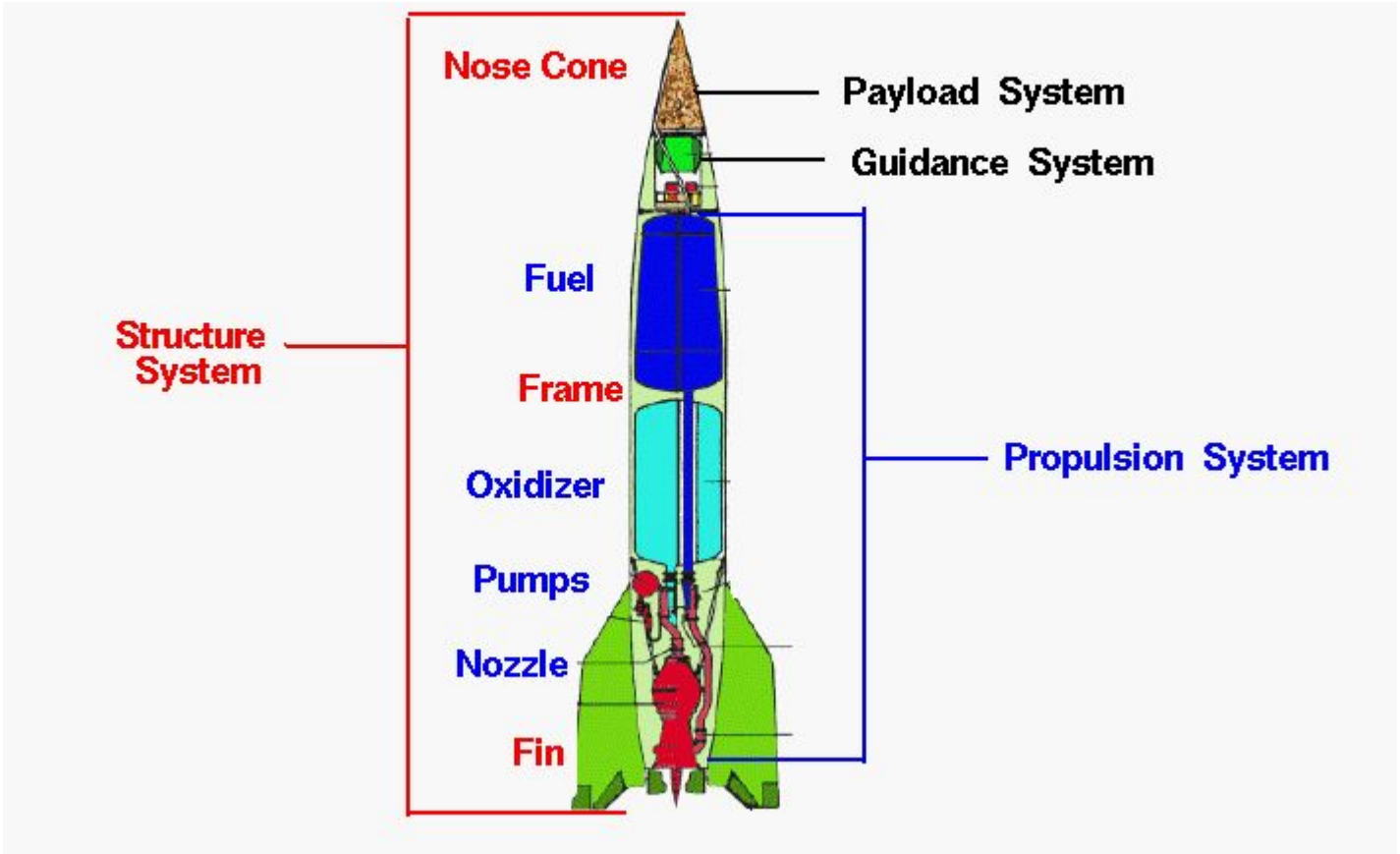
Above the Atmosphere and Under Control

Topic 6

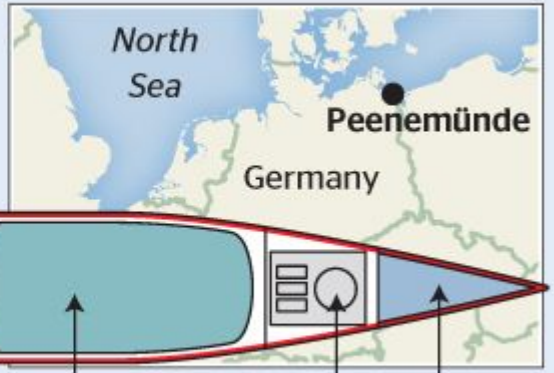
Parts of a Rocket



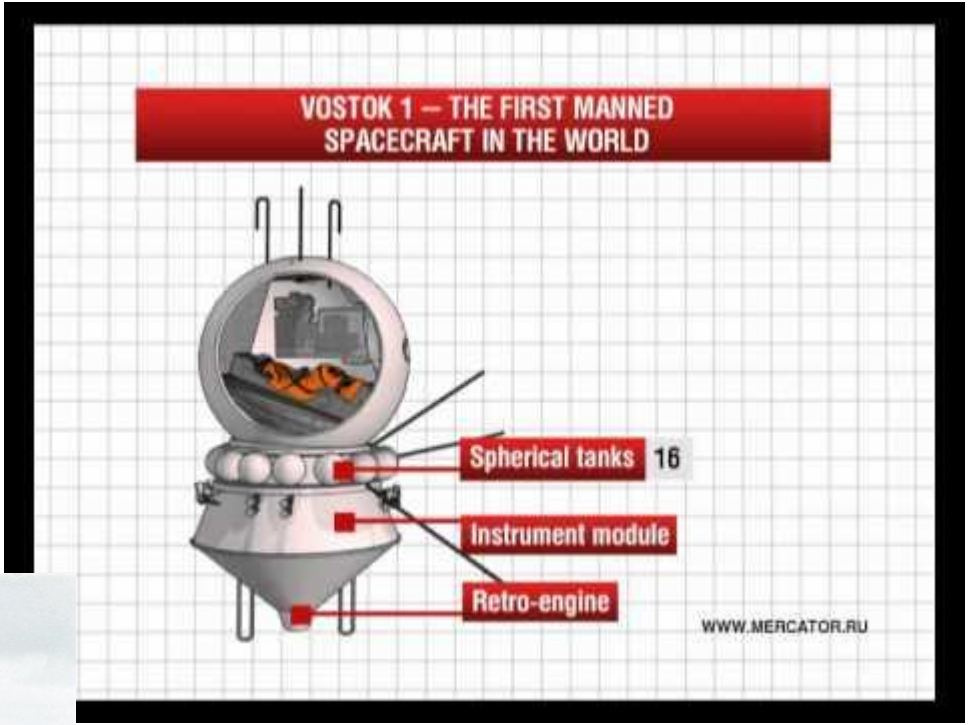
V2 rocket

Length 14m (46ft)
Altitude 60 miles

Maximum speed
5,400 km/h
(3,355 mph)
Range 200 miles




СССР


VOSTOK 1 – THE FIRST MANNED SPACECRAFT IN THE WORLD
Spherical tanks 16
Instrument module
Retro-engine
WWW.MERCATOR.RU

YURI GAGARIN'S HISTORIC FLIGHT INTO SPACE

VOSTOK 1

50 YEARS

On April 12, 1961, Soviet cosmonaut Yuri Gagarin became the first human to orbit the Earth on board of the Vostok-1, perhaps the most important flight since the Wright brother's at Kitty Hawk

Mission and Vostok program insignias

0617 GMT
Stage 2 separation, craft reaches orbit

0637 GMT
Vostok-1 crosses into the night side of earth

0710 GMT
Reaches daylight again, starts orientation for retrofire

0726 GMT
Retro-rocket fires, separation of re-entry module fails

0735 GMT
Separation achieved during re-entry

0755 GMT
Gagarin seat ejects from module at an altitude of 23,000 ft

Gagarin separates from ejection seat at 13,000 ft

0805 GMT
Yuri Gagarin lands near Uzmoriye, a former USSR town in Russia

STAGES

April 12, 1961

A two-stage rocket, carrying the Vostok-1 spaceship with Yuri Gagarin on board, launches from Baikonur (former USSR, now Kazakhstan) at 0607 GMT

0612 GMT
Stage 1 separation

0609 GMT
Strap-on booster sections separate

Vostok 3KA rocket

Weight 4,725 kg (with fuel)

38.36 m

Spaceship Vostok -1

Second stage burn time 365 seconds

First stage burn time 301 seconds

VOSTOK -1

SHARIK RE-ENTRY SPHERE

5 m

Hatch

'Trombone' communication antennas

Electronics pack

Cosmonaut's ejection seat

'Vzor' optical orientation device

Survival kit inside the seat

Ablative heat shield

Steel attachment straps, severed during re-entry

Yuri Alekseyevich Gagarin (1934-68)

SERVICE MODULE

Oxygen and nitrogen tanks

Electrical harness

Whip antennas

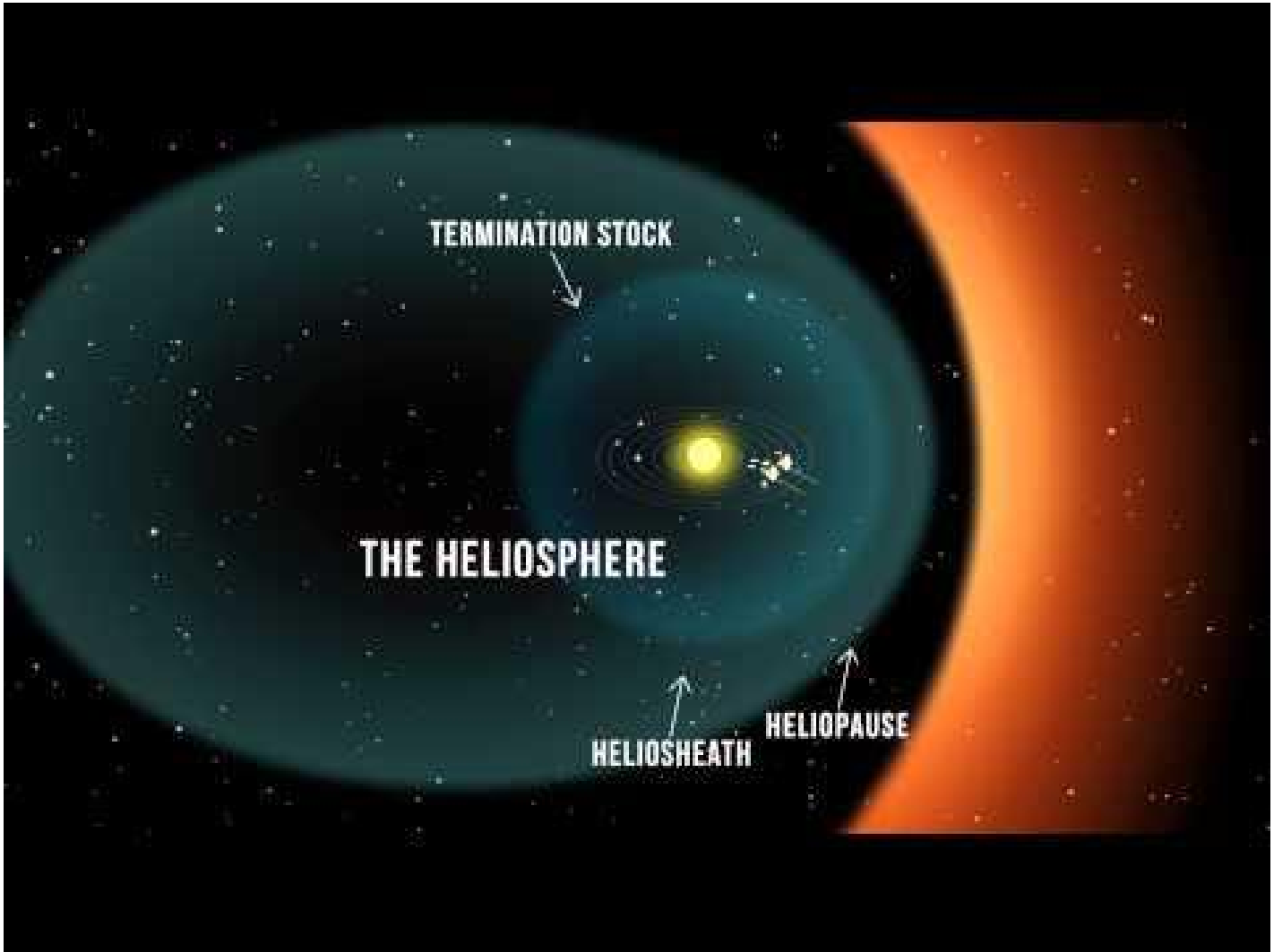
Communication antennas

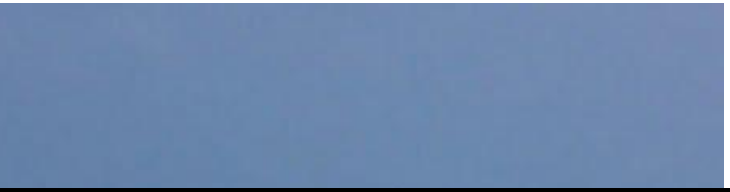
Retro-rocket

FLIGHT TRAJECTORY

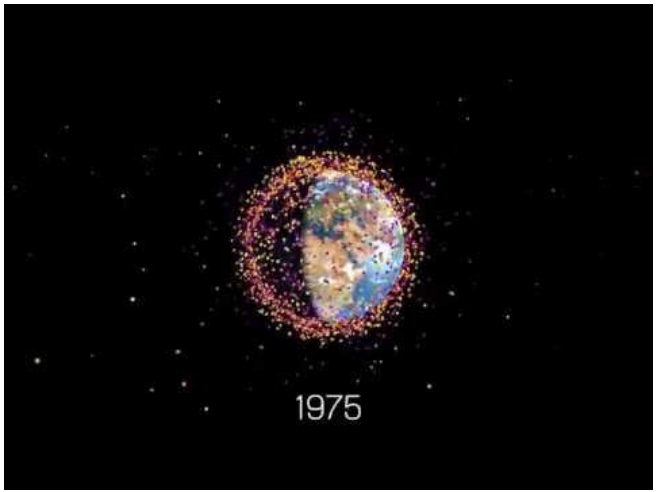
Vladimir Komarov


BASSETT, CHARLES A. II
BELYAYEV, PAVEL I.
CHAFFEE, ROGER B.
DOBROVOLSKY, GEORGI T.
FREEMAN, THEODORE C.
GAGARIN, YURI A.
GIVENS, EDWARD G., Jr.
GRISSOM, VIRGIL I.
KOMAROV, VLADIMIR M.
PATSAYEV, VIKTOR I.
SEE, ELLIOT M., Jr.
VOLKOV, VLADISLAV N.
WHITE, EDWARD H. II
WILLIAMS, CLIFTON C., Jr.

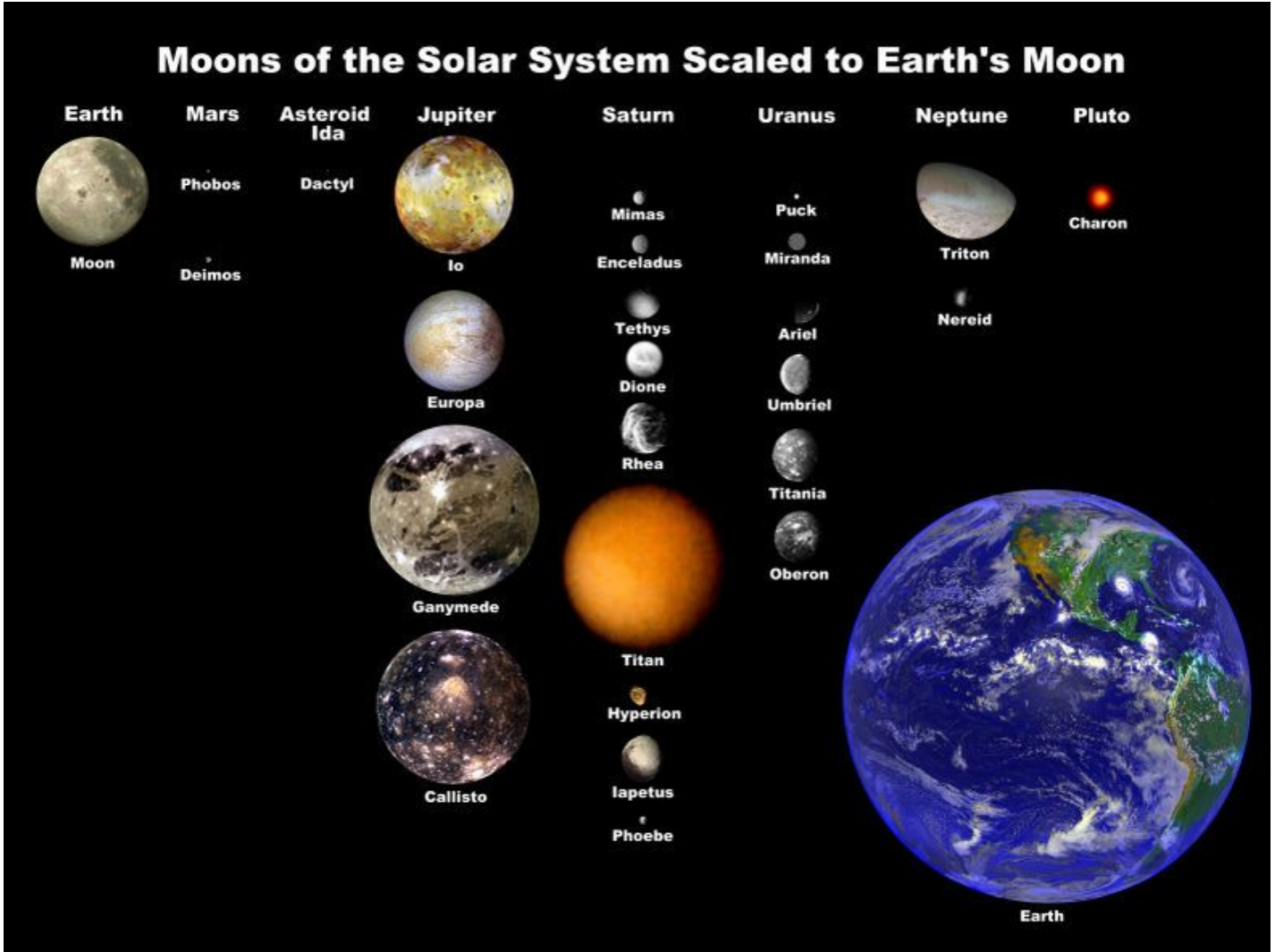

TERMINATION STOCK
THE HELIOSPHERE
HELIOSHEATH
HELIOPAUSE



Artificial Satellites

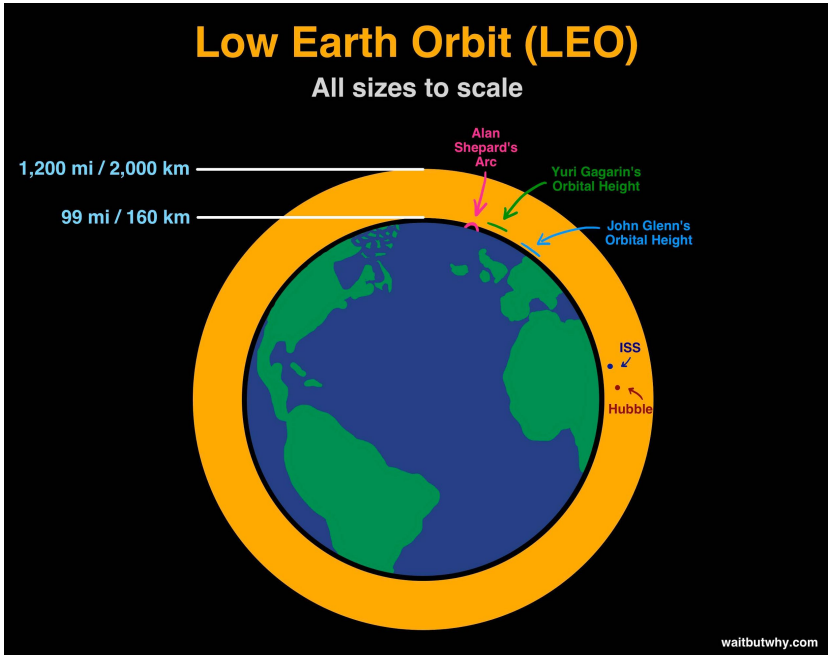


Natural Satellites


Moons of the Solar System Scaled to Earth's Moon
Earth
Moon
Mars
Phobos
Deimos
Asteroid Ida
Dactyl
Jupiter
Io
Europa
Ganymede
Callisto
Saturn
Mimas
Enceladus
Tethys
Dione
Rhea
Titan
Hyperion
Iapetus
Phoebe
Uranus
Puck
Miranda
Ariel
Umbriel
Titania
Oberon
Neptune
Triton
Nereid
Pluto
Charon
Earth

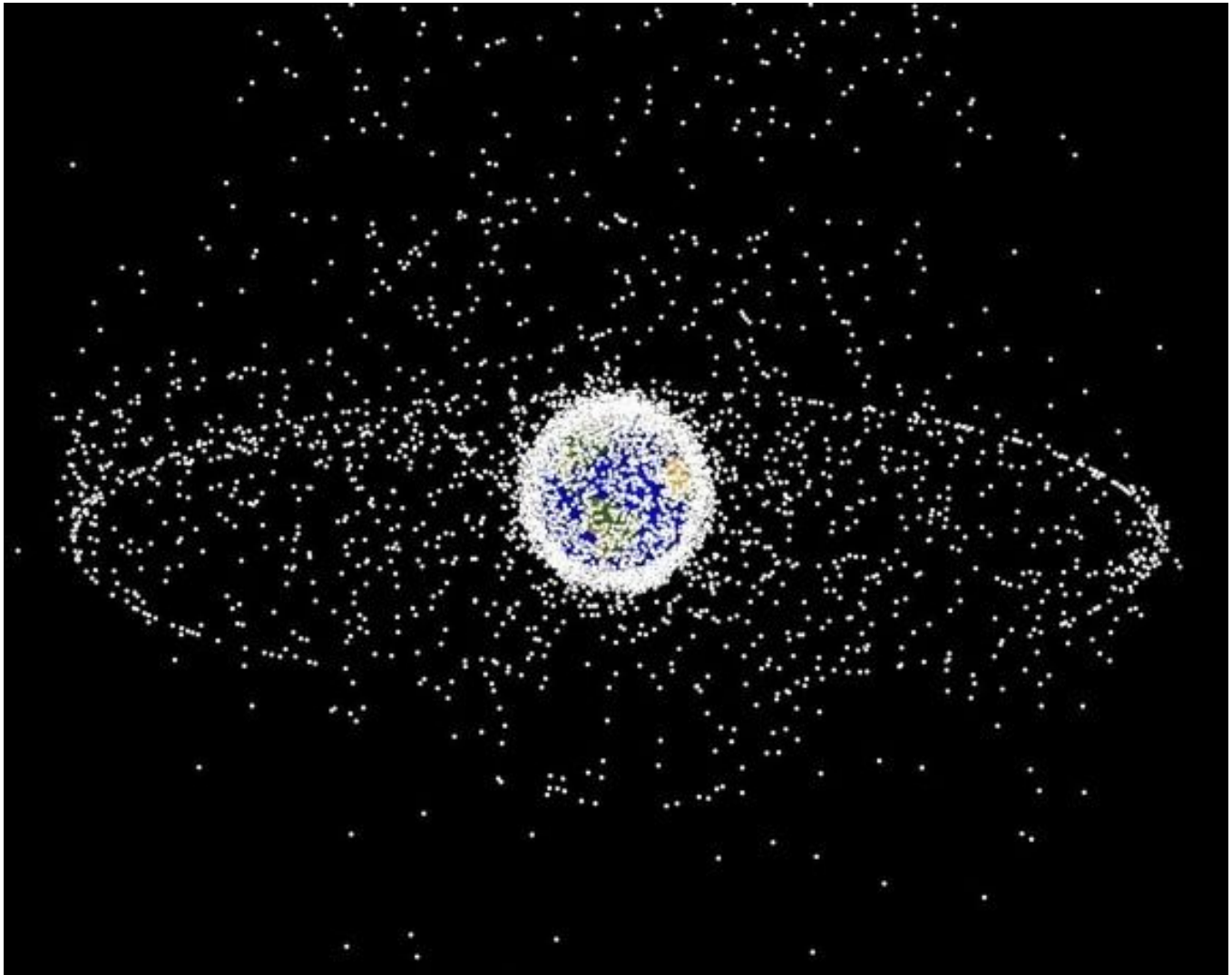
Low Earth Orbit

- 200 - 800 km high
- Orbit the Earth every 1.5 hrs.
- Good for communication
- Very fast signal since it doesn’t have to travel far
- Have to track the satellite through space to get a message from it since it is moving so fast



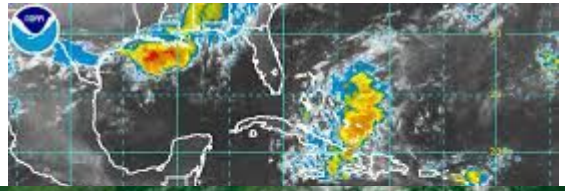
Geosynchronous Orbit

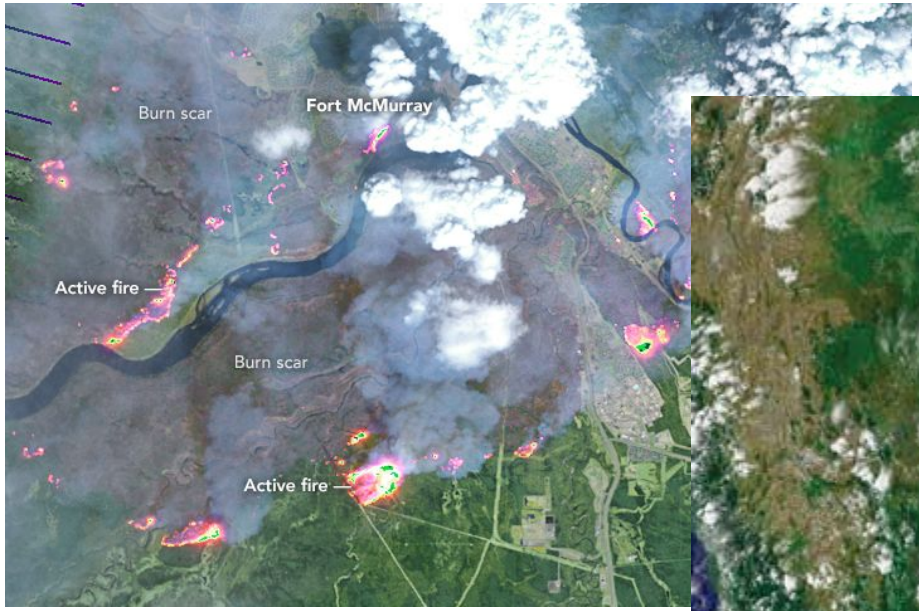
- 36 000 km high (50x higher!)
- Orbit the Earth at the same time as the Earth rotates (so it appears not to move)
- Great for broadcasting information over a large area
- Very noticeable lag as the signal has to travel a lot farther

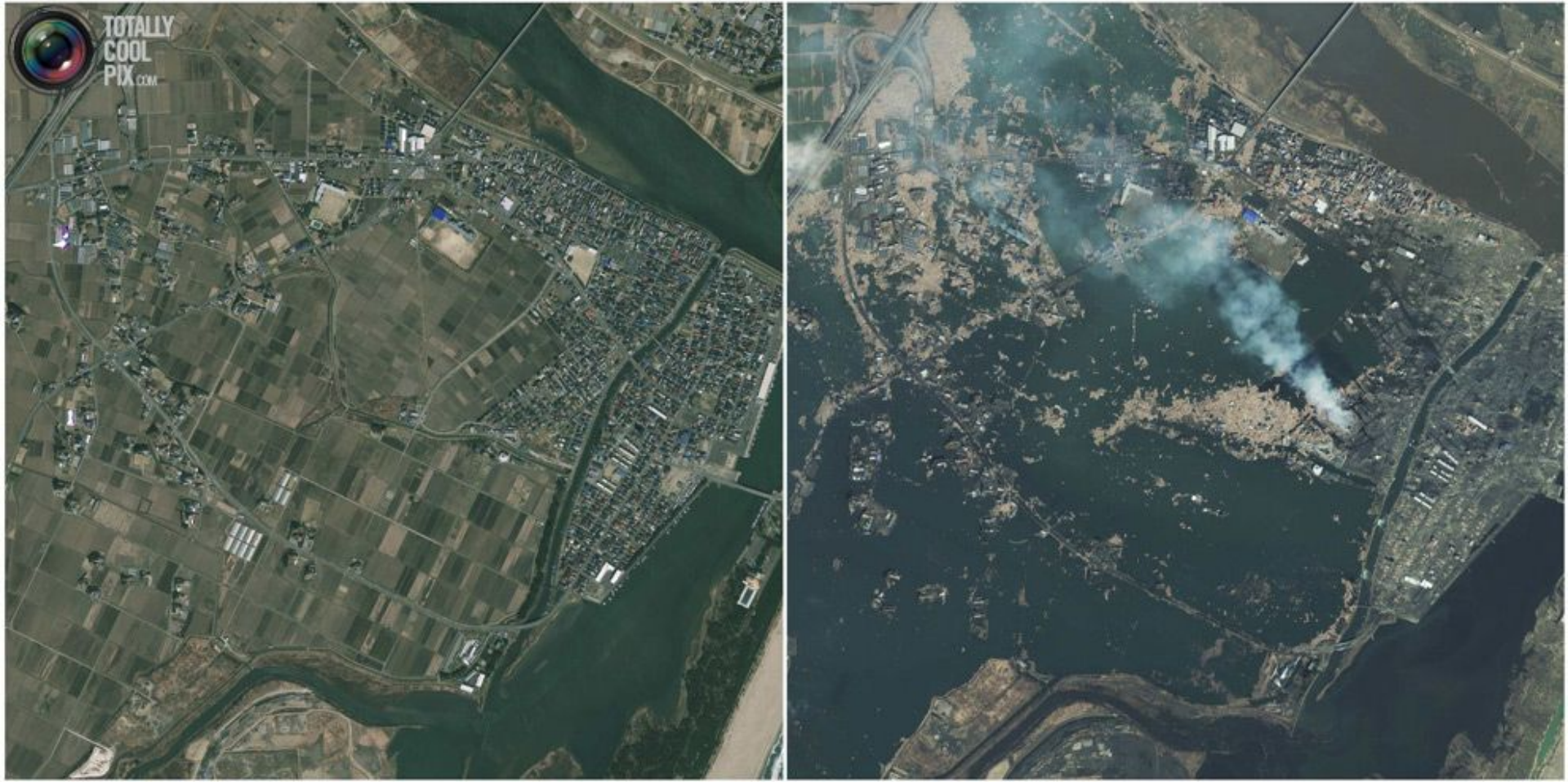


Remote Sensing

-using satellites to take measurement of Earth from outer space






TOTALLY
COOL
PIX.COM