

NEW HORIZONS

The First Mission to the Pluto System and the Kuiper Belt

Voyage to an Unexplored Planet and a New Realm

The New Horizons mission will help us understand worlds at the edge of our solar system by making the first reconnaissance of the planet Pluto and by venturing deeper into the distant, mysterious Kuiper Belt – a relic of solar system formation.

The Journey

New Horizons launched on Jan. 19, 2006; it swung past Jupiter for a gravity boost and scientific studies in February 2007, and will conduct a five-month-long reconnaissance flyby study of Pluto and Charon in summer 2015. Pluto closest approach is scheduled for July 14, 2015. As part of an extended mission, the spacecraft is expected to head farther into the Kuiper Belt to examine one or two of the ancient, icy mini-worlds in that vast region, at least a billion miles beyond Neptune's orbit.

Sending a spacecraft on this long journey will help us answer basic questions about the surface properties, geology, interior makeup and atmospheres on these bodies.

New Science

The National Academy of Sciences has ranked the exploration of the Kuiper Belt – including Pluto – of the highest priority for solar system exploration. Generally, New Horizons seeks to understand where Pluto and its moons “fit in” with the other objects in the solar system, such as the inner rocky planets (Earth, Mars, Venus and Mercury) and the outer gas giants (Jupiter, Saturn, Uranus and Neptune).

Pluto and its largest moon, Charon, belong to a third category known as “ice dwarfs.” They have solid surfaces but, unlike the terrestrial planets, a significant portion of their mass is icy material.

In 2005, using Hubble Space Telescope images, New Horizons team members discovered two previously unknown moons of Pluto, Nix and Hydra.

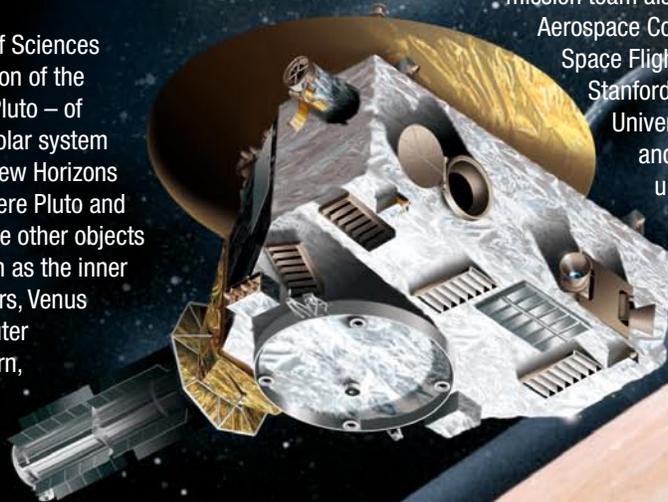
A close-up look at these worlds from a spacecraft promises to tell an incredible story about the origins and outskirts of our solar system. New Horizons also will explore – for the first time – how ice dwarf planets like Pluto and Kuiper Belt bodies have evolved over time.

The Need to Explore

The United States has been the first nation to reach every planet from Mercury to Neptune with a space probe. If New Horizons is successful, it will allow the U.S. to complete the initial reconnaissance of the solar system.

A Team Approach

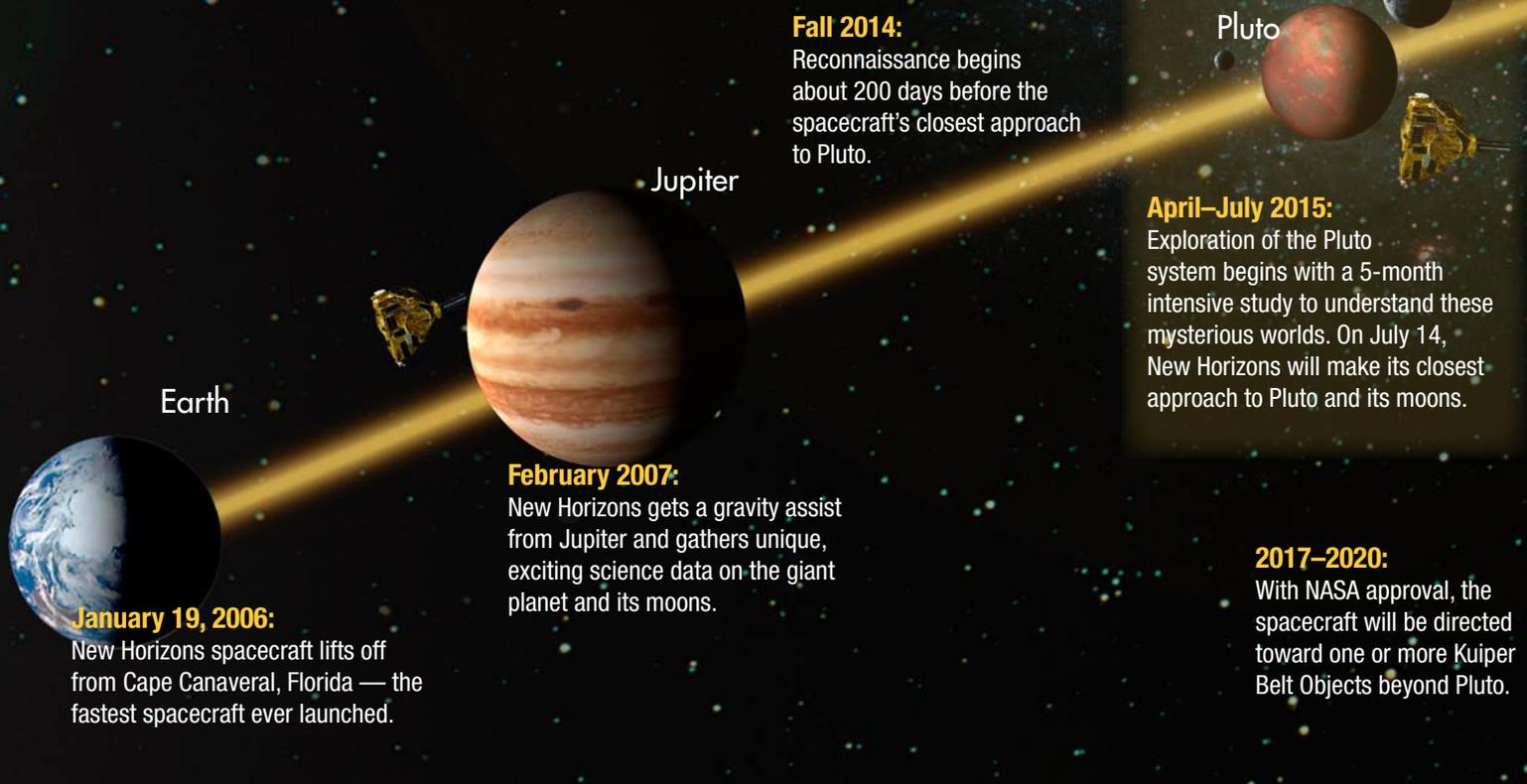
Principal Investigator Dr. Alan Stern, of NASA Headquarters, leads the mission team. The Johns Hopkins University Applied Physics Laboratory (APL) manages the mission for NASA, and designed, built and operates the spacecraft. Southwest Research Institute (SwRI) is responsible for science payload operations, and data reduction and archiving, and participates in the science team. The mission team also includes KinetX, Inc. (navigation team), Ball Aerospace Corporation, the Boeing Company, NASA Goddard Space Flight Center, NASA Jet Propulsion Laboratory, Stanford University, Lockheed Martin Corporation, University of Colorado, the U.S. Department of Energy and a number of other firms, NASA centers and university partners.



NASA's First New Frontiers Mission

Artist's concept of the New Horizons spacecraft and Pluto-Charon

Almost Ten Years and Over Three Billion Miles ...



Earth

Jupiter

Pluto

January 19, 2006:

New Horizons spacecraft lifts off from Cape Canaveral, Florida — the fastest spacecraft ever launched.

February 2007:

New Horizons gets a gravity assist from Jupiter and gathers unique, exciting science data on the giant planet and its moons.

Fall 2014:

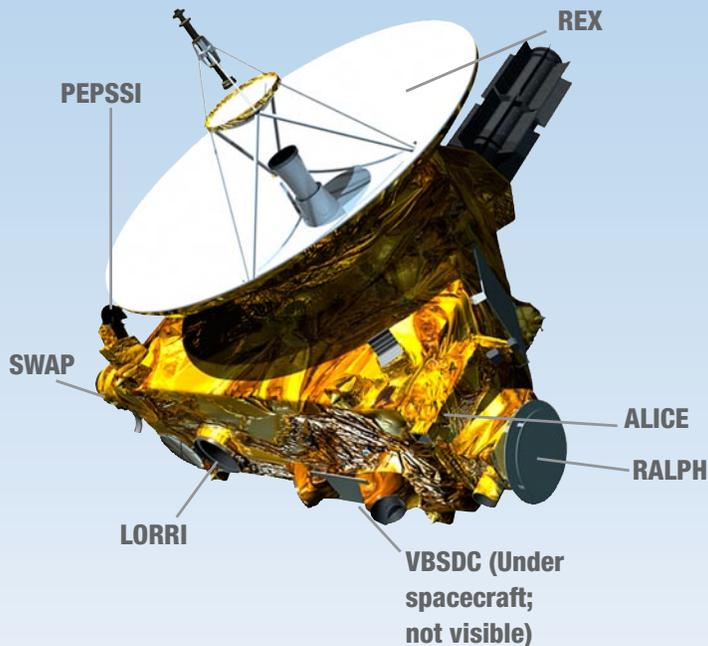
Reconnaissance begins about 200 days before the spacecraft's closest approach to Pluto.

April–July 2015:

Exploration of the Pluto system begins with a 5-month intensive study to understand these mysterious worlds. On July 14, New Horizons will make its closest approach to Pluto and its moons.

2017–2020:

With NASA approval, the spacecraft will be directed toward one or more Kuiper Belt Objects beyond Pluto.



Science Payload

- **Ralph:** Visible and infrared imager/spectrometer; provides color, composition and thermal maps.
- **Alice:** Ultraviolet imaging spectrometer; analyzes composition and structure of Pluto's atmosphere and looks for atmospheres around Charon and Kuiper Belt Objects (KBOs).
- **REX (Radio Science EXperiment):** Measures atmospheric composition and temperature; passive radiometer.
- **LORRI (LONg Range Reconnaissance Imager):** Telescopic camera; obtains encounter data at long distances, maps Pluto's far side and provides high resolution geologic data.
- **SWAP (Solar Wind Around Pluto):** Solar wind and plasma spectrometer; measures atmospheric "escape rate" and observes Pluto's interaction with solar wind.
- **PEPSSI (Pluto Energetic Particle Spectrometer Science Investigation):** Energetic particle spectrometer; measures the composition and density of plasma (ions) escaping from Pluto's atmosphere.
- **VBSDC (Venetia Burney Student Dust Counter):** Built and operated by students at University of Colorado; measures the space dust peppering New Horizons during its voyage across the solar system.

Join the Adventure

New Horizons on the Web
<http://pluto.jhuapl.edu>