

Perseverance rover gives high-definition panoramic view of landing site

February 24 2021



This is the first 360-degree panorama taken by Mastcam-Z, a zoomable pair of cameras aboard NASA's Perseverance Mars rover. The panorama was stitched together on Earth from 142 individual images taken on Sol 3, the third Martian day of the mission (Feb. 21, 2021). Credit: NASA/JPL-Caltech/MSSS/ASU

NASA's Mars 2020 Perseverance rover got its first high-definition look around its new home in Jezero Crater on Feb. 21, after rotating its mast, or "head," 360 degrees, allowing the rover's Mastcam-Z instrument to capture its first panorama after touching down on the Red Planet on Feb 18. It was the rover's second panorama ever, as the rover's Navigation Cameras, or Navcams, also located on the mast, captured a 360-degree view on Feb. 20.

Mastcam-Z is a dual-[camera](#) system equipped with a zoom function, allowing the cameras to zoom in, focus, and take high-definition video,

as well as panoramic color and 3-D images of the Martian surface. With this capability, the robotic astrobiologist can provide a detailed examination of both close and distant objects.

The cameras will help scientists assess the geologic history and atmospheric conditions of Jezero Crater and will assist in identifying rocks and sediment worthy of a closer look by the rover's other instruments. The cameras also will help the mission team determine which rocks the rover should sample and collect for eventual return to Earth in the future.

Stitched together from 142 images, the newly released panorama reveals the crater rim and cliff face of an ancient river delta in the distance. The camera system can reveal details as small as 0.1 to 0.2 inches (3 to 5 millimeters) across near the rover and 6.5 to 10 feet (2 to 3 meters) across in the distant slopes along the horizon.

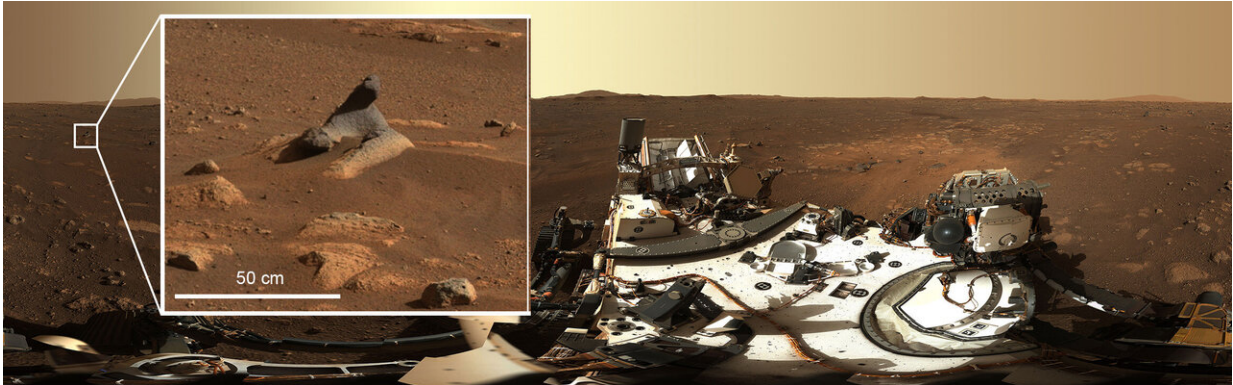
The detailed composite image shows a Martian surface that appears similar to images captured by previous NASA rover missions.



A detail shot from the top of the panorama shows the rim of Jezero Crater, Perseverance's landing site. Credit: NASA/JPL-Caltech/MSSS/ASU

"We're nestled right in a [sweet spot](#), where you can see different features similar in many ways to features found by Spirit, Opportunity, and

Curiosity at their landing sites," said Jim Bell of Arizona State University's School of Earth and Space Exploration, the instrument's principal investigator. ASU leads operations of the Mastcam-Z instrument, working in collaboration with Malin Space Science Systems in San Diego.



This wind-carved rock seen in first 360-degree panorama taken by the Mastcam-Z instrument shows just how much detail is captured by the camera systems.
Credit: NASA/JPL-Caltech/MSSS/ASU

Mastcam-Z's design is an evolution of NASA's Curiosity Mars rover's Mastcam instrument, which has two cameras of fixed focal length rather than zoomable cameras. The two cameras on Perseverance's Mastcam-Z dual cameras are mounted on the rover's mast at eye level for a person 6 feet, 6 inches (2 meters) tall. They sit 9.5 inches (24.1 centimeters) apart to provide stereo vision and can produce color images with a quality similar to that of a consumer digital HD camera.

Provided by JPL/NASA

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