

## Perseverance Rover Landing Site

USGS Astrogeology Scientists helped create this map of Jezero crater, the landing site for NASA's Perseverance rover. The oval or "ellipse" on the map is the area where the rover is most likely to touch down when it lands. Color the landing site by number and help the mission team land the rover and discover new rocks and sediments at Perseverance's new home.



Sun, V.Z., and Stack, K.M., 2020, Geologic map of Jezero crater and the Nili Planum region, Mars: U.S. Geological Survey Scientific Investigations Map 3464, pamphlet 14 p., 1 sheet, scale 1:75,000, <https://doi.org/10.3133/sim3464>.

Every geologic map is broken into rock and sediment units that were deposited by unique geologic processes. Together, they tell a story about how this region of Mars formed and changed over time. Each color shows a different kind of rock or sediment that the rover will study. These units each have names and short symbols that geologists use as codes to talk about the map.

### **Aeb – Eolian bedform unit**

Dunes! “Eolian” means blown by the wind. These sediments are blown around by the wind, and most reflect sunlight very well, making them appear bright in the daytime. Scientists think this unit also includes larger sediments like gravel that are only sometimes moved by wind. The sediments accumulate into ripples and dunes (called “bedforms”) that are usually a few meters tall and are found in low areas like impact craters and at the bottom of steep slopes around the inside of Jezero crater.

1	yellow
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### **cr – Crater rim unit**

Crater rim! These rocks and sediments were blasted out from underground when an asteroid or comet hit the surface of Mars at very high speed, causing a massive explosion. The explosion was so strong that the rocks that form this unit were pushed up, sort of like when you throw a rock into mud.

2	brown
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### **NHjf1 – Jezero fan unit 1**

Ancient river delta! The delta sits at the mouth of an ancient river that cuts through the martian cratered landscape in an area known as Nili Planum. This unit is smooth and light-colored and contains very few impact craters. Lots of different layers are sometimes visible along the edge of the unit. The Jezero “fan” has two main parts. This unit is one part that is located north of the landing site and below the Jezero fan unit 2 (described below). Thus, scientists think that it is older than Jezero fan unit 2.

3	aqua
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### **NHjf2 – Jezero fan unit 2**

Ancient river delta! Deltas are shaped like fans and form when a river enters a lake and slows down, dropping sediment carried in the water. This process forms curving layers that tell a story of the history of water in Jezero crater. Deltas on Earth are excellent at trapping and preserving evidence of life, so scientists think this delta on Mars is a prime target to help answer the question of whether there was ever life on the Red Planet. The delta in Jezero crater used to be much larger but has been eroded away over time.

4	blue
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### **Njf – Jezero floor unit**

Crater floor! This unit covers most of the Jezero crater floor. It is rugged or flat, depending on where it is located, and contains many small impact craters. The unit sits on top of and buries older units. The edges of the unit are defined by short, curvy cliffs. Scientists are not sure how these rocks formed but think that it may be an ancient lava flow, ash from a volcano, or sediment deposited by wind or water. Hopefully, the Perseverance rover will make discoveries that will help scientists understand how this unit formed!

5	pink
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### **Nle – Lower etched unit**

Volcanic ash (maybe)! This unit has a rough surface, is light in color, and does not have many impact craters on its surface. The unit contains very long ridges that extend from the northeast to the southwest. This unit shows evidence of carbonate minerals in data collected from spacecraft orbiting the planet. Carbonate minerals are interesting to scientists because they tend to form in water and can preserve evidence about the climate and whether life existed in that water.

6	red
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### **Nue – Upper etched unit**

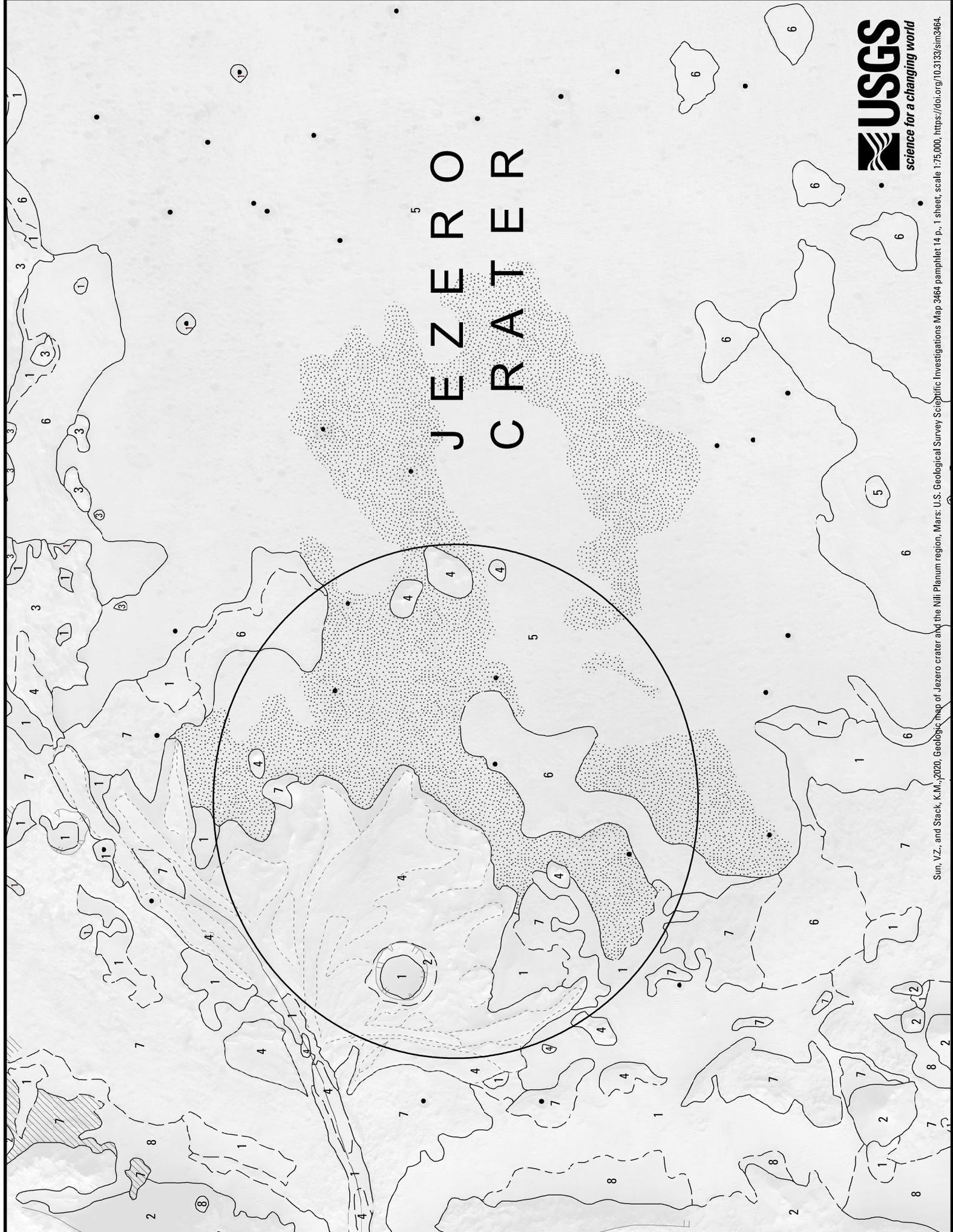
Volcanic ash (maybe)! This unit sits above and is therefore younger than the “Lower etched unit”. It has a rough surface, light color, and contains many impact craters. It is located around the edges of the Jezero crater floor, on the walls of the crater, and in the cratered plains that surround Jezero crater (in Nili Planum). This unit is interpreted by scientists to be an ancient layer of volcanic ash that has been cemented together to form a rock. This unit also contains evidence of carbonate minerals, especially in the area between the crater rim and the fan.

7	orange
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### **su – Smooth unit (undivided)**

Sediments! This is a smooth, mostly featureless unit that is dark in color and located on the steep inside slopes of Jezero crater and in local depression across Nili Planum. The smooth unit is interpreted by scientists to be sediments that came from small landslides (called “mass wasting”), volcanic ash, and dust deposited by the wind. It is probably a unit that is made up of lots of different kinds of sediments, like a geologic brag bag!

8	light green
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# JEZERO CRATER

