TENDER HEART HIGH SCHOOL

Sector 33 B, Chandigarh

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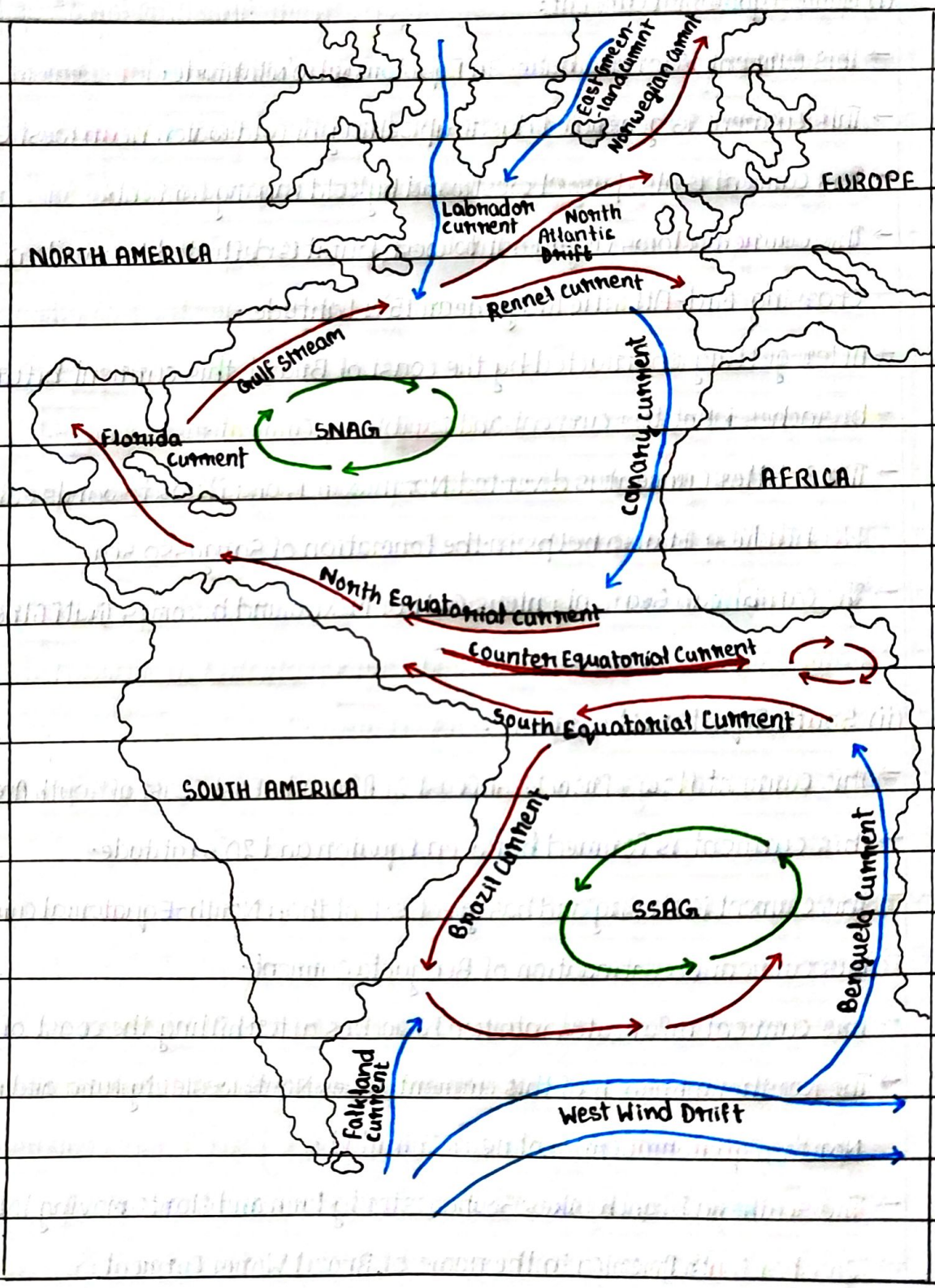
Subject: GEOGRAPHY Class: IX

TIDES AND OCEAN CURRENTS

MAJOR OCEAN CURRENTS OF ATLANTIC OCEAN



(A) Warm Ocean Current

(i) North-Equatorial Current:

→ This current is formed between Equator and 10°N latitude.

→ This current is generated due to upwelling of cold water near west coast of Africa.

→ This current is also pushed westward by cold Canary current.

→ This current flows from East to west, but it is deflected towards north after crossing Mid-Atlantic Ridge near 15°N Latitude.

→ After getting obstructed by the coast of Brazil, this current bifurcates into two branches – Antilles Current and Caribbean Current.

→ The Antilles Current is diverted Northwards and flows towards eastern part of the West Indies. It also helps in the formation of Sargasso Sea.

→ The Caribbean Current enters Gulf of Mexico and becomes Gulf Stream.

(ii) South-Equatorial Current:

→ This current flows from West Coast of Africa to East Coast of South America.

→ This current is formed between Equator and 20°S Latitude.

→ This current is strong and has great extent than North-Equatorial current.

→ This current is continuation of Benguela Current.

→ This current bifurcates into two branches after hitting the coast of Brazil.

→ The Northern branch of this current takes Northwesterly turn and merges with the North-Equatorial Current near Trinidad.

→ The Southern branch takes Southwesterly turn and starts moving towards the Eastern coast of South America in the name of Brazil Warm Current.

→ The South-Equatorial Current is originated under the stress of Trade Winds.

(iii) Counter Equatorial Current:

→ This current moves between North-Equatorial current and South-Equatorial current.

→ It moves in west to East direction.

→ This current is less developed in the western region due to stress of Trade Winds.

→ This current carries relatively higher temperature than North-Equatorial current and South-Equatorial current.

→ There are different views regarding the origin of this current. Some scientists believed that this current origins due to influence of Westerlies in the Equatorial Region that blows from west to east in the region of calm zone of doldrums.

→ many other scientists believes that counter Equatorial current is originated due to piling up of huge volume of water due to convergence of North Equatorial current and south Equatorial current near the coast of Brazil. This piling up of huge volume of water compels this current to flow eastward as compensation current upto Gulf of Guinea.

(iv) Gulf Stream:

→ It was discovered by Ponche de Leon in 1513.

→ It is the longest western boundary current of North Atlantic Ocean.

→ It is a warm current and originates in Gulf of Mexico around 20°N Latitude and than moves in North-Eastern direction along the eastern coast of North America.

→ From Newfoundland, one branch of this current moves towards the western coast of Europe near 70°N Latitude in the name of North Atlantic Drift.

→ Its speed is 30 kms per day and its average speed is 70 kms.

→ It carries warm water and modifies the climatic conditions of the adjoining areas.

→ It generally follows the coastline but it gets deflected eastward at 40°N Latitude due to influence of Westerlies and Coriolis Effect.

→ This current looses original characteristics near 40°N latitude because it mixes with cold Labrador current

→ The convergence of warm Gulf Stream with cold Labrador current creates favourable climate for the growth of fishes and results in the formation of fishing ground.

→ Moreover, the convergence of Warm Gulf stream and cold Labrador current results in the formation of dense fog that hinders oceanic Transport.

(V) Brazil Current:

→ This current is characterised by high temperature and salinity.

→ This current generates when South-Equatorial current bifurcates due to obstruction provided by Brazilean Coast.

→ This current flows along the east coast of South America upto 40°s latitude.

→ From here, it is deflected eastwards due to coriolis Effect and flows in the easterly direction under the influence of Westerlies.

→ This current merges with Falkland Cold Current near 40°s latitude.

(B) Cold Ocean Current

(i) Canary Current:

→ This current flows along the western coast of North Africa.

→ It is the continuation of North Atlantic Drift and it turns southwards near the Spanish coast and flows towards South along the coast of canaries Island.

→ The average velocity of this current is 8 to 30 nautical miles per day.

→ This current brings cold water of high latitudes to the warm water of low latitudes and finally merges with North-Equatorial Current.

→ This current improves the hot weather condition of Western Coast of North-Africa.

(ii) Labrador Current:

→ This current originates in Baffin Bay and Davis Strait.

→ After flowing through the coastal waters of Newfoundland and Grandbank, this current merges with Gulf Stream around 50°W longitude.

→ This current brings huge icebergs with it upto Newfoundland and Grand Bank.

→ These Icebergs does effective hindrance in oceanic navigation.

→ When labrador current mixes with warm Gulf Stream it produces dense fog and also creates favourable climate for the growth of fishes.

(iii) Falkland Current:

→ The cold waters of Antarctic Sea flows as Falkland Current.

→ This current flows from South to North along the Eastern Coast of South America upto Argentina.

→ This current becomes very extensive and developed near 30°S latitude.

→ This current also brings numerous icebergs from Antarctic Sea to South American Coast.

(iv) South Atlantic Drift:

→ This current is eastward continuation of Brazil Current.

→ This current is originated due to deflection of Brazil Current and coriolis Effect.

→ This current flows Eastwards under the influence of westerlies.

→ This current is also known as Westerlies Drift or Antarctic Drift.

(v) Benguela Current:

→ This current flows from south to North along the western Coast of South Africa.

→ This current turns northwards due to obstruction caused by Southern Tip of Africa.

→ This current merges with South Equatorial Current towards further north.

* Subtropical North Atlantic Gyre (SNAG)

→ This is a circular Ocean current found in North Atlantic Ocean.

→ It is located between ITCZ and Iceland and from East Coast of Africa to West Coast of Europe and Africa.

→ The sub-currents of this Gyre are Gulf Stream, North Atlantic Current, Canary and North-Equatorial Current.

→ In the centre of this Gyre, Sargasso Sea is found and this Sea is known for its dense accumulation of Seaweed.

→ It brings salty water from Mediterranean Sea to Atlantic Ocean.

→ This Gyre is driven by wind, Tides and difference in Temperature and Salinity.

* Subtropical South Atlantic Gyre (SSAG)

→ This is a circular Ocean current found in South Atlantic Ocean.

→ It consists cold as well as warm currents.

→ The sub-currents of this Gyre are Brazil Current, South Equatorial, Benguela Current and West Wind Drift.

→ It is located between 45°S to 15°S and 55°W to 10°E

→ It flows counter Clockwise

→ It is wind driven circulation that transports waters of high latitudes towards Equator and Equatorial waters towards higher latitudes.

→ Past studies have shown that this Gyre is undergoing changes in its position, strength and size.

→ The seasonal Ocean Mass of this Gyre is affected by stress of Local Winds.