

## Microwave Remote Sensing Application for Study of Land

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The Microwave Frequencies are part of electromagnetic Spectrum. These frequencies play very significant role in Remote Sensing because of their Unique capabilities. These Unique capabilities are that One can collect data in All weathers, as well as in day and in night. One can get information at certain depth because they can penetrate Earth and give information about buried objects. At these frequencies one can get inputs with regard to soil moisture For collection of data at these frequencies there are Two Types of Sensors that are used are One passive microwave Sensor the Non Imaging and Imaging microwave Radio meters. One can use one type out of these Three types that are one the TOTAL POWER RADIOMETER , and Second DICKE RADIOMETER. and Third Noise INJECTION RADIOMETER. The self emitted Radiation of the Target is monitored. This depends upon the physical Temperature of the Target and emissivity ( ). The emissivity is function of Dielectric constant ( ) of the Target material. The emissivity is Function of the condition of material for example in case of soil will be Function of the Texture of soil and the amount of moisture present in the soil at certain Frequency.

Another type of sensor used in Microwave Remote Sensing is the Active Sensor. There are Non Imaging and Imaging Active Sensors. The Non imaging Active Sensors are Scatter meter and Altimeter. The Imaging Active Sensors are Radars. one has Real Aperture Radar and Synthetic Aperture Radar. In Active Sensors one monitors the Scattered energy that is obtained from the Target after the incident energy from Active Sensor. Strikes the Target and then gets scattered in space. The Scattered energy received by the Active Sensor is monitored along with other parameters in terms of scattering coefficient. The scattering coefficient ( ) is function of

dielectric constant ( ) of the material and will vary with dielectric constant ( ) and Will vary because of the presence of moisture in the soil. Thus one can use microwave Remote Sensing for study of LAND using either passive sensors or Active sensors. In certain cases one can use both passive Sensor and Active sensor depending upon the Application.

These Sensors can be used to study different features on Land. One can delineate water bodies and monitor the extent of water in different weather conditions.

One can use these sensors for study of extent of SNOW as well as depth of snow in mountains and in poles.

These sensors can be use for monitoring growth of vegetation. The study of Health of variety of crops including the moisture content in the roots of the plant can be done using microwave sensors.

These sensors can be used from different platforms. These could be ground based air borne as well as space borne.

Thus one can use Microwave Remote Sensing for study of different features of Land.