MSL science class reference

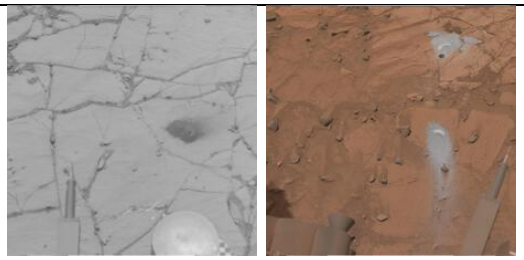
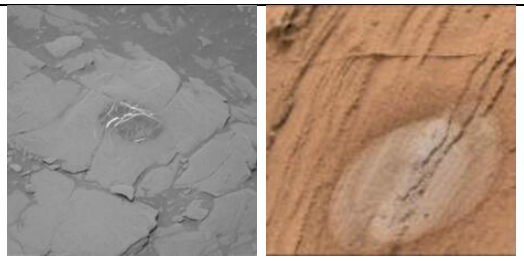
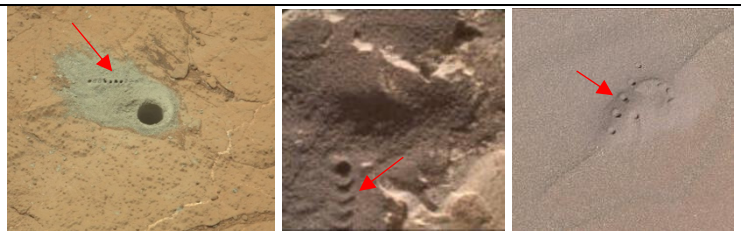
Instructions:

(1) Assign one class label per image.
This can be very difficult! ☺ Please read the prioritization guidance carefully.

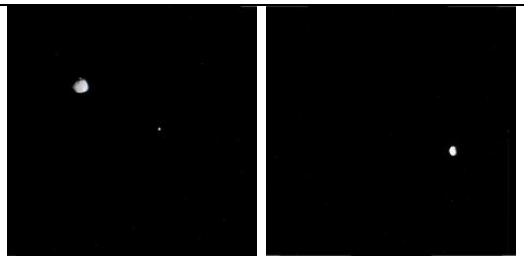
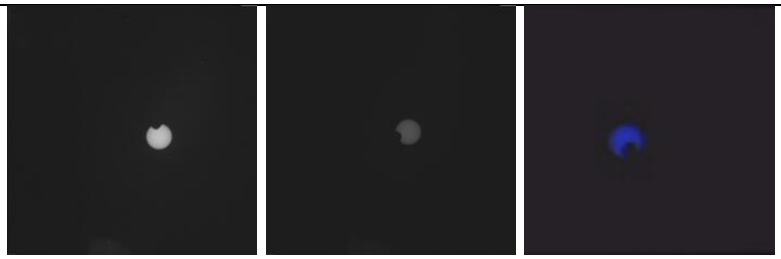
(2) Rover-created features (DRT spot, dumped sample, drill hole, wheel tracks) take priority over the natural feature classes because they are rare and significant to particular investigations.

(3) Dumped sample takes priority over drill hole (if both exist, assign to dumped sample). Both take priority over DRT spot.

Rover-created features:

Dumped sample powder (rare): Drilled sample material dumped from the rover onto the surface	
Drill hole: Hole drilled into rock by the rover; no separate dumped sample, but drill tailings (pile of dust around hole) may be present	
DRT spot: Area of rock surface cleared of dust by the brushes on the rover's Dust Removal Tool (DRT), with no hole present	
ChemCam laser spots: Tiny black dots (holes) left by the ChemCam laser. Ignore and use the class of the surface (rock, sand, drill hole, …)	
Wheel tracks: if dominant	

Instructions for sky features:

Sun: bright circle on dark background. Usually a single circle (crisp or fuzzy); can be accompanied by lens-flare type effects (rightmost example). May be blue, which indicates the use of a filter.	
Moon (rare): bright irregularly shaped object (not a circle) on dark background. Up to two may be present (Mars has two moons).	
Eclipse (rare): bright circle with a crescent "bite" taken out of it. May be blue or other colors, which indicates the use of a filter.	
Stars (rare): multiple small points of light on a black background	

Instructions for natural surface features:

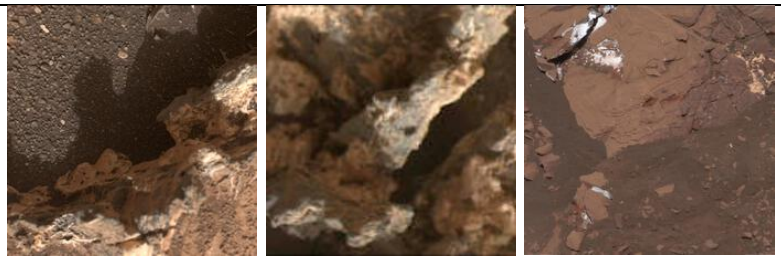
(1) Rock classes vs. sand classes:
For mixed scenes, select by prominence of the features. In general, **rocks** are more interesting than **flat sand**, but **ripples** are usually more notable than **ordinary rocks**.

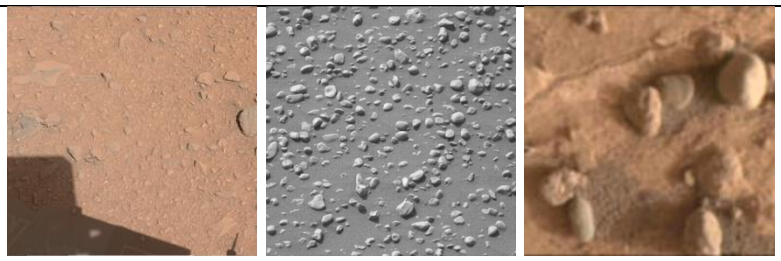
(2) If rocks and sand are both present:
   a. Are any of the rocks particularly **rare** or salient classes (meteorites, unusually dark features)? If so prefer that class.
   b. ELSE, if the sand is rippled, prefer "**Sand ripples**"
   c. ELSE, if the rocks are layered, prefer "**Layers**"
   d. ELSE, if there are **large** piled sand features, prefer "**Sand dune/bank**" class
   e. ELSE, label if for any other obvious class
   f. ELSE put in "**ground**" (including cases where **outcrop** and **sand** are both present).

(3) If **only** rocks are present (or dominant):

a. Prioritize dominant or central feature in the scene.
b. Prioritize **meteorites** over **float** rock, but only assign the meteorite class if you're confident. Low-confidence meteorites should be called float rocks.
c. **Veins** generally take priority over **layers**, unless the veins are very few/thin and the layers cover most of the image.
d. **Veins** and **layers** take priority over **outcrop** – outcrop is a catch-all for large rock areas that are not float and do not have distinctive features.
e. Use **close-up rock** when a single rock surface fills the entire image. These are usually (but not always) images by the MAHLI camera (contain "MH" in the id).

Natural surface features - rocks:

Light-toned veins: veins brighter than surrounding rock	
Layers (in rock or outcrop; rare)	
Meteorite (rare): smooth, shiny, dark rock. Use only if you are very confident it is a meteorite.	
Bright material (rare): bright, whitish patch of rock material or surface	

Dark-toned rock (rare): Single, large rock that is visibly darker/greyer than typical Mars rocks	
Outcrop: underlying solid rock formation – can be extensive surface or jutting out from underground. If a lot of sand is also present, select "ground" instead.	
Float (rare): Entire, loose rock(s) sitting on the surface, not part of a solid outcrop. These are often dark, but are not "dark-toned rock" unless it's a close-up image on one rock as above.	
Pebbles (rare): Close-up view of small loose **rounded** rocks	
Close-up rock: Close-up view of a single rock surface (often from MAHLI camera, as indicated by "MH" in filename)	

Natural surface features - sand:

Sand dune/bank: Large-scale structures made of sand with significant vertical extent	

Sand ripples: Small-scale, regular, appx. parallel, wavy pattern on the sand surface	
Sand: Generic sand (not dune/bank or ripples). If a lot of rock/outcrop is present, select "ground" instead.	

Other:

Distant landscape: no nearby features of interest. Usually the horizon will be present.	
Ground: image of the surface that does not fall into any other category, including **mixture** of outcrop + sand	
Artifact: Evidence of data corruption / saturation / other problem in the image. "Blank" or empty sky images also belong in this class.