

Satellites



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Satellites

A satellite is a small object in the universe
that will orbit a larger object

Satellites are either natural or artificial

The moon is a natural
satellite of the Earth. The
Earth is a natural satellite
of the Sun.



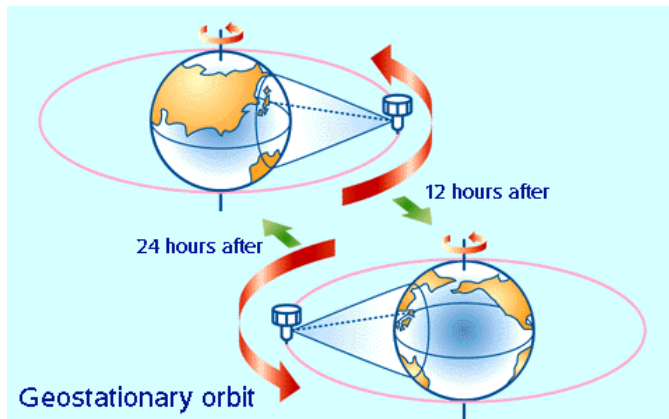
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Satellites

Artificial satellites can be
either Geosynchronous or
Low Earth Orbit satellites

Satellites

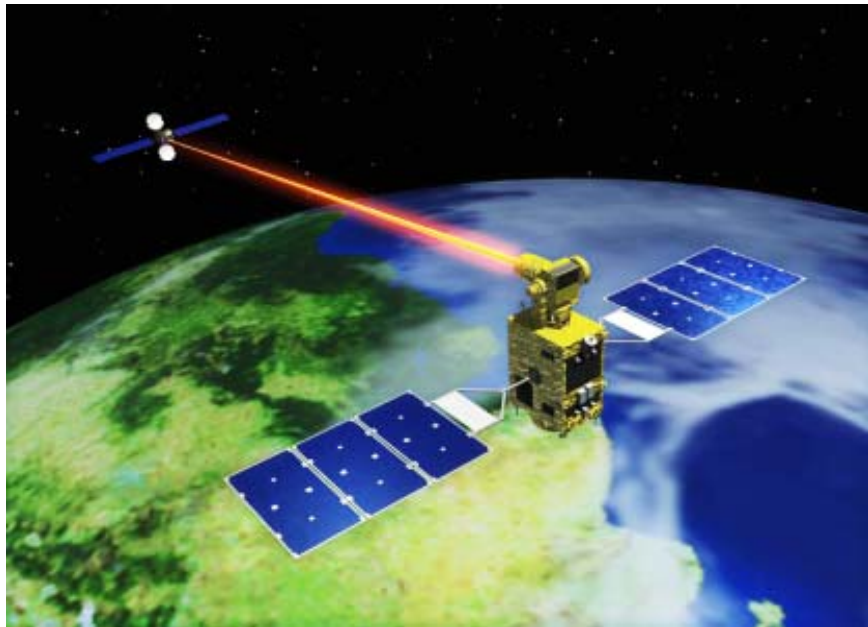
Geosynchronous satellites are placed about 36 000 km above the equator. They will rotate at the same speed as the Earth.



These satellites are always pointed to the same place on the planet.

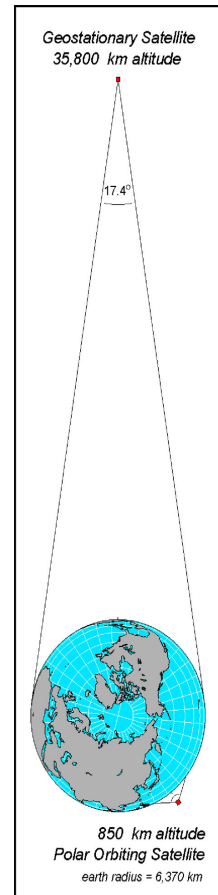
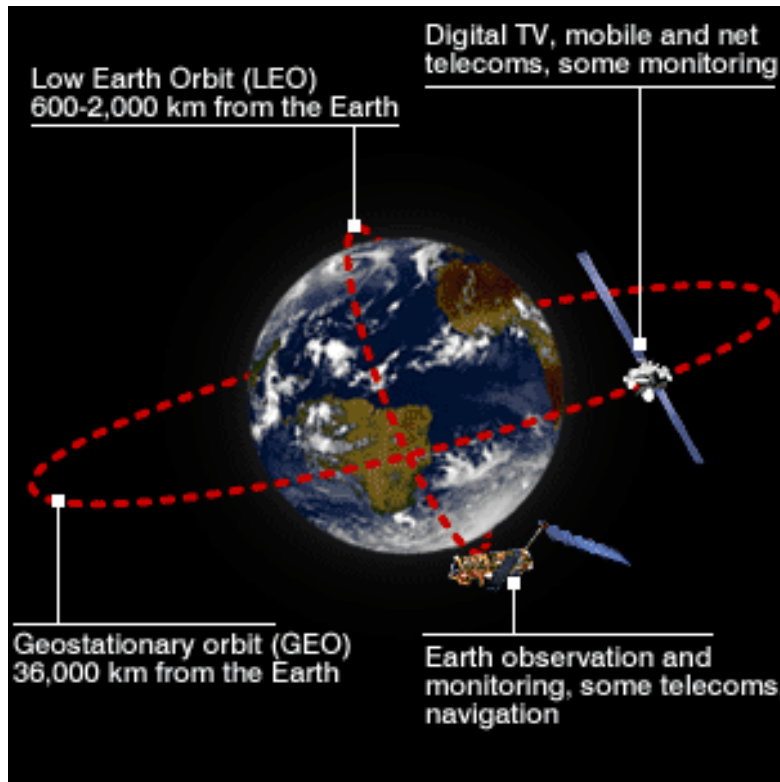
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Low Earth Orbit is between 200 and 800 km above the planet. They will revolve around the Earth in about 1.5 hours.



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Satellites

There are 3 types of satellites:

1. Communications satellites
2. Observation and Monitoring satellites
3. Remote Sensing satellites

Satellites

Communications Satellites

- allows us to watch live events from all around the world
- we can talk on the telephone with someone anywhere on the planet
- Television and Radio satellites - generally geosynchronous - our satellite dishes are always directed south to the satellites over the equator

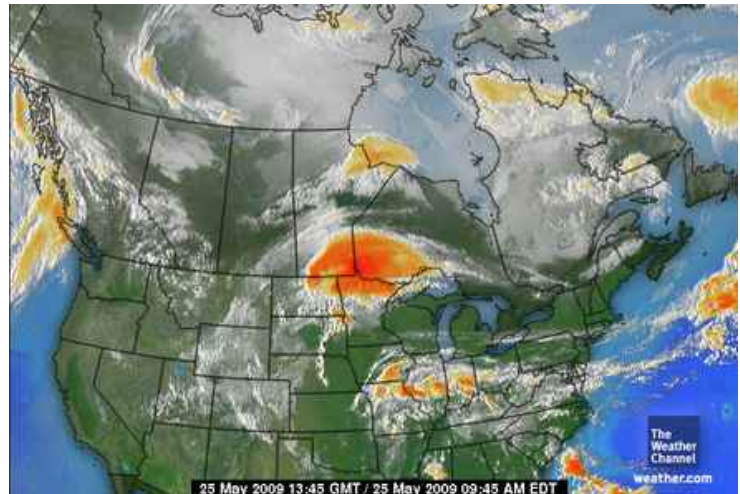


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Observation and Monitoring Satellites

- Used to forecast weather and carrying out research projects
- helps ships, airplanes and cars determine their position on the planet
- some of these satellites will be geosynchronous and some will be low earth orbit



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Remote Sensing

- taking measurements of the Earth from space which include
 - healthy vs unhealthy regions
 - clear-cut and burned forests
 - water pollution
 - erosion
 - land use in cities
- Google Maps/Google Earth uses remote sensing satellites



Satellites

Space Junk

Space junk is a serious problem. ANY tin object in space is a potential disaster for other satellites, space stations, space shuttles and/or astronauts on a space walk.



Satellites

There are 3000 functioning satellites orbiting our planet. There are 6000 non-functioning satellites.

Country	Satellites	Space probes	Other debris	Total
Russia	1335	35	2571	3941
USA	741	46	2971	3758
China	27	0	324	351
European Space Agency	24	2	233	259
Canada	16	0	0	16

Satellites

GPS - Global Positioning System

Launched in 1995

24-32 medium orbit satellites relay information about location - within meters (and improving all the time)



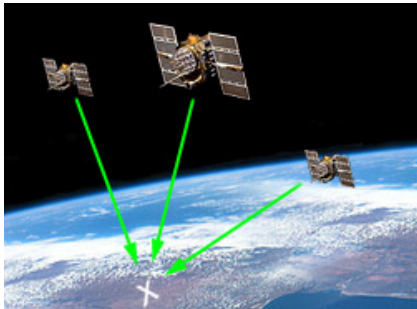
Originally developed by US Military

Available to anyone to use (as long as you have a device to read the coordinates)

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Satellites

GPS works based on triangulation - using 3 circles (radio waves). The intersection of those 3 circles gives you your position.



At any given time, there are 3 satellites above you sending information to your device.



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