

Pacific Ocean Currents

A. Current in the Central Pacific

a. North Equatorial Current

- ❖ Moves from Ravilla Gigeda Island (Maxico) to the Philippines Island.
- ❖ Distance Covers 7500 Sea miles
- ❖ Derives water from California current and NE Trade Wind.
- ❖ Mixing of branches as the current flow West-ward & water Volume increases.
- ❖ One branch inclined to north at Farmusa (Taiwan) and mixed
- ❖ Southern branch tilt eastward and forms **counter** currents
- ❖ Northern branch of this current **move continuously**.
- ❖ 5° N (winter) to 10° N (Summer) Change annually
- ❖ **Velocity** of the current ranges between 12 and 18 sea miles per day, with maximum velocity of 20cm/sec.
- ❖ **Spiral movement**: northern boundary descending (near northern boundary), southern boundary ascending

b. South Equatorial Current

- ❖ **Trade** wind effect:
- ❖ **Stronger** than northern eq. current,
- ❖ **Southern branches mixing** in southern face and volume increase
- ❖ **Bifurcation** at the coast of New Guinea: N. Branch flows with counter current, S. Branch flows as northern current of Australia.
- ❖ **Velocity** -20 N. Mile per day. Max.100 N. Mile (184 km)per day.

c. Equatorial Counter Current: (Recognized during "Carnegie Expedition"):-

- ❖ Water collection in western part of pacific equator.
- ❖ Counter balancing the differencing between slope gradient.
- ❖ Mindanao in West to Panama in East.
- ❖ Origin: Pilling up (Store) light surface water against the west boundary under the stress of trade winds.
- ❖ Counter balancing the differencing.
- ❖ Very shallow nature- being confined to the surface layer only.

B. North pacific Current

a. Kuroshio System (Similar to Gulfstream)

- ❖ Extension: Farmusa (Taiwan) to Barring straight

i. Kuroshio Current:

- ❖ N.Eq.Curr. tilt north flow **Farmusa** to **Ryukyu**
- ❖ Temp: 8°C and Salinity 35

ii. Kuroshio extension:

- ❖ Tilt to eastward at 35°N
- ❖ Bifurcation : East and North-east
- ❖ After 35°N both flows toward east.

iii. North Pacific Drift:

- ❖ Impact of westerlies.....reaches eastern coast
- ❖ At 150°E its turn to south
- ❖ **Bifurcation**: Northern branch known as **Aleutian current** and southern current known as **California current**.
- ❖ **Aleutian current's bifurcation: 1. Bering current and 2. Alaska current**

b. Tsushima Current:

- ❖ At 30°N one branch of Kuroshio enters to Japan sea as Tsushima current
- ❖ Major Climatic effect due to high temperature

c. Counter Kuroshio

- ❖ Between Hawaii island and American coast
- ❖ 155°E to 160°E Water whirl
- ❖ Opposite water flow in reference to Kuroshio main current
- ❖ 20cm/sec

d. Oyashio Current (Kuril):

- ❖ Same as Labrador
- ❖ Water avail from Okhotsk and Bering sea
- ❖ Meet to Kuroshio at $35^{\circ}-41^{\circ}\text{N}$

e. California Current:

- ❖ Cold
- ❖ Same as canary current
- ❖ To flow to recover the water of north equatorial current gap originated by coastal trade wind blowing
- ❖

C. South Pacific Current:

- I. East Australian Current
- II. Peru Current
- III. El Nina
- IV. La Nina