Fundamentals of remote sensing

Basic concept of Remote Sensing:----

"Remote sensing is the science (and to some extent, art) of acquiring information about the Earth's surface without actually being in contact with it. This is done by sensing and recording reflected or emitted energy and processing, analyzing, and applying that information."

In much of remote sensing,**the process involves an interaction between incident** radiation and the targets of interest. This is exemplified by the use of imaging systems where the following seven steps /elements are involved.

1. **Energy Source or Illumination (A)** - first of all we know that the Sun is the main source of energy . First requirement for remote sensing is to have an energy source which illuminates or provides electromagnetic energy to the target of interest.

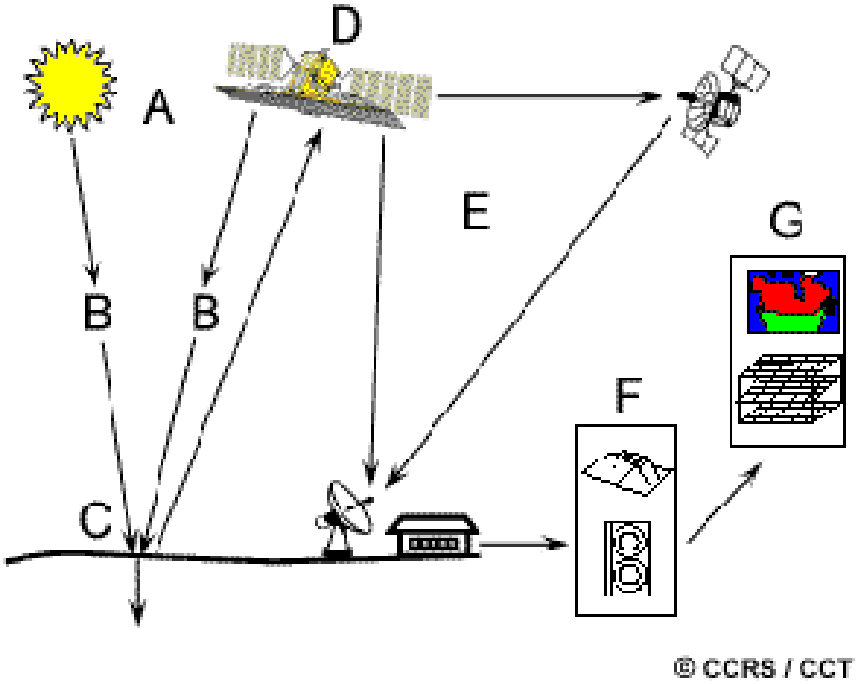

Fig: basic steps of remote sensing

2.Radiation and the Atmosphere (B) - asthe energy travels from its source to the target,it will come in contact with and interact with the atmosphere it passes through. This interaction may take place a second time as the energy travels from the target to the sensor.

3.Interaction with theTarget(C)-once the energy makes its way to the target through the atmosphere,it interacts with the target and the radiation.

4.Recording of Energy by the Sensor (D) - after the energy has been scattered by, or pemitted from the target,we require a spensor(remote-not in contact with the target)to collect and record the p

electromagnetic radiation.

5.Transmission,Reception,andProcessing(E)-the energy recorded by the sensor has to be transmitted, often in electronic form, to a receiving and processing station where the data are processed into an image (hardcopy and/ordigital).

6.Interpretation and Analysis(F)-the processed
image is interpreted,visually and/or digitally orbelectronically, to extract information about the target was illuminated.

7.Application (G) - the final element of the remote sensing process is achieved when we apply the information we have been able to extract from the imagery about the target in order to better understanding it, reveal some new in formation ,or assist in solving a particular problem.

These seven steps and elements comprise the remote sensing process from beginning to end.