REMOTE SENSING

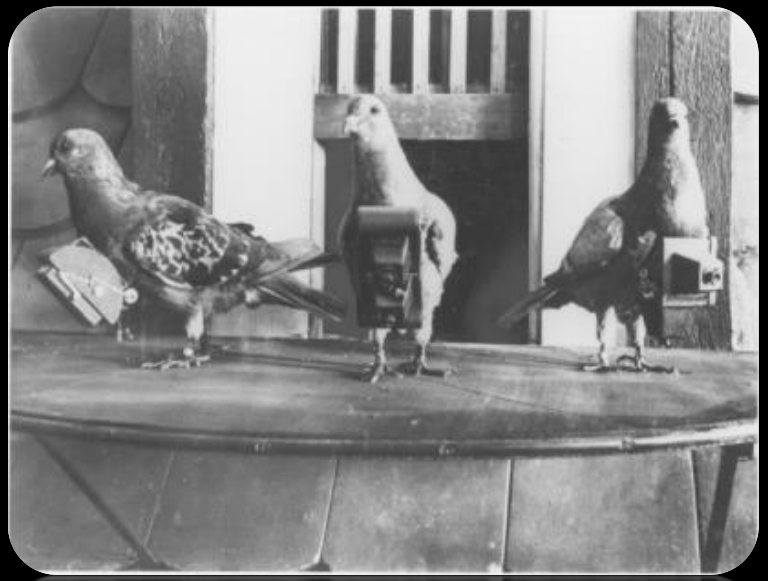
History

M.H. Mohamed Rinos

Dept. of Geography, SEUSL

Remote sensing Acquire data without being in contact with it
At the beginning of the 20th

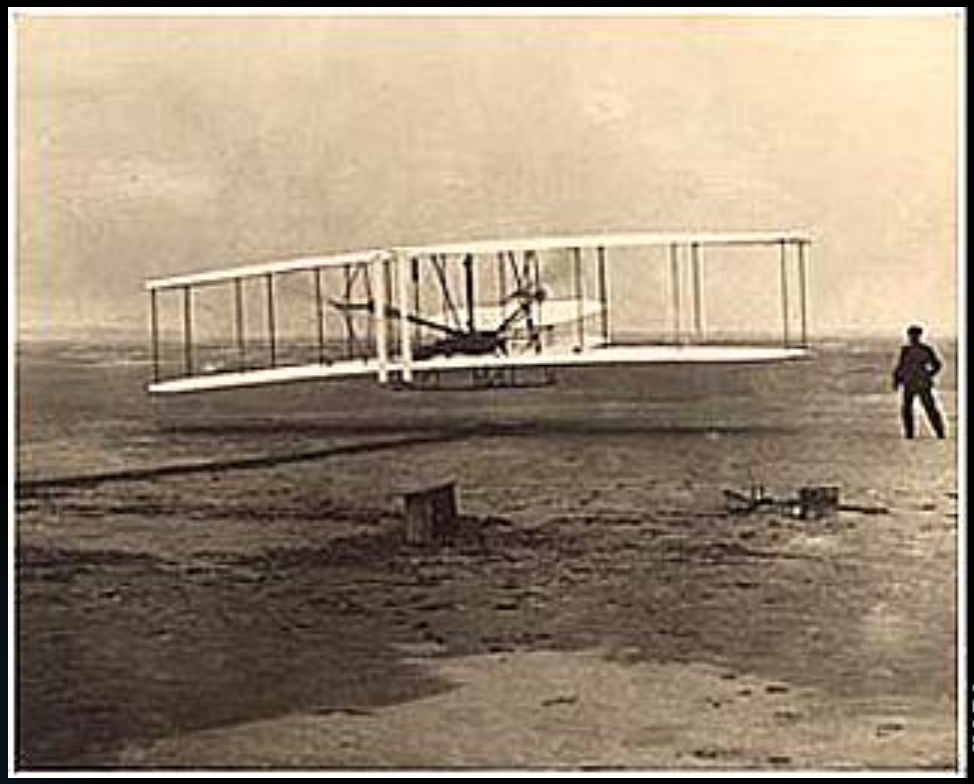
At the beginning of the 20th century a Bavarian pigeon fleet that operated in Europe.



Early Applications of Remote Sensing

Remote Sensing became a reliable instrument

as humans learned how to fly



Early Applications of Remote Sensing

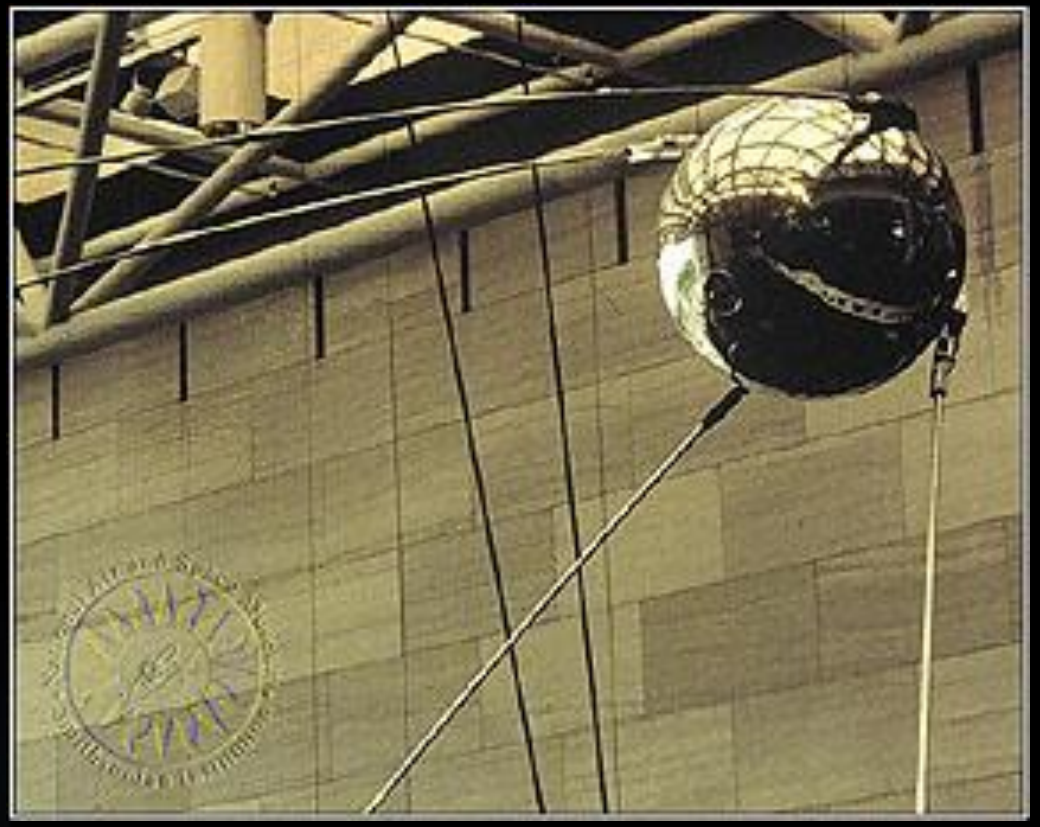
The logical entry of remote sensors into space on a routine basis began with automated photo-camera systems mounted on captured German V-2 rockets, launched out of White Sands, NM

These rockets also carried geophysical instruments in their nose cones, which were returned to Earth by parachute

Photo U. S. Navy—Johns Hopkins (APL)

Early Applications of Remote Sensing

The modern Space program is held by many historians to truly have begun with the launch of Sputnik I by the Soviets on October 4, 1957



History & Development of Remote Sensing

The first photograph, a permanent impression of image created by light, was reportedly made by Daguerre & Niepce (France) in the year 1839.

In the year 1858 a French photographer, Gaspard Felix Tournachon, and Laussedat attempted successfully to take aerial photographs from a balloon over the city of Paris with a camera using wet plate process.

RS- the word was coined in 1960s in an unpublished paper- it simply meant observation and measurement of an object without touching it (office of Naval Research)

In 1871 dry photographic film, with gelatin emulsion of silver halide grains was available.

In 1903, pigeons with camera mounted on them were also used for taking aerial photographs.

Many experiments were also conducted for using balloons, kites and rockets for reconnaissance purpose during world war I. This was the time when importance of aerial reconnaissance was recognized for military purpose.

The first recorded photographs from aero plane were taken by Wilbur Wright on April 24, 1909 over Centocelli, Italy.

During the period between world war I and II, many developments and improvements took place in the technology of photography, film, camera, processing equipment, interpretation of photographs and related techniques

History…….

During the world war II, aerial photographs were extensively used for topographic mapping and military intelligence. The German, British, French and later American and Japanese forces established their aerial reconnaissance units for extensive surveillance of enemy areas. Thousands of photographs were processed almost overnight during operations. Aerial photography to observe movement of enemy forces was done repeatedly at an interval of few days, and in some cases, flights were flown even in morning and evening. Large number of photo-interpreters was trained by army.

During this period, aerial photographs were also used for non military applications such as geology, forestry, soil survey, route alignment etc.

After the world war, many of the technologies developed during war time were transferred to civil areas of application.

Expansion in data collection methods- besides cameras, other instruments were being added- scanners and radiometers into regions of electromagnetic spectrum beyond visible regions (Thermal and Microwave).

Most important of them have been launching of spacecraft, development of non photographic sensors, operating in ultra-violet, infra-red, thermal and microwave regions of electromagnetic regions, satellite communication and data processing on computers.

In the year 1957 first artificial satellite "Sputnik I" , Explorer 1 (US) in 1958 were launched and in 1961 manned as well as unmanned spacecraft were used to take orbital photographs. Tiros, Mercury, Gemini, and Apollo series of satellites are examples of such experiments.

History.....

The name "remote sensing" as first used in the early 1960's, when it was felt necessary to find a suitable name for the new type of "images" obtained from a completely different type of "cameras",(known as scanners), formed using energy outside the visible spectrum as the term "photograph" was no longer suitable to describe new kind of images (also called as imageries).

The launch of LANDSAT 1 by NASA in 1972 was another landmark in the history of remote sensing which was the result of efforts started in the 1960's and beginning of modern Remote Sensing.

(LANDSAT 1 ("LAND SATELLITE") was initially called as ERTS 1 (Earth Resources Technology Satellite) was the first of several earth-orbiting satellites designed specifically for observation of the earth's land areas)

Brief History of Remote Sensing

- 1972 Launch of the first earth resource satellite (Landsat-1)
- 1980 Landsat-4: new generation of Landsat sensors
- 1986 Launch of French earth observation satellite (SPOT-1)
- 1990 Launch of earth resource satellites by national space agencies and commercial companies
- 1990 Launch of French earth observation satellite (SPOT-2)
- 1992 National Space Development Agency (NSDA) of Japan – JERS1
- 1993 Launch of Landsat-6 failed
- 1995 Launch of Canadian Space Agency Satellite –Radarsat

Brief History of Remote Sensing

- 1995 Launch Indian Remote Sensing Satellite –**IRS 1C**
- 1999 Launch of Space Imaging Satellite, USA –**IKONOS**
- 1999 Launch of **Landsat7**
- 2001 Launch of Digital Globe Satellite -**Quickbird**
- 2002 Launch of French earth observation satellite -**SPOT-5**
- 2005 Launch Indian Remote Sensing Satellite -Cartosat1
- 2006 Launch of Advanced Land Observing Satellite, Japan-**ALOS**
- 2007 Launch of Canadian Space Agency Satellite –Radarsat2
- 2007 Launch of Digital Globe Satellite –**Worldview 1**
- 2008 Launch of Space Imaging Satellite, USA –**GeoEYE1**
- 2009 Launch of Digital Globe Satellite –**Worldview 2**
- 2011 Launch of **PLEIADES 1**

Present Applications of Remote Sensing

Remote sensing technology is very advanced

We can observe the Earth and its environment with a large array of instruments with very high spatial, spectral and temporal resolution

Such observations give us unprecedented access to massive amount of data

Present Applications of Remote Sensing

Since the 1950s several countries have been sending satellites into space

At first, the USA and the Soviet Union were the only countries capable of launching satellites into orbit

Nowadays many countries have capabilities to launch satellites into orbit
Satellites use was primarily military

- Reconnaissance
- Communication

Present Applications of Remote Sensing

Nowadays several countries can independently send satellites into space

Applications are both Military and Civilian

- Reconnaissance
- Communication
- Navigation
- What else?

Space Countries

Brazil	Israel	Korea, South
China	Italy	Russia
France	Japan	Ukraine
India	Pakistan	United Kingdom
Iran	Korea, North	United States

European Union

THANK YOU