

CRATER VARIETY WITH AND WITHOUT VOLCANIC ROCKS BETWEEN THE MOON AND EARTH.
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Introduction. Impact crater on the Moon is de-
fined by typical impact process on the highland. Mare
basalt is filled to wide impact crater structure only front
side of the Moon, mainly by large impact or tidal forces
from Earth. [1] (cf. Table 1). The main purpose of this
paper is 1) to elucidate large lunar craters with vol-
canic rocks compared with terrestrial crater, 2) to clas-
sify craters with volcanic rocks on Earth.

Lunar crater with volcanic rocks: Mare basin
on the Moon is considered to be formed finally by fill-
ing by basaltic rocks on wide crater [1]. As there is no
plate tectonics (with water flow) on the Moon, volcanic
process on the Moon is considered to one type of “ter-
restrial ridge” connecting with mafic volcano from up-
per mantle layers which is different with terrestrial vol-
cano because there are few sea-water flow and mantle
convection followed by plate tectonics on the lunar
surface (Table 1).

Table 1. Lunar craters with and without basaltic flow.

Crater type	Characteristics
1) Impact crater	Mainly on lunar highland. Smaller size.
2) Crater with basalt	Found at Mare of front side. Large size. Ridge type.

Reason to form lava flow on the Moon: Volcanic
rock on the Moon is basaltic rocks which is 1) mafic
volcanic rocks, 2) mantle rock, and 3) low viscosity to
form basin. As there is no plate tectonic with sea-water,
acidic volcanic rock found in Japanese volcanic islands
formed on crust layer of land cannot be found on the
Moon. In this sense, volcano on the Moon is not from
surface rock on the crust, and not from mountain-shape
volcano of acidic rocks (i.e. andesite) found on the vol-
canic islands on Earth. This is other reason to support
that are few circulation of surface rocks, sea-water and
plate tectonics on the Moon (cf. Table 2).

Table 2. Volcanic lava on the Moon and Earth.

Planetary body	Type of volcanic lava
1) The Moon	Basalt. Mantle rock. Low viscosity to form plateau.
2) Earth	a) mafic rocks (ridge) b) acidic rocks (subduction) to form mountain shape.

Lunar Maria type crater on Earth: As there is
no large crater of lunar Maria on the continent of
Earth, Maria type crater of the Moon can be found as
smaller crater of acidic rock on volcanic island on
Earth if the crater is survived on harder basement
rock. Continental drift on Earth is other process to
circulate on land, where any older crater at conti-
nental rim is easily broken to circulate on water
planet of Earth (Table 3).

Table 3. Maria type crater on Earth.

Maria type crater	Condition to survive
1) Size	Smaller to survive (not basaltic flow)
2) Location	Volcanic islands (not rim of continent)
3) Rock type	Acidic & high viscosity (i.e. andsite)
4) Basement rocks	Harder (i.e. granite).

New type crater of Japanese islands: Recently
crater structure with shocked data is found at Taka-
matsu-Kagawa district, Western Japan [2,3,4]. This
crater is similar with lunar Maria crater with volcanic
intrusion to impact crater. However, rock type of ande-
site is different with lunar basalt due to their environ-
ments.

Summary: The present results are summarized as
follows: 1) Lunar crater of Maria type is different type
of volcanic rocks and lava flow on crater on the Earth.
2) Crater structure at Takamatsu-Kagawa district in
Japan is similar with Mare crater of the Moon with vol-
canic intrusion along crater structure, though volcanic
rocks, size and location are different.

References:

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