Five years ago, after an epic 10-year voyage of more than 3 billion miles, the SwRI-led New Horizons mission made history. NASA’s piano-sized spacecraft flew within 7,800 miles of Pluto revealing a surprisingly complex, geologically active surface. Scientists continue using New Horizons data to gain new insights about Pluto and Charon and to understand other Kuiper Belt objects.

### COOL DISCOVERIES ABOUT PLUTO

#### 1

For the first time ever, the surface of this distant planet was revealed in spectacular, colored detail. Pluto’s surface includes towering mountains, giant ice sheets, pits, scarps, valleys and terrains seen nowhere else in the Solar System.

#### 2

Like Earth, Mars and a handful of moons, Pluto hosts active, flowing glaciers. This 50-mile section of the Sputnik Planitia glacier is covered with thousands of pits and larger circular patterns on the nitrogen ice surface.

#### 3

Pluto’s winds explain the thousands of dunes that stretch 45 miles on the western edge of Sputnik Planitia. Dunes require small particles and sustained, driving winds to lift and blow specks of materials.

#### 4

Pluto’s climate cycles—called its beating heart—control its atmosphere and climate. The nitrogen ice of Pluto’s Sputnik glacier cycle every day, subliming from ice to vapor in the sunlight, condensing back onto the surface during the frigid night and circulating up to 20 mile-per-hour nitrogen winds.

#### 5

Enormous faults stretch for hundreds of miles and cut roughly 2.5 miles into the icy crust covering Pluto’s surface. Pluto may have gotten these fissures by the gradual freezing of an ancient ocean beneath its surface.

#### 6

Zoom in on the surface of Sputnik Planitia and you will see a novel network of strange shapes charming the surface of the glacier. These six-mile polygons are evidence of Pluto’s internal heat trying to escape from beneath the glacier, creating bubbles of upwelling and downwelling nitrogen ice.

#### 7

A vast, liquid, water ocean may be sloshing beneath Pluto’s surface. Models indicate that the ocean may date back to the rapid, violent formation of the dwarf planet.

#### 8

It’s clear to me that the Solar System saved the best for last. We could not have explored a more fascinating or scientifically important planet at the edge of our Solar System.

— SwRI’s Dr. Alan Stern, New Horizons principal investigator

#### 9

Pluto’s largest moon Charon also features surprising geological features, indicating a geologically active past. An immense southern plain the size of California gives way to rugged terrain to the north, likely the result of freezing and expansion of an ancient ocean beneath Charon’s crust.

#### 10

This close-up of Wright Mons, one of many potential cryovolcanoes spotted on the surface of Pluto, indicates the dwarf planet was, and may still be, volcanically active.

### TECHNOLOGY TODAY

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