Abstract

The electromagnetic spectrum extends from Hertz to terahertz. In this large range of EM spectrum there are window defining the smaller ranges and one of the important windows which covers frequency range from 3GHz to 30GHz is known as Microwaves. These Microwaves have various applications in communication Industrial, Medical and Remote Sensing. The Microwaves have unique Properties that include day and night capability all weather capability, Soil Moisture determination and penetration through vegetation and Soil. Because of these unique properties Microwave Remote Sensing gives information about targets which otherwise
will not be available by optical and infrared remote Sensing. The Sensors used for Microwave Remote Sensing are Broadly Classified in two types they are (i) Passive Sensors and (ii) Active Sensors. These Sensors could be Non imaging and Imaging type. The Microwave radiometers are passive Sensors whereas Real Aperture and Synthetic Aperture Radars are imaging type Active Sensors and Altimeter, Scatterometer are non imaging type Active Sensors. These sensors at different frequencies can be used for various applications. Major areas of application are for Land, Ocean, and Atmospheric. In land the Microwave Sensors can be used for study of Crops, Forest cover, SNOW and ice, Soil Moisture and Soil types. For ocean application the active as well as passive sensor can be used for determination of salinity Sea Surface Temperature, Microwave Temperature Significant Wave Heights, and the detection of TSUNAMI and in Atmospheric applications the study of minor constituents could be studied. The Microwave remote Sensing can be used for Planetary Exploration, the planets like MARS and VENUS and Satellites like MOON and Titan have been explored using Microwaves and in future Microwaves will provide unique opportunity to detect presence of frozen water on MOON and presence of buried channels under sand dunes on MARS. Thus one can say that in present as well as in FUTURE Microwave part of EM spectrum will play major role in remote Sensing of Earth, Natural Satellite and Planets. In this paper details of Microwave application in Remote Sensing will be presented.

Reference

7.  “eesa” Earth Observation Applications, 19th Feb 2004

Index Terms

Computer Science

Communications
Key words

Remote Sensing
microwave sensor

Image radar