



COMPILED AND CIRCULATED BY DR. POULAMI ADHIKARY MUKHERJEE, ASSISTANT
PROFESSOR, DEPARTMENT OF ZOOLOGY, NARAJOLE RAJ COLLEGE

ECOSYSTEM FACTORS

BY

DR. POULAMI ADHIKARY MUKHERJEE
ASSISTANT PROFESSOR
DEPARTMENT OF ZOOLOGY
NARAJOLE RAJ COLLEGE

ZOOLOGY: SEM- I, PAPER- C2T: ECOLOGY, UNIT 1: INTRODUCTION TO ECOLOGY



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Factors of Ecosystem:

An **ecological factor**, **environmental factor** or **eco factor** is any factor, abiotic or biotic, that influences living organisms.

Abiotic factors include ambient temperature, amount of sunlight, and pH of the water soil in which an organism lives. Biotic factors would include the availability of food organisms and the presence of biological specificity, competitors, predators, and parasites.



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Abiotic factors:

Light:

- + The sun is the main source of energy to all life on earth.
- + Green plants and photosynthetic bacteria need light to manufacture their food.
- + Animals depend on plants for food.



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- + Light affects living things in terms of intensity, quality and duration.
- + Light intensity and quality affects photosynthesis, flowering and germination of plants while in animals affects migration, hibernation and reproduction.



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+ A photographic light meter is used to measure light intensity while the seechi disc measures light penetration in water.

Temperature:

+ Biochemical processes of most organisms function effectively within a narrow range of temperature.



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- + Temperature varies due to seasons, altitude, latitude, and diurnally especially in hot deserts.
- + This therefore affects the distribution of organisms in a habitat.
- + Temperature variations influence the distribution of organisms more in terrestrial habitats than aquatic habitats.



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- + Living organisms must develop necessary physiological and behavioral adaptations to cope with extremes of temperatures.

Atmospheric Pressure:

- + The atmosphere has a definite weight and so it exerts pressure on the earth.



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- ✚ On the surface of the earth, atmospheric pressure varies with altitude.

- ✚ Variations in atmospheric pressure affects the amount of Oxygen available for respiration and of carbon dioxide for photosynthesis.

- ✚ These two gases affect the distribution of organisms.



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Humidity:

- ✚ It refers to the amount of water vapour in the atmosphere.
- ✚ When humidity is high there is much water vapour and vice versa.
- ✚ Humidity affects the rate at which water evaporates from the surface of organisms such as in transpiration or sweating.



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- + This in turn affects their distribution on earth.
- + Paper Hydrometer is used to measure or a wet and dry bulb hydrometer


Wind:


- + Wind is moving air.
- + It increases the rate of water loss from the organisms, therefore affecting their distribution.



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-  Wind is also important in formation of rain.

-  In deserts winds form sand dunes which can be habitats for other organisms.

-  Wind causes wave formation in lakes and ocean, which enhance aeration of water in this water bodies.



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- ✚ Trees in areas experiencing a strong winds may have stunted growth and distorted growth.

- ✚ Wind also disperses spores and seeds hence influence disposal and migration of flying animals.

- ✚ Wind wafts scent hence determines the positioning of hunting animals with respect to their prey in a habitat.



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- + A wind vane or windsock is used to determine the direction of prevailing wind.
- + Anemometer is used to measure the speed of wind.

Salinity:

- + It refers to the salt concentration of water, causing a division of the aquatic environment into marine, estuarine and fresh water.



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- ✚ Saline conditions immediately outside the body of organism pose the problem of water loss from the body to the environment.
- ✚ Only animals with suitable osmoregulation adaptations can occupy such habitats.
- ✚ Salinity can be determined by calculating percentage of salts on water or by the acid-base titration method.



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pH (Hydrogen ion Concentration):

- ✚ pH is the measure of how acidic or alkaline water is in aquatic animals or soil solution.
- ✚ It influences the distribution of plants and animals in soil and fresh water ponds.
- ✚ Some plants drive well in acidic conditions while others in alkaline conditions.



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- + The pH of a soil can be altered by leaching fertilizers' applied or soil exhaustion.
- + pH is expressed in terms of pH scale by use of BDH universal indicator solution or paper and pH meter.

Biosphere: The biosphere (from Greek βίος bíos "life" and σφαῖρα sphaira "sphere"), also known as the ecosphere (from Greek οἶκος oîkos "environment" and σφαῖρα), is the



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worldwide sum of all ecosystems. It can also be termed the zone of life on Earth. A relatively thin life-supporting stratum of Earth's surface, extending from a few kilometres into the atmosphere to the deep-sea vents of the ocean is called the **Biosphere**. The biosphere is a global ecosystem composed of living organisms (biota) and the abiotic (nonliving) factors from which they derive energy and nutrients. Earth's environment includes the atmosphere, the hydrosphere, the lithosphere, and the biosphere. The biosphere is a narrow



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zone of the earth where land, water, air interact with each other to support life. It is in this zone that life exists. There are several species of organisms that vary in size from microbes and bacteria to large mammals. The biosphere is defined as the area of the planet where organisms live, including the ground and the air. An example of the biosphere is where life occurs on, above and below the surface of Earth. The zone of planet earth where life naturally occurs, extending from the deep crust to the lower atmosphere.

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Functions of Biosphere: 1) Conservation of biodiversity and 2)
Sustainable development.

- ✚ The biosphere is a global ecosystem composed of living organisms (biota) and the abiotic (nonliving) factors from which they derive energy and nutrients.



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- ✚ The biosphere is the biological component (supporting life) of the earth, which includes the lithosphere, hydrosphere and atmosphere.
- ✚ The biosphere includes all living organisms on earth, together with the dead organic matter produced by them.
- ✚ The biosphere is absent at extremes of the North and South poles, the highest mountains and the deepest oceans since

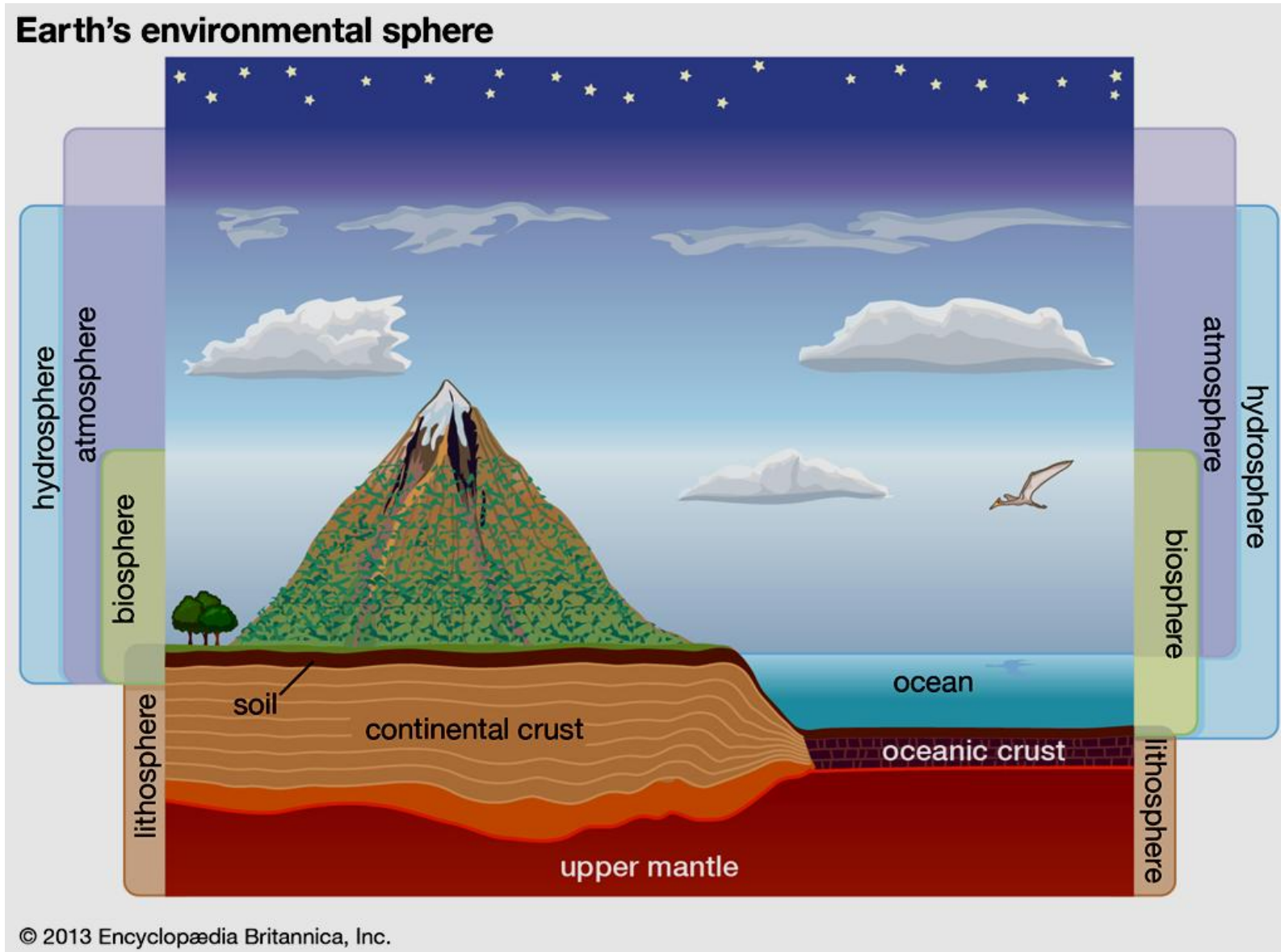


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existing hostile conditions there do not support life (life is the characteristic feature of the biosphere).

- ✚ Occasionally spores of fungi and bacteria do occur at a great height beyond 8,000 metres, but they are metabolically inactive, and hence represent only dormant life.

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THANK YOU

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