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A Review paper on Dendrochronology

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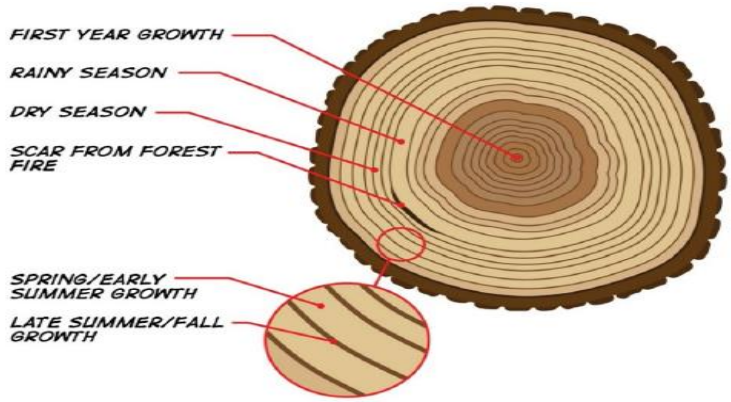
Abstract- This Reasearch paper deals with the term dendrochronology as a whole. The various previous methods of analysis of dating are also emphasized in this paper. This paper also gives keen approach towards various new approaches and innovations occurring in the field of dendrochrolonology as well as its importance to the research scholars and ecologists.

Keywords: Dendrochronology; tree-rings; palaeoclimate reconstruction; forest history; Tree biology; Tree rings; Compartmentalization; Organismal biology

I. METHODOLOGY OF DENDROCHRONOLOGY

This technique was invented by A.E Douglass, the founder of the Laboratoryof Tree-Ring Research at the University of Arizona. It is a concepectual and observational technique which is a better tool to realize the significance of the atmosphere , hydrosphere as well as troposphere. The web of the earth's atmosphere is vast and this technique is applied on the tree rings to as a record to keep a keen eye on the life of the organisms of planet earth.the main focus of this paper is to derive the attention of the readers towards the fact that the dendrochronology is dealing with the rings of the tree which are formed under certain climatic stressed conditions and exposed to times of abundance. The tree-ring series is having its own history rooted in time and space. Basically the growth the tree is relied on the growth of the rings and it is interstiong to know that the growth of the rings varies and differ with various climatic conditions as well as disturbances in the discsease , insects and pests. Visible rings results from the change in growth speed through the seasons of the years, thus one years marks the passage of one year in the life of the tree.



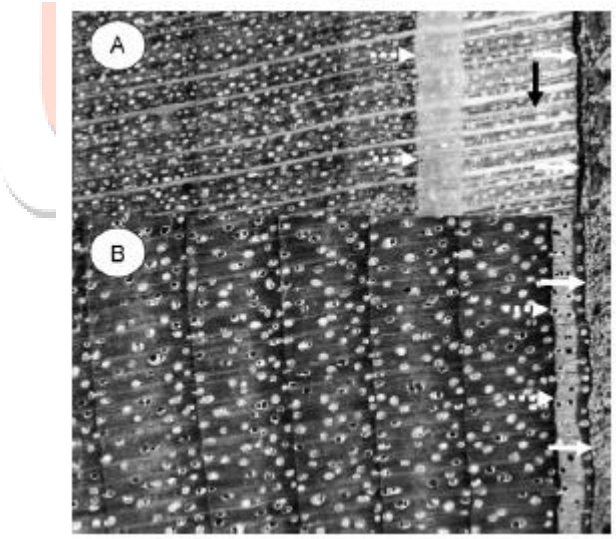
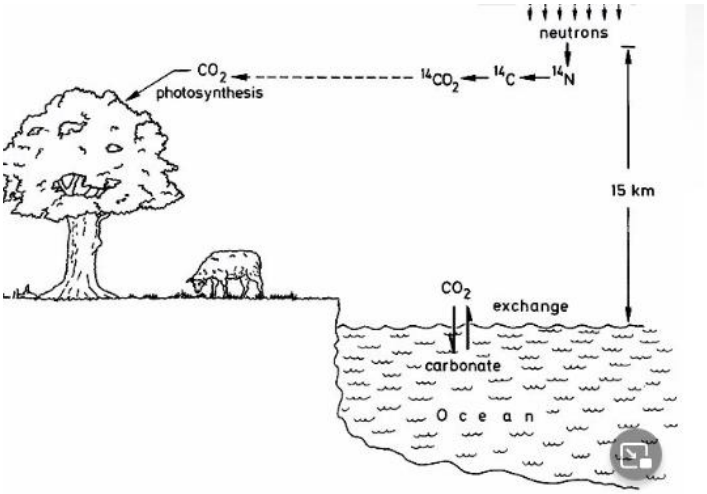


Fig : 1

In fig no. 1 betulla alleghamiensis suffering from storm injury of winter season .(A) shows rapid recovery while (B) shows slow recovery.

II. RADIOCARBON DATING



It is a radiometric dating method that uses the naturally occurring isotope carbon-14(14C) to determine the age of carbonaceous materials up to about 60,000 years. The techniques of radiocarbon dating was discovered by Willard Libby and his colleagues in 1949 during his tenures as a professor at the University of Chicago.Probably the best known and most known and most frequently used is radiocarbon or 14C dating. Radiocarbon dating can only be applied to organisms that were once alive and is a means of determining how long ago they died. It is possible because of the existence in nature of a tiny amount of 14 C, or, radiocarbon, a radioactive isotope of carbon. By measuring how much 14C remains in ancients organic materials, it is possible to calculate how long ago they died. To do this requires extensive chemical processing carried out in laboratories. To convert the carbon in the ancient objects to a aform in which the very low levl radioactive can be measured. Most radiocarbon dating is carried out on bone or charcoal , as these are the organics that most frequently survive from the past,but many other materials can also be dated using this technique.

The 14C combine with oxygen to produce carbon dioxide(CO2) and is taken by plants during photosynthesisi. From plants this 14 C is absorbed into the tissues of every living tghing via the food chain. Since. It is a radioactive , it is unstable and decay away at a known rate. While any plant or animal is alivethe 14 C lost by radioactive decay is constantly replaced through the food chain , but when that organism dies, no more 14C is taken in, and the amount present in the tissues goes down.

III. APPLICATIONS OF DENDROCHRONOLOGY

A. ECOLOGY

It is defined as a interrelation between living beings and the the environment with which they all are surrounded.

Fig :2

B. GEOLOGY

It is defined as the process by which the planet earth is made, the structure of its constituents and all the the processes acting upone them.

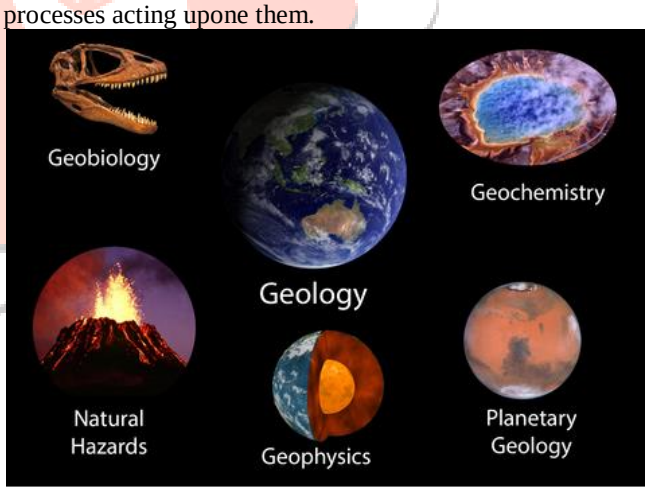


Fig :3

C. ANTHROPOLOGY

It is the past and present study of humanity.

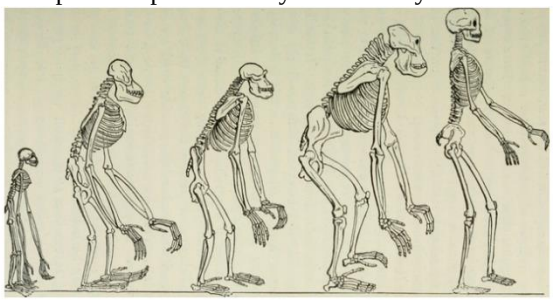


Fig :4

IV. IMPORTANCE OF DENDROCHRONOLOGY

A. A tree ring starts from center with the oldest ring in the middle and newest one at the edge.

B. Tree rings patterens never repeats

C. Marking the narrow rings on the graph will signify drought known as Skeleton Plotting**.**

Fig :5

V. DISCUSSION

It holds a great potential to explicate cultural heritage studies and sustain cultural heritage practice with evidence, but to get the best out of the method, both potentials and limitation must be clarified.firstly, awareness of the common misinterpretation of dendrochronological results, survey reports could be developed with more extensive general outline metgod and guidance in how to interpret the resilts. It is , for instance, impotatnt that the end user be fully aware that a adating results can indicate the time of the tree and not when a building or an artifact were made, or if the material were resused.

Secondly, the potential contribution from dendrochronology is often underuded, and, here, improved communication could lead to more effective uses of the results. Not all end users know that it is possible to also get historical information on, for instance, the age of of the tree, the structure of a forest stand, or local climate conditions. The dendrochronologists could therefore enlighten endusers regarding what information can be possibly extracted. A continuing dialogue between the dendrochronologists and the end users during the interpretation of the results is therefore highly recommeneded.

I. CONCLUSION

The challenge now is to utilize these techniques to better understand pastenvironments and the history and present ecology of forests.`

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