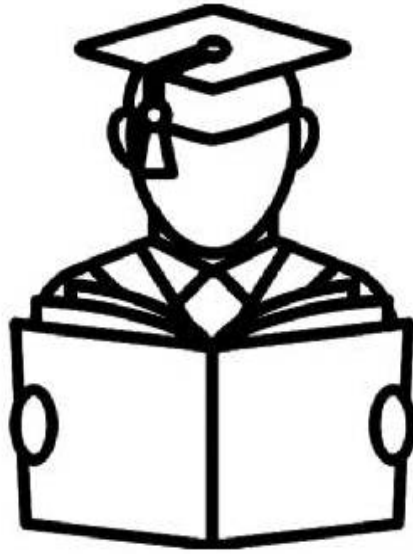


# चौधरी PHOTOSTAT

*"I don't love studying. I hate studying. I like learning. Learning is beautiful."*



*"An investment in knowledge pays the best interest."*

Hi, My Name is

**EVS**

**UGC NET**

SUNDAY

01

JANUARY

Adiabatic - No outside heat  
is involved in warming  
or cooling of the air parcel

Week 1st - 1st Day

DECEMBER

M T W T F S S  
1 2 3 4  
5 6 7 8 9 10 11  
12 13 14 15 16 17 18  
19 20 21 22 23 24 25  
26 27 28 29 30 31

JANUARY

M T W T F S S  
30 31  
1  
2 3 4 5 6 7 8  
9 10 11 12 13 14 15  
16 17 18 19 20 21 22  
23 24 25 26 27 28 29

## AIR

- Atmospheric stability
- Global warming and GHE
- Air pollution
- Air pollution modelling

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## ATMOSPHERIC STABILITY

\* **Lapse Rate** - Change in temp. w.r.t. distance  
(altitude)

\* **Latent Heat** - Heat required to change form  
(solid  $\rightarrow$  liquid  $\rightarrow$  gas)

\* **Adiabatic Processes** but it doesn't inc. the  
temp<sup>r</sup>.

$$\Delta Q = 0$$

Latent heat of water is highest, exist in  
three forms, solid form is less dense  
than liquid forms.

Important

Adiabatic  $\Delta Q = 0$   
Isothermal  $\Delta T = 0$   
Isobaric  $\Delta P = 0$   
Isochoric  $\Delta V = 0$

\* **System**  $\rightarrow$  (1) Open, exchange of heat and  
material

JANUARY

M T W T F S S  
 30 31  
 2 3 4 5 6 7 8  
 9 10 11 12 13 14 15  
 16 17 18 19 20 21 22  
 23 24 25 26 27 28 29

FEBRUARY

M T W T F S S  
 1 2 3 4 5  
 6 7 8 9 10 11 12  
 13 14 15 16 17 18 19  
 20 21 22 23 24 25 26  
 27 28

MONDAY

02

JANUARY

Week 2nd - 2nd Day

Earth

(2.) Closed, exchange of heat and not material

(3.) Isolated No exchange of heat and ~~no~~ no  
 Therm stat Material exchange of material

- Decrease in pressure as the parcel around  
 9 ascends in altitude.

10 Volume increase, work is done as volume  
 changes.

11 Work needs energy that will be taken from  
 12 temp.

1 The changes in temperature is k/a lapse rate.

2

altitude

 $P' < P$  $V' > V$  $T' < T$  (lapse rate)

Important

Sea level

 $P' < P$ 

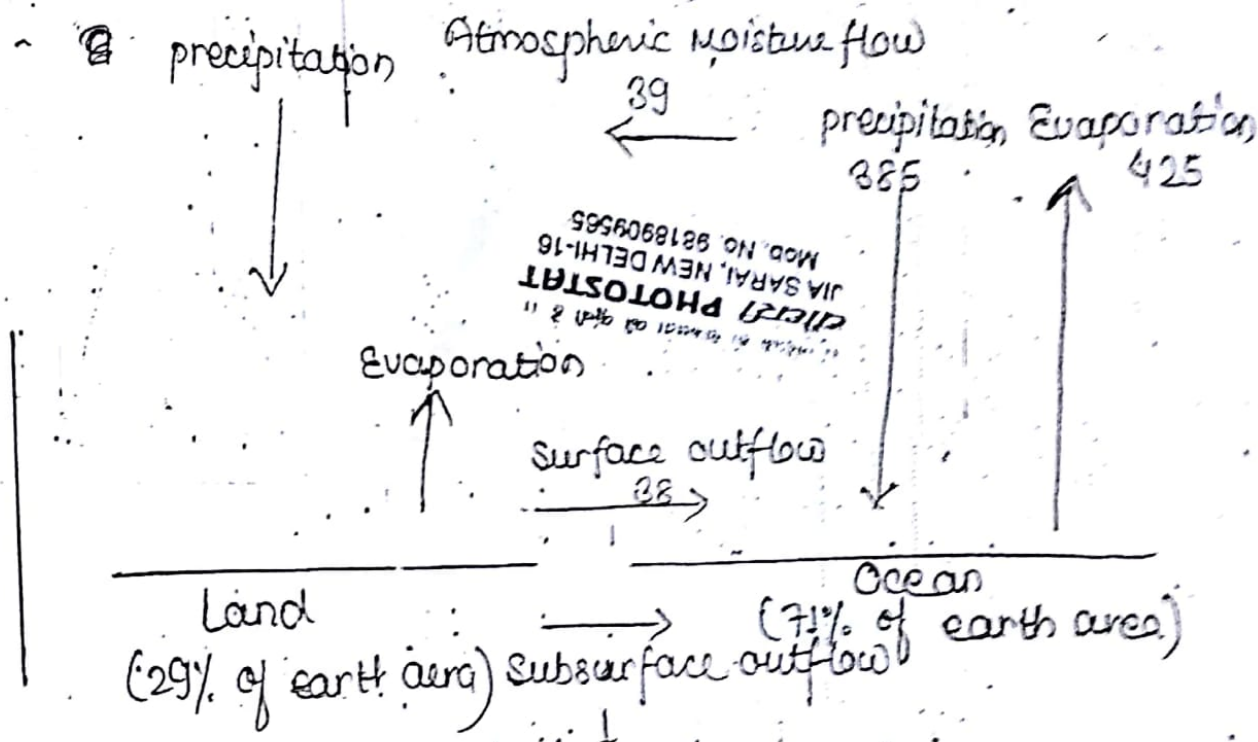
Isolated

2017



# Water Balance

- A water balance can be established for any area of earth's surface by calculating the total precipitation input and the total of various outputs.



## Global water Balance

\* **Green Water** — Water that is stored in the soil and is taken up by plants and lost by evaporation.

\* **Blue water** — Water that is found in rivers and lakes as well as ground-water that is used for agriculture,

industrial and domestic purposes.

(2)

Possible routes that raindrops may take on their way to and into the soil surface -

- Precipitation that reaches earth surface follows variety of pathways.

• The process of precipitation striking vegetation or other groundcover is called interception.

• Intercepted precipitation may be redistributed as throughfall and stemflow. Precipitation that falls directly to the ground, is coupled with drips onto the ground from vegetation is k/a throughfall.

• Intercepted water that drains across plant leaves and down to the plant stem is termed as stemflow.

• Water reaches the subsurface through infiltration, or penetration of the soil surface. It then permeates soils or rock through vertical movement called percolation.

### Ground Water Resources

- Ground water is the part of hydrologic cycle that lies beneath the ground.

- Ground water is the largest potential source of freshwater in hydrologic cycle + larger than



## Water

Imp.

Temp<sup>r</sup> & Solubility of any gas

(Le-Chatelier's Principle)

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Imp.

Solubility of gas into water depends upon temp<sup>r</sup> & pressure

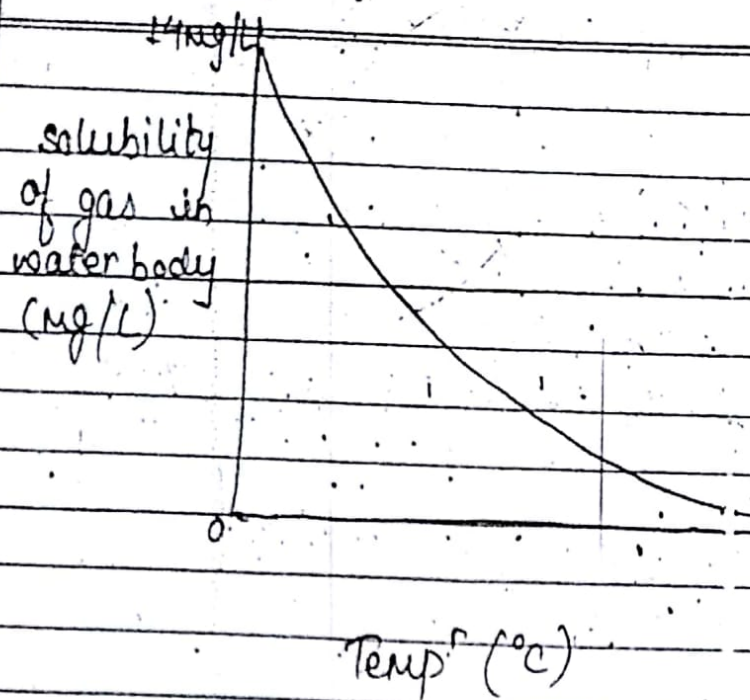
Solubility of any gas & Pressure (Henry's Law)

DO — Dissolved oxygen is the amount of  $O_2$  dissolved (mg) per liter of water

- If DO is less than  $8 \text{ mg/l}$ , water is said to be contaminated & If DO is less than  $4 \text{ mg/l}$ , it is said to be polluted

$< 8 \text{ mg/l}$  — contaminated (can be used by purification)

$< 4 \text{ mg/l}$  — Polluted (can't be used)



Sup  
#

Normal DO range of pure water is  $15\text{mg/l} - 8\text{mg/l}$

- The above graph tells us that solubility of a gas (here  $O_2$ ) decreases as we increase the temp°, hence hot water discharge from industries decreases the DO content of water stream.

- This is one of the reasons why aquatic flora and fauna do not survive in the case of thermal water pollution.

- Factors affecting DO -

① [Reaeration (Turbulence) ( $T_r$ ) & DO]

② Photosynthesis in water & DO stream/body



## Species concept -

- taxonomy and evolution. Species is basic unit of
- There are diff. concept of species like morphological, genetic and biological.
- In ecology and environment biological sp. concept given by Mayr is used.
- A/c to Mayr, when individuals can interbreed or reproduce and can form fertile offspring, belongs to same species.

Let C is a herbivore.  
then comp<sup>n</sup> is for

- ① Shelter
  - ② Food
  - ③ Mate
- Interspecific

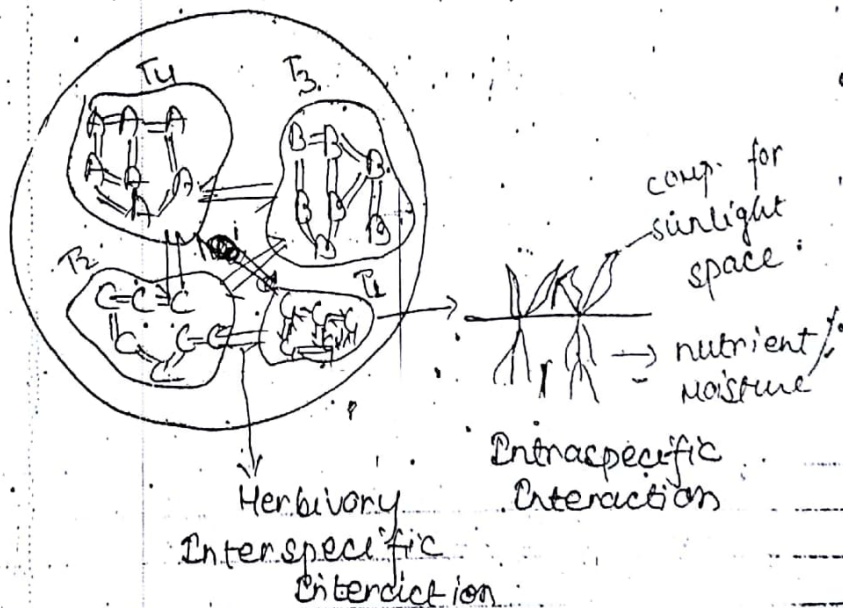


Fig - A



When rays fall vertically on equator due to rotation  
 Proiect - Shape of earth is flattening over pole and bulging at equator due to rotation

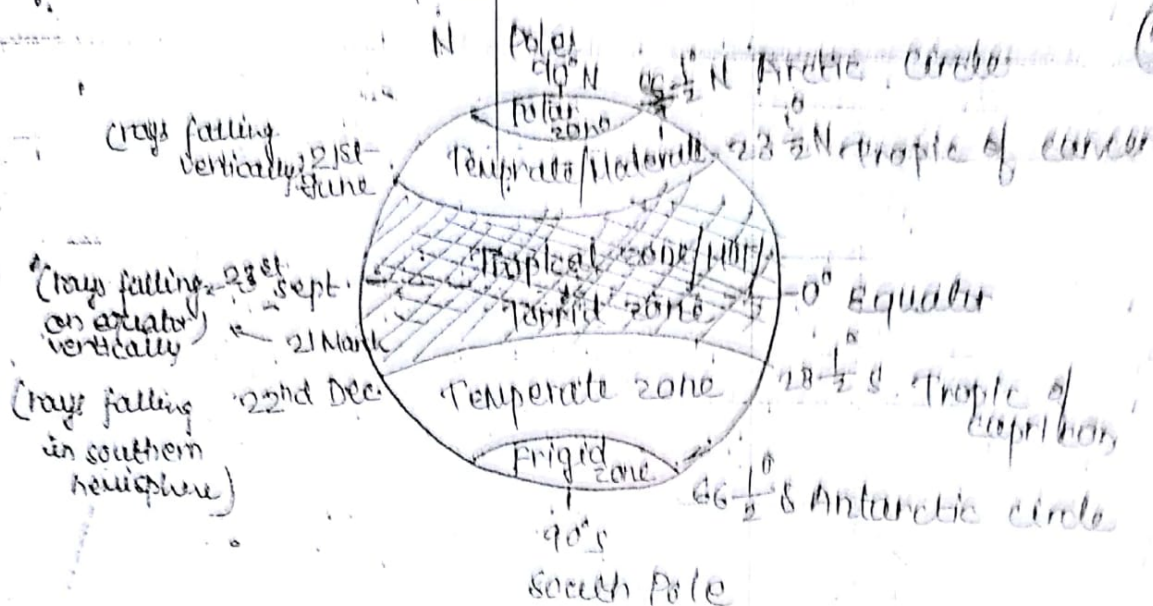


Fig - B.

**Population** — It is sum of all individuals that belongs to a given species in an area.

**Community / Biocenosis** — It is sum of all pop. of all plants (flora), animal (fauna) and microorganisms.   
 i.e. diff. populations of all plants (flora), animal and microorganisms.

This community forms biotic component of the given locality.

**Factor** — factor is any force, substance or cond<sup>n</sup>. that affects individuals in any way. It can be biotic and abiotic.   
 For eg - light, temp, competition, herbivory