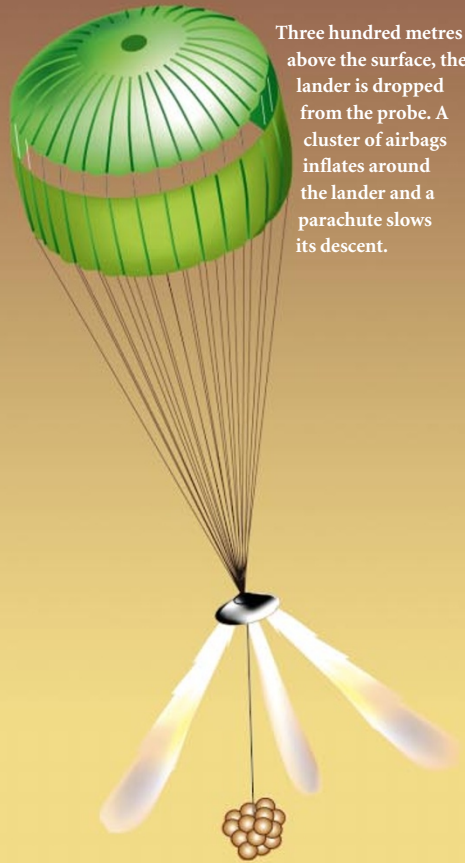


Released into the atmosphere, a probe falls towards the surface at over half a kilometre per second.

Fantastic journeys

Early next year, three instrument-laden landers will touch down on Mars. The Japanese craft Nozomi will enter orbit around the planet shortly afterwards. By spring 2004, data on the red planet will be flowing thick and fast.



Three hundred metres above the surface, the lander is dropped from the probe. A cluster of airbags inflates around the lander and a parachute slows its descent.

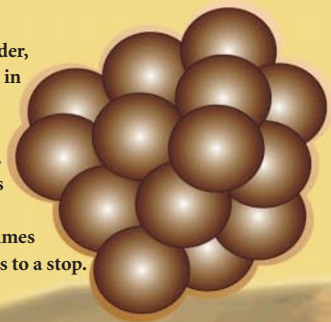
Meridiani Planum

One of NASA's twin Mars Exploration Rovers will touch down at Meridiani Planum, where it will find itself on the opposite side of Mars to its sibling craft. Grey deposits of the mineral haematite attracted NASA to this site. Haematite — an oxidized form of iron — rarely forms on Earth in the absence of water. Its presence at Meridiani suggests that hot springs may once have gurgled through the rocks there. Using a high-power microscope, the rover will examine the size and the orientation of haematite grains, which should provide clues about how the mineral formed.

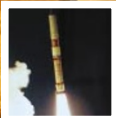
Gusev Crater

NASA staff plumped for this site after noticing its resemblance to lake beds seen on Earth. Sediment seems to have accumulated at the point at which a 900-km-long valley courses into the crater. One of NASA's rovers will land in the deepest part of the crater, and use an abrasion tool to grind away the surface layers of sedimentary rocks. Measuring the X-rays and α -particles emitted by the lower layers of rock will provide data on their composition and the conditions under which they formed — including whether water was present at that time.

The lander, encased in airbags, hits the ground, bounces about a dozen times and rolls to a stop.

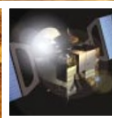


4 July 1998



Japan launches Nozomi from the Kagoshima Space Center

2 June 2003



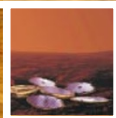
Europe's Mars Express due for lift-off from Baikonur Cosmodrome, Kazakhstan

5 & 25 June 2003



NASA's rovers set for launch from Cape Canaveral, Florida

25 December 2003



Mars Express scheduled to release Beagle 2

January 2004

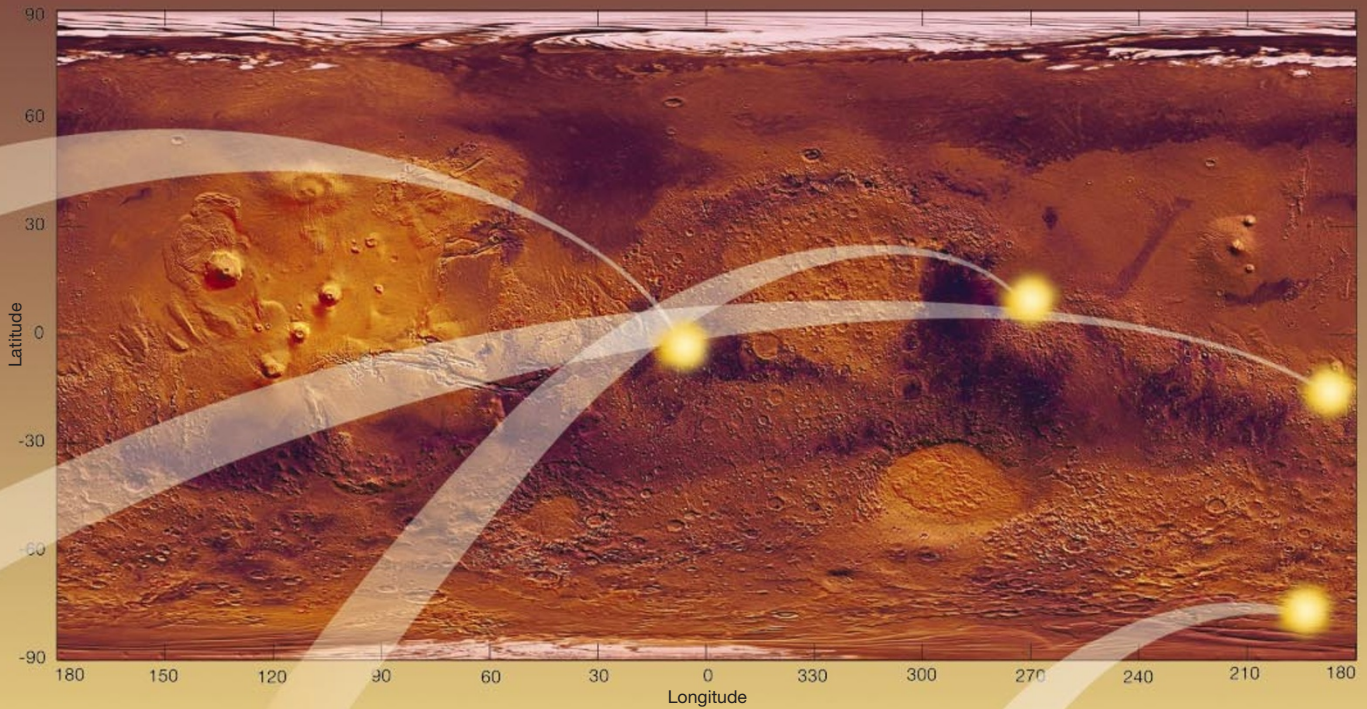


NASA's rovers due to touch down on Mars

Early 2004



Nozomi expected to enter orbit around Mars



Isidis Planitia

Europe's Beagle 2 will land in a boundary zone. The Isidis Planitia, a crater 1,600 km wide, separates the red planet's more cratered southern hemisphere from the flatter northern half. The flat, smooth features of Isidis Planitia should make it a safe landing site, and its volcanic domes and small channels may have preserved evidence of life. Beagle 2 carries a set of ovens, which will heat promising rock samples at a variety of temperatures to determine the nature of any carbon-containing matter.

The solar-panel petals unfold, the lander surveys its surroundings and begins exploring. NASA's Mars Exploration Rover is shown here, but the European Space Agency's Beagle 2 will also use a parachute and airbag to land safely on Mars.

Polar Lander

The fate of NASA's Mars Polar Lander isn't known for certain, but officials assume that fragments of the lander litter a depression near the planet's southern pole. Contact with the craft was lost on 3 December 1999, as it began the final stages of its descent to the martian surface. The lander would have touched down here and studied minerals near the planet's poles, using a drill to bore into the surface in search of water. NASA believes that a jolt to the lander's leg shut off the landing engines, causing it to crash with the loss of all instruments.

For an extended interactive version of this graphic, visit our Mars web focus at www.nature.com/nature/focus/mars

Research: Hannah Hoag

Art: Cliff Saunders and Ann Thomson

Photos: NASA, ESA, ISAS, Beagle 2

