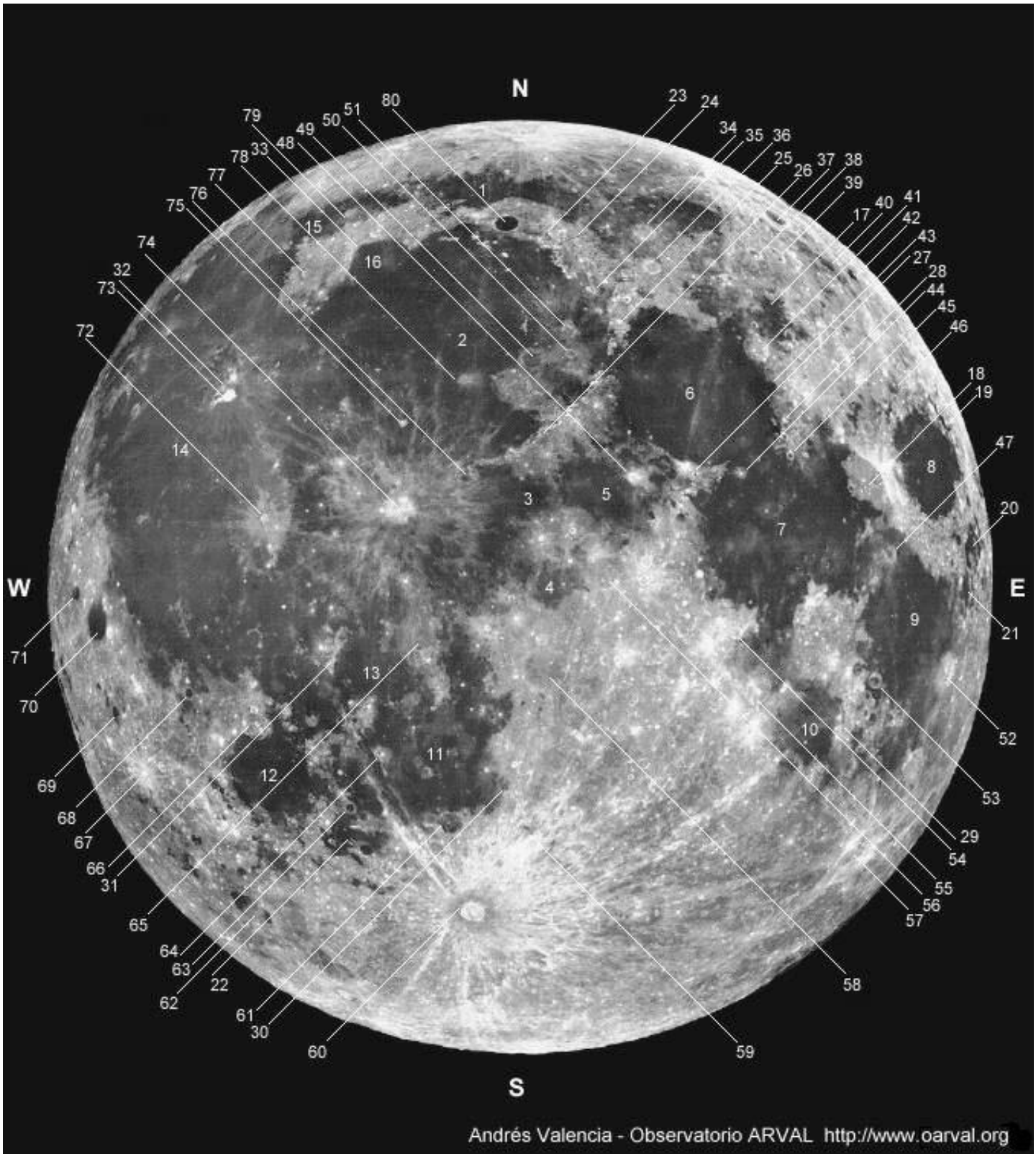
Observatorio ARVAL - Moon Map

http://www.oarval.org/MoonMapen.htm



Maria:

North:

1- Mare Frigoris (Sea of Cold)
2- Mare Imbrium (Sea of Rains)
3- Sinus Aestuum (Bay of Seething)

Northeast:

4- Sinus Medii (Bay of the Center)
5- Mare Vaporum (Sea of Vapors)
6- Mare Serenitatis (Sea of Serenity)
7- Mare Tranquillitatis (Sea of Tranquillity)
8- Mare Crisium (Sea of Crises)
17- Lacus Somniorum (Lake of Sleep)
18- Palus Somnii (Marsh of Sleep)
19- Mare Anguis (Sea of Snakes)
20- Mare Undarum (Sea of Waves)

Southeast:

9- Mare Fecunditatis (Sea of Fecundity)
10- Mare Nectaris (Sea of Nectar)
21- Mare Spumans (Sea of Foam)

Southwest:

11- Mare Nubium (Sea of Clouds)
12- Mare Humorum (Sea of Moisture)
13- Mare Cognitum (Known Sea)
22- Palus Epidemiarum (Marsh of Diseases)

West:

14- Oceanus Procellarum (Ocean of Storms)

Northwest:

15- Sinus Roris (Bay of Dew)
16- Sinus Iridum (Bay of Rainbows)

Montes (Mountains):

Northeast:

23- Montes Alpes
24- Vallis Alpes (Alpine Valley)
25- Montes Caucasus
26- Montes Apenninus
27- Montes Haemus
28- Montes Taurus

Southeast:

29- Montes Pyrenaeus

Southwest:

30- Rupes Recta (Straight Wall) [Geological Fault]
31- Montes Riphaeus

Northwest:

32- Vallis Schröteri (Schröter's Valley) [Northwest of Crater Aristarchus, 73, and North of Crater Herodotus]
33- Montes Jura

Craters:

Northeast:

34- Crater Aristotle [on the East part of Mare Frigoris, 1]
35- Crater Cassini
36- Crater Eudoxus
37- Crater Endymion
38- Crater Hercules
39- Crater Atlas
40- Crater Mercurius
41- Crater Posidonius
42- Crater Zeno
43- Crater Le Monnier
44- Crater Plinius
45- Crater Vitruvius
46- Cráter Cleomedes
47- Crater Taruntius
48- Crater Manilius
49- Crater Archimedes
50- Crater Autolycus
51- Crater Aristillus

Southeast:

52- Crater Langrenus
53- Crater Goclenius
54- Crater Hypatia
55- Crater Theophilus
56- Crater Rhaeticus [Crater Hipparchus is directly South of Crater Rhaeticus]
57- Crater Stevinus
58- Crater Ptolemaeus
59- Crater Walter

Southwest:

60- Crater Tycho
61- Crater Pitatus
62- Crater Schickard
63- Crater Campanus
64- Crater Bulliadus
65- Crater Fra Mauro
66- Crater Gassendi
67- Crater Byrgius
68- Crater Billy [Mons Hansteen is to the North of Crater Billy]
69- Crater Crüger
70- Crater Grimaldi
71- Crater Riccioli

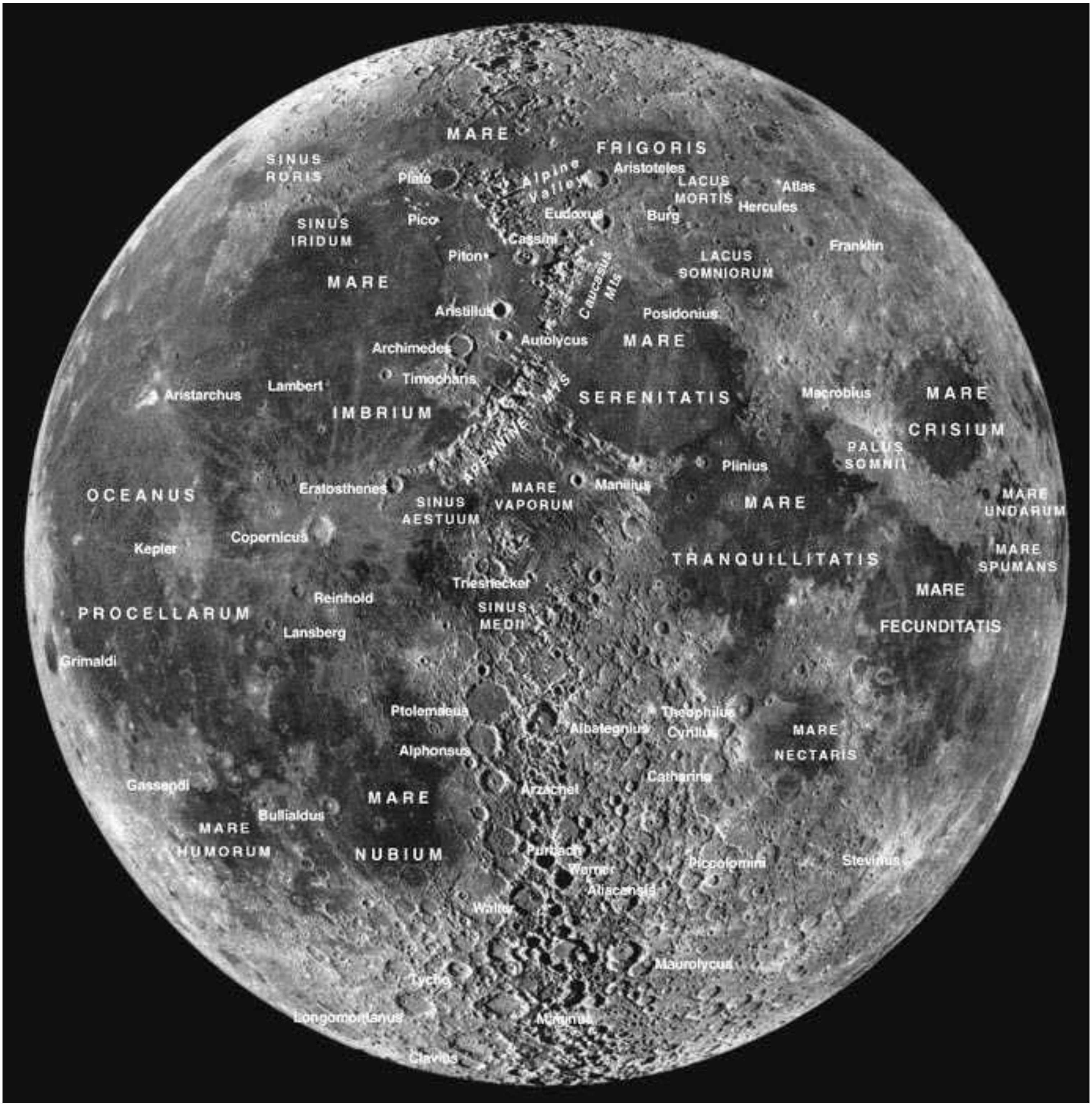
Northwest:

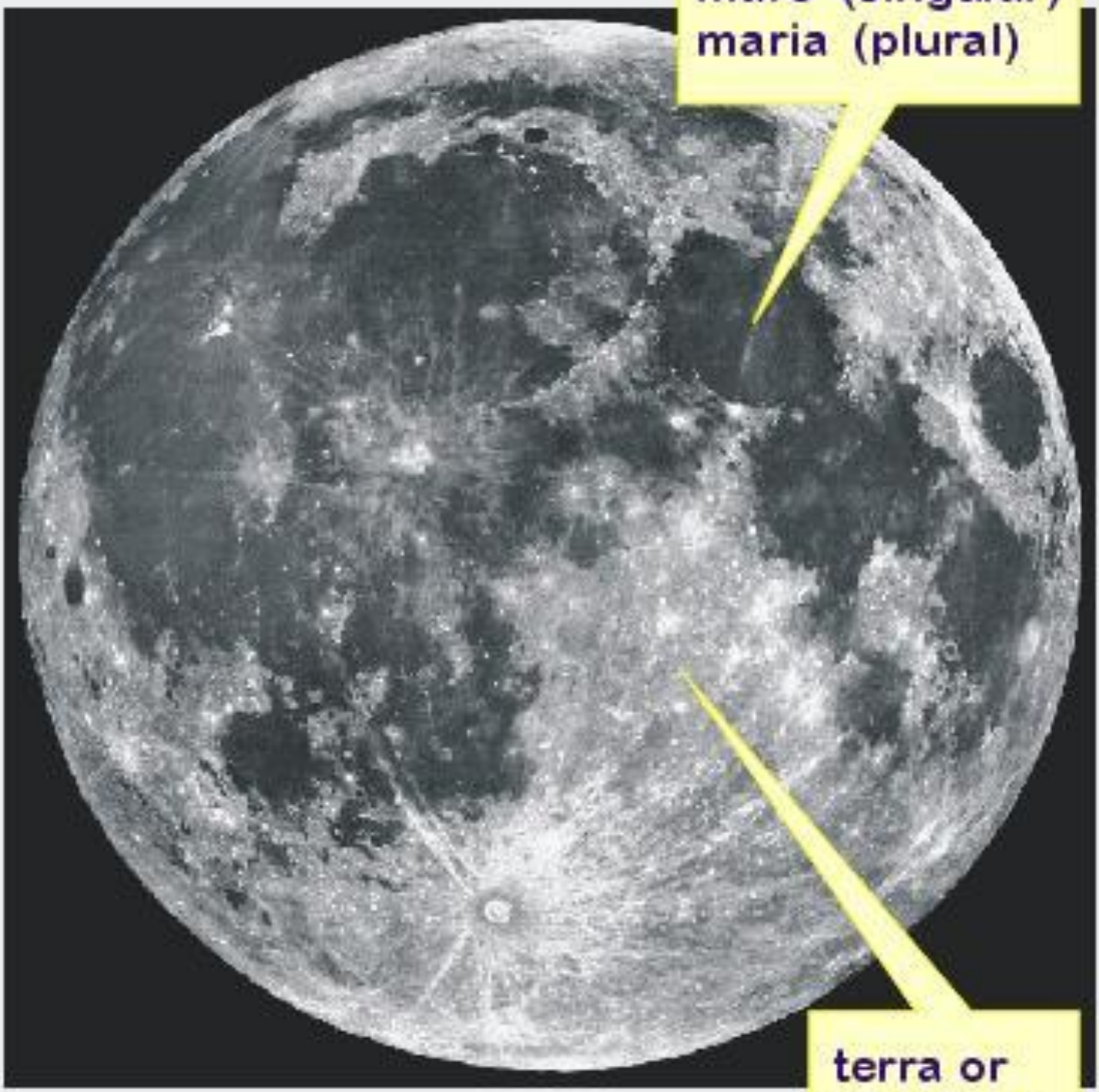
72- Crater Kepler
73- Crater Aristarchus [Crater Herodotus is West of Crater Aristarchus]
74- Crater Copernicus
75- Crater Pytheas
76- Crater Eratosthenes [near the Southwestern extreme of Montes Apenninus, 26]
77- Crater Mairan
78- Crater Timocharis
79- Crater Harpalus [Crater Pythagoras is North of Crater Harpalus]
80- Crater Plato

Manned Lunar Landing Missions:

-- - Apollo 11 (July 20 '69) [Southwestern extreme of Mare Tranquilitatis, 7]
-- - Apollo 12 (November 19 '69) [Northern extreme of Mare Cognitum, 13]
-- - Apollo 13 (April 13 '70) [could not land North of Crater Fra Mauro, 65]
-- - Apollo 14 (February 5 '71) [North of Crater Fra Mauro, 65]
-- - Apollo 15 (July 31 '71) [Northern extreme of Montes Apenninus, 26]
-- - Apollo 16 (April 21 '72) [between Craters Theophilus, 55, and Hipparchus]
-- - Apollo 17 (December 11 '72) [Southern extreme of Montes Taurus, 28]

Lunar Map


MARE
FRIGORIS
SINUS RORIS
Plato
Alpine Valley
Aristoteles
LACUS MORTIS
Atlas
Hercules
Burg
Eudoxus
Pico
SINUS IRIDUM
Cassini
Piton
Franklin
LACUS SOMNIORUM
Caucasus Mts
MARE
Aristillus
Posidonius
Archimedes
Autolycus
MARE
Timocharis
Lambert
Aristarchus
IMBRIUM
SERENITATIS
APENNINE MTS
Macrobius
MARE
CRISIUM
PALUS SOMNII
Plinius
Eratosthenes
Manilius
OCEANUS
SINUS AESTUUM
MARE VAPORUM
MARE
MARE UNDARUM
Copernicus
Kepler
TRANQUILLITATIS
MARE SPUMANS
Triesnecker
Reinhold
SINUS MEDII
MARE
FECUNDITATIS
PROCELLARUM
Lansberg
Grimaldi
Ptolemaeus
Theophilus
Albategnius
Cyrillus
MARE NECTARIS
Alphonsus
Catharina
Gassendi
Arzachel
MARE
Bullialdus
MARE HUMORUM
NUBIUM
Purbach
Werner
Piccolomini
Stevinus
Aliacensis
Walter
Maurolycus
Tycho
Longomontanus
Maginus
Clavius


mare (singular)
maria (plural)
terra or
highlands

Lunar Phases and Eclipses

Materials

- Styrofoam balls on wooden dowel or pencils
- Sun or bright light source

PRE-ACTIVITY DISCUSSION

1. Participants' head represents earth, ball on stick represents moon; light source represents the sun.
2. Discuss how the moon orbits the earth every month. The change in "size" is how much of the lit side we see from earth.

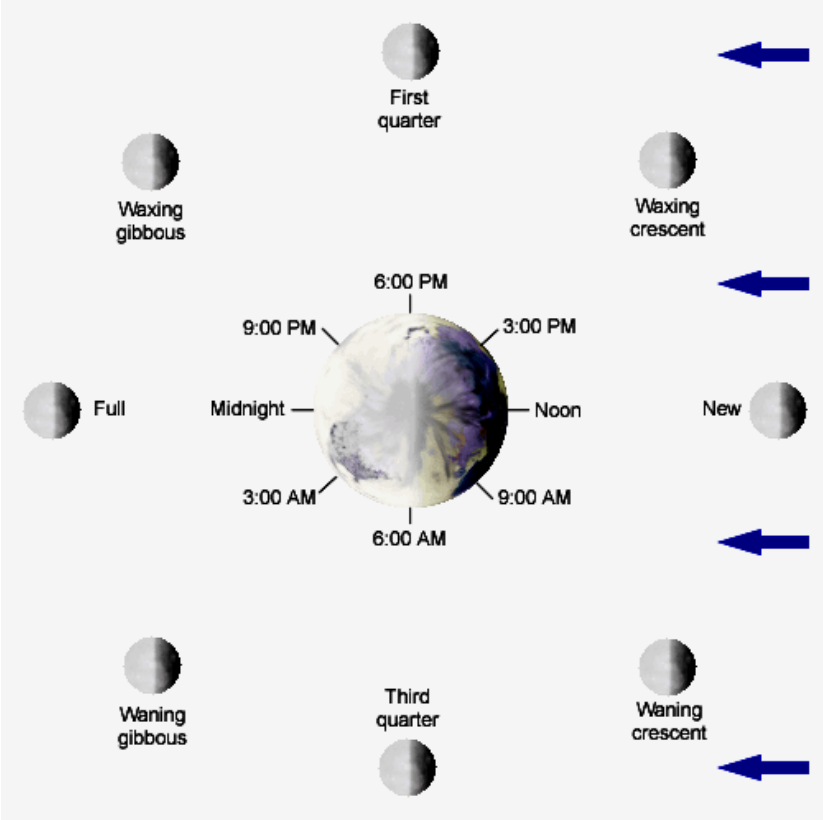
ACTIVITY

1. Have participants face the light source holding their "moon" between them and the light.
2. *QUESTION - How much of the lit side is seen?* Note what "phase" of the moon this is. (NEW)
3. Continuing to face the light, hold moon to the left side. *QUESTION - How much of the lit side is visible from earth now?* (Hal if seen). (Note the lunar phase is 1ST QUARTER.)
4. Face away from light and hold moon in front (with participant between light and moon). Be sure to not block the light to the moon with your head. If this happens, discuss what type of eclipse this is (Lunar). Hold moon up so it is in the light. *QUESTION - How much of the lit side is visible? What phase of the moon is it now? (FULL)*
5. Face the light again. Hold moon out to right side. *QUESTION - How much of lit side is visible? (1/2) What phase is the moon now? (3RD or LAST QUARTER).*
6. Face the light source again and hold the "moon" between you and the light. *QUESTION - How much of the lit side is seen?* Note moon has returned to NEW phase.

EXTENSIONS

1. Repeat the exercise, this time stopping at NEW moon, and discussing what kind of eclipse (solar) is created when the Earth is in the shadow of the Moon. Discuss the 3 types of solar eclipses that are possible, depending on the arrangement of Earth, Moon, and Sun. Stop also on FULL moon, and discuss what kind of eclipse is created now that the moon is in Earth's shadow.

2. *QUESTION - Does the moon rotate on its axis during the month?*
    a. Repeat exercise, this time making a mark on the moon and holding the moon so that mark faces the participant at each phase. Note where in the room, or in which direction, the mark faces during each of the four phases of the moon. *QUESTION – Does this indicate that the moon is rotating on its axis? (YES)*
3. *QUESTION - Does the same side of the moon face the earth at all times? (YES) Does the other side ever get sunlight? When? (During NEW Moon).* Pink Floyd got it wrong – it's the far side of the moon, not the dark side.
4. Discuss lunar rotation on its axis in relation to its orbit around earth. (Moon's day is the same length as its orbital period of about one month, or approximately 28 days).
5. For advanced students, discuss synchronous rotation , the fact that the moon always has the same face towards earth, and that it rotates once on its axis in the same time it take for it to go once around the earth (complete one orbit).
6. For advanced students, discuss the difference between synodic period (lunar phases), and sidereal period (moon's relation to background stars).
    a. Synodic period = lunar phases = full moon to full moon = about 29.5 days.
    b. Sidereal period = moon's relation to background stars = about 27.3 days.



Eclipse Types