Of Ocean Water Is Largely Affected By

1. Depth Of Water In The Ocean
2. Ocean Current
3. Prevailing Winds
4. Latitudes

Which Of The Following Is Correct?

- (A) 1, 2 And 3 (B) 1, 2 And 4
(C) 2, 3 And 4 (D) 1, 2, 3 And 4

Q. The Horizontal Distribution Of Temperature Of Ocean Water Is Largely Affected By

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4. Latitudes

Which Of The Following Is Correct?

- (A) 1, 2 And 3 (B) 1, 2 And 4
(C) 2, 3 And 4 (D) 1, 2, 3 And 4

Q. What Is True About Nile?

1. Forms The Largest Delta Of The World
2. The Longest River Of The World
3. Provides Fertile Soils And Water For Irrigation In A Desert Region
4. The Most Voluminous River

(A) 1 And 2 (B) 1 And 3

(C) 2 And 3 (D) 3 And 4

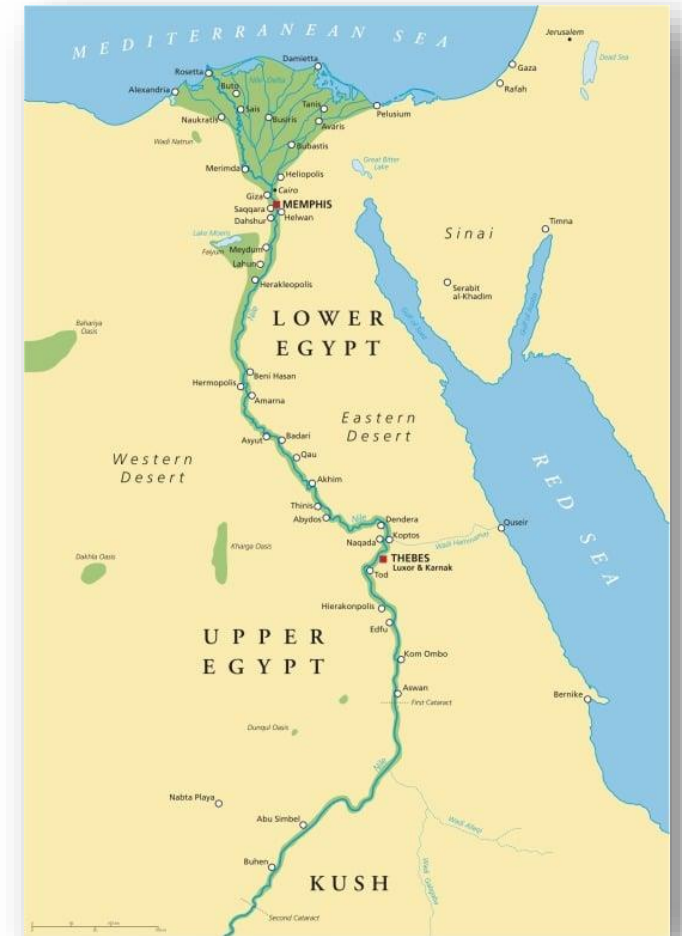
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4. The Most Voluminous River

(A) 1 And 2 (B) 1 And 3

(C) 2 And 3 (D) 3 And 4

- **Explanation:**
- **It Is A Major North-flowing River In North Eastern Africa.**
- **It Is Regarded As The Longest River In The World.**
- **The River Nile Is About 6,670 Km In Length.**
- **Although It Is Generally Associated With Egypt, Only 22% Of The Nile's Course Runs Through Egypt.**



Q. Which Among The Following Statements Characterized El Nino?

I. It Occurs At Irregular Intervals

ii. It Carriers Warmer Water

iii. It Carries Less Saline Water

iv. Its Atmospheric Equivalent Is Southern Oscillation.

Select The Correct, Answer Using The Code Given Below

(A) I And II Only

(B) II And III Only

(C) III And IV Only

(D) I, II, III And IV

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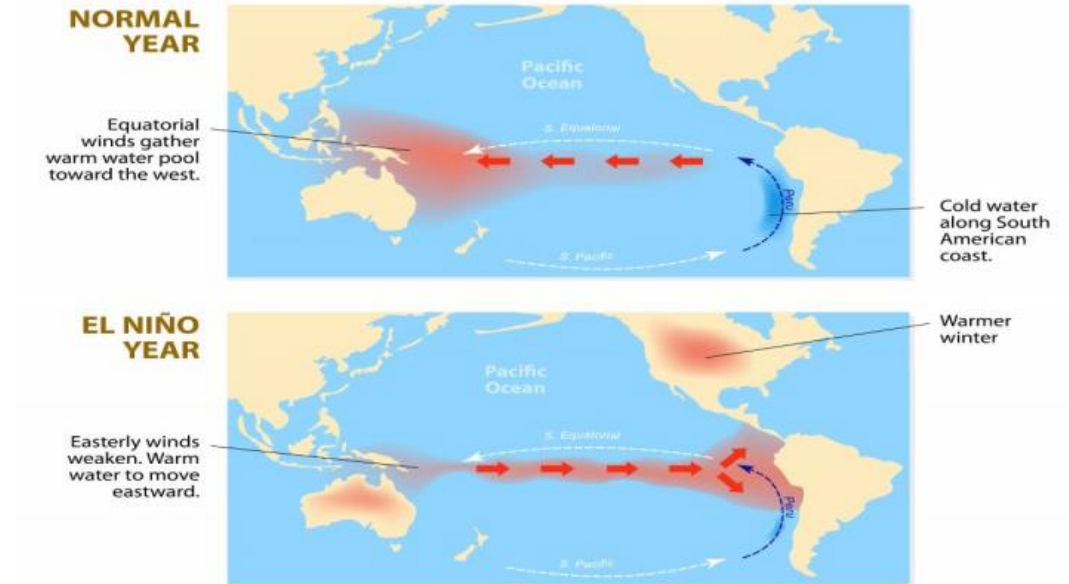
(A) I And II Only

(B) II And III Only

(C) III And IV Only

(D) I, II, III And IV

- **Explanation:**
- **It Is A Climate Cycle In The Pacific Ocean With A Global Impact On Weather Patterns.**
- **During An El Niño, The Pacific's Warmest Surface Waters Sit Offshore Of North Western South America.**



Q. Which Of The Following Two Gulfs Are Connected By Hormuz Strait?

- (A) Persian Gulf— Gulf Of Oman
- (B) Persian Gulf— Gulf Of Aden
- (C) Gulf Of Aden— Gulf Of Oman
- (D) Persian Gulf— Gulf Of Aquaba

Q. Which Of The Following Two Gulfs Are Connected By Hormuz Strait?

- (A) Persian Gulf— Gulf Of Oman
- (B) Persian Gulf— Gulf Of Aden
- (C) Gulf Of Aden— Gulf Of Oman
- (D) Persian Gulf— Gulf Of Aquaba



Q. Which Is The Longest River Of Europe?

(A) Danube

(B) Volga

(C) Dnieper

(D) Rhine

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(C) Dnieper

(D) Rhine



Q. Gaza Strip Lies Along The Coast Of

(A) Dead Sea

(B) Mediterranean Sea

(C) Persian Sea

(D) Red Sea

Q. Gaza Strip Lies Along The Coast Of

(A) Dead Sea

(B) Mediterranean Sea

(C) Persian Sea

(D) Red Sea

- **Explanation:**
- The **Gaza Strip** Is A Self-governing Entity On The **Eastern Coast Of The Mediterranean Sea** That **Borders Egypt** On The **Southwest** And **Israel** On The **East And North**.



Q. The Strait Which Separates Asia From North America Is

(A) Berring Strait

(B) Palk Strait

(C) Strait Of Gibraltar

(D) Strait Of Malacca

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Q. Which One Of The Following Is Not Correctly Matched?

Islands

Ocean

- (A) Greenlands Arctic Ocean
- (B) Madagaskar Indian Ocean
- (C) Tasmaniya S. Pacific Ocean
- (D) Baffin North Pacific Ocean

Q. Which One Of The Following Is Not Correctly Matched?

Islands

Ocean

(A) Greenlands Arctic Ocean

(B) Madagaskar Indian Ocean

(C) Tasmaniya S. Pacific Ocean

(D) Baffin North Pacific Ocean

- **Explanation:**
- **Baffin Bay** Is Located Between **Baffin Island** And The **Southwest Coast Of Greenland**, Is A Marginal Sea Of The **North Atlantic Ocean**.
- It Is Connected To The **Atlantic** Via **Davis Strait** And The **Labrador Sea**.



Q. Which One Among The Following Is A Sea Without Having A Coastline?

(A) North Sea

(B) Sargasso Sea

(C) Baltic Sea

(D) Bering Sea

Q. Which One Among The Following Is A Sea Without Having A Coastline?

(A) North Sea

(B) Sargasso Sea

(C) Baltic Sea

(D) Bering Sea

- **Explanation:**
- **The Sargasso Sea Is Defined Only By Ocean Currents.**
- **The Sargasso Sea Does Not Have A Coastline As It Is Located In The Middle Of The Atlantic Ocean**



Q. The Largest Delta Of The World Is

(A) Amazon Basin

(B) Congo Basin

(C) Sunderban Delta

(D) Godavari Basin

Q. The Largest Delta Of The World Is

- (A) Amazon Basin
- (B) Congo Basin
- (C) Sunderban Delta**
- (D) Godavari Basin



Q. What Is True About Lake Superior ?

- (A) It Is A Lake Wholly Within US
- (B) It Is A The Largest Freshwater Lake Of The World
- (C) It Is The Deepest Lake Of The World
- (D) This Lake Has Been Created Through Fluvial Erosion

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(D) This Lake Has Been Created Through Fluvial Erosion

- **Explanation:**



Q. What is the correct sequence of the following oceans in descending order of their areas?

- A) Indian Ocean, Arctic Ocean, Atlantic Ocean and Pacific Ocean
- B) Arctic Ocean, Atlantic Ocean, Indian Ocean and Pacific Ocean
- C) Atlantic Ocean, Pacific Ocean, Arctic Ocean and Indian Ocean
- D) Pacific Ocean, Atlantic Ocean, Indian Ocean and Arctic Ocean

Q. What is the correct sequence of the following oceans in descending order of their areas?

A) Indian Ocean, Arctic Ocean, Atlantic Ocean and Pacific Ocean

B) Arctic Ocean, Atlantic Ocean, Indian Ocean and Pacific Ocean

C) Atlantic Ocean, Pacific Ocean, Arctic Ocean and Indian Ocean

D) Pacific Ocean, Atlantic Ocean, Indian Ocean and Arctic Ocean

Explanation : Pacific Ocean is the largest ocean in the world with a total area of 155,557,000 sq km. This is followed by Atlantic Ocean (76,762,000 sq.km.), Indian Ocean (68,556,000 sq.km.) and Arctic Ocean (14,056,000 sq.km).

Q. What is the correct sequence of features on the sea floor starting from the coast to greater depths?

- A) Continental shelf, continental slope, continental rise, abyssal plain
- B) Abyssal plain, continental rise, continental slope, continental shelf
- C) Continental slope, continental rise, abyssal plain, continental shelf
- D) Continental rise, continental slope, continental shelf, abyssal plain

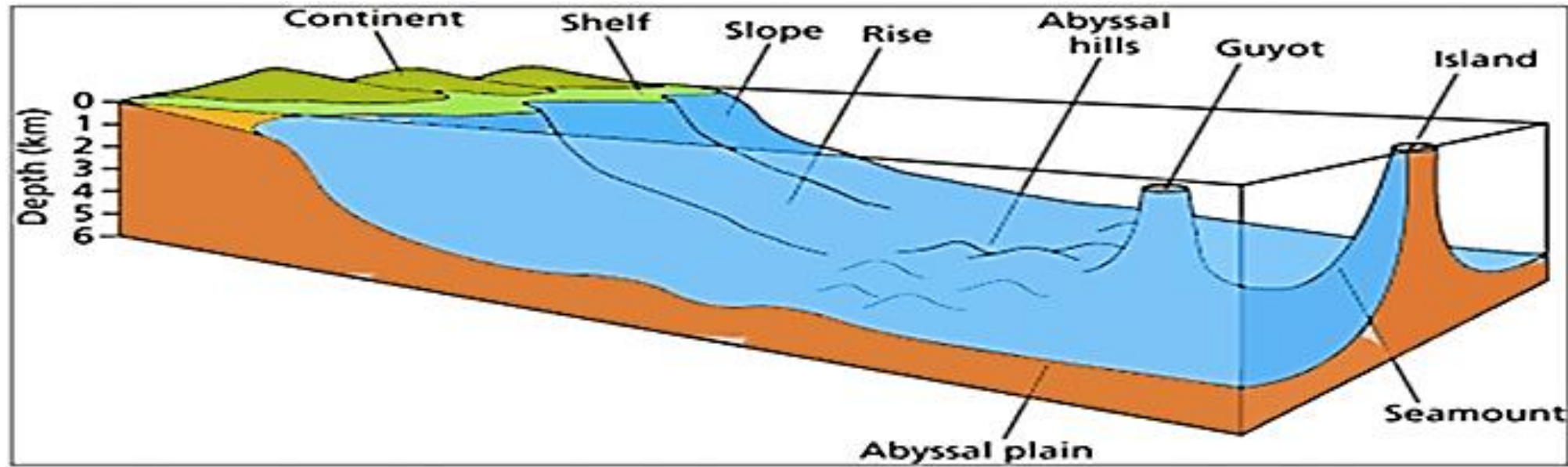
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B) Abyssal plain, continental rise, continental slope, continental shelf

C) Continental slope, continental rise, abyssal plain, continental shelf

D) Continental rise, continental slope, continental shelf, abyssal plain



Q. Consider the following pairs:

List I (Sea)

List II (Ocean)

1. Kara Sea

Atlantic Ocean

2. Baltic Sea

Arctic Ocean

3. Weddell Sea

Southern Ocean

4. Coral Sea

Pacific Ocean

Which of the above pairs are correctly matched?

A) 1 and 2 only

B) 2 and 3 only

C) 3 and 4 only

D) None

Q. Consider the following pairs:

List I (Sea)

List II (Ocean)

1. Kara Sea

Atlantic Ocean

2. Baltic Sea

Arctic Ocean

3. Weddell Sea

Southern Ocean

4. Coral Sea

Pacific Ocean

Kara Sea : Arctic Ocean on the Russian coast
Baltic Sea : Atlantic Ocean on the West European coast
Weddell Sea : Southern Ocean on the Antarctic coast
Coral Sea : Pacific Ocean off the coast of Queensland (Australia)

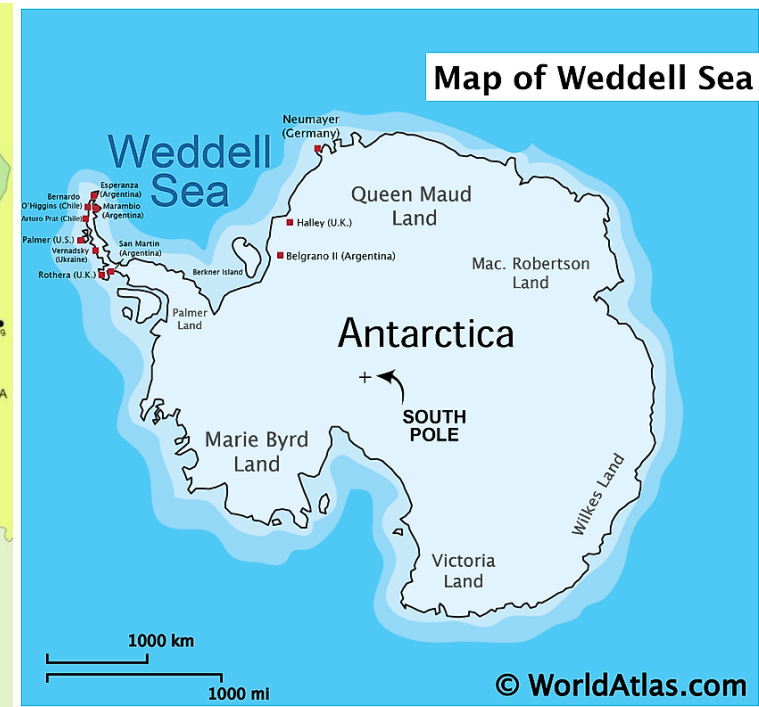
Which of the above pairs are correctly matched?

A) 1 and 2 only

B) 2 and 3 only

C) 3 and 4 only

D) None



Q. Consider the following statements regarding continental shelves

1. They have gentle slope and they extend up to 200m depth.
2. They are quite wide where mountains are close and parallel to the coast.
3. They are narrow where there are wide plains near the coast.
4. The widest continental is off the Arctic coast of Siberia.

A) 1 and 2 are true

B) 2 and 3 are true

C) 3 and 4 are true

D) 1 and 4 are true

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Explanation :

Continental shelves are narrow where high mountains are close and parallel to the coast. For example, off the west coast of South America where the Andes Mountains are very close and parallel to the coast, the shelf is only a few hundred metres wide. Continental shelves are quite wide where there are wide plains near the coast. For example the width of the continental shelf is about 560 km off the coast of Rio de La Plata.

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ANSWER: B

