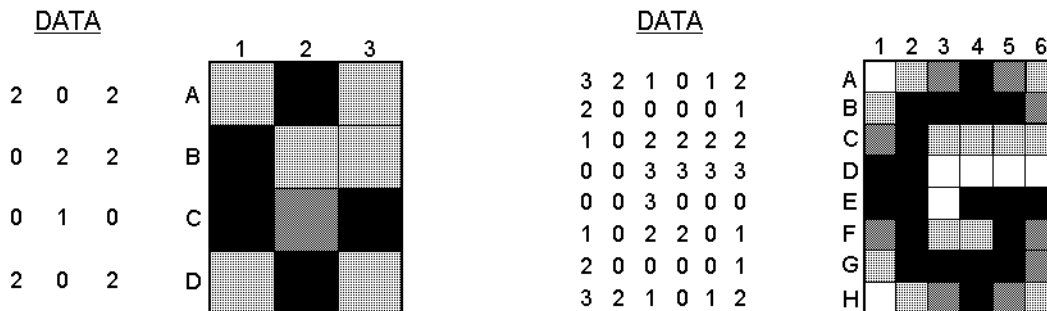


AMS Peer Training Module

Weather Satellites

Activity: A Satellite Puzzle

- See figure. The grid to the right with smaller picture elements (“pixels”) shows greater detail, i.e. has greater resolution. Letter “G”.



- 2 km pixels: $5000 \text{ km} / 2 \text{ km/pixel} = 2500 \text{ pixels E-W}$
 $3000 \text{ km} / 2 \text{ km/pixel} = 1500 \text{ pixels N-S}$
 $2500 \times 1500 = \mathbf{3,750,000}$ total pixels

1 km pixels: $5000 / 1 \text{ km/pixel} = 5000 \text{ pixels E-W}$
 $3000 \text{ km} / 1 \text{ km/pixel} = 3000 \text{ pixels N-S}$
 $5000 \times 3000 = \mathbf{15,000,000}$ total pixels
- As picture quality improves (better resolution), greater numbers of pixels are required. That involves engineering better and more expensive sensors, storage for data, transmission time from satellite to ground station, processing time for pictures, etc.

Real World Applications

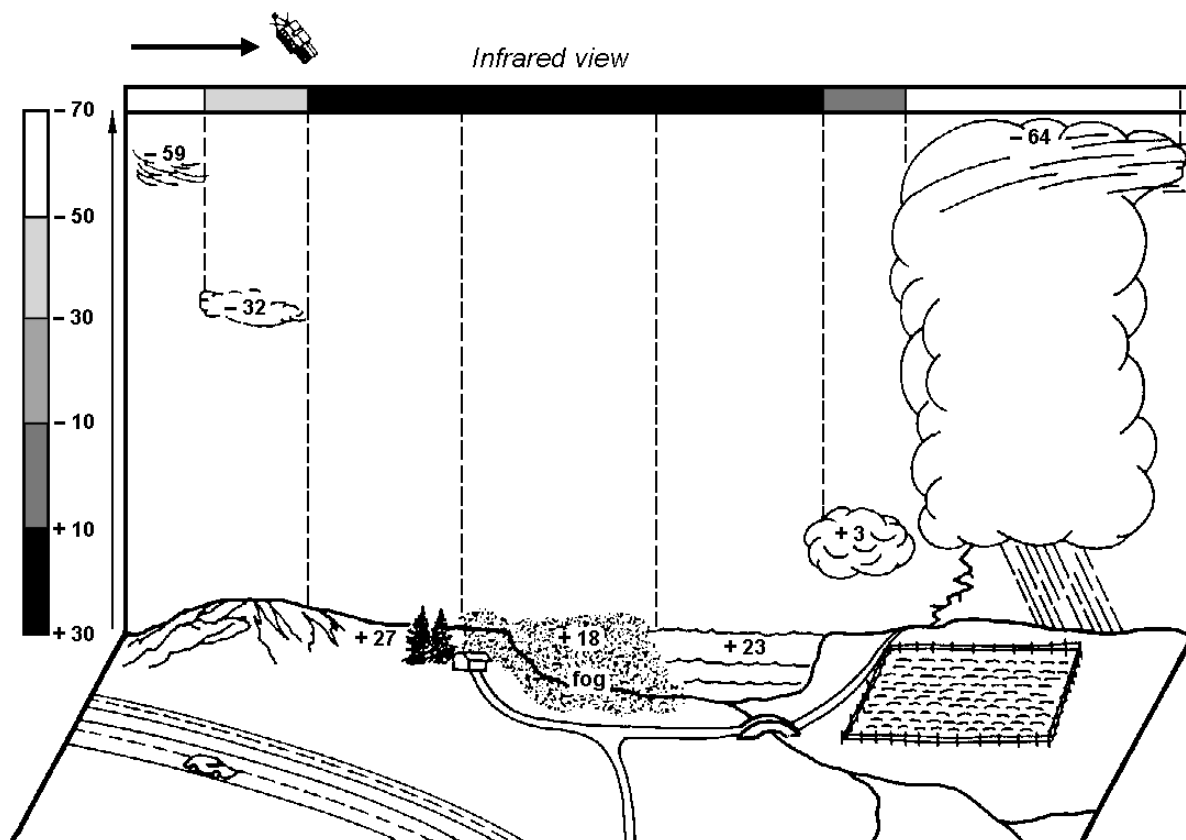
- are
- are not
- are not
- do not
- more
- warmer

AMS Peer Training Module

Weather Satellites

Activity: What Can You See?

1. Visible view: mountains, road, forest, fog, lake, farms, various cloud types, thunderstorm
2. Infrared view: white, light gray, black (extended), medium gray, white
 - number of “things” and their distinctions are fewer
 - land, fog, water surface are indistinguishable via temperature contrasts
 - high clouds are whiter (because colder)
 - temperature views are available 24 hours per day



3.	<u>Visible</u>	<u>Infrared</u>
24-hour coverage of atmosphere		✓
finer details of cloud surfaces	✓	
temperatures of cloud tops		✓
distinguishing fog from surfaces	✓	
extent of snow cover on ground	✓	
detect small fair weather clouds	✓	
give color coding to cloud tops		✓

Real World Applications (same as Activity 1 of Satellites)

1. are
2. are not
3. are not
4. do not
5. more
6. warmer