

## OCEAN CURRENTS

The general movement of large mass of surface water in definite pattern is called ocean currents.

### CAUSES OF THE MOVEMENT OF OCEAN CURRENTS

1. The earth's rotation which results in the genesis of deflective or coriolis force.
2. The planetary winds.
3. Difference in the temperature of ocean waters between the equator and the poles.
4. Similarly of ocean affects the density of water, which is the main cause of movement of ocean water.
5. Shape and configuration of the continent determines the direction of ocean current.

### OCEAN CURRENTS

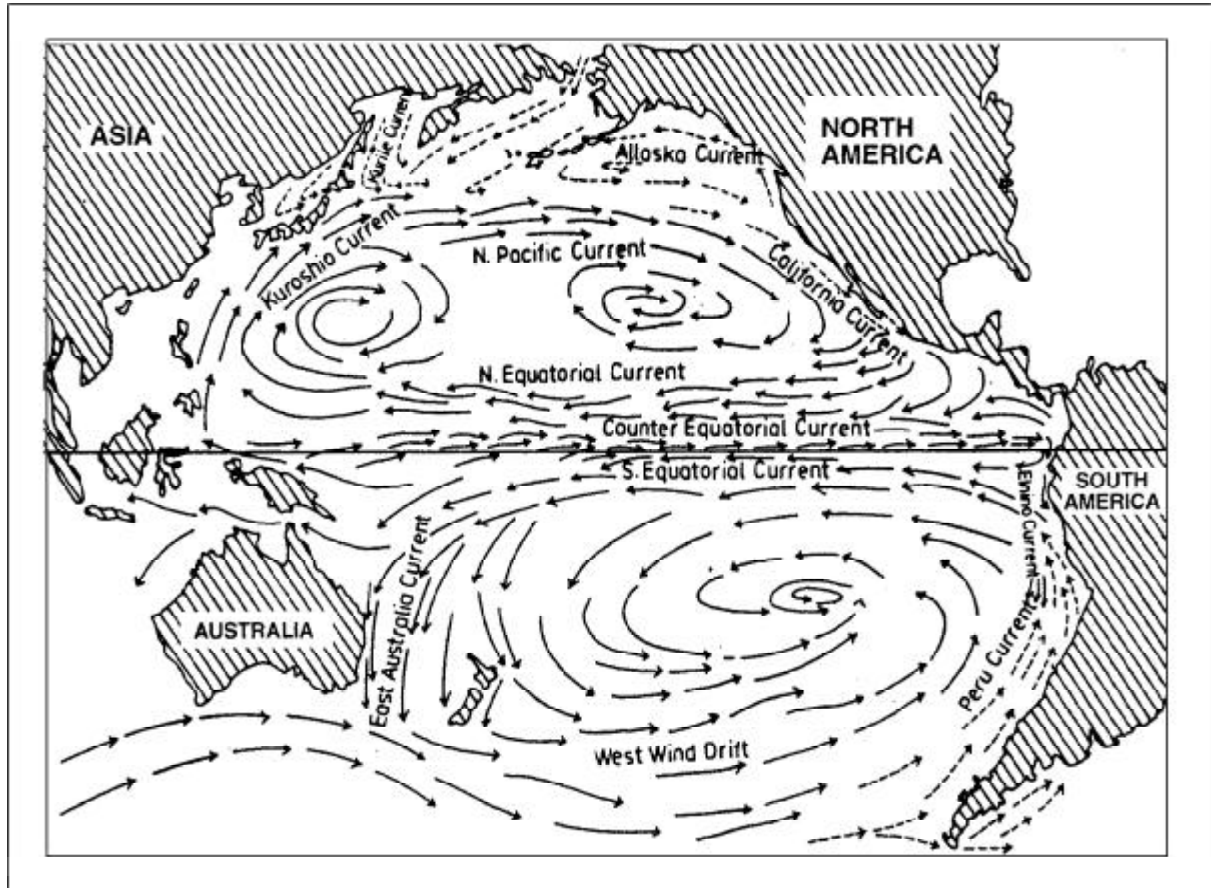
Types of ocean currents on the basis of temperature can be divided into following—

1. **Warm Currents:** Those ocean currents which flow from the warmer equatorial zone to the cooler polar regions having a higher surface temperature are called warm currents.
2. **Cold Currents :** Those ocean currents which flow from the polar region to the equatorial region, having a low surface temperature are called cold currents.

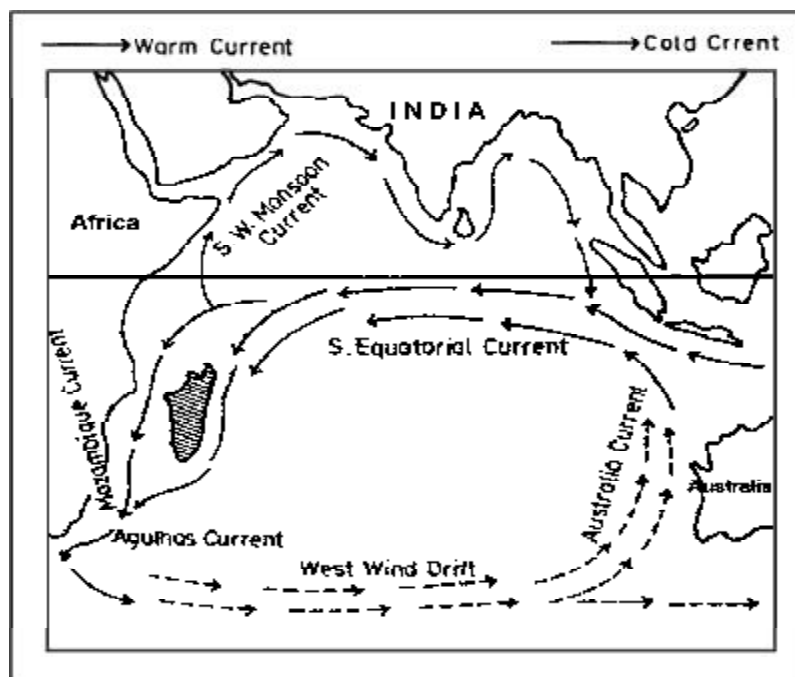
### Major Ocean Currents of the Atlantic Ocean

Warm currents of the Atlantic Ocean	Cold Current of the Atlantic Ocean
<ol style="list-style-type: none"> <li>1. North Equatorial Current which bifurcates into Antilles Current and Caribbean Current.</li> <li>2. South Equatorial Current bifurcates at the protruding landmass of northeast Brazil into northern Cayenne Current and the southern Brazilian Current (South Atlantic Ocean).</li> <li>3. Gulf stream - One of the strongest ocean system which originates in the Gulf of Mexico. It consists of                             <ol style="list-style-type: none"> <li>(i) Florida Current - From the Strait of Florida to Cape Hatteras (USA)</li> <li>(ii) Gulf Stream (cold wall) - From Cape Hatteras to the Grand Bank (Northeast USA)</li> <li>(iii) North Atlantic Drift - From the Grand Bank, near New Foundland to western Europe.</li> </ol> </li> <li>4. Counter Equatorial Current - Flows from west to east in between the North and South Equatorial Current.</li> </ol>	<ol style="list-style-type: none"> <li>1. Labrador Current - Originates in Baffin Bay drifts south eastwards Baffin and Greenland and merges with Gulf stream off New Foundland.</li> <li>2. The Irminger Current of Greenland Current- Flows between Greenland and Iceland and merges with North Atlantic Drift.</li> <li>3. Canaries Current - Continuation of North Atlantic Drift along the western coast of Iberian Peninsula and North Africa in the southern direction.</li> <li>4. Falkland Current - Flows northwards along the eastern coast of South America upto Argentina.</li> <li>5. South Atlantic Drift - Under the influence of westerlies at about 40°S latitude, Brazilian Current continues as the South Atlantic Current.</li> <li>6. Benguela Current - Flows northwards along the western coast of South Africa.</li> </ol>

### Major Currents of the Pacific Ocean



### Major Currents of Indian Ocean



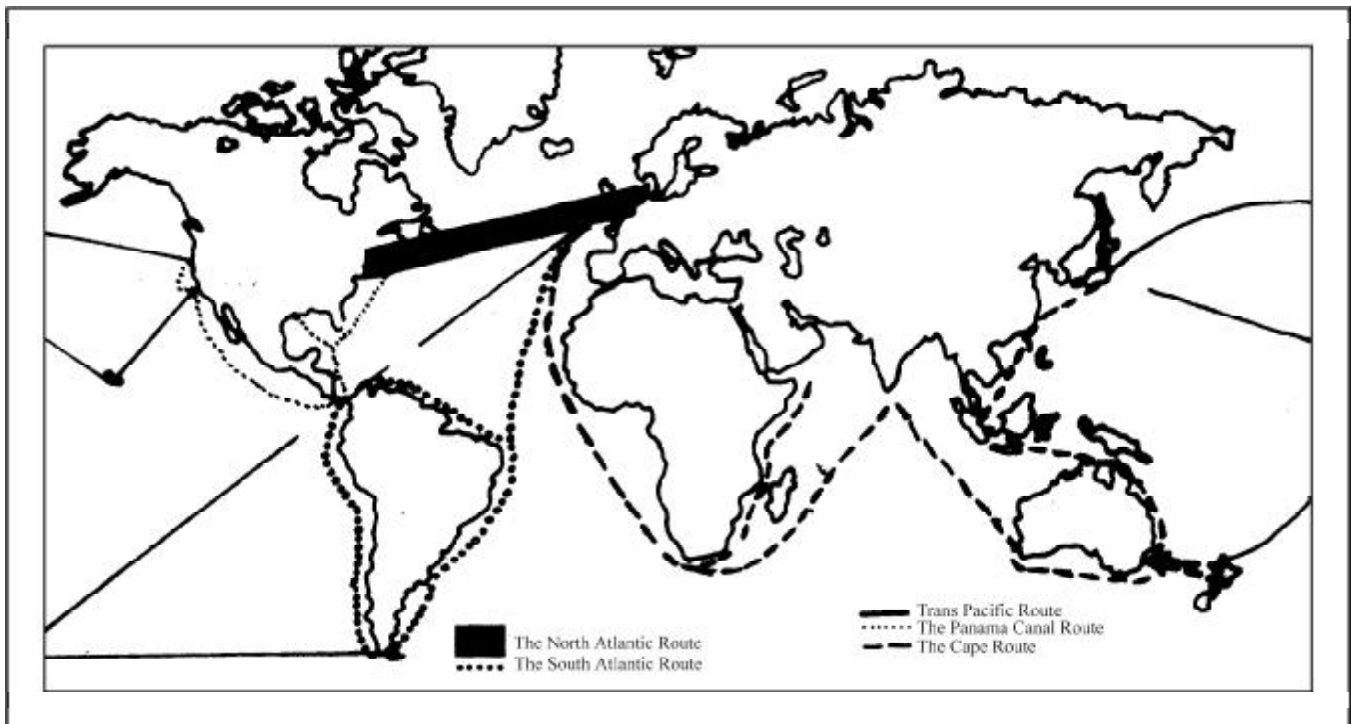
## Major Ocean Currents of the Pacific Ocean

WARM CURRENTS OF THE PACIFIC OCEAN	COLD CURRENTS OF THE PACIFIC OCEAN
<ol style="list-style-type: none"><li>1. North Equatorial Current - Flows westwards from the western coast of Mexico to the Philippines.</li><li>2. South Equatorial Current - Flows westwards in the southern Pacific Ocean and bifurcates into northern and southern branches near new Guinea.</li><li>3. Counter Equatorial Current - Flows between north and south Equatorial Current in the opposite direction.</li><li>4. Kuroshio or Japan Current - Flows from Taiwan to Bering Strait.</li></ol>	<ol style="list-style-type: none"><li>1. Oyashio (Kurile) Current - Bering Current or Alaskan Current and Okhotsk Current meet to form Oyashio Current.</li><li>2. California Current - Flows along the western coast of USA and finally merges with North Equatorial Current (Warm) to complete the circulation.</li><li>3. West Wind Drift - Flows from west to east in the zone of 40°-50°S latitude under the influence of Westerlies.</li><li>4. Peruvian (Humboldt) Current - Flows northwards along the western coast of South America is actually the continuation of West Wind Drift.</li></ol>

## Major Ocean Currents of the Indian Ocean

WARM CURRENTS OF THE INDIAN OCEAN
<ol style="list-style-type: none"><li>1. Indian Equatorial Current : Flows westwards in the south Indian Ocean, bifurcates at Madagascar and flows as Mozambique and Agulhas Current in the southern direction.</li><li>2. South West Monsoon Current : Flows along the coasts of India in easterly direction.</li><li>3. North West Monsoon Current : Flows along the eastern coasts of India during winter.</li></ol>

### Major Ocean Routes of the World



### MAJOR OCEAN ROUTES OF THE WORLD

OCEAN ROUTE	SEA PORTS OF THE ROUTE
<p>1. North Atlantic Route.</p> <ul style="list-style-type: none"> <li>• Busiest ocean trade route which connects the ports of western coast of Europe with the ports on the east coast of North America.</li> <li>• Developed and very dense populated regions are</li> <li>• Developed and very dense populated regions are located on both sides.</li> <li>• The foreign trade of the North Atlantic route is greater than any other route of the world.</li> </ul>	<p>Ports on the east coast of North America New York, Boston, Philadelphia, Baltimore, Montreal, Quebec, Toronto (through the Great Lakes St. Lawrence Seaway)</p> <p>Ports on the wst coast of Europe Gothenburg, Oslo, Copenhagen, Rotterdam, Hamburg, Antwerp, London, Southampton, Glasgow, Liverpool, Le Havre, Lisbon, etc.</p>
<p>2. The Suez Canal Route</p> <ul style="list-style-type: none"> <li>• Passes through the heart of the world and South Asian countries by 9000 km.</li> <li>• It was once considered as lifelines of Britain.</li> <li>• Oil supplies from Middle East, raw material from tropical Asia and manufactured goods from Europe are the main trade commodities.</li> </ul>	<p>Mediterranean ports - Marseilles, Gibraltar, Genoa, Vanice, Athens, Naples are ports of Europe adn Algiers, Port Said are ports of Africa.</p> <p>Asian ports - Aden, Karachi, Mumbai, Colombo, Singapore and Manila.</p> <p>Important ports of call - Mombassa, Zanzibar, Mozambique, Aden, Mumbai, Perth, Adelaide, Melbourne and Sydney.</p>

OCEAN ROUTE	SEA PORTS OF THE ROUTE
<p>3. The Paname Canal Route</p> <ul style="list-style-type: none"> <li>Connects the Pacific Ocean with Atlantic Ocean.</li> <li>Increase the trade between the countries of both Atlantic and Pacific seaboard since the opening of Panam Canal in 1914.</li> <li>Facilitated the trade in oil, minerals, food stuffs, raw materials and manufactures goods.</li> <li>West and east coast of USA are the most benefited region.</li> </ul>	<ul style="list-style-type: none"> <li>Panam and Colon are important ports on the Panama Canal.</li> <li>Save the distance between New York and Auckland.</li> <li>Ports of Gulf Coast of USA and Caribbean Stats are also important.</li> </ul>
<p>4. The Cape Route</p> <ul style="list-style-type: none"> <li>Connects the countries of western Europe with western and southern part of Africa, Australia and New Zealand.</li> </ul>	<p>Ports of West Europe: London, Liverpool, Cardiff, Lisbon Southampton, etc.</p> <p>Ports of Africa : Cape Town, Port Elizabeth.</p> <p>Ports of Australia : Perth, Adelaide, Melborne, and Sydney.</p>
<p>5. The Trans-Pacific Route</p> <ul style="list-style-type: none"> <li>Connects the ports of western coast of North America with the ports</li> <li>Several routs of the Trans-Pacific converge at Honolulu (the crossroads of Pacific).</li> </ul>	<p>Ports of North America : Vancouver, Seattle, Portland, San Francisco, Los Angeles deals with timber, wheat, paper-pulp, fish etc.</p> <p>Ports of East Asia : Shanghai, Tokyo, Yokohama, Kobe, and Manila deals with manufactured goods, e.g., textiles electrical equipments etc.</p>

### Major Ports of the World

NAME	COUNTRY	EXPORTS
Duluth (on the Lake Superior)	North America	Largest iron are exporting port of USA and export it to other American steel centres.
Chicago (on the Lake Michigan)	North America	<ul style="list-style-type: none"> <li>World's largest and the biggest pork exporting port.</li> <li>It also exports agriculatural instruments and maize.</li> </ul>
Detroit (one the Lake Erie)	North America	Automobiles.
Montreal	Canada	<ul style="list-style-type: none"> <li>Biggest Canadian ports in terms of exports.</li> <li>Major exports are wheat, textiles, leather goods and engineering products.</li> </ul>
Halifax	Canada	Iron-steel and heavy engineering products.
Boston	North America	Exports engineering goods, woolen textiles and leather goods. Also exports electrical equipments and hydel power turbines.

NAME	COUNTRY	EXPORTS
Baltimore (on the head of Chesapeake Bay)	North America	Exports tobacco, livestock, cotton, timber and oyster.
Richmond	North America	Biggest exporting port of tobacco and tobacco products.
New Orlands (on the Gulf of Mexico)	North America	<ul style="list-style-type: none"> <li>• Biggest rice exporting port of USA.</li> <li>• Also exports cotton, cotton textiles and petromeum products.</li> </ul>
Vancouver	Canada	Wheat, paper and pulp.
San Francisco	North America	Petroleum products.
Los Angeles	North America	Biggest orange exporting port of the world.
Havana	Cuba	One of the major sugar exporting port.
Recife	Brazil	Largest sugar exporting port of world.
Rio de Janeiro	Brazil	Second largest coffee exporting port.
Santos	Brazil	Largest coffee exporting port and also exports cotton.
Montevideo	Uruguay	Exports beef, wheat and beef.
Buenos Aires	Argentina	Exports maize, wool and beef.
Bahia Blanca	Argentina	Exports wheat, beef and wool.
Tumaco	Colombia	Coffee exporting port.
Antogagasta	Chile	Biggest intrate exporting port of the world.
Valparaiso	Chile	Exports copper and iron.
Cardiff	United Kingdom	Only port of United Kingdom which exports coal.
Glasgow	United Kingdom	Exports chemicals and textile.
Dublin	Ireland	Exports chemicals and textile.
Gothenburg	Sweden	Largest port of Sweden which is open throughout the year.
Hammarfest	Norway	Northern most port of the world.
Hamburg	Germany	an enterpot, which exports manufactured goods, dairy products, steel goods, chemicals, etc.
Le Havre	France	Fishing port of France.
Marseilles	France	Largest port of France on the Mediterranena coast.
Lisbon	Portugal	Exports wine and raw wool.
Alexanderia (on the Nile Delta)	Egypt	Mediterranean seaport which exports cotton.

NAME	COUNTRY	EXPORTS
Port Said (on the northern end of Suez Canal)	Egypt	Mediterranena seaport which exports cotton.
Port Sudan (on the Red Sea)	Sudan	Exports cotton.
Accra	Ghana	Exports cocoa and palm oil.
Lagos	Nigeria	Exports cocoa and palm oil.
Port Harcourt	Nigeria	Oil exporting port.
Cape Town	South Africa	A port of call which exports wine, raw wool and woolen textiles.
Durban	South Africa	Exports coal.
Zanzibar	South Africa	Biggest exporing port of cloves.
Dar-es-Salaam	Tanzania	chief port which exports cotton.
Mombasa	Kenya	Chief port which export coffee.
Brisbane	Australia	Chief port of Queensland (Australia) which exports wool, wheat, copper, meat, fruits and wine.
New Castle	Australia	Exporting port of coking coal.
Sydney	Australia	Exports raw wool, woolen, textile and beef.
Adelaide	Australia	Exports raw wool, woolen textile beef, mutton, frutis and wine.
Perth	Australia	Raw wool and mutton.
Port Headland	Australia	Largest iron ore exporting port of Australia.
Auckland	New Zealand	Export butter and other dairy products.
Wellington	New Zealand	Exports wool and mutton.