

Voyager

What is the Voyager programme?

Launching aboard two separate rockets in 1977 from Cape Canaveral in Florida, USA, Voyager 1 & 2 are on a mission to explore our solar system and beyond.

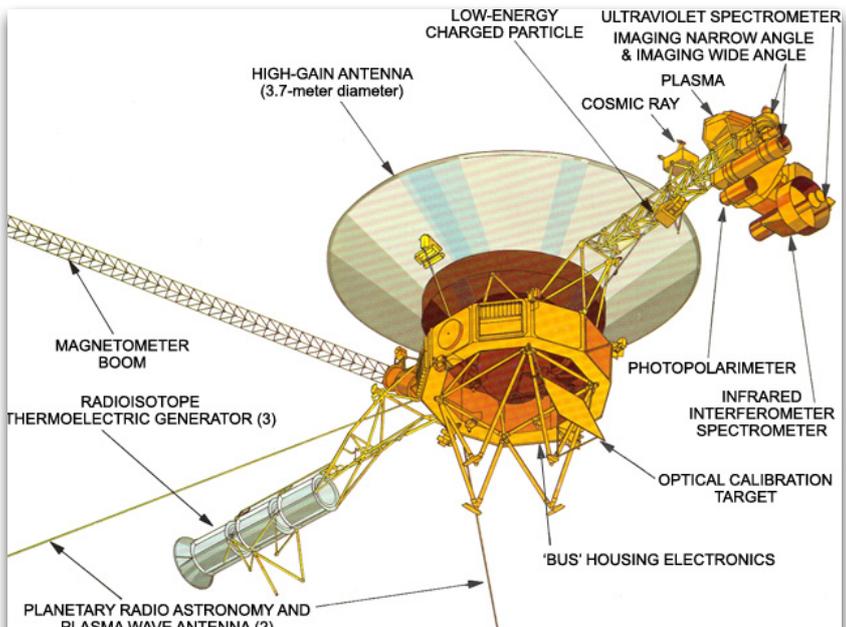
They launched on Titan-Centaur rockets (see image)

Both Voyager 1 and 2 carry lots of scientific instruments to make new discoveries. This included cameras to take photos of the planets, a thermometer for taking temperature readings at different places in the solar system, and an ultraviolet light sensor. Looking at this invisible UV light could tell Voyager about any aurorae (like the northern lights) on the planets and explore the nature of any planetary rings.



The Titan-Centaur rocket that launched Voyager 2 on the 20th of August, 1977

They are powered by something called Radioisotope Thermoelectric Generators, which is a kind of battery that uses nuclear energy to make heat and then electricity. Unfortunately, this is not a renewable energy, so once the voyager spacecrafts have used up the nuclear fuel they left Earth with, they won't be able to record anything with their instruments. This is due to happen around 2025.



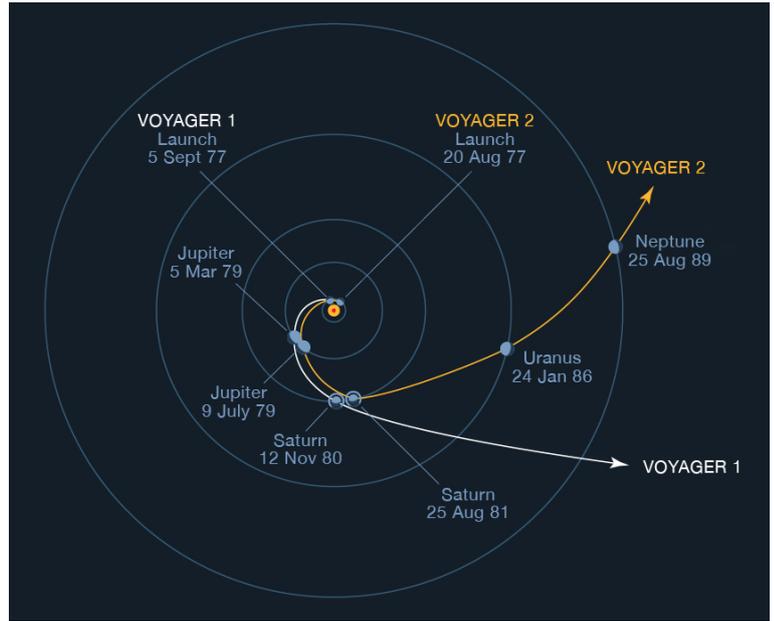
This diagram shows what Voyager 1 & 2 look like and what instruments they carry.



Where are they going & where have they been?

As of April 2020, Voyager 1 is the furthest human-made object ever to be sent from Earth. It was 22.3 billion kilometers from the Sun, and still going! Voyager 2 was 18.5 billion kilometers from the Sun!

Between them, Voyager 1 & 2 have visited all of the giant planets in our solar system – they both got close to Jupiter and Saturn, and Voyager 2 flew by Uranus and Neptune



The diagram shows the trajectories of Voyager 1 & 2.

Big distances can be measured in units called Astronomical Units (AU). 1 AU is the average distance the Earth is away from the Sun (nearly 150 million km). Voyager 1 & 2 are 149 and 124 times further away than this!

The probes used something called a gravity assist from the planets they passed nearby, using their gravity to give them a boost in speed and 'slingshot' them off a bit faster without using any extra fuel!

As of 2021, both Voyager probes have left our solar system and are in interstellar space – the space between stars.

The Golden Records

As well as scientific instruments, the voyager probes carry a very important message.

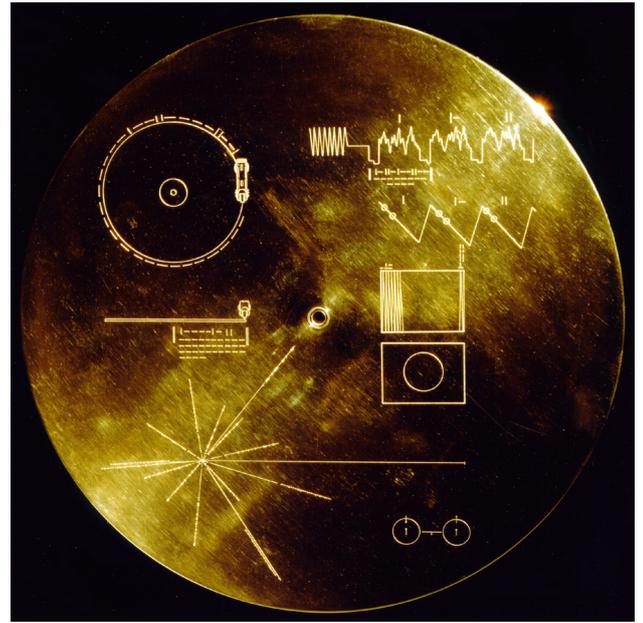
They carry a golden record each, called "Sounds of Earth". The records contain sounds and images that represent the diversity of life and culture on Earth, and includes recordings of greetings from people in 60 languages! The record was sent with a needle and a cartridge, as well as symbolic instructions on the cover for how to play the record in the case that another intelligent life form comes across the record in interstellar space; the next time it will be close to any other planets will be in 40,000 years!



The Golden Records are actually gold plated copper and contains sounds and information that could be converted into images.

The cover was designed to protect the record from space debris but also acts as instructions for the user.

The images encoded on the record include a 'map' of sorts to explain where the voyager probes came from, diagrams showing how our mathematical systems work, information about the planets in our solar system, how DNA works and human development, what the land on Earth looks like, music, and lots of images of different cultures. You can see some of the images [here](#).



The cover of the golden records, designed to give instructions on how to play the record and where the records have come from!

The scientist who was in charge of deciding what information went on the record, Carl Sagan, said:

“The spacecraft will be encountered and the record played only if there are advanced spacefaring civilizations in interstellar space. But the launching of this bottle into the cosmic ocean says something very hopeful about life on this planet.”

You can read more information about Voyager [here](#).