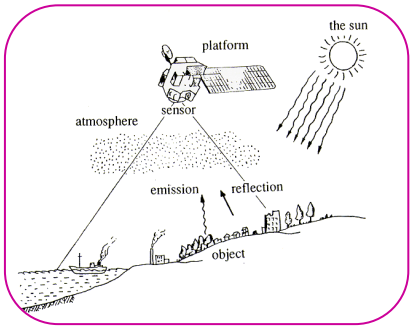
REVIEW OF RESEARCH
IMPACT FACTOR : 5.2331(UIF) UGC APPROVED JOURNAL NO. 48514 ISSN: 2249-894X
VOLUME - 7 | ISSUE - 8 | MAY - 2018

CONCEPT OF REMOTE SENSING



Dr. Satyabir Yadav
Head, Department of Geography,
Govt. College for Women, Pali (Rewari)

ABSTRACT:

Remote sensing is the art or science of telling something about an object without touching it. The term remote sensing in its broadest sense merely means 'Reconnaissance at a distance'. A device that detect the electromagnetic radiation reflected from an object is called a remote sensor. Cameras or scanners may be the examples of remote sensors.

KEYWORDS : *Remote sensing , electromagnetic , Baloon, aircraft.*

INTRODUCTION

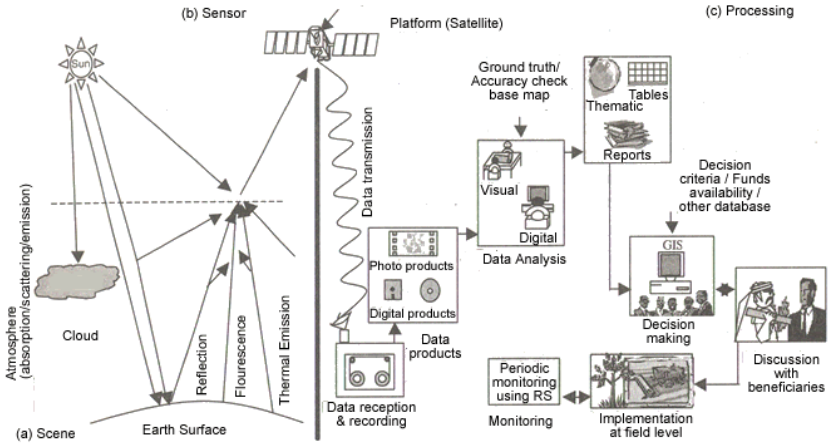
A vehicle to carry the sensor is called a platform. Baloon, aircraft or satellites are used as platforms. Aerial photographs and satellite images aare the original forms of remote sensing. Remote sensing was first used in the United States of America in 1960. The first earth observation satellite "Landsat-1" was launched in 1972, since then the remote sensing has become widely used.

REMOTE SENSING SYSTEN

To understand the typical Remote Sensing system it is easy to make the analysis of the different stages in remote sensing. They are.

1. Source of energy.
2. Transmission of energy with the surface of the earth and its interaction with the intervening atmosphere.
3. Interaction of energy with the earth's surface: reflecgtion/absorption or transmission.
4. Transmission of the reflectedor emitted energy to the remote sensorplaced on a suitable platform, through the intervening atmosphere.
5. Detection of the energy by the sensor, converting it into photographic image.
6. Data recording of the sensor output.
7. Pre-processing of the data and the data products.
8. Collection of ground truth and other collateral information.
9. Data analysis and interpretation.
10. Integration of interpreted images with other data towards deriving management strategies for various themes, or other applications.

Following figure reveals a simplified system of whole process of remote sensing from the source to the end user of the technology.



A remote sensing system consists of a sensor to collect radiation and platform-an aircraft, a satellite or even a ground based sensor-suppoting stand on which a sensor can be mounted. The information received by the sensor is manipulated back at the data recording centre situated on the earth. The data received are re-formated and processed on the ground called as data products. These data products are called as digital products and photo products. Further these data products are analysed and after data analysis the thematic tables and reports are prepared. These reports are further sent to the decision makers who discuss with beneficiaries for implementation at field level and periodic monitoring is done using remote sensing to arrive at a management plan. There are various components of a remote sensing system such as remote sensor, platforms aircrafts etc. The instrument used to measure the electromagnetic radiation reflected by the target under study are called remote sensors. Sensors which sense natural radiations either emitted or reflected from the earth are called passive sensors. The sensors which carry electromagnetic radiation of a specific wavelength or band of wavelength to illuminate the earth's surface are called active sensors. Sensor systems need to be placed on suitable platforms and lifted to a pre-defined altitude. Platforms may be stationary or mobile. Tripod for field observation or aircraft, spacecraft are the best examples of stationary and mobile platforms.The spatial resolution becomes poorer as the platform beight increases, but the area coverage increases . Aircrafts are mainly useful for surveys of a local or limited regional interest. When earth is observed from a satellite platform from greater heights we get a large coverage of the earth and observe a large region. The capability to observe the earth is very useful to monitor dynamic phenomena such as cloud evolution, genetation cover, snow cover, forest fires etc. The period of revolution increases with the increase of distance of a satellite from the earth. At about 36000 km, the period of a satellite is exactly equal to that of the earth.s revolution and a satellite kept at the equatorial plane at that height called geostationary orbit. The satellite can have a constant view of a particular part of the earth.Date of the earth or any part of the earth surface is acquired in digital form with the help of electromagnetic radiation. Due to atmospheric effects, motion of the earth or scene and surface characteristics imaging characteristics etc acquired data has number of errors, therefore, data products are generated after correcting these errors.Data product is generated in photographic or digital form. Raw data is converted into image so that further analysis can be done.Visualinterpretation and digital image processing are two important techniques of data analysis. Visual interpretation has been the traditional method for extracting information from a photograph base on the characteristics such as tone, texture, shodow, shape, size association etc. Digital techniques facilitate quantitative analysis, make use of full spectral information and avoid individual bias.In digital classification, the computer analyses the spectral signature, so as to associate each pixel with a particular feature of imagery. The reflectance value measured by a sensor for the same feature will not be identical for all pixels. For example, in a rice field, all the pixels will not have identical reflectance values.

Advantages of RS.

1. RS provides areacovering data.
2. RS provides temporal data (Repeatability)
3. RS provides real time data.
4. RS provides multipurpose data.
5. RS data are generally in digital format except for aaerial photographs and therefore easy to process with computers.
6. RS data are cost effective
7. Cover over inaccessible area.
8. Properly interpreted RS dataare more reliable than ground measurements.

LIMITATIONS OF REMOTE SENSING

1.Specialised knowledge is required to analyse RS images because of unfamiliar scales, resolutions, overhead views and use of several regions of ghe electromagnetic spectrum
2.RS provides information only about surface features.
Initial cost is high.
3. Operational restrictions of sensors under adverse weather conditions..

NEED OF REMOTE SENSING

The population of the world is increasing and thus increasing consumerism place a heavy burden on the limited natural resources, due to the increasing demand for food, fodder, fuel, minerals etc. Industrial development alongwith comforts to human mankind also brought environmental pollution and degradation in ecosystem. Therefore the demands on our natural resources from the increasing population and aspiration for improving the quality of life, need management strategies to use our resources optimally. Therefore, Remote Sensing, can help in achieving economic and social development by providing timely and repetitive information to manage natural resources while minimizing adverse impact on the earth's resources, environment and climate.We may take the example to consider the option of increasing the land under cultivation which in our view is a possible way to sustainable development. We can get full information like present area under cultivation, land use pattern, arablewasteland, forest cover etc. which can be obtained through remote sensing at local and global level. The reliable and cost effective technologies to provide such informations all over the world is the need of the hours. We can extend this analogyfor other areas of resource management as well. In brief , relevant information is very necessary for resource management. The quality of decision- making would depend upon accurate and updated information. Improper decisions coult be more expensive and can also affect the environment by further degradation of environment and ecological quality.The RS techniques in assessment and monitoring can be possibly used in many disciplines. In forestry and Ecology, vegetation mapping , growing stock estimation, wild life habitat evaluation , forest management can be done by preparing forest type mapping and ecology and environment. RS techniques can be very much helpful to provide information about agriculture, hydrology, geo-sciences, human settlement, oceanography and decision makers can solve the problems for proper management and sustainable development. Remote sensing techniques are very much helpful to provide the informations about episodic events like cyclones, floods, landslides, volcanoes, forest fires etc. The decision makers can solve the problems of harms caused due to episodic events by prepairng the damange assessment maps and thus disasters can be managed . To realize and objective, one has a number of possible options, and a manager chooses the route, which optimally uses the available resources without degrading the eco-system. To arrive at sucha decision, the manager requires reliable information about various aspects related to the problem he is contemplating to solve.Remote sensing,by providing timely and repetitive information on the phenomenon happening on earth and its environment can help in achieving

worldwide economic and social development, by managing natural resources while minimizing adverse impact on the earth,s resources and environment.

REFERENCES:

1. Remote Sensing and Image Interpretation, Lillesand, T.M.Kiefer, R.W.John wiley and sons,
2. Physical principles of Remote Sensing, Rees W.G. Cambridge University press.
3. Introduction to environmental Remote Sensing, E.C. Barett and L.F. Curtis, John Willey and sons,
4. Fundamentals of Remote Sensing, George Joseph.
5. Manual of Remote Sensing-vol-I Ed. Colwe,, ASPRS
6. http/rst.gsfc.nasa.gov/intro/part2-1html.

Dr. Satyabir Yadav
Head, Department of Geography, Govt. College for Women, Pali (Rewari)