



# Remote Sensing

اعداد م.م هالة علي عبد

ماجستير علم فيزياء / تحسس نائي ومعالجة صورية

# Lecture one

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## **Basic Out line**

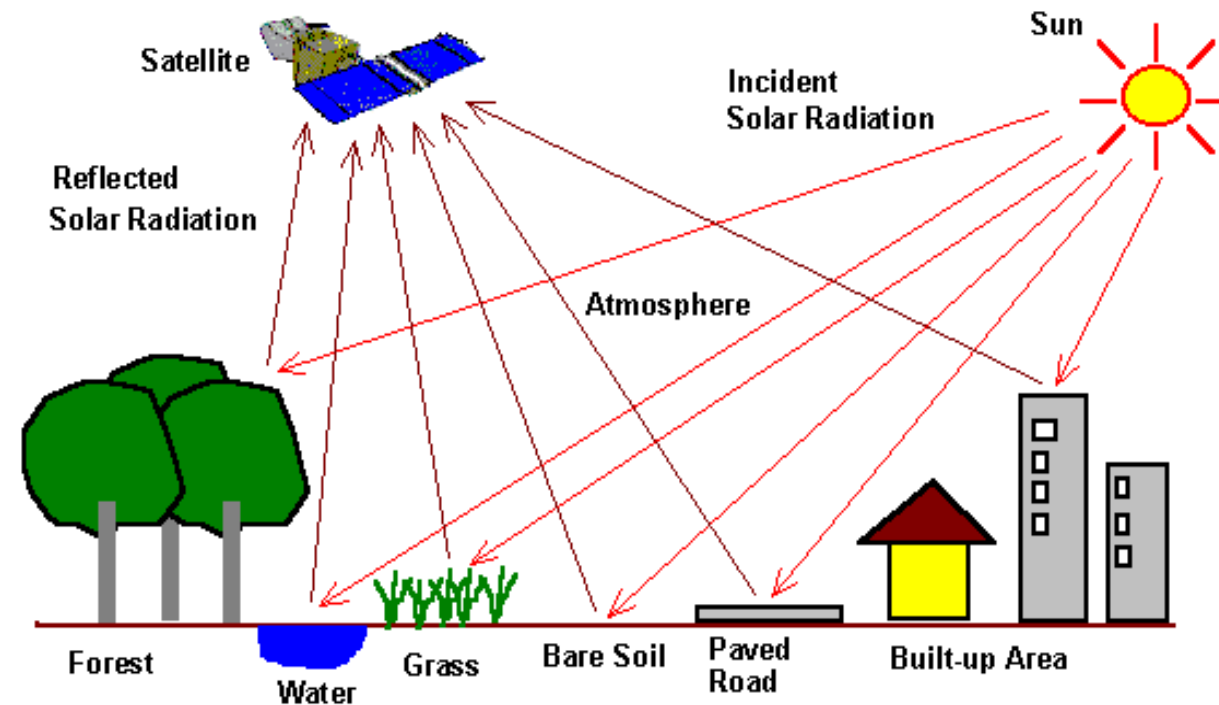
- **Definitions of Remote Sensing**
- **Remote Sensing Platforms**
- **Why do we use Remote Sensing**
- **Uses of Remote Sensing**
- **Process Remote Sensing**
- **Application of Remote Sensing**

## ➤ Definition of Remote Sensing

**Remote Sensing (RS):** is the art and science of obtaining information about an object or feature without physically coming in contact with that object or feature .

Remote Sensing can be measured:-

1. Variations in acoustic wave distribution
2. Variations in force distribution
3. Variations in electromagnetic energy distribution variation in electromagnetic energy can be measured using photographic or non-photographic sensors



## ➤ Remote Sensing Platforms

**Types of RS platforms :**

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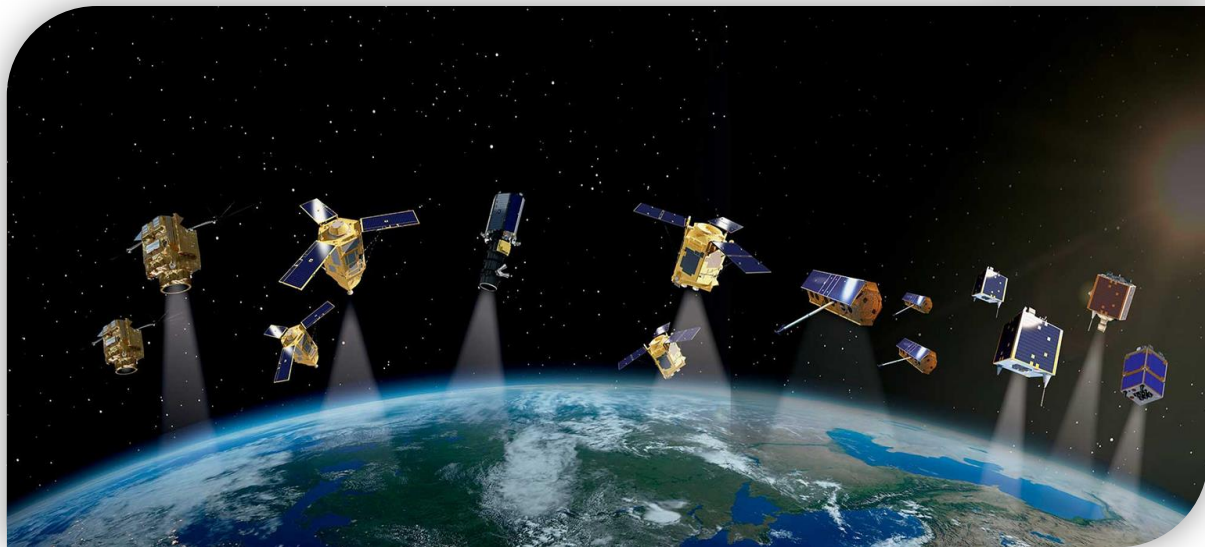
Aerial platforms (Aircraft)



A ground Based Sensors



**Space Shuttle**



**Satellite**

## ➤ Why do we use remote sensing?

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**We used remote sensing for many reason such as :**

1. Many monitoring issues global or regional
2. Drawbacks of in situ measurement...
3. Remote sensing can provide (not always) source of spatial and temporal information ( land surface , oceans ,atmosphere, ice)
4. Monitor and develop understanding or environment (measurement and modelling)

## ➤ Uses of Remote Sensing

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### 1- Land Use Mapping

Remote sensing data can be used to get the most up-to-date land use patterns for large areas at any given time, as well as track changes over time. It may be used to update road maps, assess asphalt conditions, and identify wetlands. Regional planners and administrators utilize this data to help them formulate policies for the region's overall growth.

### 2- Weather Forecasting

Remote sensing is widely employed for weather forecasting. It's also used to alert people of approaching cyclones.

## ➤ Uses of Remote Sensing

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### **3- Environmental Study**

It may be used to investigate deforestation, land degradation, air pollution, desertification, eutrophication of huge bodies of water, and oil spillage from oil tankers.

### **4- Study of Natural hazards**

Earthquakes, volcanoes, landslides, floods, and ice melting in polar locations may all be studied via remote sensing. Remote sensing may often be used to anticipate the advent of natural disasters.



## ➤ Uses of Remote Sensing

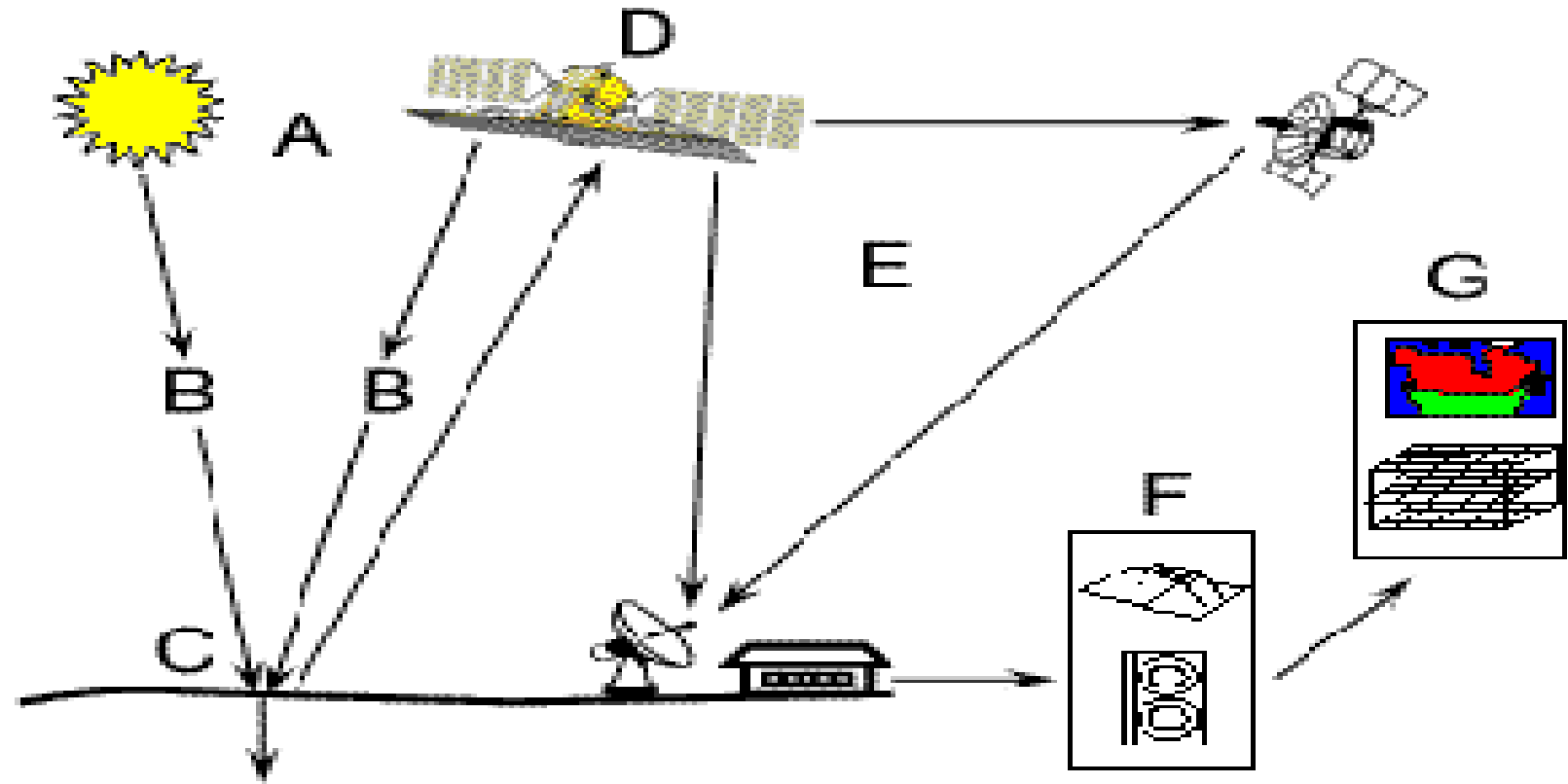
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### 5- Resource exploration

Remote sensing data is useful for updating existing geological maps, producing lineament and tectonic maps quickly, detecting mineral quarrying sites, and discovering fossil fuel resources.

## ➤ Process of Remote Sensing

In much of remote sensing the process involve an interaction between incident radiation and the targets of interest.

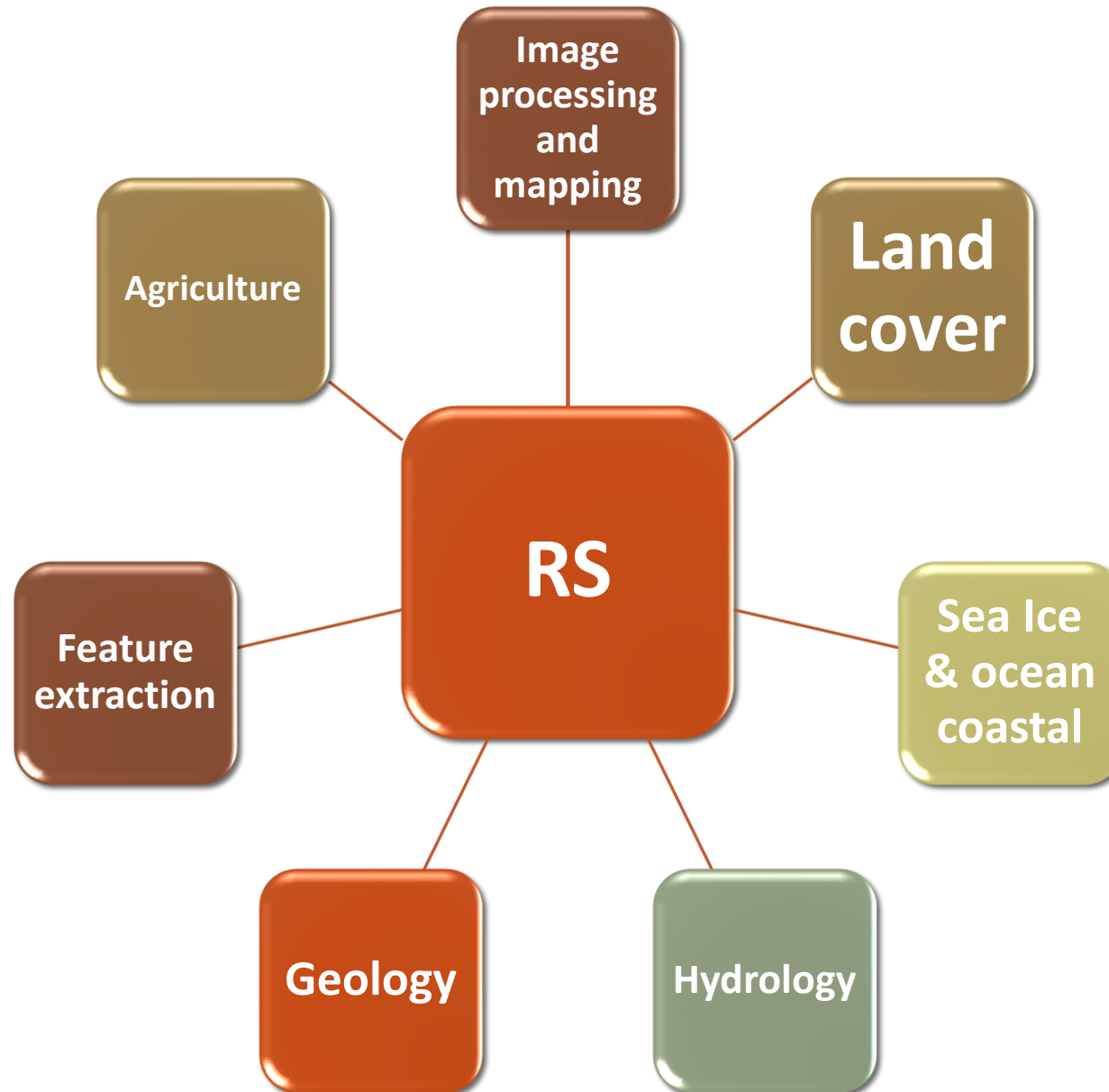


## These seven elements comprise the remote sensing process from beginning to end :

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1. Energy Source or Illumination -Emission of electromagnetic radiation
2. Radiation and the Atmosphere - Transmission of energy from source to the object
3. Interaction with the Target - Interaction of EMR with object and subsequent reflection and emission
4. Recording of energy by the Sensor-after the energy has been scattered by. Or emitted from the target
5. Transmission, Reception, and Processing- Recording of the energy at the sensor.
6. transmission of the recorded information to ground station Interpretation and analysis the processed image is interpreted, visually and/or digitally or electronically to extract information about the target which was illuminated.
7. Analysis of data and application

## ➤ Application of RS



## ➤ **Summary**

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- 1. Learn about Remote sensing and its processes**
- 2. Get to Know the platforms of Remote sensing.**
- 3. why use it and its applications.**

## ➤ **Home work**

**Prepper report about one of RS applications.**