

Atlas (87 km) and **Hercules** (71 km) – are a crater pair of nearly the same size, but with completely different crater floors. Atlas is a "Floor Fractured crater" with a system of rilles and pyroclastic ash deposits. Hercules shows a young, smooth crater floor, flooded with mare lava.

Boussingault (128km) is close to the south pole of the moon. For its observation a favourable libration is needed. It is a double crater, the second crater, half the size of Boussingault, is located eccentric to the middle.

Cleomedes is a crater north of Mare Crisium with a diameter of 130 km. His narrow system of rilles is difficult to observe because of the distortion at the lunar edge. On the crater floor are some small Dark Halo craters. The crater Tralles (43km) lies on the northwestern crater rim. Its impact produced major boulders on the floor of Cleomedes.

Crozier H is with a diameter of 11 kilometers, the second largest concentric double crater on the front of the moon. The largest is Hesiodus A which lies on the edge of the Mare Nubium.

Daguerre (45 km) is an almost entirely lava flooded crater with strange concentric ridge remnants and dark pyroclastic ash deposits. Maybe Daguerre and the complete region is of volcanic origin.

Endymion, 122 km in diameter, is a Plato-like crater with smooth lava on the crater floor.

Fabricius (80 km) differs in its appearance from the normal standard crater model, because it has two central mountain massives, one of them far from the middle of the crater.

Furnerius (135 km) is smaller and significantly older than Petavius. On the crater floor there is a long linear rille.

Fracastorius (130 km) is a complex crater which is strongly tilted to the center of the Nectaris basin. The northern crater rim and the crater floor are completely flooded by the lava of the Nectaris basin. After the lava cooled off and the Nectaris lava shield further subsided a thin fracture zone formed which crossed Fracastorius. The smaller crater Beaumont is also tilted towards the Nectaris basin but doesn't show any fraction zones.

Franklin (56 km) and **Cepheus** (40 km) are a smaller versions of the crater pair Atlas and Hercules. Franklin a "Floor Fractured crater" with bulged floor and system of rilles, Cepheus with a lava flooded crater floor.

Gardner Megadome is a 70 km large, elevated area, south of the crater Gardner (18 km). The plateau is interpreted as a huge shield volcano with a huge caldera.

Geminus is with a diameter of 83 km a classic complex crater with terraced crater walls and remainings of central mountains on the crater floor. Looking at it on the LRO images vertically from above, it looks like a smaller version of Tycho. However, it is much older, because it shows no ray system. The most likely formerly existing ray system was darkened over billions of years due to the solar wind.

Janssen is with a diameter of 200 kilometers a superposition of craters, because it is not round but elliptically shaped. The southern crater floor is smooth, the northern floor is covered with ejecta of Fabricius. Both areas are divided by the spectacular, slightly curved Janssen rille. Such a rille is rare in the highlands and therefore noteworthy to be addressed.

Messala is with a diameter of 122km, a large but very old and weathered crater. The crater floor is covered with ejected material of the Humboldt Basin, thus it is older and formed before the Humboldt impact.

Mare Crisium (620 x 570 km) is the only Mare, which has no contact with any of the other Mare. Looking at it on LRO images vertically from above one recognizes that it is not round but elliptically shaped. It is created either by an impact at a very flat angle or by two separate impacts. Interesting craters in the basin: Lick, a "Floor Fractured crater" with clearly bulged floor and Picard, which shows a strange double structure (crater in the crater).

Messier (14 km) and **Messier A** (11 km) are probably the most bizarre crater pair on the moon. Messier was created by a grazing impact from the east, Messier A by a "rebound". The two comet-like beams are also spectacular. When the sun is rising, two further rays become visible which run perpendicular into the northern and southern direction. The entire beam system - with a little imagination – has the appearance of a butterfly. Overall, the ray system is similar to all other systems which are created by a shallow impact such as the ray system of Proclus.

Petavius (170 km) and **Humboldt** (200 km) are both "Floor Fractured craters". **Humboldt** is very difficult to observe because of its extreme location at the lunar edge and requires favourable libration conditions. On the crater floor are large areas of pyroclastic deposits and it has large central mountains.

The system of rilles on the crater floor of **Petavius** is spectacular. Small pyroclastic deposits (in the north) and a small effusive lunar dome (south) are on the crater floor.

Petavius B (32 km) was also created by an impact at a very flat impact angle. The projectile came from the north east. The ray system is bright and striking and also resembles that of Proclus.

Proclus (27 km in diameter) has a distinctly polygonal shape and a distinctive asymmetric ray system. It originated from an impact with very shallow impact angle, the projectile came from an easterly direction.

Rima Goclenius is a 190 km long fault zone, which probably originated when the center of Fecunditatis basin slowly sank under the weight of the lava.

Rupes Neander is with 77 kilometers length a little observed fault in the highlands of the moon and extremely rare. Like many of these slopes, the structure continues into a rille at its end (here in the south). Other examples are Rupes Cauchy and Rupes Lacus Mortis.

Rupes Altai is with a length of 550 kilometer part of the crater walls of the Nectaris impact (similar to the Apennines). The Wall reaches a height of 3 to 4 km above the surrounding highlands and reaches impressive 7 km above the center of the Nectaris basin.

Rima and Rupes Cauchy - The region around the 12.5 km wide crater Cauchy is rich in lunar domes and other structures of lunar volcanism. **Rupes Cauchy** is a 170-km long slope with a height of 340 meters which merges into a rille at its end. Southerly are the two major lunar domes Cauchy Tau and Omega. Many of the lunar domes as well as Rupes and Rima Cauchy are radially aligned to the center of the Imbrium basin - coincidence?

Stevinus A (10 km) and **Funerius B** (10 km) are two craters of the same size, which, for this crater size, both have an extremely bright ray system, implying that they are very young.

Taruntius comprises 57 km in diameter and is a typical "Floor Fractured crater". It shows concentric ridges, a system of rilles and two dark pyroclastic deposits on the crater floor.

Theophilus (100 km) is a magnificent and complex crater which is relatively young, it has a very distinct central mountain. Its crater rim rises 4.5 km above the crater floor. Easy to observe are smooth, partially melted ejecta on the crater floor and in the northern surrounding of the crater. In the area towards the crater **Torrichelli** secondary craters are visible.

Vallis Rheita is with a length of over 500 km, the largest secondary crater chain on the near side of the moon and not a valley such as the Vallis Alpes. The chain is aligned radially to the center of the Nectaris basin and was apparently created by the Nectaris impact. At the crater Mallet (56km) the Vallis Rheita shows a slight change in direction. They might be two different rows of secondary craters.

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