

# Pluto's vast icy plains and gentle hills emerge in new images

New Horizons data portrays a geologically active world on the fringes of the Solar System.

Alexandra Witze

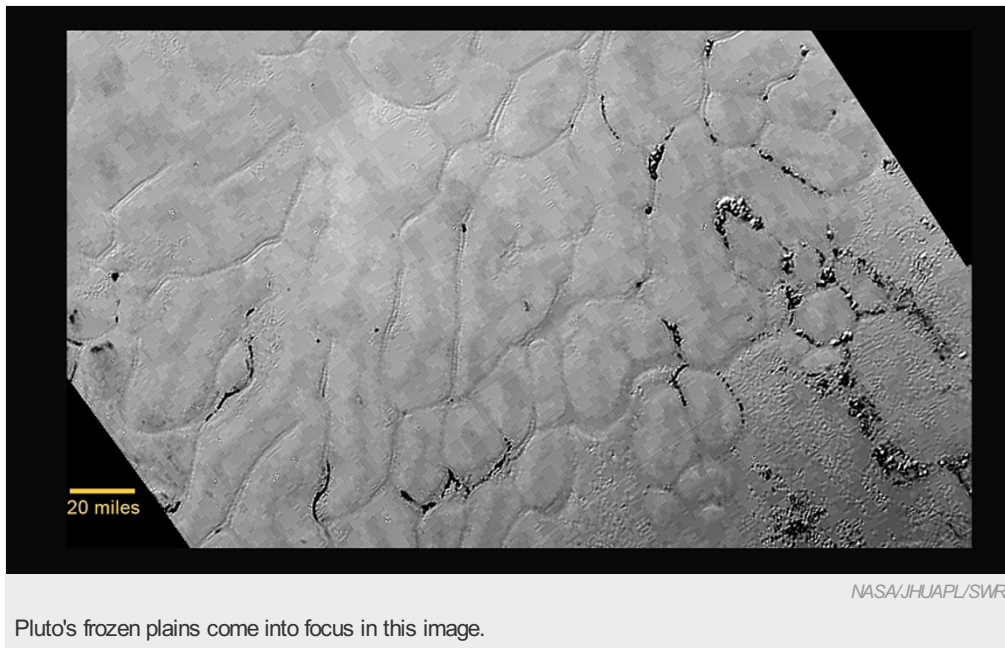
17 July 2015 | Updated: [17 July 2015](#)



Pluto has icy plains scarred with long polygonal marks, dark streaks and rolling hills, new images from [NASA's New Horizons spacecraft](#) reveal.

The pictures, released on 17 July, show an astonishingly young surface that seems to be constantly reshaped. "Pluto is every bit as geologically active as any other place we've seen in the Solar System," says Jeffrey Moore, a planetary scientist at NASA's Ames Research Center in Moffett Field, California, who heads the mission's geology team.

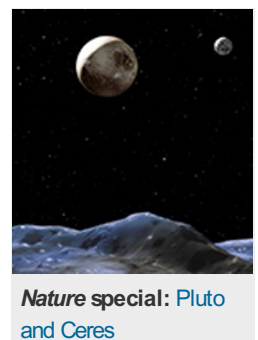
Each roughly 20 to 30 kilometres across, the polygons resemble terrain in Earth's Arctic region. It is too early to say whether the shapes formed through expansion — perhaps as heat within the dwarf planet rose and caused the surface to fracture — or contraction, much as cracks form in drying mud on Earth. "These vast craterless plains have some strange story to tell," Moore says.



Team members have dubbed the plains 'Sputnik Planum' after the first artificial satellite. The features sprawl outward from the base of the [towering mountains](#) seen in earlier images from New Horizons. The peaks have been named 'Norgay Montes', after Tenzing Norgay, the Nepalese mountaineer who was one of the first two explorers to reach the summit of Mount Everest.

Shallow troughs in the plains border the polygons, some of them apparently filled with a darker material. Nearby, dark smudges mar the bright surface, perhaps indicative of wind-blown streaks or even outfall from icy plumes or geysers.

The widespread geological activity is surprising because it means that Pluto still has an internal heat source, presumably the radioactive decay of chemical elements that it accreted during its formation billions of years ago. Other geologically active icy worlds, such as [Saturn's moon Enceladus](#), are heated by the gravitational pull of a nearby gas-giant planet. Not so with Pluto. "You're minding your business out in space, and the reason you have geology is that there's heat in your interior," says Mark Sykes, director of the Planetary Science Institute in Tucson, Arizona.



Pluto has an atmosphere formed by ices on its surface sublimating directly into the air. That activity helps to keep the surface looking young, says Francis Nimmo, a New Horizons team member and a planetary scientist at the University of California Santa Cruz. He had expected Pluto to look like the heavily battered Callisto, a moon of Jupiter, but says that it reminds him instead of the active, haze-enshrouded Titan, Saturn's largest moon.

New Horizons [flew by Pluto on 14 July](#), in the [first-ever encounter](#) with the dwarf planet. The spacecraft is already more than 4 million kilometres on the other side of Pluto, headed outwards into the depths of the realm of icy bodies known as the Kuiper belt.

*Nature* | doi:10.1038/nature.2015.18013

## Updates

**Updated:** Update (8:30 BST): Added comment from Mark Sykes and Francis Nimmo.