Let's say your homework is to think about how to observe the clouds over North America, both day and night....
Move your hand over the ice, then over the hot water. Do you feel the difference?

The cold area could be the North Pole or a cloud. The hot area could be a desert.

Instead of a hand in orbit, satellite builders use a little sensor chip, which changes an electrical current, depending on whether it senses hot or cold.
Communication! We need a transmitter to send information from the satellite to the satellite operations control center on Earth. And we need an antenna on the satellite so it can receive instructions from the command center.
We will also need a way to make and store electricity for the camera, scan mirror, transmitter, and a computer to control everything. We can use solar cells to convert sunlight to electricity, and batteries to store the electricity.
Expanded View of Sensor Module

- Louver Assembly
- Scan Electronics
- Baseplate
- Cooler Assembly
- Scan Assembly
- Scan Aperture Sun Shield
- Preamplifiers
- Telescope
Visible detectors

Infrared detectors

Imager Optical Elements

NOTES:
1) SCAN MIRROR NOT SHOWN
2) COMPONENTS AND SPACINGS ARE NOT TO SCALE
Full Disk with stepped-edge
Full Disk with stepped-edge
Full Disk with stepped-edge
Full Disk with stepped-edge
Full Disk with stepped-edge
Full Disk with stepped-edge
GOES-10 Imager – Multi-band example

Data from SSEC Data Center
GOES Sounder

Expanded View of Sensor Module

Sounder Optical Elements

LEGEND
31 Dichroic Beamsplitter, Visual/R
32 Dichroic Beamsplitter, LW(SW+MW)
33 Dichroic Beamsplitter, SW/MW
L1-L6 Intermediate Lenses
M Folding Mirror (MW)
34 STAR/Vis/Trichroic Beamsplitter
W1 Filter Wheel, Window
W2 Filter Wheel, Window
W3 Filter Wheel, Window
F1 Visible Filter
F2 Star Sensing Filter
F3 Diepolanizing Window
LS Lyot Stop
Filter Wheel

- Continuously spinning filter wheel
Detector Separation and Scan Pattern

ONE STAR SENSE DETECTOR
ARRAY EIGHT DETECTORS -
each 27 BY 27 µrad

FOUR RADIOMETRIC DETECTOR ARRAYS
FOUR DETECTORS PER ARRAY

DIRECTION OF SCAN

THE FIVE DETECTOR ARRAYS SHARE A COMMON OPTICAL AXIS

TWOELVE SAMPLE (120 km) E/W SOUNDER SCAN

A

B

OPTICAL AXIS
AIM POINTS

C

D

NOTE: GVAR LABELS
THE NORTHWEST DETECTOR AS 1 OR A. GVAR NOTATION IS SHOWN HERE.