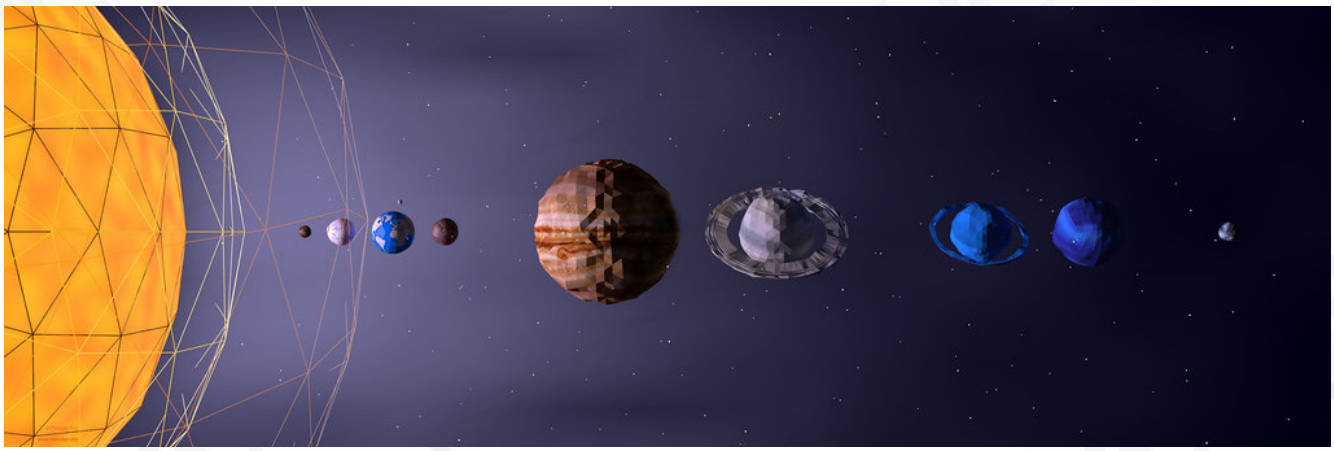
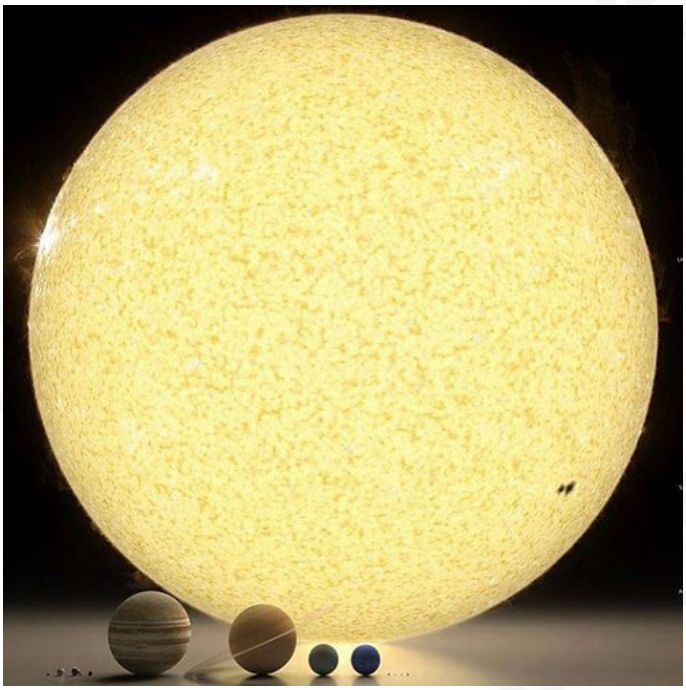
Our Solar System

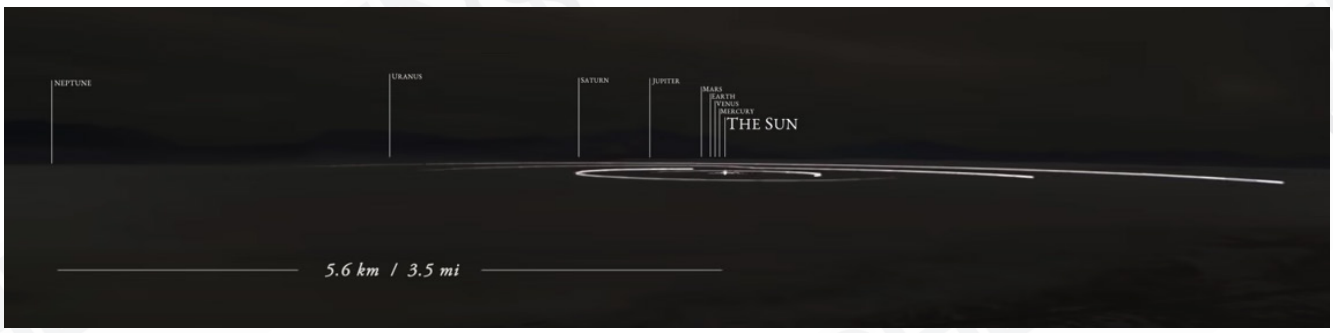


This illustration shows the position of the planets in our solar system, but not to scale.

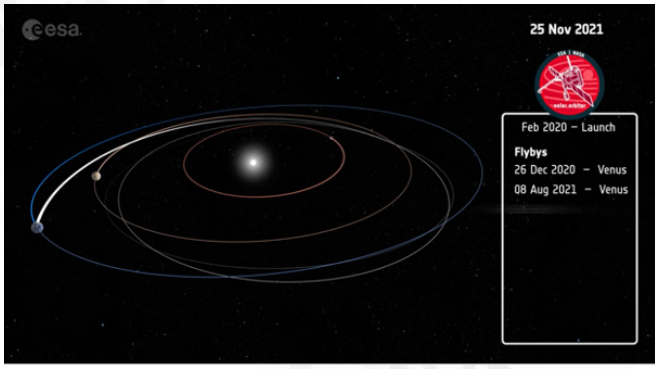
Earth is the third planet from the left. The distance between the planets cannot be shown to scale.

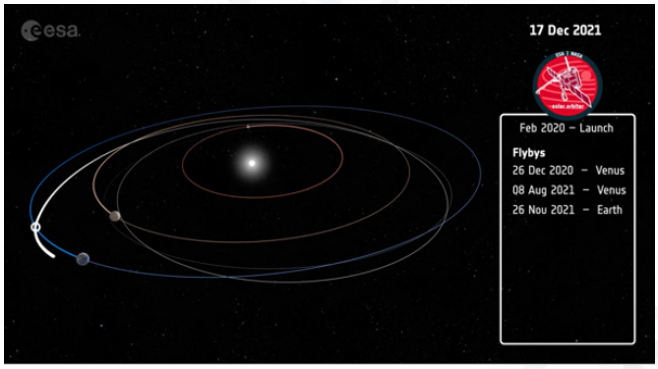


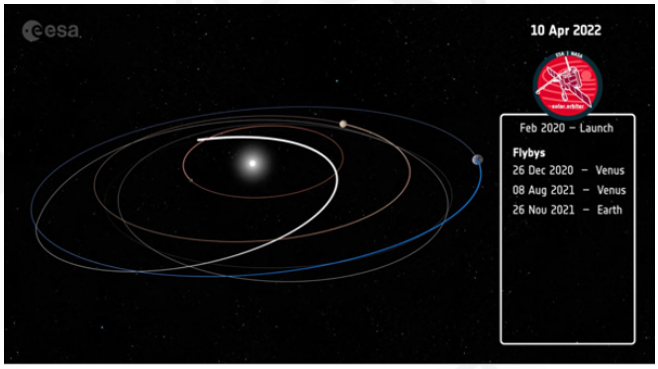
Video clip showing the correct distances between the planets to scale. National Geographic 7 mins.https://www.youtube.com/watch?v=Kj4524AAZdE

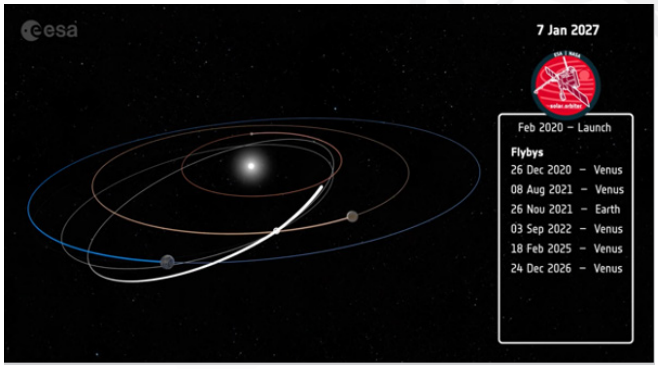


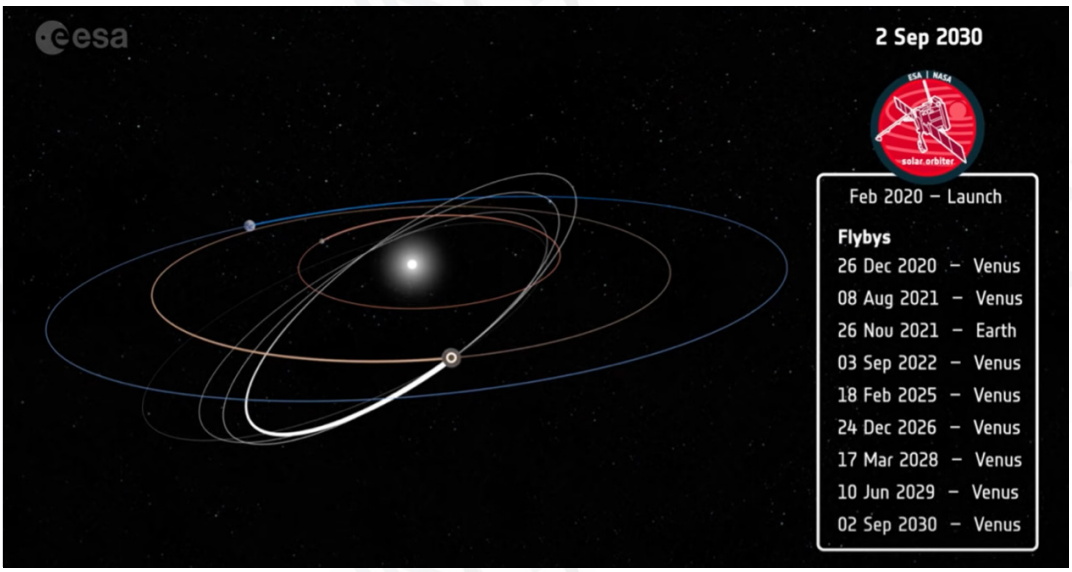
At this scale, Earth is the size of a marble and Neptune is 3.5 miles from the Sun.











For current information about the Solar Orbiter **https://www.esa.int/Enabling_Support/Operations**

The mission will be controlled from the European Space Operations Centre (ESOC), Darmstadt, Germany, using ESA's Malargüe ground-station. Other ESTRACK stations such as New Norcia in Australia and Cebreros in Spain will act as backups.

The Science Operations will be managed from the European Space Astronomy Centre (ESAC), Madrid, Spain.

European Space Operations Centre, Darmstadt, Germany

At any one time, ESOC operates over a dozen satellites, with multiple new missions in planning and others under study.

Teams design and build mission 'ground segments' – the hardware and systems on Earth that enable engineers to control satellites in space and receive and distribute precious data to scientists.

Just after lift-off, during the critical Launch and Early Orbit Phase (LEOP), ESOC engineers assume control of a new spacecraft, working around the clock to activate crucial on-board systems and ensure the spacecraft's health in the extreme environment of space.

Flight operations teams maintain real-time contact with missions near Earth, orbiting at the Sun-Earth Lagrange points or voyaging deep in our Solar System.

ESOC's mission analysis team plans and selects the best possible orbits, launch trajectories and launch windows while experts in flight dynamics calculate the real-time position, speed and attitude of satellites in space.

ESOC is responsible for the Agency's worldwide Estrack ground station network, which can track all types of missions and routinely supports spacecraft operated by NASA and other agencies.

In past decades, ESOC experts have recovered numerous satellites that experienced launcher problems or technical failures in orbit.

Daily operations from specialised control rooms continue 24 hrs/day, year-round during a satellite's life, until mission completion and safe disposal in a 'graveyard' or re-entry orbit.

ESOC is an internationally recognized centre of excellence for space debris studies and services, space situational awareness, ground system engineering, software systems, the design and development of tracking stations and satellite navigation.

ESOC works in cooperation with other agencies and international bodies to define technical standards, share cutting-edge tools and techniques and support European industrial development and competitiveness.

The information above has come directly from the European Space Agency pdf 'Where Missions Come Alive'. To read more click here: **https://download.esa.int/esoc/esa_ESOC_BR_web_2015.pdf (esa_ESOC_BR_web_2015.pdf)**

Interesting Cat and Spacecraft Operations Engineer – Solar Orbiter – News Feature
https://www.theatlantic.com/science/archive/2020/04/nasa-cats-spacecraft-europe-an-space-agency/610438/

ESOC Satellite Control Fail Simulation
https://www.youtube.com/watch?v=xhM-bqXTKoU

The Solar Orbiter

The Solar Orbiter has been sent from Earth on an orbit that will take it between Mercury and the Sun.

Mission

ESA's Solar Orbiter mission is conceived to perform a close-up study of our Sun and inner heliosphere - the uncharted innermost regions of our Solar System - to better understand, and even predict, the unruly behaviour of the star on which our lives depend. At its closest point, the spacecraft will be within the orbit of Mercury, braving the fierce heat to provide unique data and imagery of the Sun.

Solar Orbiter will be the first satellite to provide close-up views of the Sun's polar regions, which are very difficult to see from Earth, providing images from high latitudes. It will also be able to see solar storms building up over an extended period from the same viewpoint, delivering data of parts of the Sun not visible from Earth. Link **https://www.esa.int/Science_Exploration/Space_Science/Solar_Orbiter_overview**

The Solar Orbiter can be tracked in real time at **https://solarorbiter.esac.esa.int/where/**

For a simulation of the Orbiter's entire journey **https://www.esa.int/Science_Exploration/Space_Science/Solar_Orbiter_overview**