

TENDER HEART HIGH SCHOOL

Section 33 B, Chandigarh

Name: Varun Salhotra

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Subject: Geography

Class: IX

(9) Ocean Currents of Pacific Ocean

WARM CURRENT

COLD CURRENT

North Equatorial Current

South Equatorial Current

Counter Equatorial Current

Kuroshio Current

North Pacific Current

East Australian Current

Alaskan Current

Oyashio Current

California Current

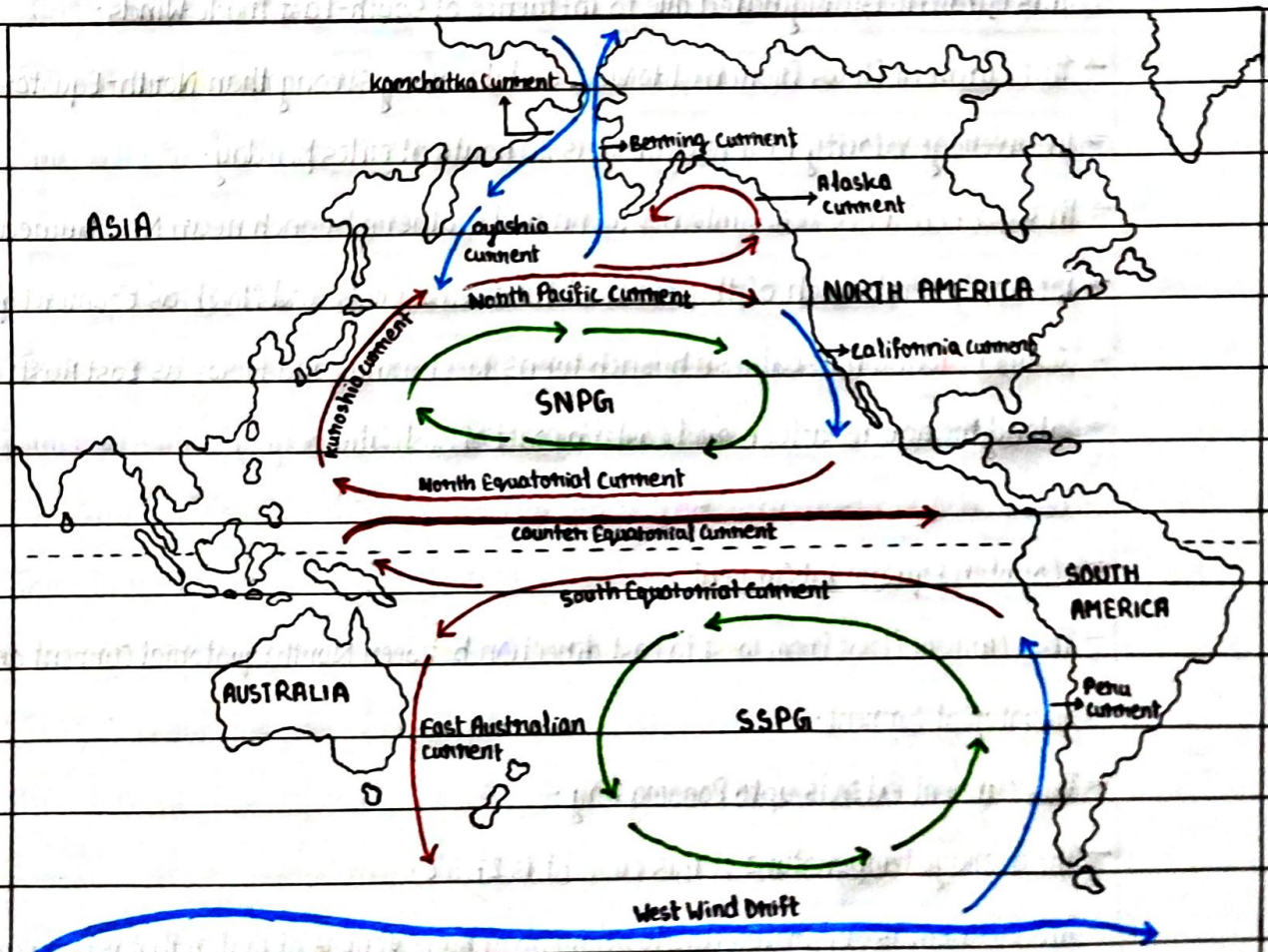
Peru Current

Bering Current

West Wind Drift

Kamchatka Current

MAJOR OCEAN CURRENTS OF PACIFIC OCEAN



(A) Warm Ocean Currents(i) North Equatorial Current:

- This current originates in western coast of Mexico due to California Current and N.E. Monsoon
- It flows in western direction and reaches Philippines coast after covering a distance of 7500 nautical miles.
- One branch of this current emerges near Taiwan and flows northwards to join kuroshio Current while the other branch moves southwards and forms Counter Equatorial Current
- The Velocity of this current is 12 to 18 Nautical Miles per day.
- This current flows as continuous current in North Pacific Ocean.
- This current always remains to the North of Equator.

(ii) South Equatorial Current:

- This current is originated due to influence of South-East Trade Winds.
- This current flows from East to West and it is very strong than North-Equatorial Current.
- The average velocity of this current is 20 nautical miles per day.
- This current bifurcates into northern and southern branch near New Guinea.
- The northern branch of this current turns eastwards and flows as counter Equatorial Current while the southern branch turns westwards and flows as East Australian Current along the north-eastern and Eastern coast of Australia.

(iii) Counter Equatorial Current

- This current flows from west to east direction between North Equatorial Current and South Equatorial Current.
- This current extends upto Panama Bay.
- The average temperature of this current is 27.5°C .
- This current is originated due to piling up of huge volume of water that is brought by both North and South Equatorial Current in the western margin of Pacific Ocean.

(iv) Kuroshio Current:

- This current originates due to obstruction of Philippines Coast and Coriolis Effect.
- It takes birth from North Equatorial Current.
- It flows from Taiwan to Ryuku Ridge at 30°N Latitude.
- This current is similar to Florida Current of North Atlantic Ocean.
- The average temperature of this current is 8°C .
- The average velocity of this current is 89 centimetres per second.
- This current leaves Japanese Coast and turns eastwards near 35°N latitude under the influence of Westerlies.
- This current is bifurcated into two parts, one part moves in Eastern direction and the other part flows in North-eastern direction upto 42°N latitude and thereafter it turns eastwards.
- The northern branch of this current merges with cold Oyashio current coming from North region.

(v) North Pacific Current OR North Pacific Drift

- This current moves from west to east across the Pacific Ocean between 30° and 50° north latitude.
- This is a warm current and it is formed by combination of Oyashio current and Kuroshio current.
- This current bifurcates into two branches, Northern Branch flows as Aleutian current while the Southern branch gives birth to California Cold current.
- The Aleutian current is further divided into two branches, one branch flows towards Bering Strait as Bering cold current while the other branch moves towards Gulf of Alaska as Alaska current.
- The North Pacific current keeps Alaskan Coast Ice free in winters.

(vi) East Australian Current

- This current originates from South Equatorial Current.
- It bifurcates near Australian Coast into northern branch and southern branch.
- The northern branch of this current moves towards Philippines Coast, while the southern branch moves along the eastern coast of Australia.
- Moreover, this current also surrounds Newzealand.
- This current deflects eastwards near 40° 's latitude due to Coriolis Effect and influence of Westerlies.
- This current is warm and consistent current.
- It raises the temperature of East Coast of Australia and areas of Newzealand.
- Its speed is 90 cms per second.

(vi) Alaska Current

- It is a warm current that flows along Gulf of Alaska.
- It moves from 48° N to 50° N latitude.
- It is a branch of North Pacific Drift.
- It forms anticlockwise Gyre in Gulf of Alaska.
- Its temperature is 4°C and it also keeps Alaskan Coast Ice free.
- The warm water of this current mixes with cold water of Bering Sea and creates a low pressure centre in the region.

(B) Cold Ocean Currents**(i) Oyashio Current:**

- This is a cold current that flows in western part of North Pacific Ocean.
- This current originates in Arctic Ocean and flows southwards through Bering Strait.
- This current flows towards South-west direction.
- This current meets warm kuroshio current near the eastern coast of Japan.
- This current is also known as Okhotsk Current or Kurile Current.
- This current is very strong in spring season.
- The meeting point of Oyashio Current and kuroshio Current is a famous fishing ground in North Pacific Ocean.

(ii) California Current:

- It is a cold current that flows in eastern part of North Pacific Ocean.
- It flows southwards along the western coast of North America from British Columbia to Baja California.
- This current forms the eastern boundary of North Pacific Gyre.
- The velocity of this current is 25 cms per second.
- This current flows from 50°N to 27°N Latitude.
- This current is the eastward extension of North Pacific Current.
- This current merges with North Equatorial Current after reaching Mexican coast.

(iii) Peru Current:

- This current flows northwards along the western coast of South America from South Chile to North Peru.
- This current is also known as Humboldt Current.
- The annual temperature of this current ranges between 14°C to 17°C.
- The average velocity of this current is 15 nautical miles per day.

→ This current has cooling influence on climate of Chile, Peru and Ecuador.

→ This current is responsible for arid conditions in Chile, Peru and Ecuador.

→ This current converted Atacama Desert into Cold Desert.

(iv) Bering Current :

→ This current originates in North Pacific Ocean and moves towards Arctic Ocean through Bering Strait.

→ This current flows in northern direction along the coast of Alaska and has freezing influence in the region.

→ The temperature of this current varies due to location and seasonal change.

→ The speed of this current varies according to season, winds, Tidal fluctuations.

→ This current is northern branch of Aleutian Current.

(v) Kamchatka Current :

→ It originates in Bering Sea and flows towards south-west direction through Bering Strait.

→ It flows along the Siberian Coast and Kamchatka Peninsula.

→ It brings cold waters of Arctic Ocean to North-eastern part of Japan.

→ The average speed of this current is 40-77 cms per day.

→ One branch of this current becomes Oyashio Current and joins Kuroshio Current while the other branch joins North Pacific Current.

(vi) West Wind Drift :

→ This current flows from west to east under the influence of Westerlies.

→ It flows from Tasmania to South American Coast between 40° to 50° S Latitude.

→ This current becomes much stronger and flows with great velocity due to immense volume of water and high velocity winds, known as Roaring Forties.

→ In far east, this current is bifurcated into two branches, its one branch moves towards Atlantic Ocean through Cape Horn while the second branch turns northwards and joins Peru Current.

* Subtropical North Pacific Gyre (SNPG)

- This Gyre forms in North Pacific Ocean.
- This Gyre moves in clockwise direction.
- This Gyre has mean depth of 5 kilometres.
- This Gyre is located between Equator and 50°N latitude.
- This Gyre is formed by four currents, namely, Kuroshio Current, North Pacific Current, California Current and North Equatorial Current.
- This Gyre is home of many marine organisms such as Phytoplanktons, Tunas, Sharks etc.
- Thus, the edge of this Gyre is likely to shift due to Global Climate Change.

* Subtropical South Pacific Gyre (SSPG)

- This Gyre forms in South Pacific Ocean.
- This Gyre moves in Anti-clockwise.
- This Gyre covers 10% of ocean surface.
- This Gyre is located between Australia in west, Equator in North, South America in East and West Wind Drift (ocean current) in South.
- This Gyre is very important as it regulates the climate of Southern Hemisphere.