

SATELLITES

Types of artificial satellites Artificial satellites are classified according to their mission.

There are six main types of artificial satellites:

- (1) scientific research,
- (2) weather,
- (3) communications,
- (4) navigation,
- (5) Earth observing
- (6) military.

Scientific research satellites gather data for scientific analysis. These satellites are usually designed to perform one of three kinds of missions. (1) Some gather information about the composition and effects of the space near Earth. They may be placed in any of various orbits, depending on the type of measurements they are to make. (2) Other satellites record changes in Earth and its atmosphere. Many of them travel in sun-synchronous, polar orbits. (3) Still others observe planets, stars, and other distant objects. Most of these satellites operate in low altitude orbits. Scientific research satellites also orbit other planets, the moon, and the sun.

Weather satellites help scientists study weather patterns and forecast the weather. Weather satellites observe the atmospheric conditions over large areas. Some weather satellites travel in a sun-synchronous, polar orbit, from which they make close, detailed observations of weather over the entire Earth. Their instruments measure cloud cover, temperature, air pressure, precipitation, and the chemical composition of the atmosphere. Communications satellites serve as relay stations, receiving radio signals from one location and transmitting them to another.

A communications satellite can relay several television programs or many thousands of telephone calls at once. A ground station has a large dish antenna for transmitting and receiving radio signals. Countries and commercial organizations, such as television broadcasters and telephone companies, use these satellites continuously.

Navigation satellites enable operators of aircraft, ships, and land vehicles anywhere on Earth to determine their locations with great accuracy. Hikers and other people on foot can also use the satellites for this purpose. The satellites send out radio signals that are picked up by a computerized receiver carried on a vehicle or held in the hand. Earth observing satellites are used to map and monitor our planet's resources and ever-changing chemical life cycles. Under constant, consistent illumination from the sun, they take pictures in different colors of visible light and non-visible radiation. Computers on Earth combine and analyze the pictures. Scientists use

Earth observing satellites to locate mineral deposits, to determine the location and size of freshwater supplies, to identify sources of pollution and study its effects, and to detect the spread of disease in crops and forests.

Military satellites include weather, communications, navigation, and Earth observing satellites used for military purposes. Some military satellites -- often called "spy satellites" -- can detect the launch of missiles, the course of ships at sea, and the movement of military equipment on the ground.