

University of Anbar

College of Science – Applied Geology Department

Dr. Omar AL-Jarrah

Assis. Professor

2nd Stage

Remote Sensing

Lecture 4 : Types of Satellites



Types of Satellite Recording

The recording of satellite may happen by two ways :

1 – Passive : its record the natural fields (or its effects) when they exists with the sensors held by satellite . Some satellite record the earth features by the help of sun light when reflect of the features .but in night no record will happen because of no sun light .

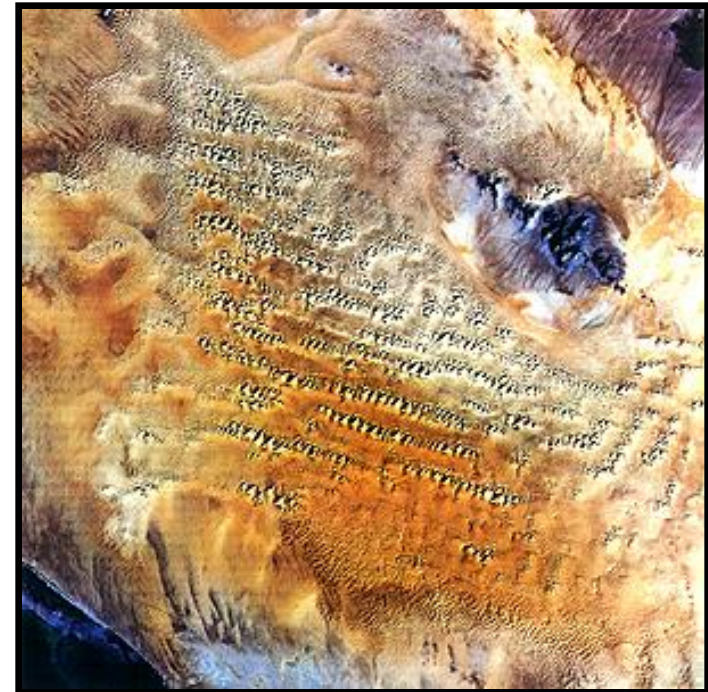
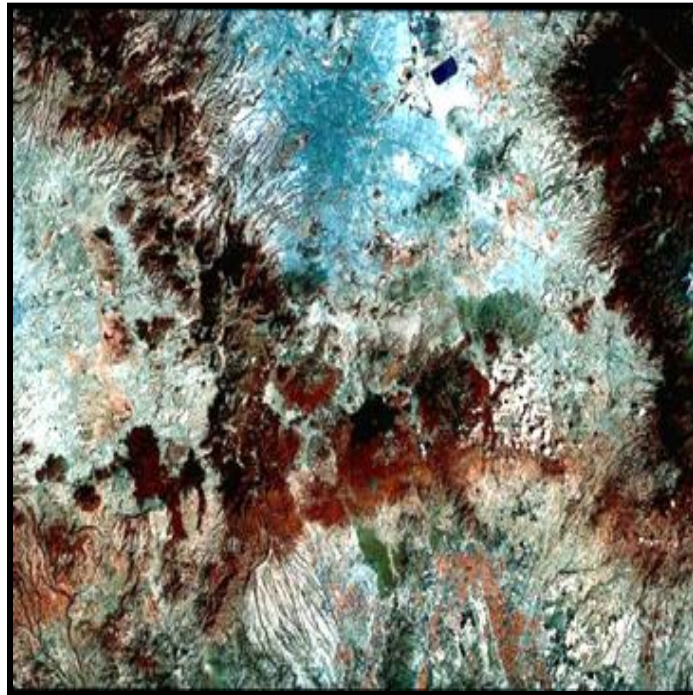
2 – Active : this record happen when the satellite create some effect in some place then we record the reaction happen in the bodies And interpretive them . Such as some radar satellite send pulses to earth surface and record them by antenna when they reflect from it , with many other information come from surface .

Types of satellite duty

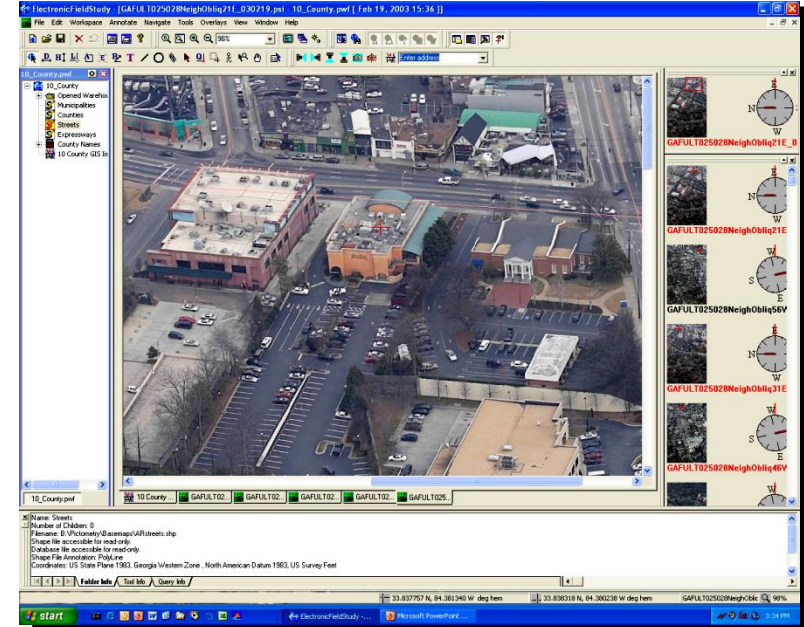
There are many types of satellites serve now at outer space , the deferent in jobs or types or date of lunching or the country belong to him

At 1960 the USA launched first complete space project called (TIROS) to study the earth climate and clouds movement , that was the first step at satellite projects come later . We can brief the general types of satellite as

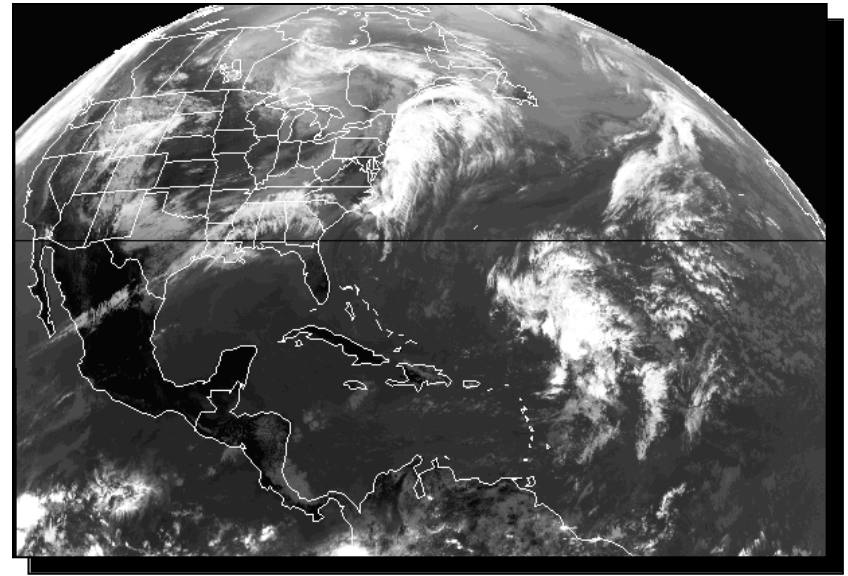
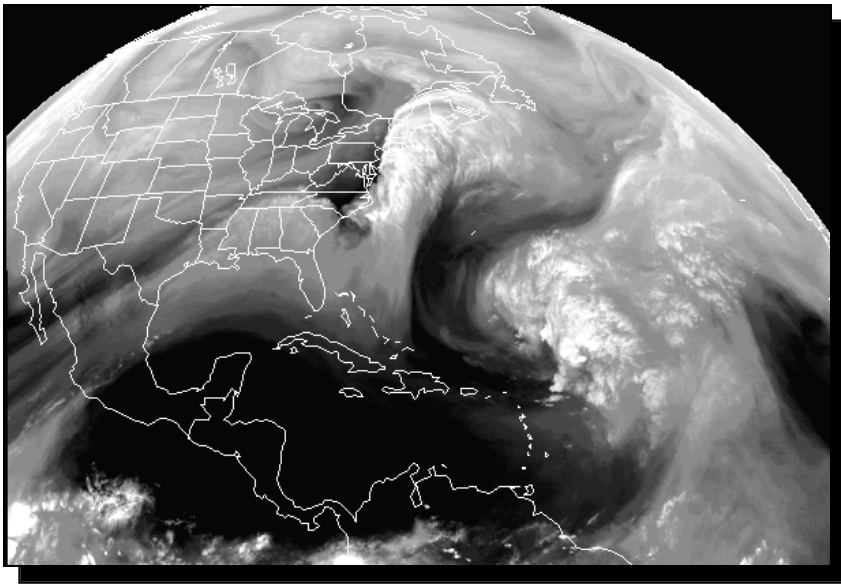
- 1 – communication satellites : this type of satellite specialize by communications such as TV. Channels – internet – mobile – Fax – broadcasting . Height about 36.000 Km. above equator with fix orbits , Ex : Nile sat – Arab sat .
- 2 – Natural resources satellite : This satellite specialize by scanned and recording the natural resources such as mineral – agriculture – water – environmental and also towns or dams and other resources . Moderate height and medium resolution . Ex : Landsat – Spot



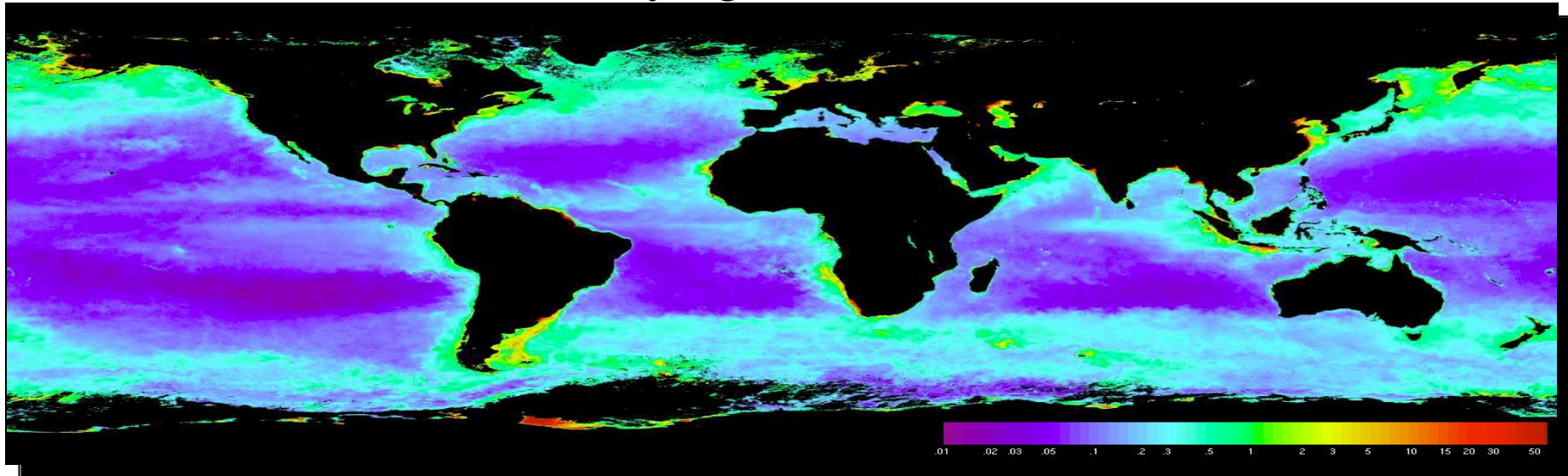
3 – Navigation satellite : This satellite specialize by moving with coordinate , when we can contact these satellite they can give as the coordinate of our place with very high accurate with GPS , many type of this satellite work around the worlds , Low highs .



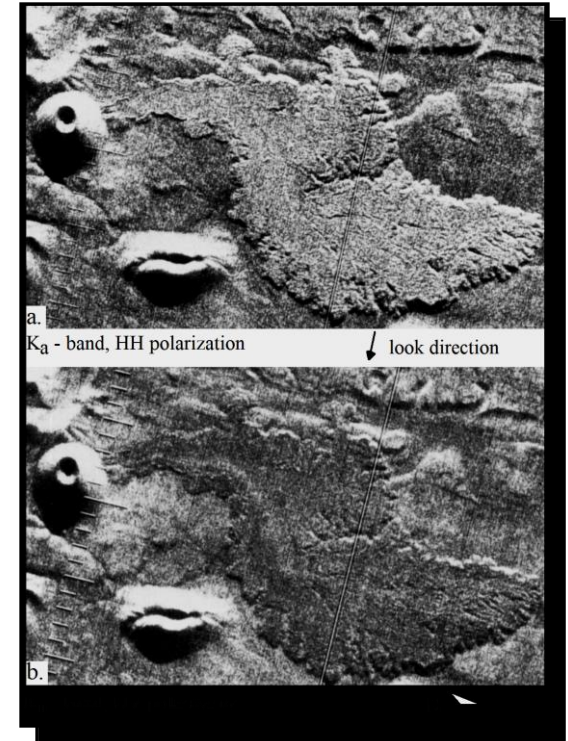
4 – Meteorological satellite : This satellite specialize by recording and studying clouds moving - wind - temperature - pressure , each satellite move twice around the world or one each 30 min, low height and low resolution , we can not use in studying earth feature .



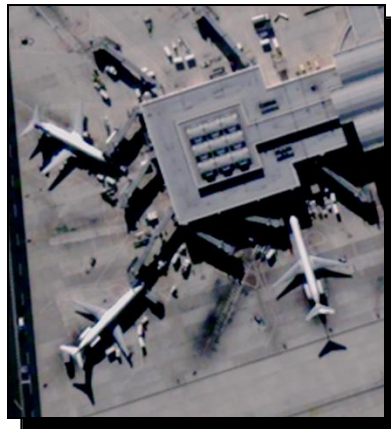
5 – Seasat satellite : specialize by studying sea surface and temperature and humidity with sea current , moderate resolution , only some satellite work with this studying . Ex: Mos satellite .



6 – Radar satellite : using radar signal send and received at satellite to study the earth , we can recognize the water or land bodies by this satellites , Ex: Canadian radar sat .



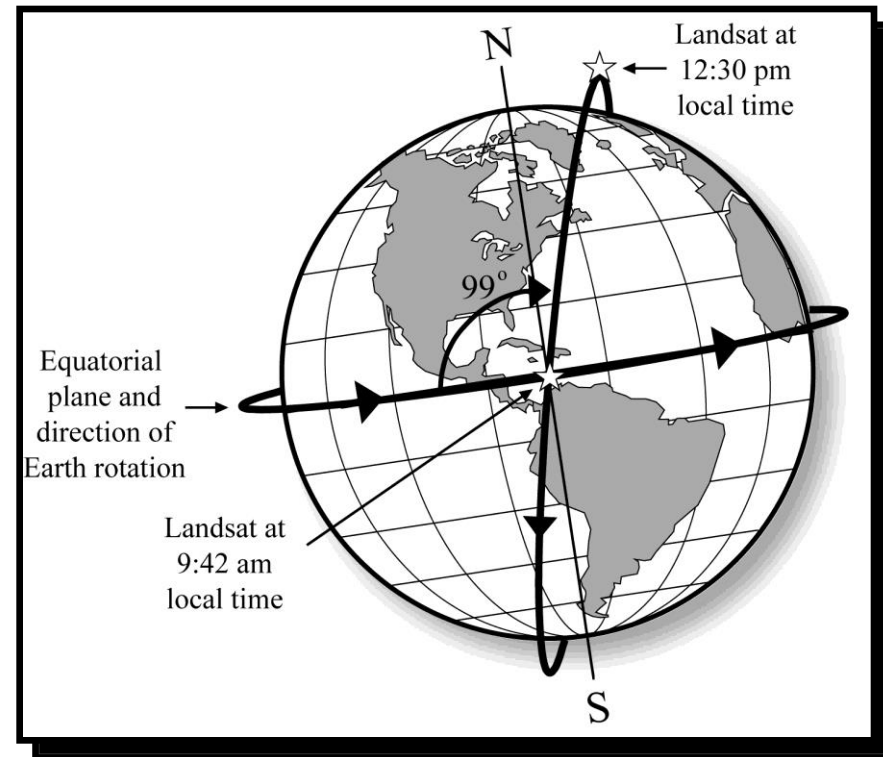
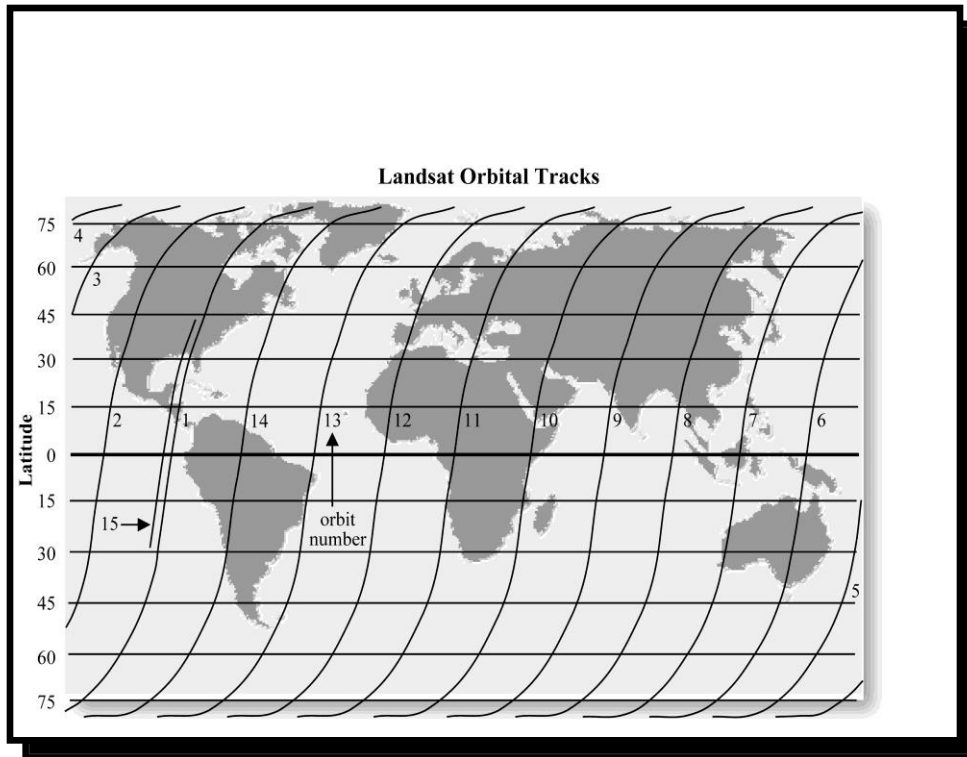
7 – Military satellite : its secret spy satellite with high resolution imaging 30 cm. , we have not any much information about these satellites . Low height with many passes every day .



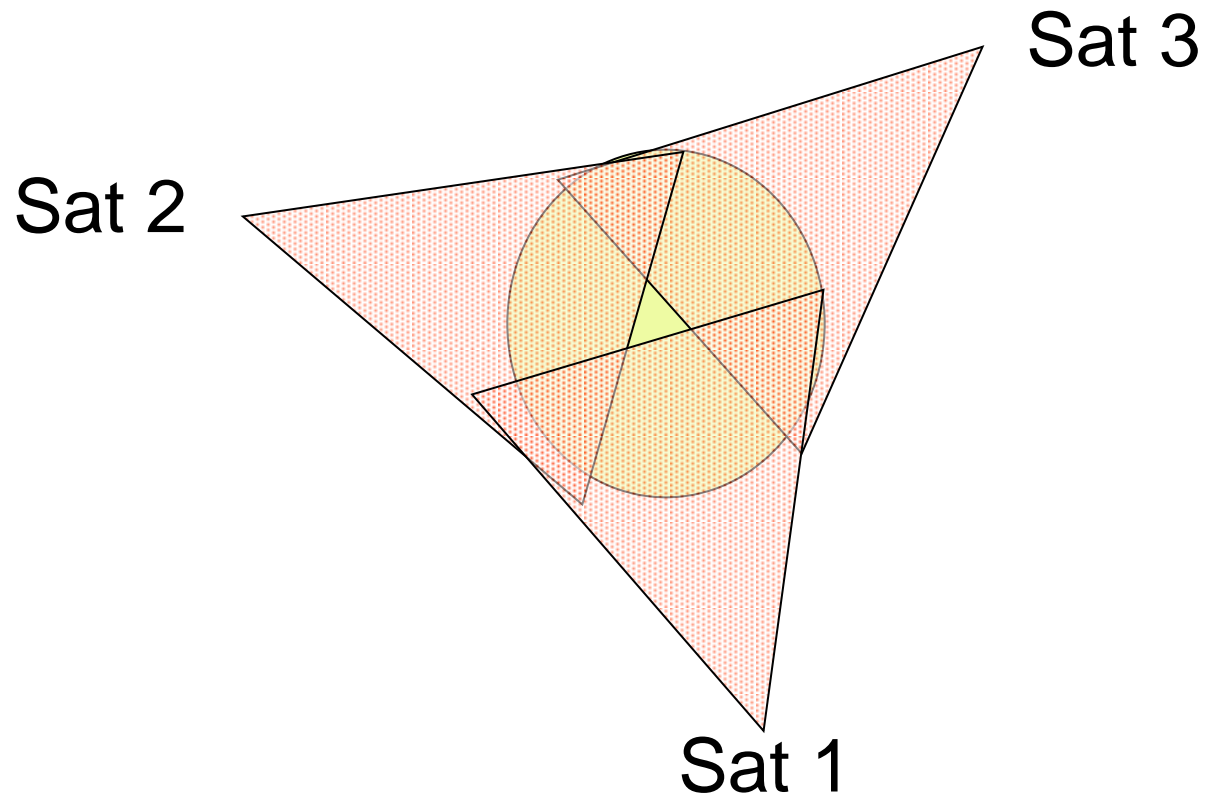
Types of satellite orbits

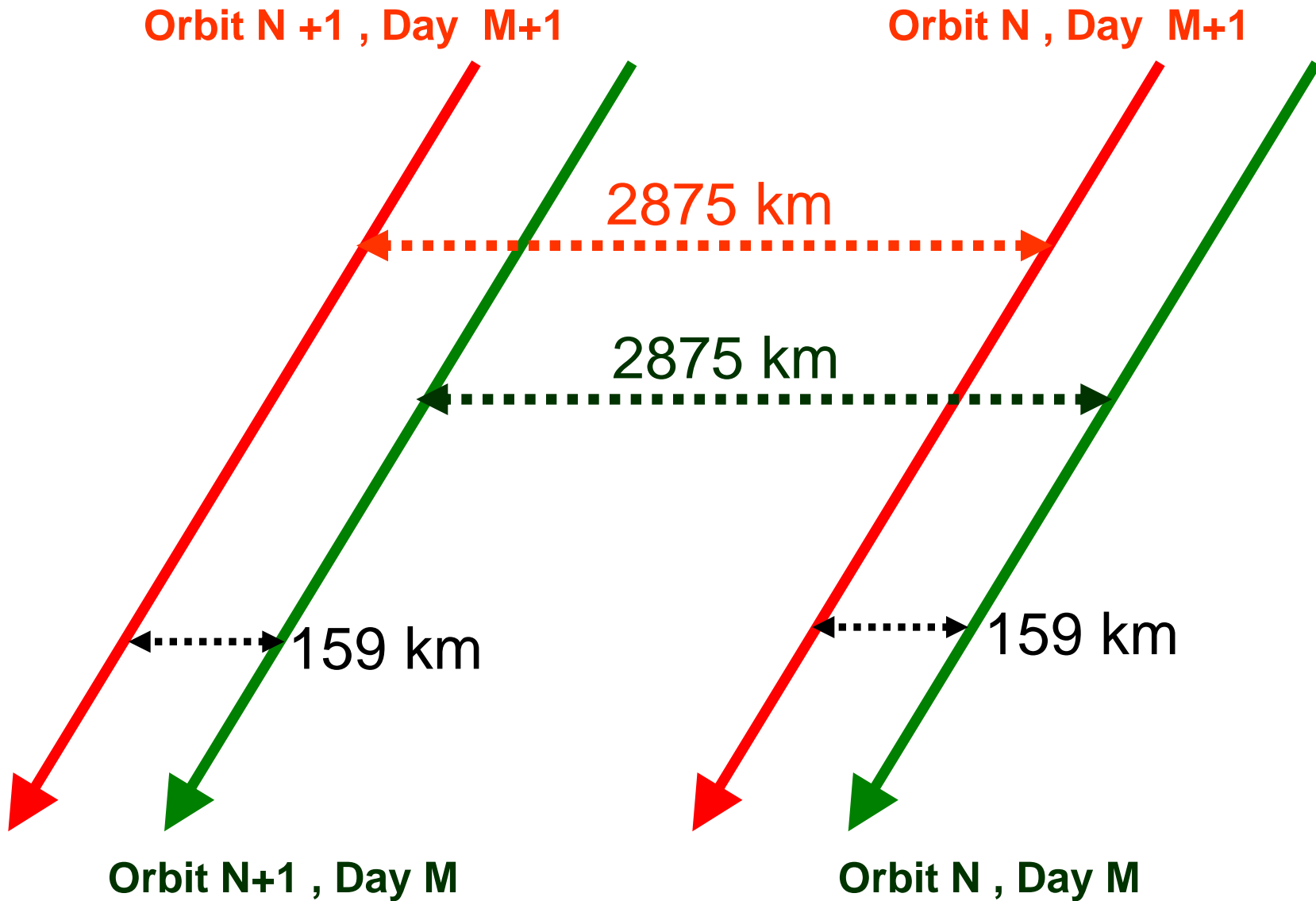
there are two types of satellite orbiting each of them has special characteristics and jobs

1 – Polar orbiting Satellite : The orbit of this satellite passes over the two poles north and south with fixed paths and about 800 km. The continuous imaging can give us a final image of the earth's surface. Recording data is sent directly to the earth. As Landsat, Spot.



2 – Geostationary satellite : this satellites have fix orbit over the equator with height 35800 km. its turn once at 24 hours with the same speed of earth speed rotation around its axis so it seemed as it fix on the sky , All the communication satellites with this type .





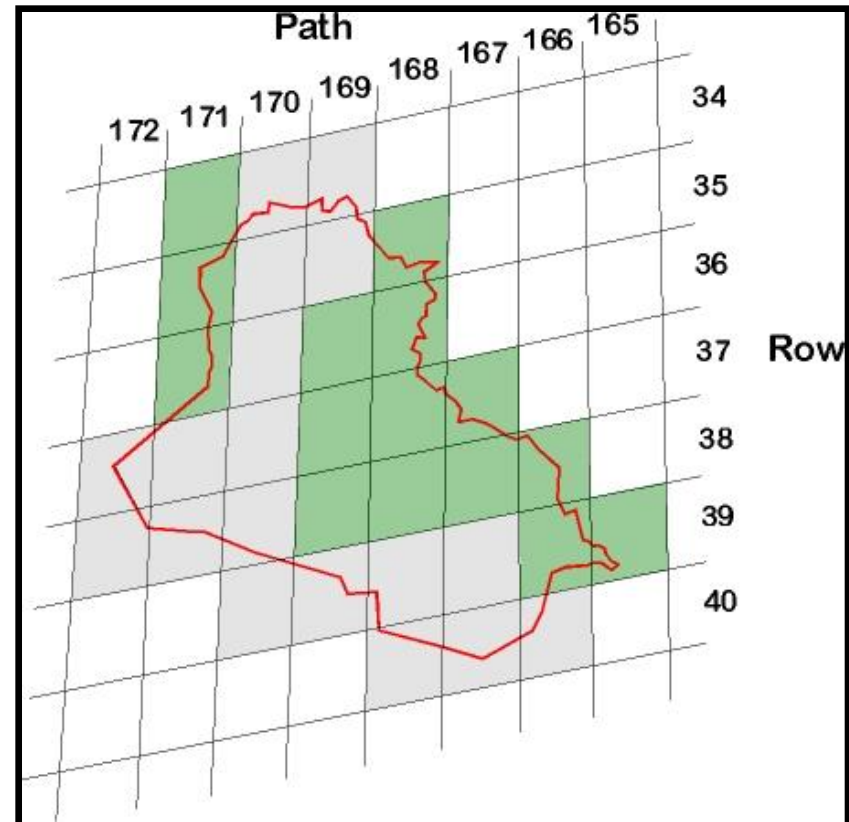
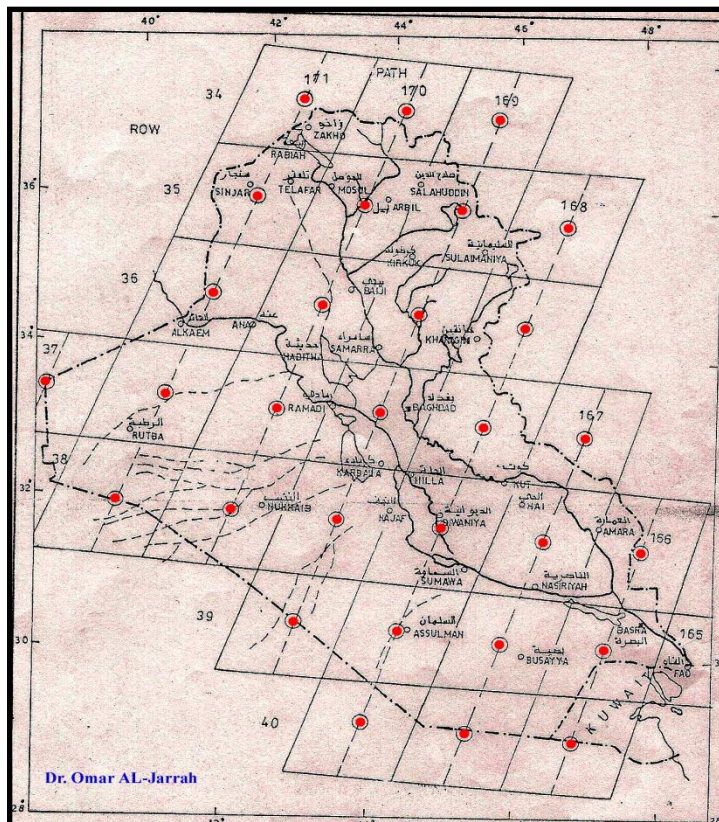
When satellite move around the earth according to special coordinate we called :

Path with N – S there are 233 paths all over the earth

Row with E – S there are 248 row

This coordinate used in Landsat satellite

In French satellite Spot we used K and J



References

IMAGE INTERPRETATION IMAGE INTERPRETATION , Seventh Edition, Lillesand T. M., Kiefer R. W., Chipman J. W., WILEY press , USA , 2015

Earth Science Satellite Remote Sensing Vol. 1: Science and Instruments , Qu J. J., Gao W. , Kafatos M. , Murphy R. E, Salomonson V. V., Tsinghua University Press, Beijing and Springer-Verlag GmbH Berlin Heidelberg . 2006

Internet Remote Sensing Lectures sites