



# Remote Sensing, GIS and GPS

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THEORY

CREDIT: 4 (60 MARKS)

UNIT 1: REMOTE SENSING (30 MARKS)

UNIT 2: GIS (20 MARKS)

UNIT 3: GPS (10 MARKS)

# Remote sensing

▶ **Definition:**

Remote sensing is the science and art of obtaining information about an object, area, or phenomenon through the analysis of data acquired by a device that is not in contact with the object, area, or phenomenon under investigation.

# Stages Of Remote Sensing



Target

Processing station

Analysis

Application

# History of Remote Sensing

The history of remote sensing began with the invention of photography. The term "photography" is derived from two Greek words meaning "light" (phos) and "writing" (graphien)

- **1858 - Gasper Felix Tournachon (Nadar)** takes the first aerial photograph from a balloon at an altitude of 1,200 feet over Paris.
- In the **early 20th** century remote sensing images were captured using kites and even with cameras mounted on pigeons.
- In **1906** professional photographer **George Lawrence** used a string of kites to raise a 49 pound camera 1000 feet in the air to capture the devastation of the earthquake in San Francisco.



Nadar




Pegions with camera

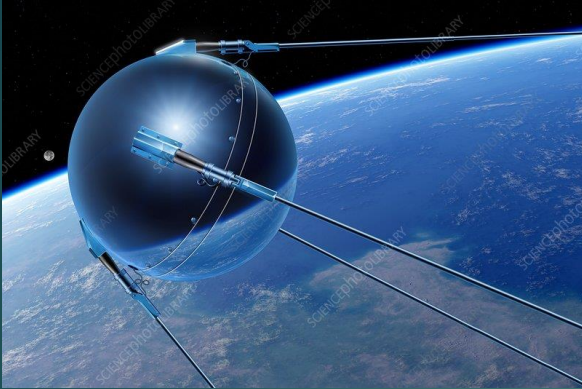


- The first aerial photographs taken from an airplane were in **1909**, by **Wilbur Wright**. By the first World War, cameras mounted on airplanes provided aerial views of large surface areas that proved invaluable for military purpose.
- By World War II airplanes were commonly equipped with cameras, in fact allied forces recruited a team of experts to review millions of stereoscopic aerial images to detect hidden Nazi rocket bases.



World war 1

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- The development of **satellite based remote sensing** began with the "**space race**" in the **1950s and 1960s**. In 1957 the Soviet Union launched **Sputnik 1**, the world's first artificial satellite.
  - The United States followed in **1960** with the successful launch of **Explorer 1**. The next decades brought about rapid developments in satellites and imaging technology.
  - The first successful meteorological satellite (**TIROS-1**) was launched in 1960 by US.
  - In **1972 Landsat 1**, the first earth resource satellite was launched by the US.



Sputnik-1



Tiros-1



Landsat 1



The **Aryabhata** spacecraft, named after the famous Indian astronomer, was India's first satellite; it was completely designed and fabricated in India and launched by a Soviet **Kosmos-3M rocket** from Kapustin Yar on April 19, 1975.

