

**M.A./M.Sc. Geography Part-I
Paper-III- Climatology & Oceanography
Topic- Sea Waves & Ocean Current**

(4)

OCEANOGRAPHY

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WAVES

- Wave phenomena transmits energy through various states of matter by setting up patterns of oscillation motion in particle that make up the matter.
- Most of the waves observed at sea are progressive wind waves, i.e., they are generated by winds.



DIFFERENT TYPES OF WAVES

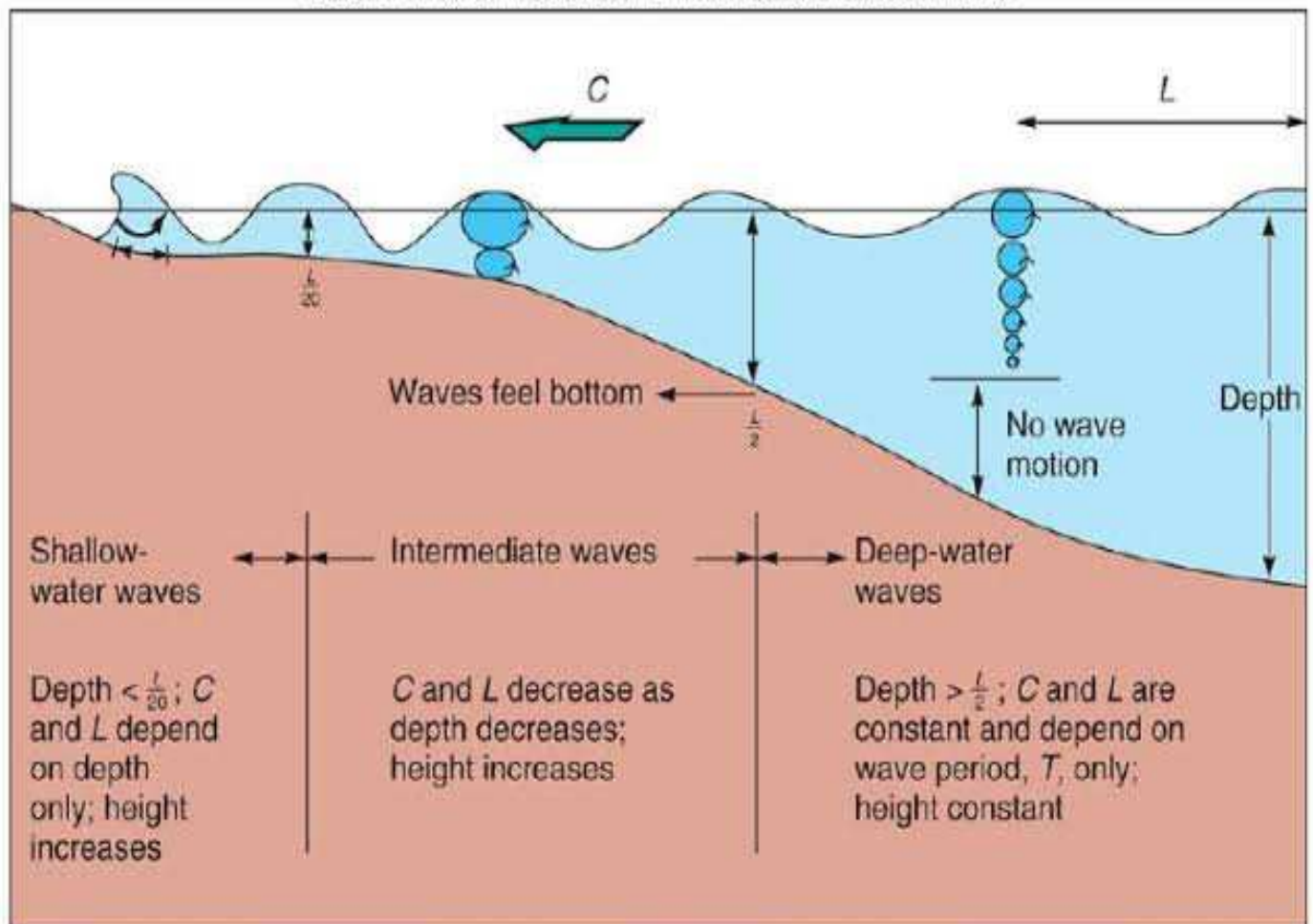
- Shallow water wave, deep water wave, gravity wave, constructive and destructive wave, Rogue wave, Tsunami or seismic wave.



DEEP AND SHALLOW WAVES

Deep and Shallow-Water Wave Regions

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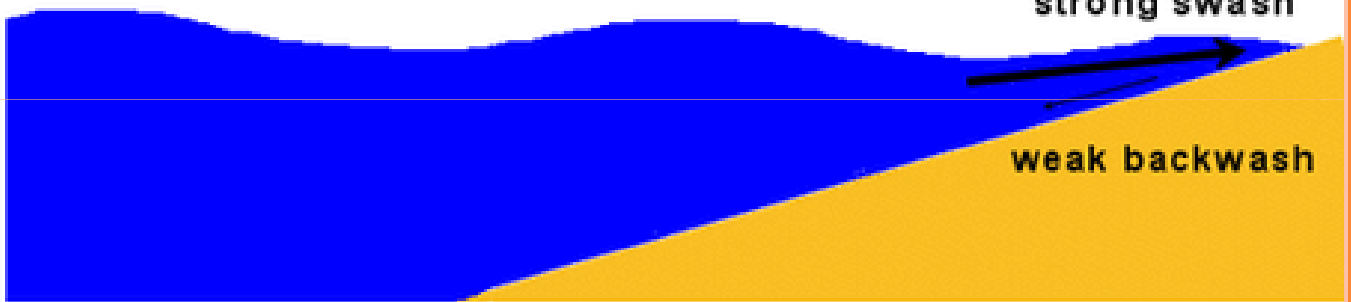
CONSTRUCTIVE & DESTRUCTIVE WAVES

Constructive Waves

low wave in proportion to length

strong swash

weak backwash



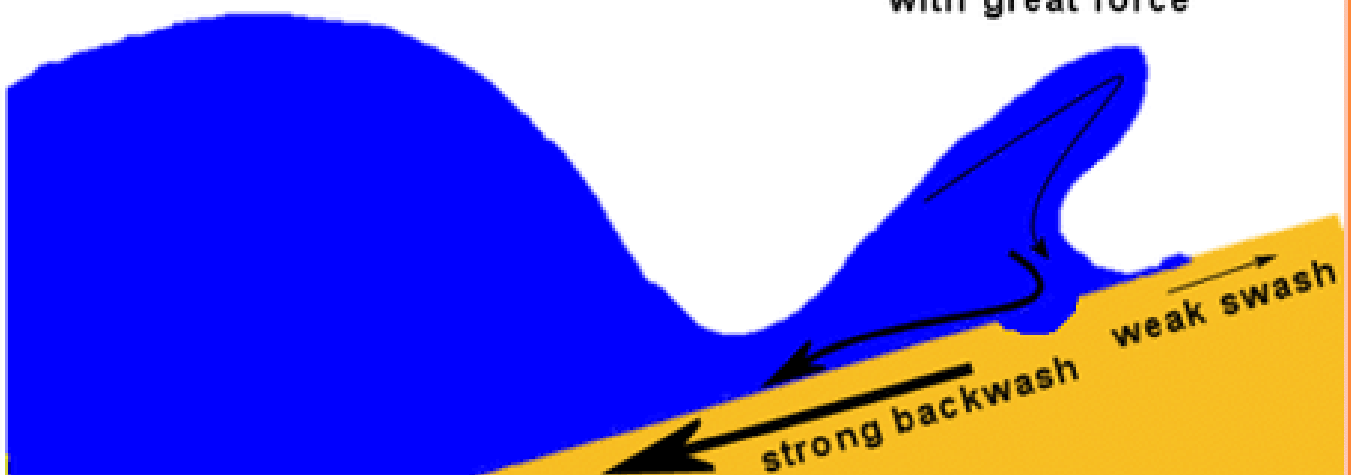
Destructive Waves

high wave in proportion to length

A tall breaker:
It breaks downwards
with great force

weak swash

strong backwash



TSUNAMI WAVES



CURRENTS

- The general movement of a mass of oceanic water in a definite direction is called currents which are more or less similar to water streams flowing on the land surface of the earth.
- They are divided on the basis of temperature as warm currents and cold currents.



ORIGIN OF CURRENT

- Rotation of the Earth – Equatorial and counter equatorial currents.
- Temperature difference
- Salinity difference
- Density of Water (function of temp, salinity and pressure).
- Air pressure and Winds
- Evaporation and Rainfall
- Direction shape and configuration of Coastline
- Bottom relief and seasonal variation



CURRENTS OF THE ATLANTIC

- North Equatorial Current (warm)
- South Equatorial Current (warm)
- Counter Equatorial current (warm)
- Gulf stream (warm)
- Florida Current (Warm)
- North Atlantic Current (warm)
- Canary Current (cold)
- Labrador current (cold)
- Brazil Current (warm)
- Falkland Current (cold)
- South Atlantic Drift (Cold)
- Benguela Current (cold)



Currents of the Atlantic



CURRENT OF THE PACIFIC OCEAN

- North Equatorial Current (Warm)
- South Equatorial Current (Warm)
- Counter Equatorial Current (Warm)
- Kuroshio System (warm)
- North Pacific Drift (extension of Kuroshio)
- Tsushima Current (branch of Kuroshio)
- Counter Kuroshio current
- Oyashio current (cold)
- California Current (cold)
- Peru Current (cold)
- West Wind Drift (cold)
- El Nino or Counter Current (warm)
- East Australian current warm)



Currents of the Pacific Ocean

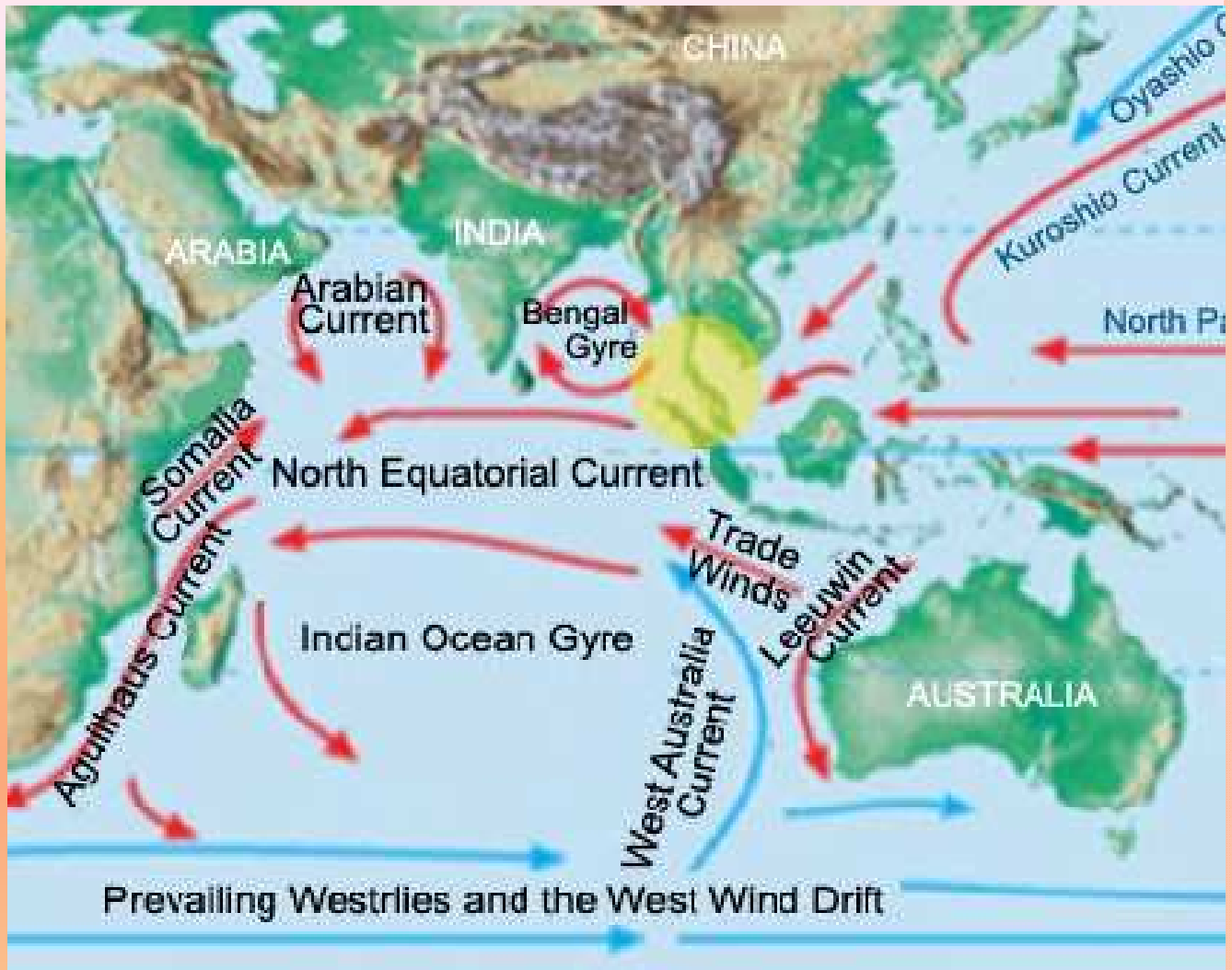


CURRENT OF THE INDIAN OCEAN

- North east monsoon climate (warm)
- Indian counter current (warm)
- South west monsoon (warm)
- Indian equatorial current (warm)
- Mozambique current (warm)
- West wind drift (cold)



Currents of the Indian Ocean



Summary of the Currents

