Sailing the planets

NASA investigates using a wing to steer the next generation of planetary balloon probes through alien atmospheres.

New balloon probe

Scientists and engineers from NASA and the Global Aerospace Corp. are developing research balloon platforms that will take observations of a planet's atmosphere for longer durations than current balloon probes. The project improves upon previous balloon designs by attaching a new steering device called the StratoSail.

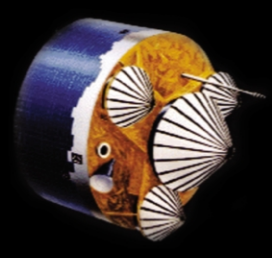
Space probe history

Nov. 16, 1965
The Soviet probe Venera 3 lands on Venus, making it the first spacecraft on the surface of another planet.

Aug. 7, 1970
The Soviet probe Venera 7 is deployed to study the Venusian atmosphere. It was the first probe to return data from another planet.

Aug. 20, 1975
The United States launches Viking probes to study the Martian atmosphere and collect soil samples.

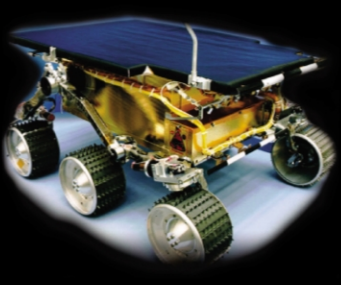
May 20, 1978
The U.S. Pioneer Venus mission deploys multiple probes into the atmosphere of Venus to study the planet's clouds and map its surface.



July 13, 1995
The U.S. spacecraft Galileo deploys a probe into Jupiter's violent atmosphere to measure winds, clouds and lightning.

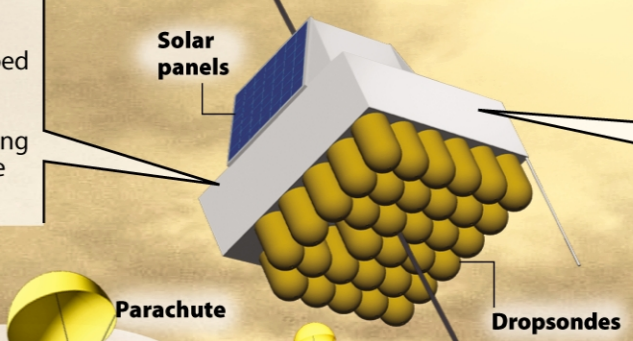
Dec. 15, 1984
Soviets launch Vega 1 and Vega 2. Each spacecraft deployed a lander and an atmospheric balloon. This was the first use of data-collecting balloons on a planet other than Earth. The balloons transmitted directly to Earth for 47 hours.

Sept. 27, 1997
The U.S. Mars Pathfinder mission deploys several instruments and a robotic rover. The probe photographs the surface features, analyzes soil and rock composition and monitors weather.



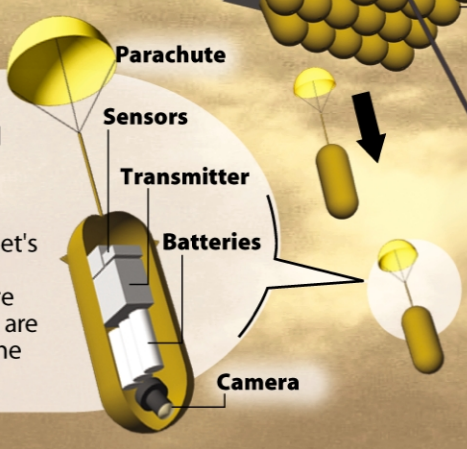
Gondola

The gondola is equipped with a suite of solar-powered instruments and sensors for studying a planet's atmosphere and recording data.



Dropsonde

Dropsondes are small probes that can be deployed from the gondola. While parachuting to a planet's surface they record humidity, temperature and pressure. The data are then transmitted to the gondola.



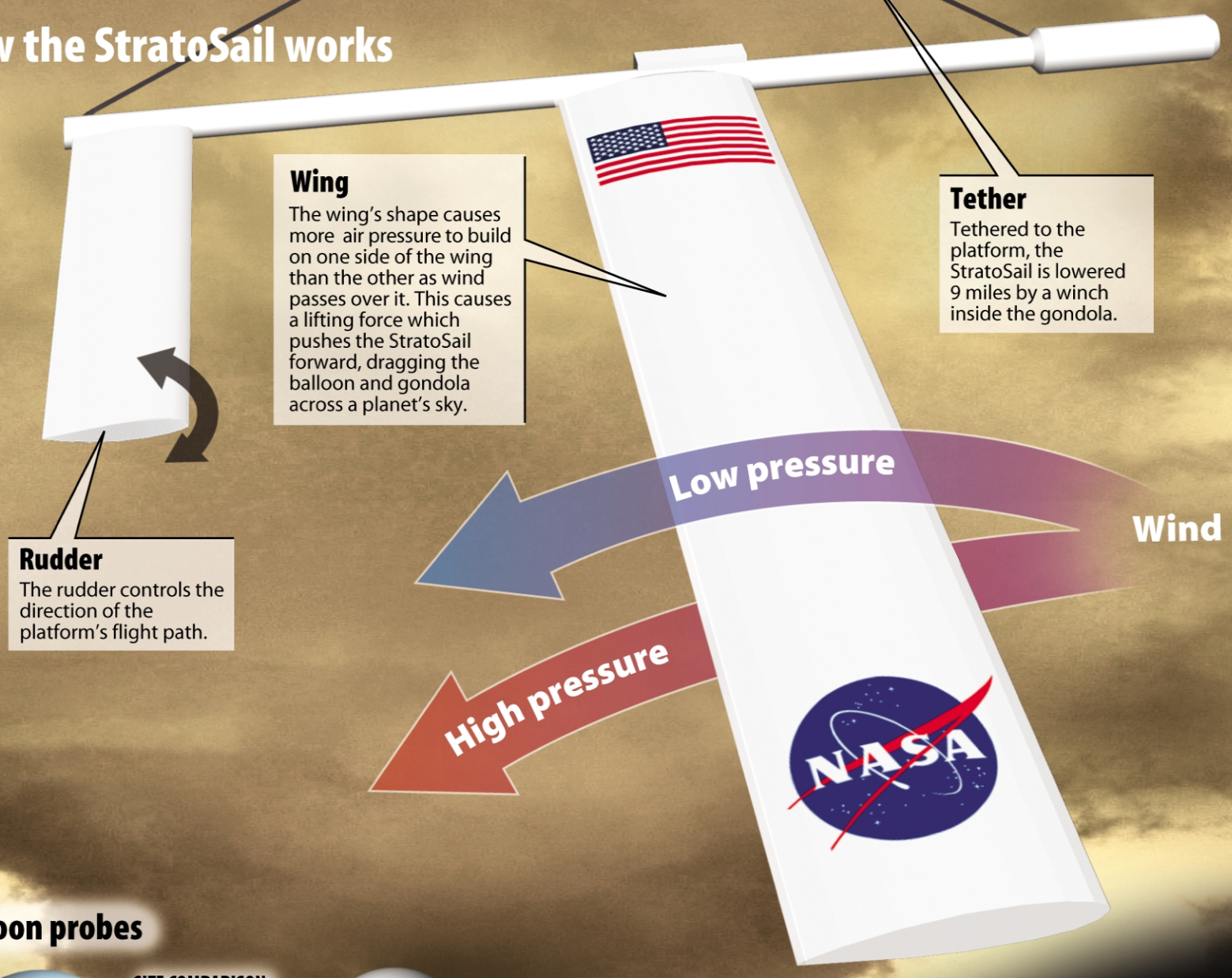
Stowing the StratoSail

Before the StratoSail is deployed, it is collapsed and stored on the gondola of the platform in two configurations.

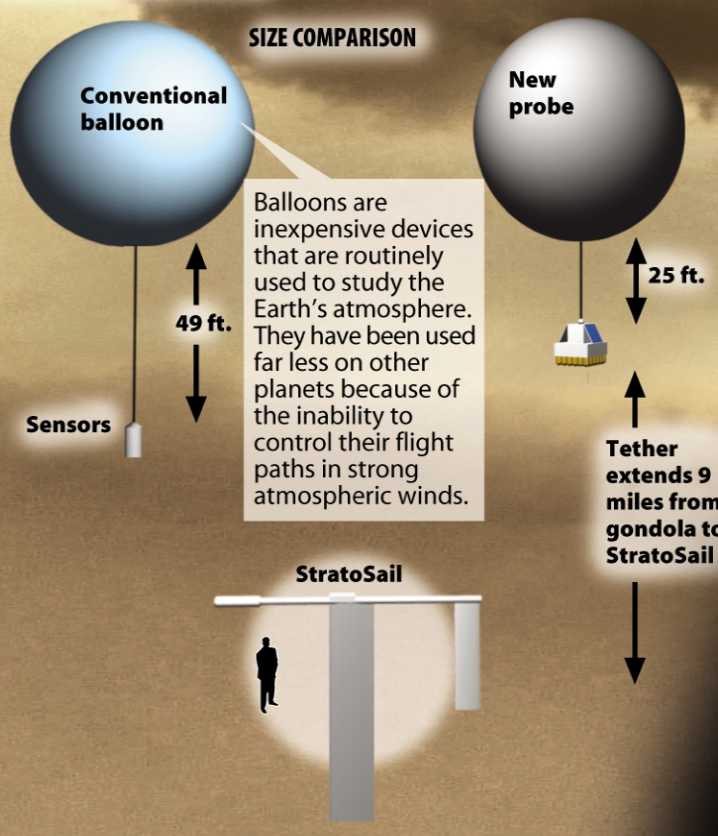
Wrapped around the gondola or

folded beneath gondola.

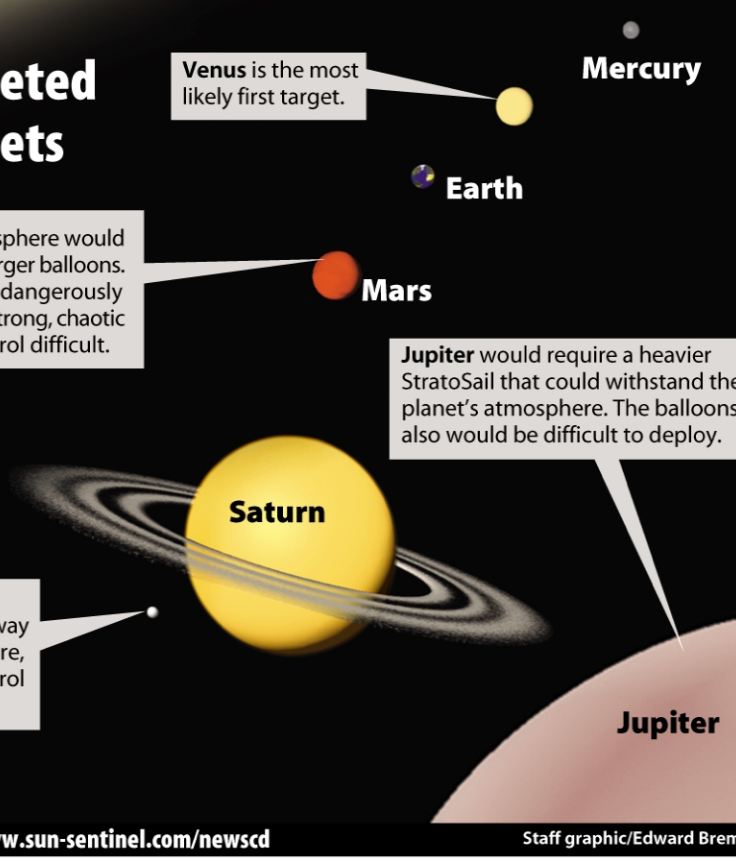
How the StratoSail works



Balloon probes



Targeted planets



SOURCES: Dr. Alexey Pankine, Global Aerospace Corp., NASA

Staff graphic/Edward Bremner