

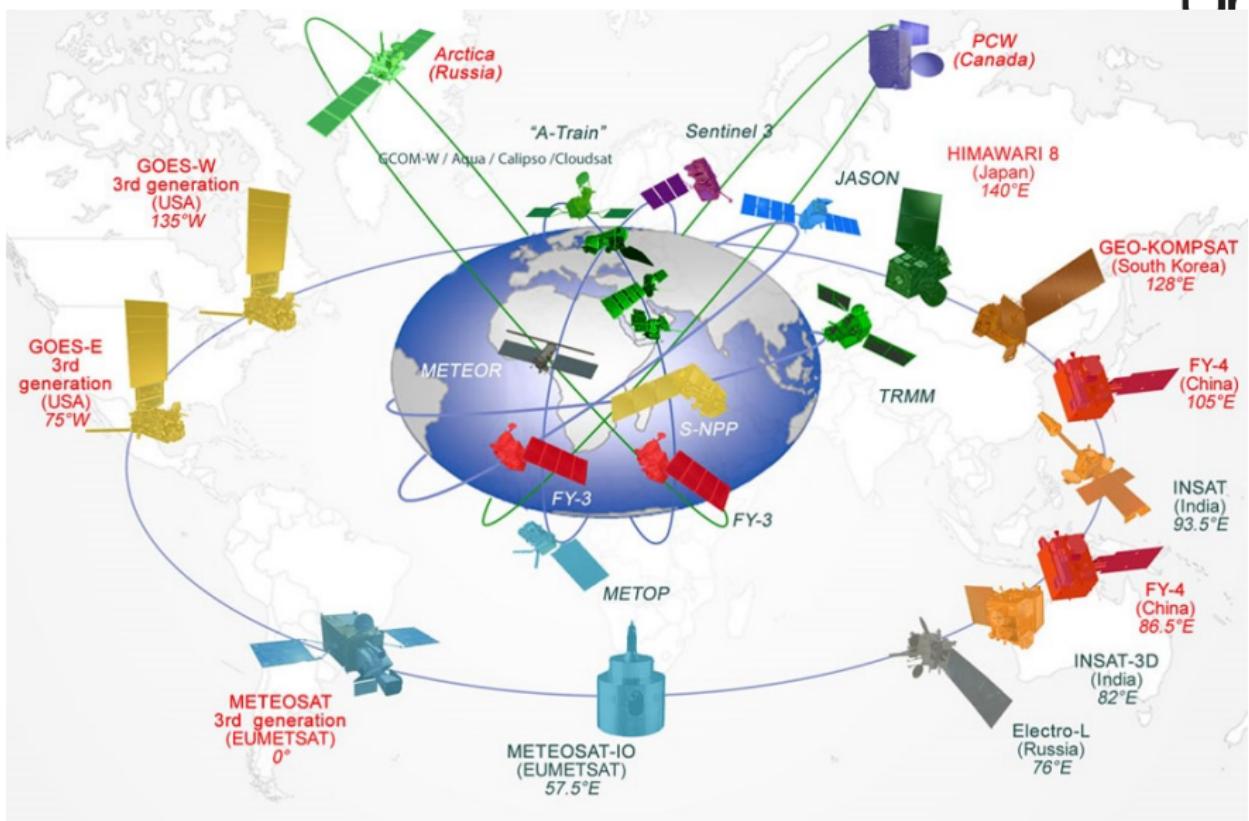
# SENSORES REMOTOS

Edier V. Aristizábal G.

*evaristizabalga@unal.edu.co*

(Versión:July 25, 2020)





# Orbitas polares

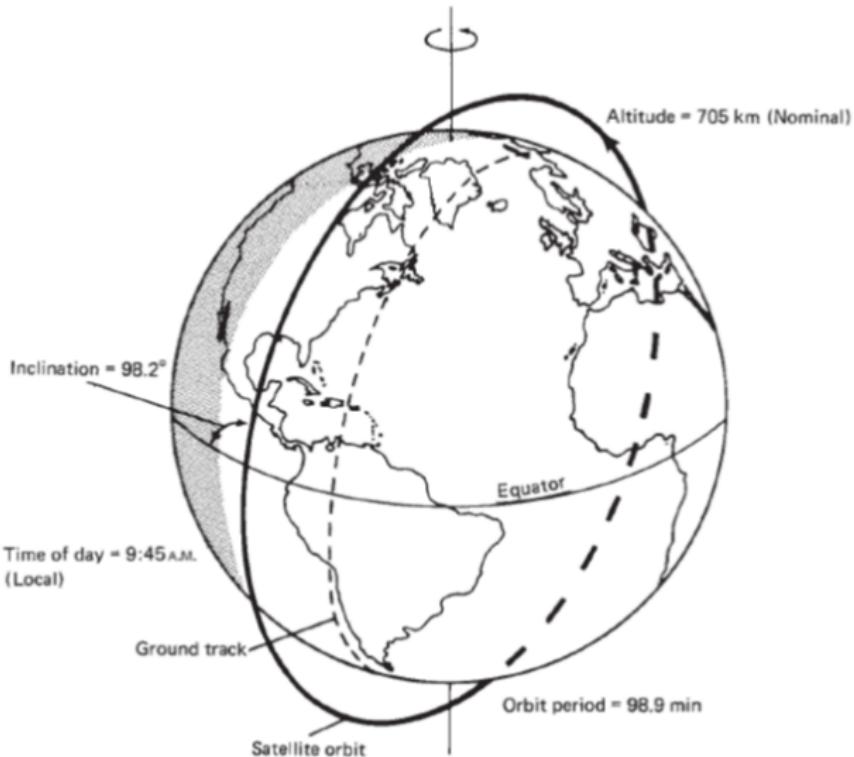
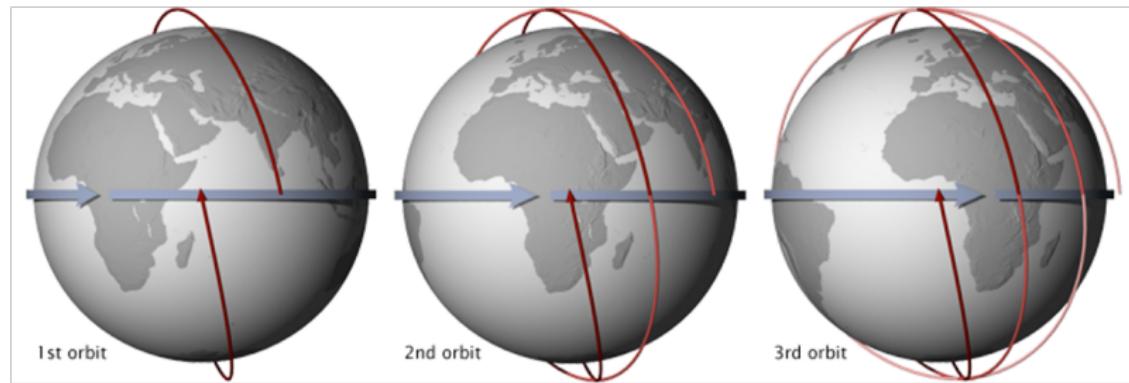


Figure 5.2 Sun-synchronous orbit of Landsat-4, -5, -7, and -8. (Adapted from NASA diagram.)

# Orbitas polares

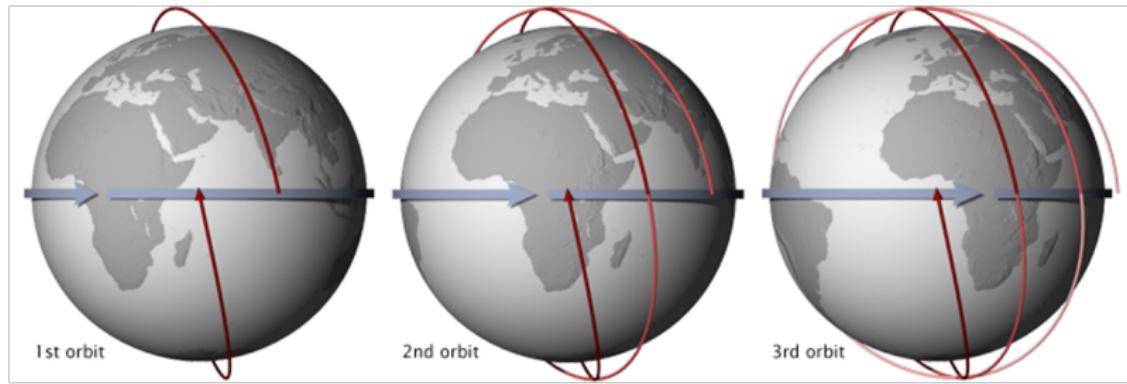
Paso descendente: día → reflejada



Paso ascendente: noche → emitida

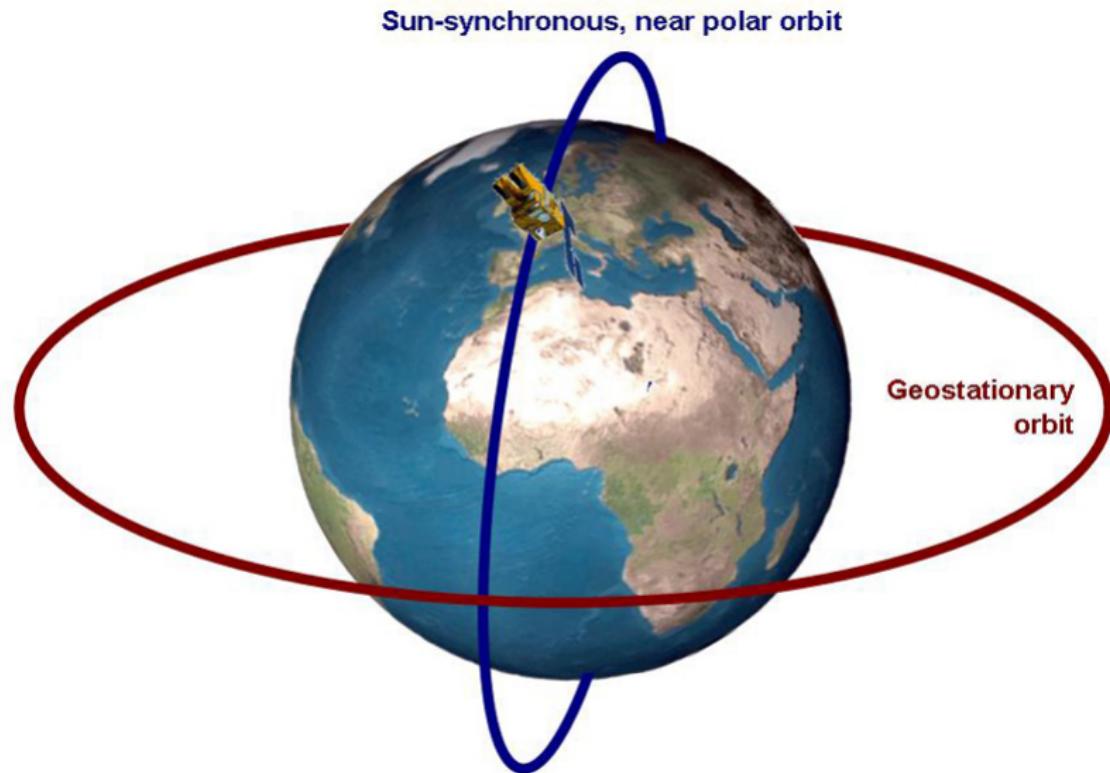
# Orbitas Geoestacionario

Paso descendente: día → reflejada

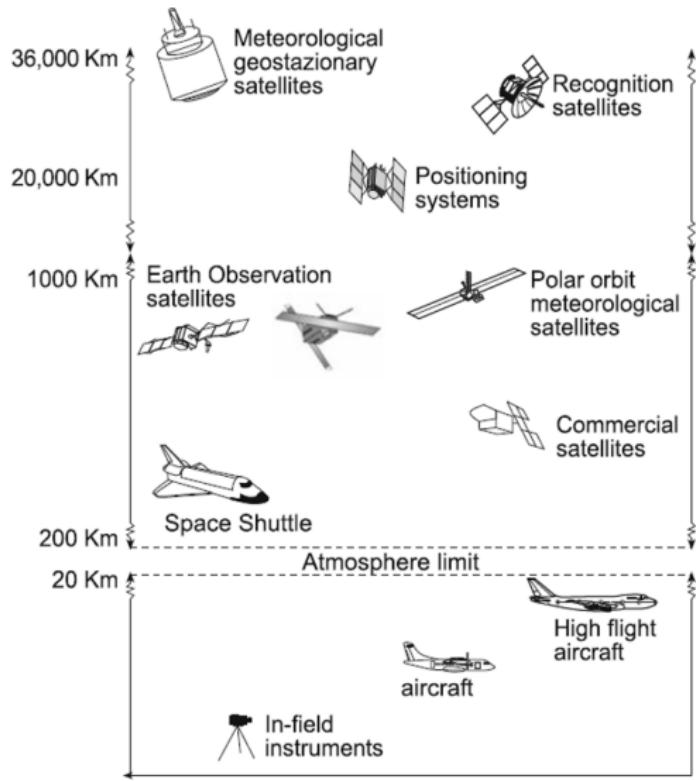


Paso ascendente: noche → emitida

# Orbitas Geoestacionarias vs. Heliosincrónicas



# Plataformas



# Swath & Path

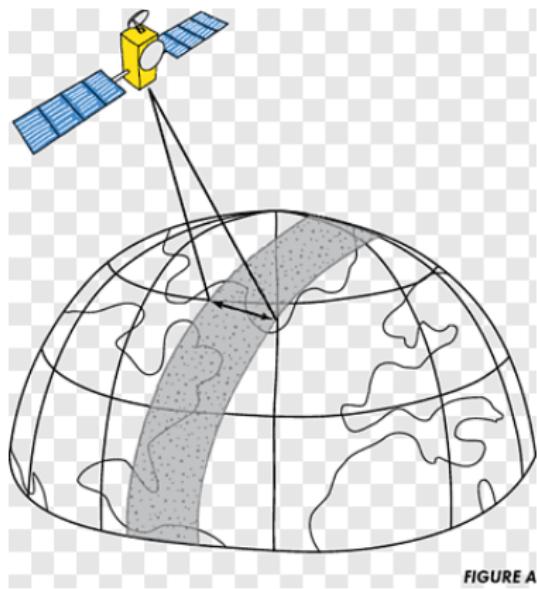
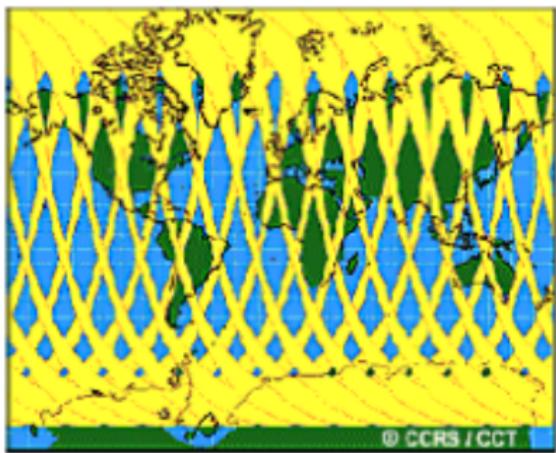


FIGURE A

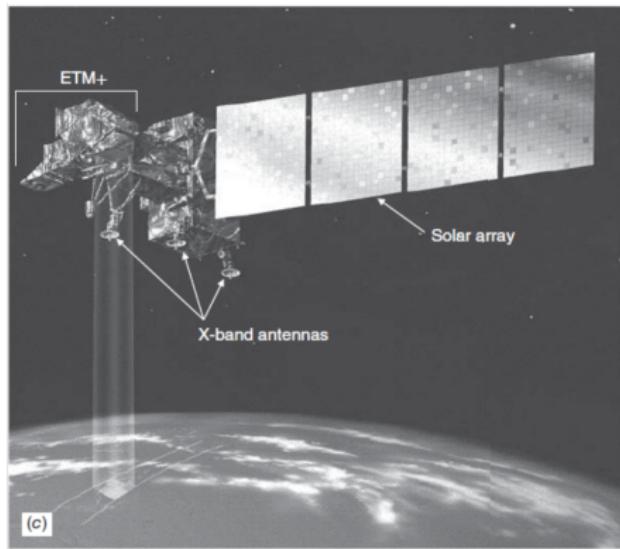
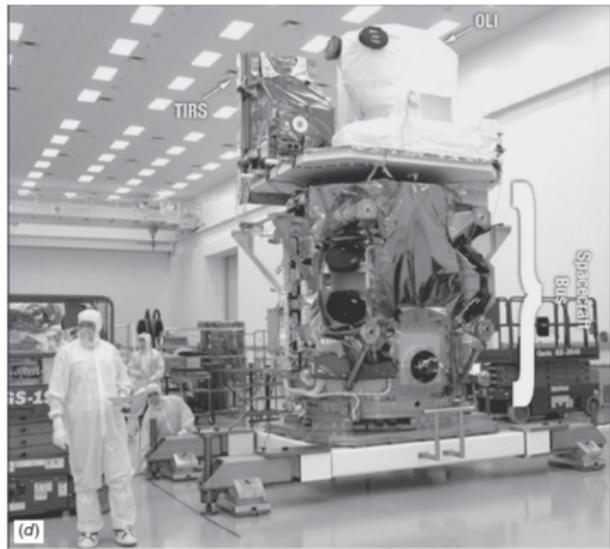


# Landsat 8: Swath & Path

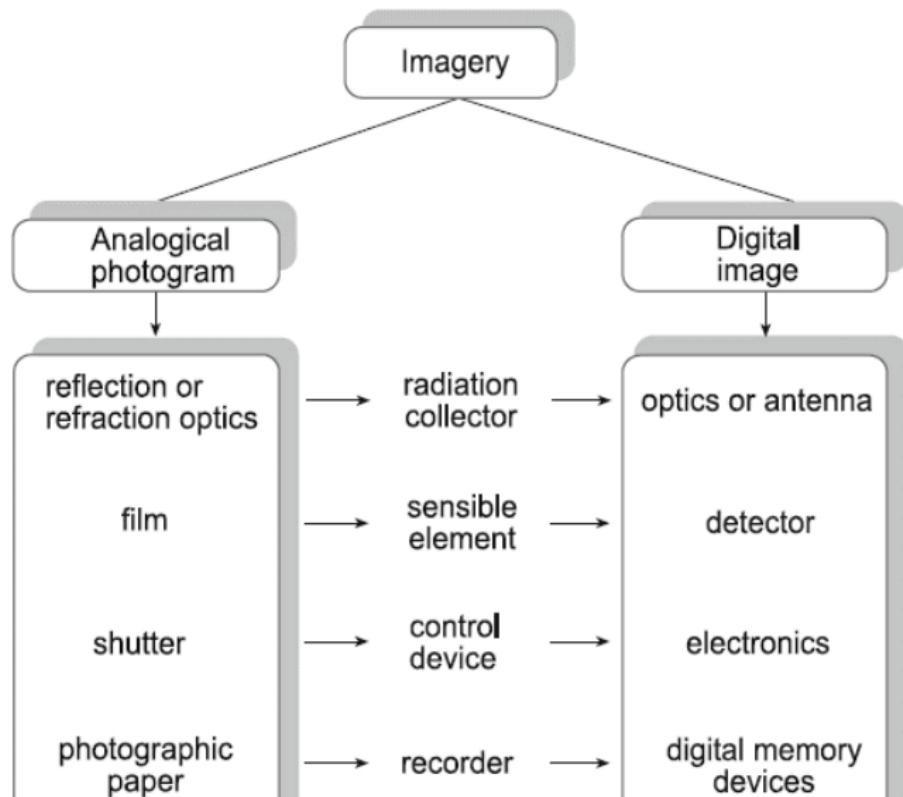


Figure 5.14 Timing of adjacent Landsat-8 coverage tracks. Adjacent swaths are imaged seven days apart. (Adapted from NASA diagram.)

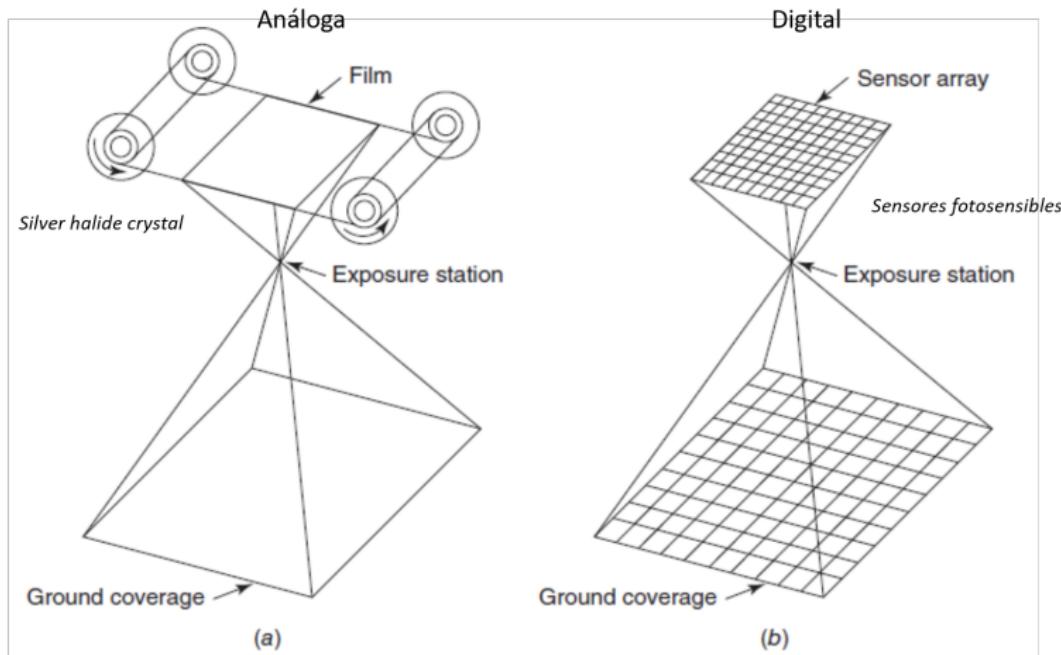
# Satélite Bus: Landsat 8



# Detectores Análogos vs Digitales



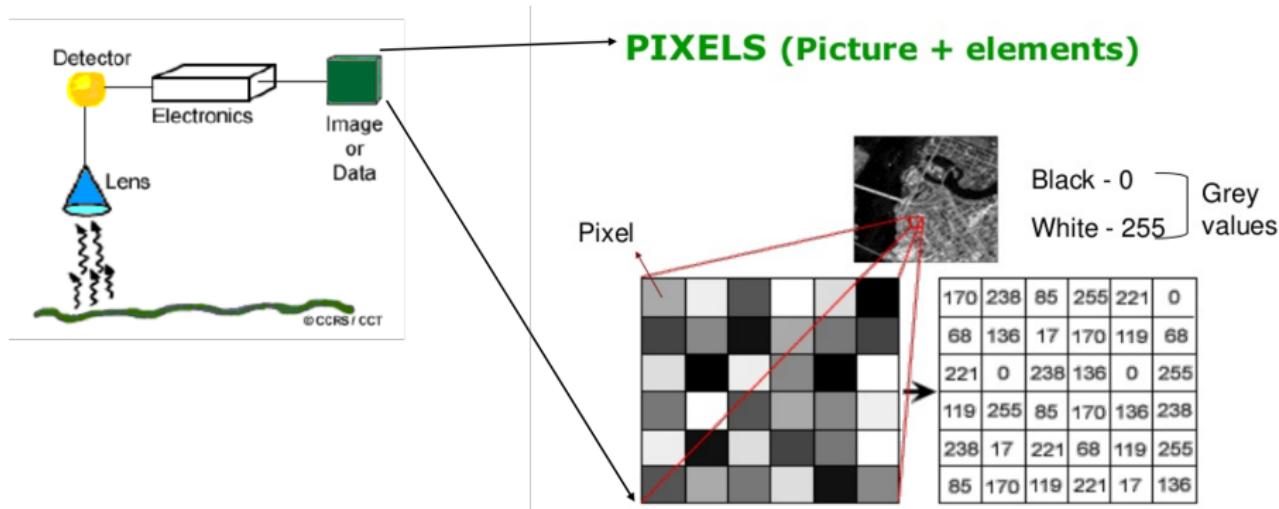
# Detectores Análogos vs Digitales



# Detectores

Los detectores son definidos como instrumentos que reciben un flujo de energía y proporcionan una señal. Existen dos tipos fundamentales de detectores de luz que operan con mecanismos de transducción diferentes.

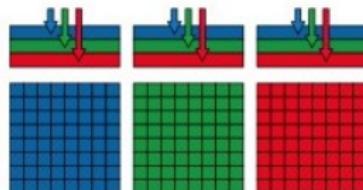
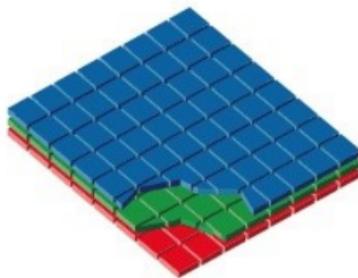
- Cuánticos (Photon) (CCD – CMOS)
- Térmicos



# Detectores

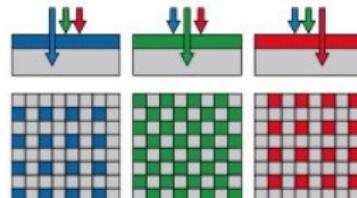
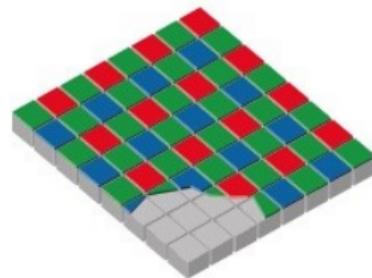
CCD (Charge-Coupled Device) - CMOS (Complementary Metal-Oxide Semiconductor)

Foveon X3  
direct image sensor



R:100%

Color filter array sensor  
(Bayer filter sensor)



G:50%

R:25%

# Detectores termales

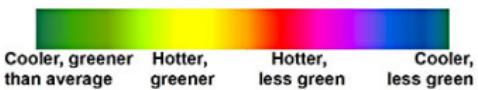
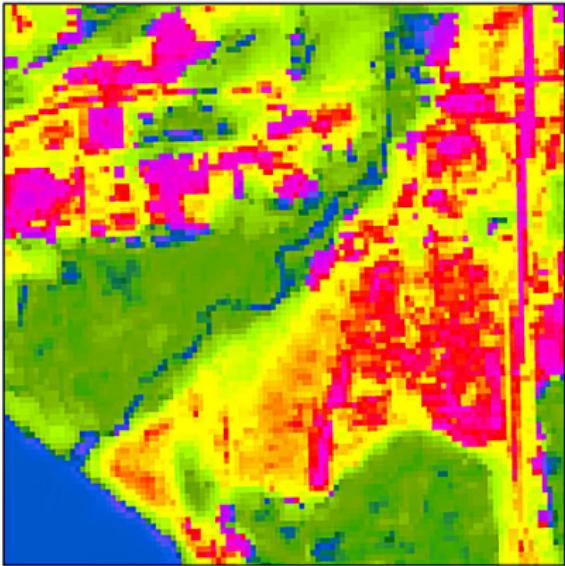
## Aerial RGB image

Source: National Agricultural Imagery Program (NAIP),  
spatial resolution: 1m



## Coupled thermal-vegetation metric

Source: Landsat satellite image  
spatial resolution: 30 m visible-near & mid infrared, 120 m thermal infrared



# Teoría del color

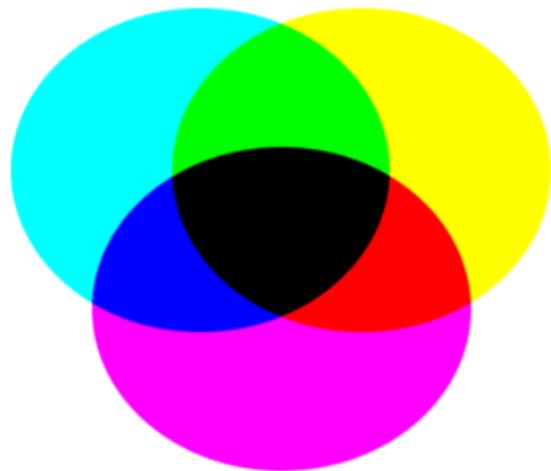
Teoría aditiva (RGB) & Teoría sustractiva (CMYK)

PC & TV



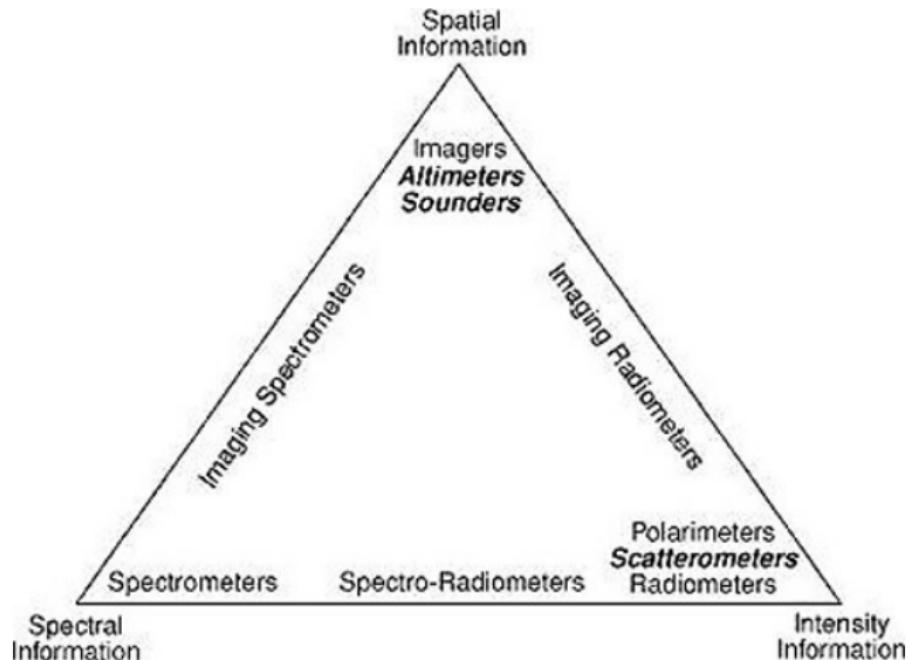
$$\boxed{\text{R}} + \boxed{\text{G}} + \boxed{\text{B}} = \boxed{\text{BLANCO}}$$

Color film photography

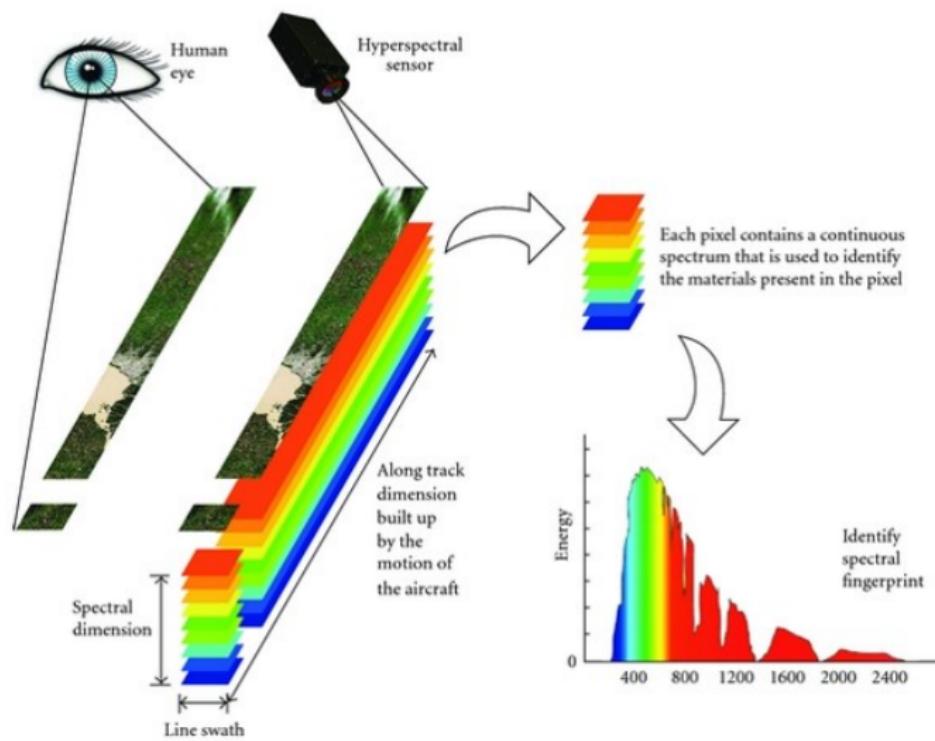


$$\boxed{\text{C}} + \boxed{\text{M}} + \boxed{\text{Y}} = \boxed{\text{K}}$$

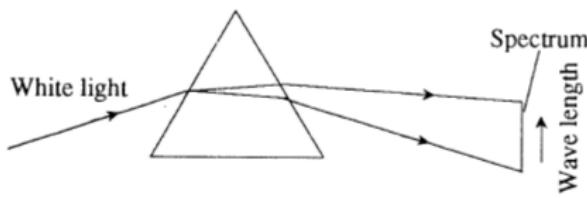
# Tipo de sensores



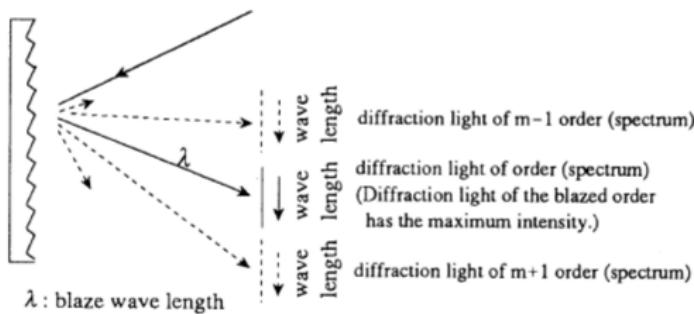
# Espectrómetros



# Elementos para dispersión

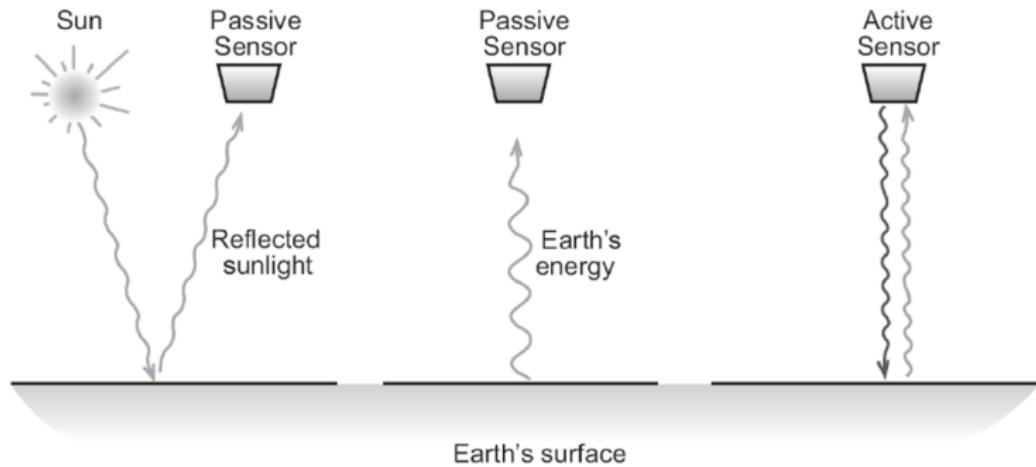


Por prisma



Por difracción

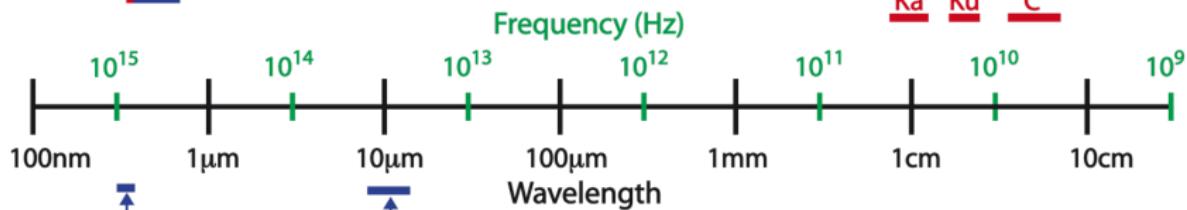
# Sensores Activos & Pasivos



# Sensores Activos & Pasivos

## ACTIVE SENSORS

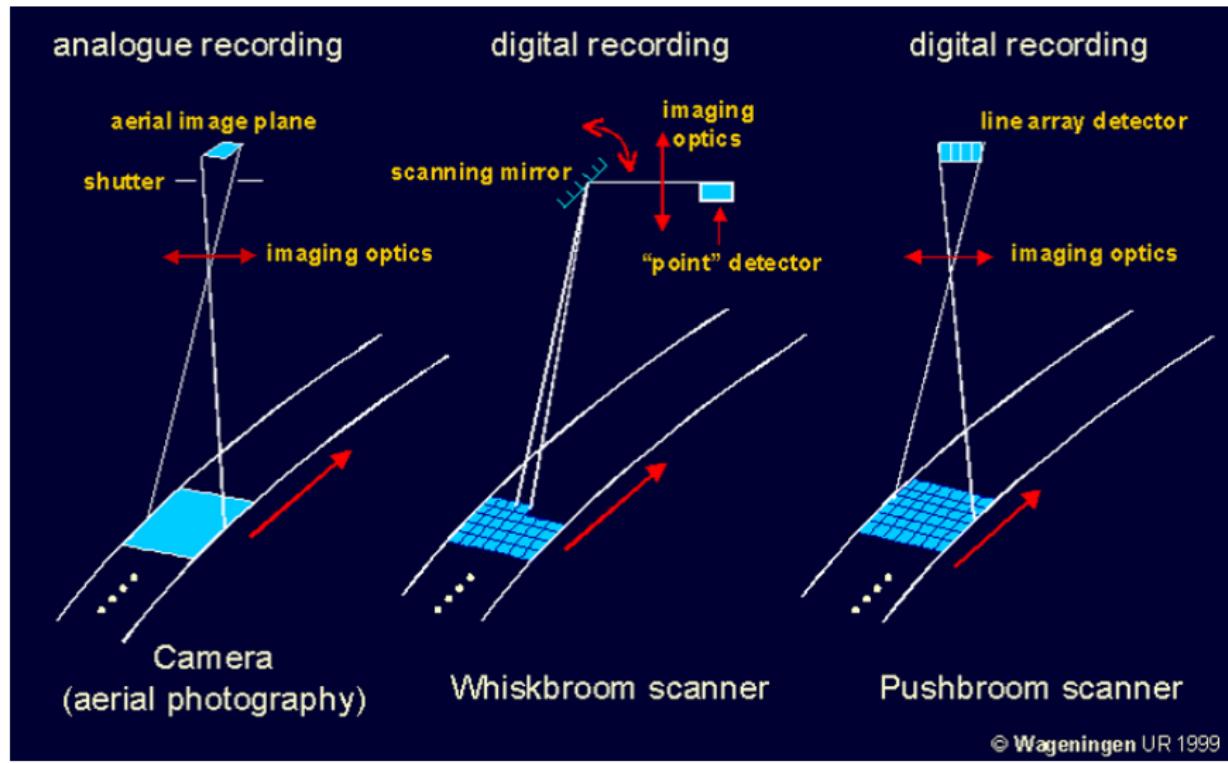
Laser Fluorosensors  
Typical excitation wavelength 355nm  
Emission measurements: 430-750nm



## PASSIVE SENSORS

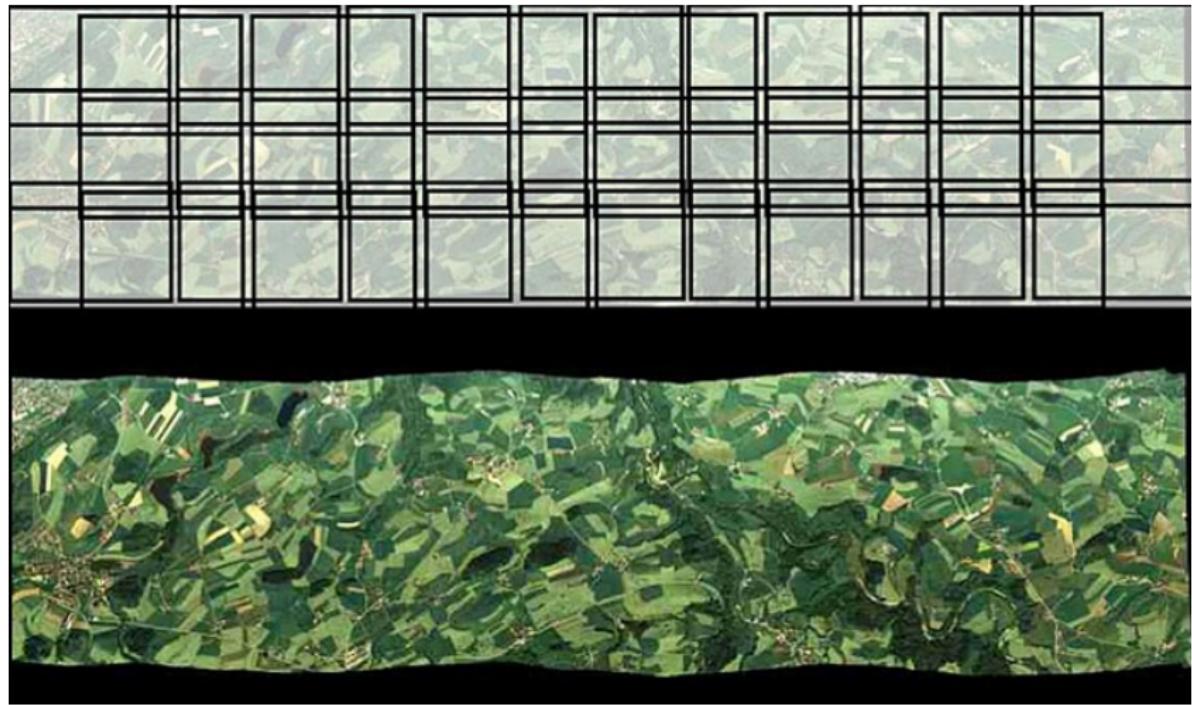
Typical wavelength range  
400-1100 nanometers (nm)

# Tipo cámaras



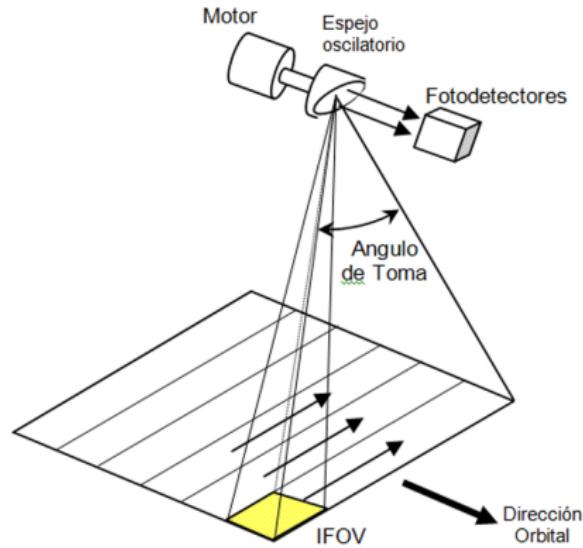
© Wageningen UR 1999

# Tipo Frame

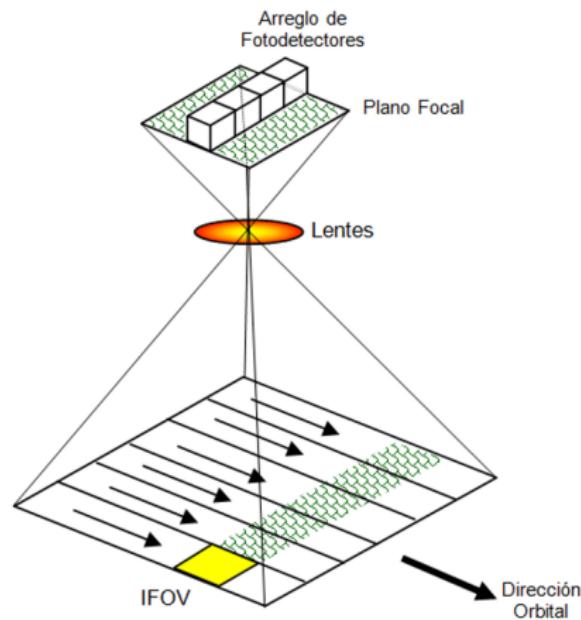


# Escaner

## Barrido vs Empuje

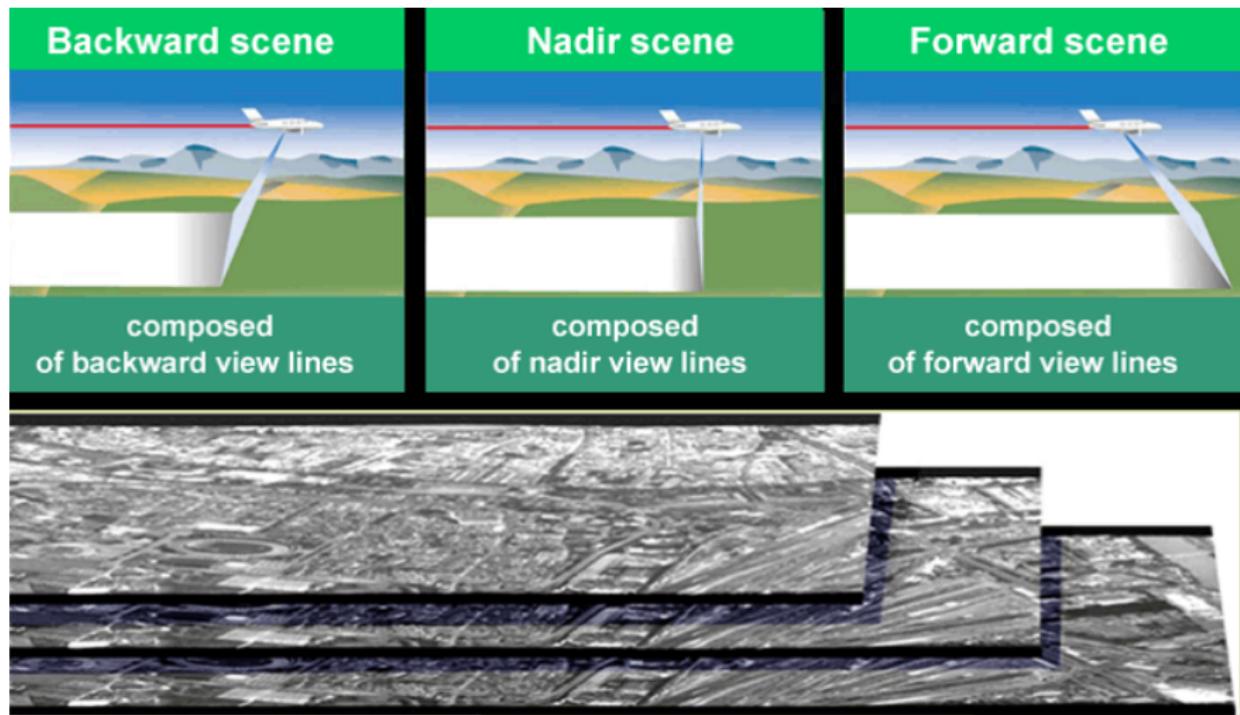


ESCANER DE BARRIDO



ESCANER DE EMPUJE

# Empuje



# Combinación

