

## TYPES OF OCEAN CURRENTS – CLASS NOTES

### 1. Meaning of Ocean Currents

Ocean currents are large-scale continuous movements of seawater in definite directions. They are driven by winds, temperature differences, salinity variations, Earth's rotation, and gravitational forces.

### 2. Causes of Ocean Currents

- Planetary winds (Trade winds, Westerlies)
- Coriolis force (Earth's rotation)
- Temperature differences
- Salinity differences
- Configuration of continents

### 3. Types of Ocean Currents

#### (A) Based on Temperature

1. **Warm Currents** – Originate in low latitudes and move towards high latitudes. Example: Gulf Stream, Kuroshio Current.
2. **Cold Currents** – Originate in high latitudes and move towards low latitudes. Example: Labrador Current, Peru (Humboldt) Current.

#### (B) Based on Depth

1. **Surface Currents** – Flow in the upper layer of oceans (top 400 meters). Mainly wind-driven.
2. **Deep Currents** – Flow below the surface due to density differences (Thermohaline circulation).

#### (C) Based on Periodicity

1. **Permanent Currents** – Flow throughout the year in a fixed direction.
2. **Periodic Currents** – Change direction according to seasons (e.g., Monsoon currents in the Indian Ocean).
3. **Tidal Currents** – Caused by gravitational pull of the Moon and the Sun.

### 4. Major Ocean Currents of the World

- Gulf Stream (North Atlantic – Warm)
- Canary Current (Cold)
- Kuroshio Current (Warm)
- Oyashio Current (Cold)
- Benguela Current (Cold)
- Agulhas Current (Warm)

### 5. Importance of Ocean Currents

- Regulate global climate
- Influence rainfall distribution
- Support marine life and fisheries
- Affect navigation and trade routes

### 6. Exam-Oriented Points

- Warm currents increase coastal temperature.
- Cold currents often cause desert formation on western margins.
- Thermohaline circulation is also called the "Global Conveyor Belt".

### 7. Important Questions

1. Define ocean currents and explain their causes.
2. Differentiate between warm and cold currents.
3. Discuss the role of ocean currents in climate regulation.