

The background of the slide is a painting of a rural landscape at sunset or sunrise. A bright, glowing sun is low on the horizon, casting a warm, golden light across the sky and the field. The sky is filled with soft, colorful clouds in shades of orange, yellow, and blue. In the foreground, a wooden fence runs across the field. To the left, a person is standing near the fence, looking towards the sun. To the right, a dark silhouette of a barn is visible against the bright sky.

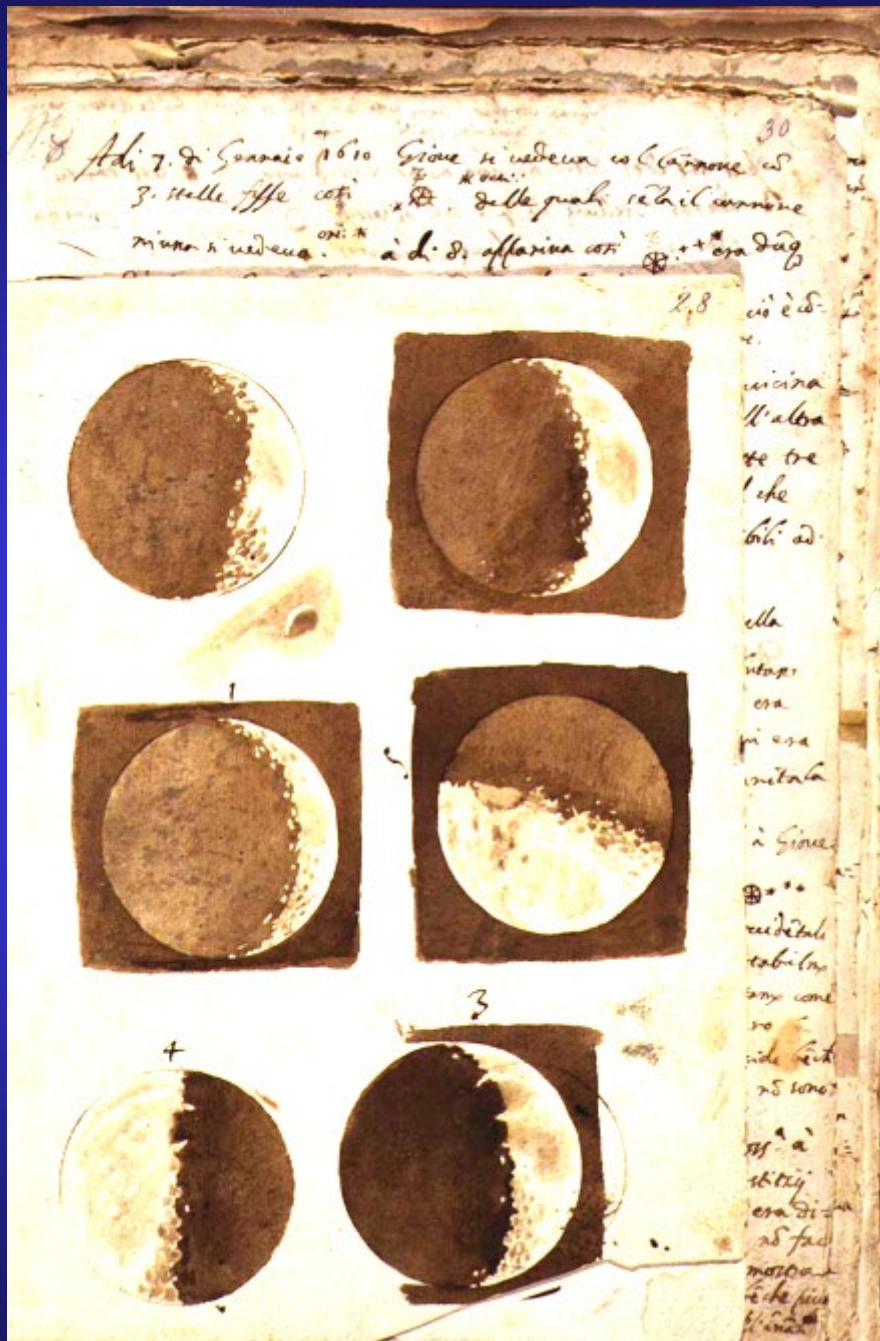
The Moon race and the dark sides of lunar crater naming

Thierry Montmerle
Institut d'Astrophysique de Paris, France

Outline

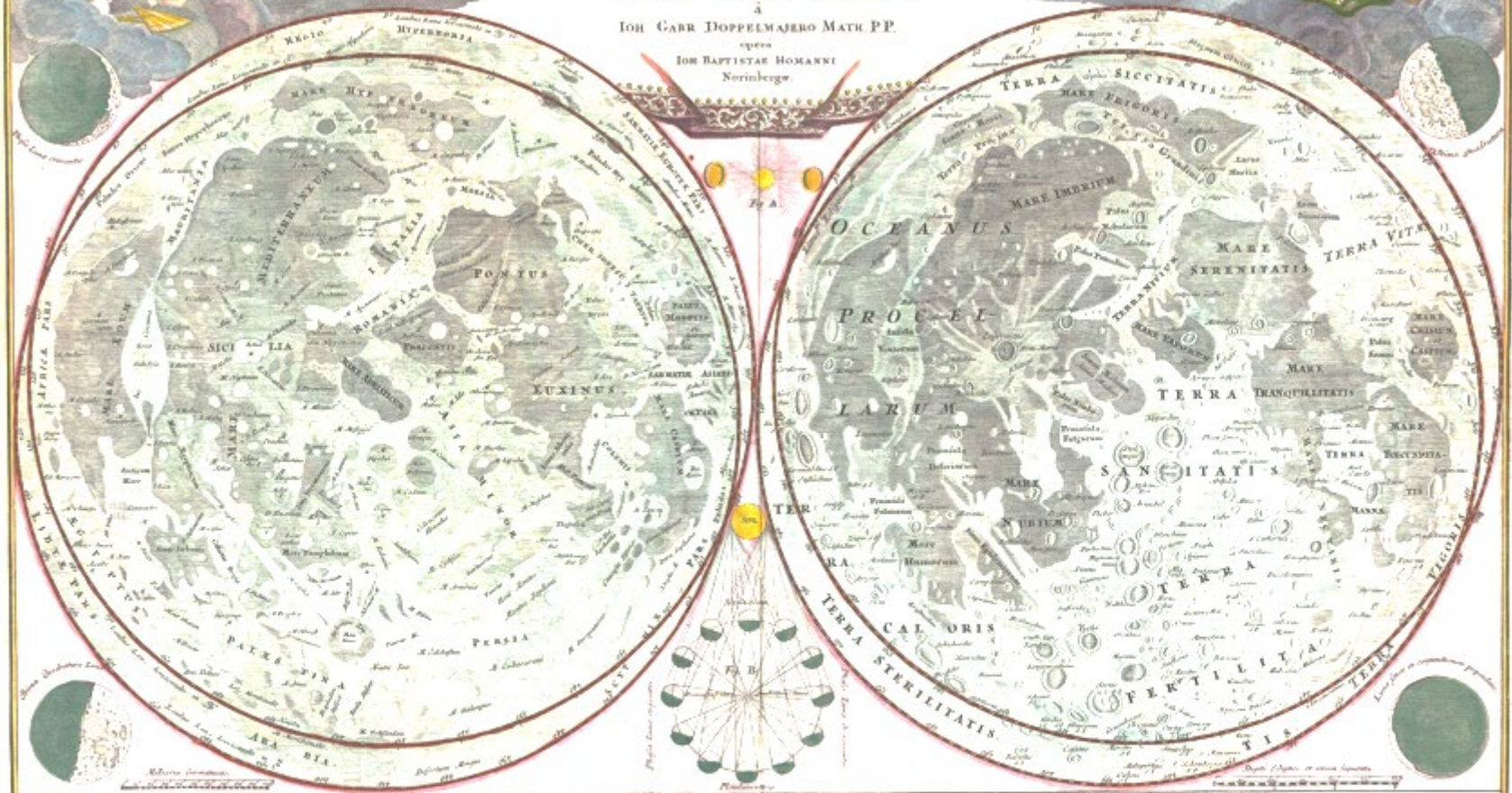
- How the eyes sees it: a brief history of lunar maps
- From chaos to order: The IAU takes over (1919)
- Changes from space: the Moon race (1959-1969)
- The conflict with the UN (1970-1975): challenging the authority of the IAU *[untold story !]*
- The Moon today –and tomorrow





Galileo Galilei
Sidereus Nuncius (1610)

JOH. BAPTISTAE HOMANNI
Neringerw.



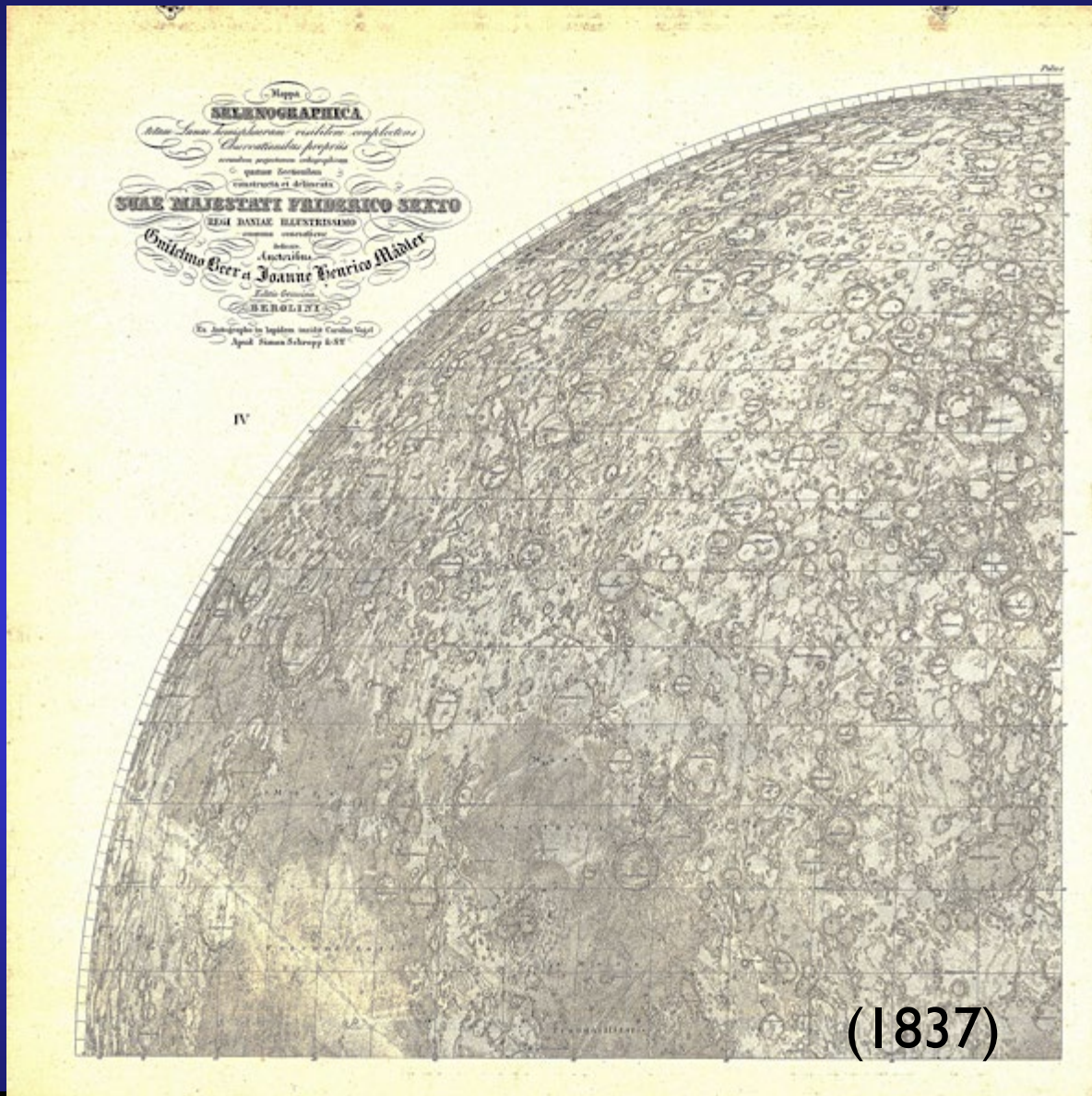
*Ad multis facibus facibus, omnino prima calidioribus ad Nervorum
Kathematis Gellius de viabilis ad fupioris fandi diano, qui adhibet
Tobias quoniam inveniunt fide publicis traditionibus ad totius tractare, quod
hunc Schenker e-ale fide fupioris habet profectione, qui placet habet
hunc ad magnum perfectionem, non pro habet, non cum quod quod multo habet
tempore, magis, fupioris, adhibet, quod habet, adhibet, adhibet, adhibet, adhibet,
qui adhibet adhibet, habet, adhibet, quod habet, adhibet, adhibet, adhibet, adhibet,
qui adhibet adhibet, habet, adhibet, quod habet, adhibet, adhibet, adhibet, adhibet,*

[illegible]

*Quia, circa Ratum hinc, & inde, fingitur nihil aliud quam motus abire in
Rata libratione tremore, ut & qui pinguis dependit libratione tremore
substantia, qui hinc ducit per Fides & dicitur maxime in sublimi
motu abire, ut Veritas non motus fuit, sed in digne sublimi
conspiciuntur singuli Rati abire, quoniam hinc per motum hinc
in motum fuit libratione per quatuordecim motus hinc pinguis fuit motus.*

[illegible]

(1651)

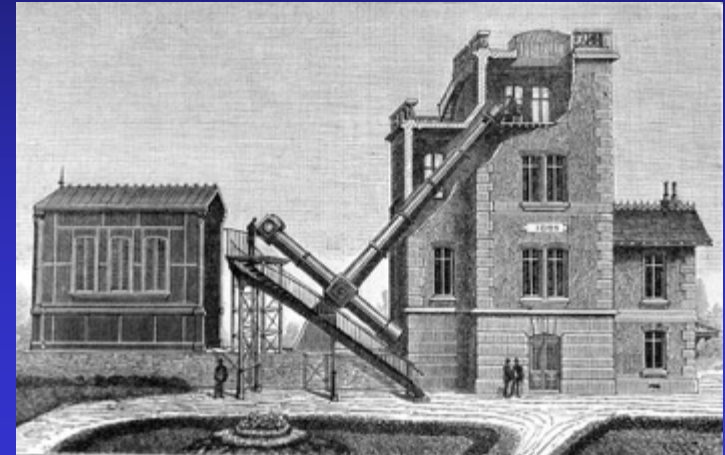


Johannes Friedrich Mädler
 (1794-1874)
 Introduced letters after
 name for nearby smaller
 features
 (ex.: Sabine F)

PHOTOGRAPHIE LUNAIRE
MER DES CRISES, MONT LAURUS, CORNET D'OR, ALI.



PAR M. M. LOEWY ET PUISEUX



Loewy & Puiseux
Grand équatorial coudé
Observatoire de Paris (1897)



*Official IAU map (1935):
still hand made !*

(Whitaker 1999)

From chaos to order: The IAU takes over

- Creation of the IAU (1919): « standing committees » on “Physics of Planets” (#16) and “Lunar Nomenclature” (#17)
- 1922 (1st GA, Rome): Commissions 16 & 17
- 1935: first official rules for nomenclature (“IAU approval”)
 - List of features (in latin): mons, mare, etc.; inspired from geophysics
 - New feature names: deceased astronomers or scientists having contributed to astronomy
 - Name + Letters (capitals or lower-case) attributed to nearby small features (“Mädler’s system”)
- 1961 (GA Berkeley): first names of the space age
 - Far side of the Moon
- 1970 (GA Brighton) + 1973 (GA Sydney): era of crises



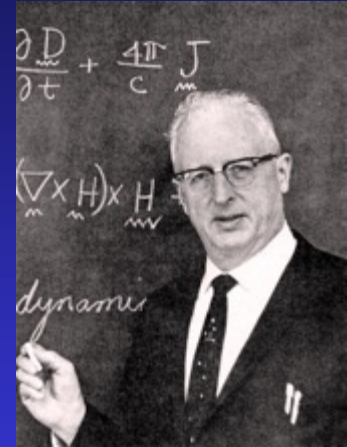
The actors...



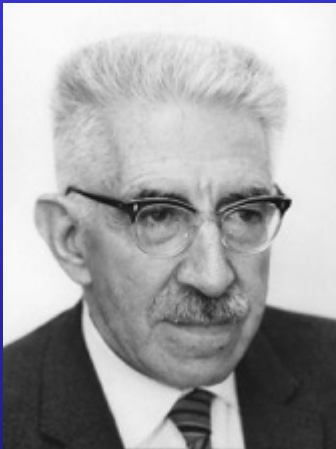
Kees de Jager (NL; born 1921) IAU General Secretary (1970-1973)



Audoin Dollfus (F; 1924-2010) President of Commission 17 (The Moon)



Donald Menzel (USA; 1901-1976) Chair of Working Group on Lunar Nomenclature



Marcel Minnaert (B; 1893-1970) Member of Working Group



Gerard Kuiper (USA; 1905-1973) Working Group Member

Boris Levin (USSR),
VP of Commission 17
Working Group Member

Col. Strickland (USA)
NASA representative

Anatolij Komkov (USSR)
UN Expert (geographer)



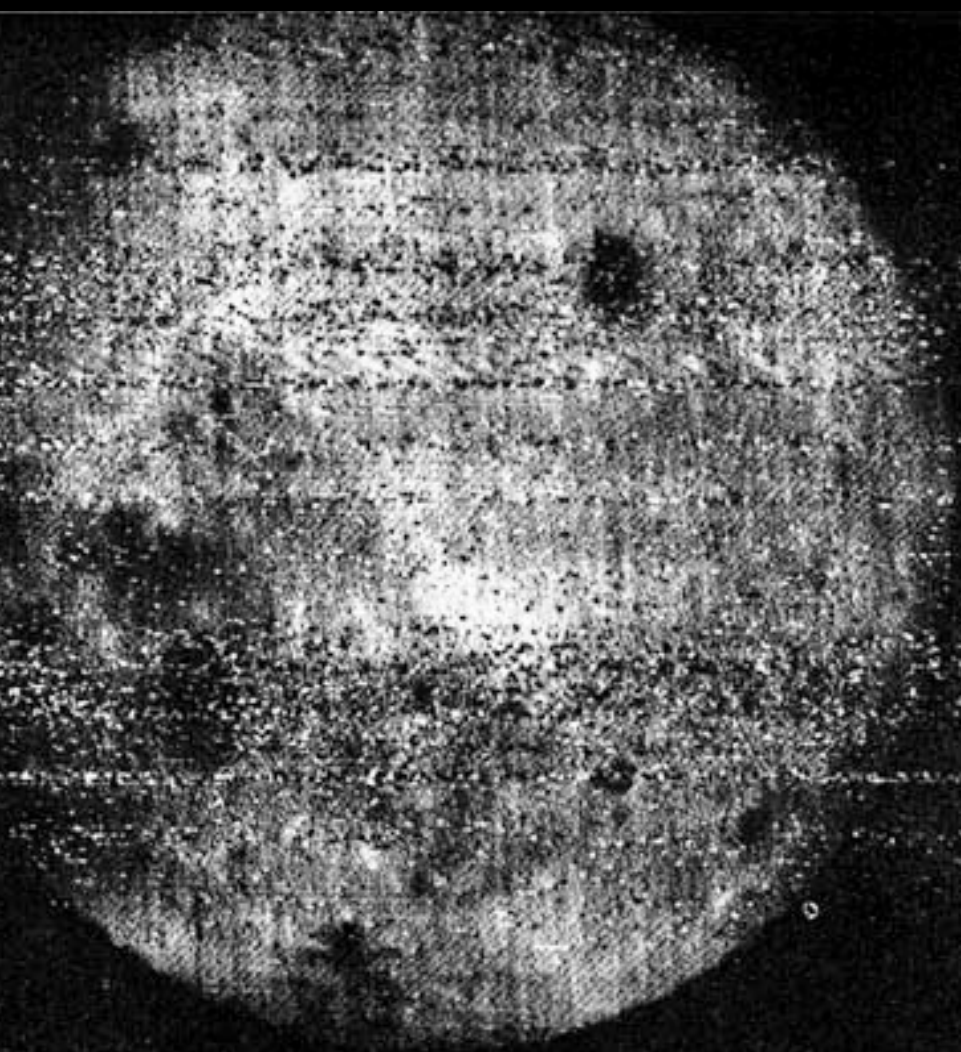
The Moon race (1959-1969)

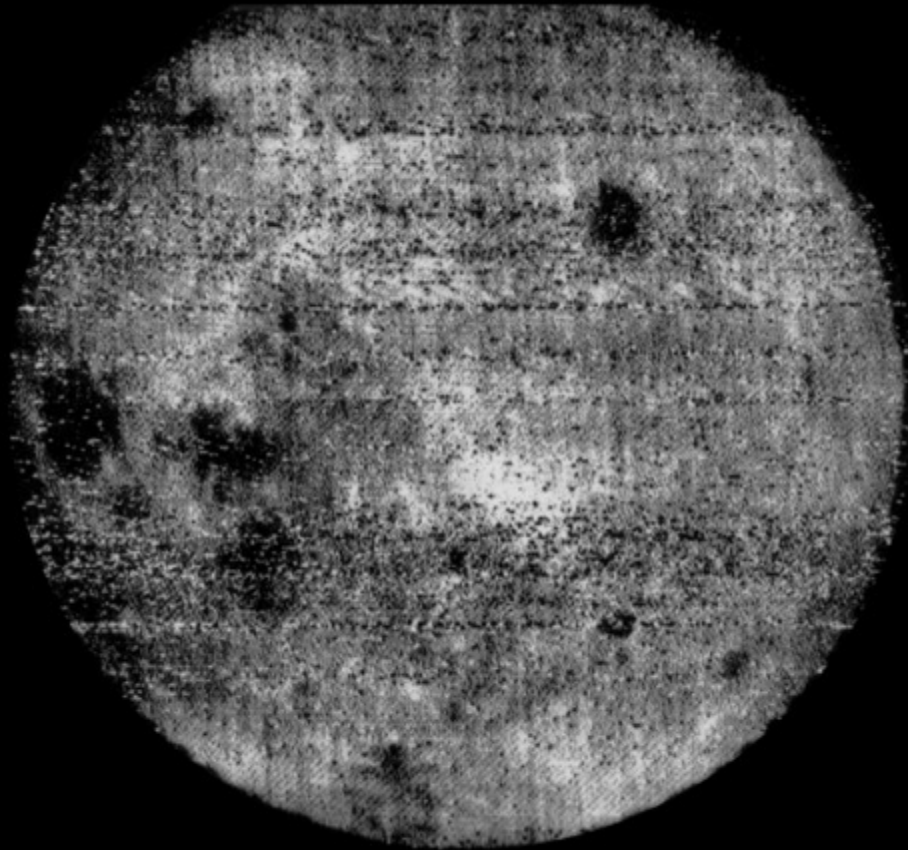
- Oct.4, 1957: *Sputnik I*
- Nov.3, 1957: *Sputnik II* (with dog Laika)
- Jan. 31, 1958: *Explorer I*, first American satellite
- Jul. 12, 1959: *Luna I* –grazes the Moon and becomes the first artificial satellite of the Sun
- Sep.13, 1959: *Luna II* crashes on the Moon (after 5 rocket failures)
- Oct.4, 1959: *Luna III* sends the first photographs of the far side of the Moon
- Apr.12, 1961: Y. Gagarin first human in space (1 orbit)
- Feb. 20, 1962: J. Glenn first American to orbit the Earth
- ...
- Jul. 1965: *Zond-3*, photographic flyby of the Moon
- 1966-1968: *Lunar Orbiter* (x5): mapping of 99% of the Moon
- Dec. 24, 1968: *Apollo 8*, first humans to orbit the Moon
- Jul. 21 (in France), 1969: “The Eagle has landed” (*Apollo 11*)
- Dec. 11-14, 1972: last Apollo mission (#17), last humans on the Moon



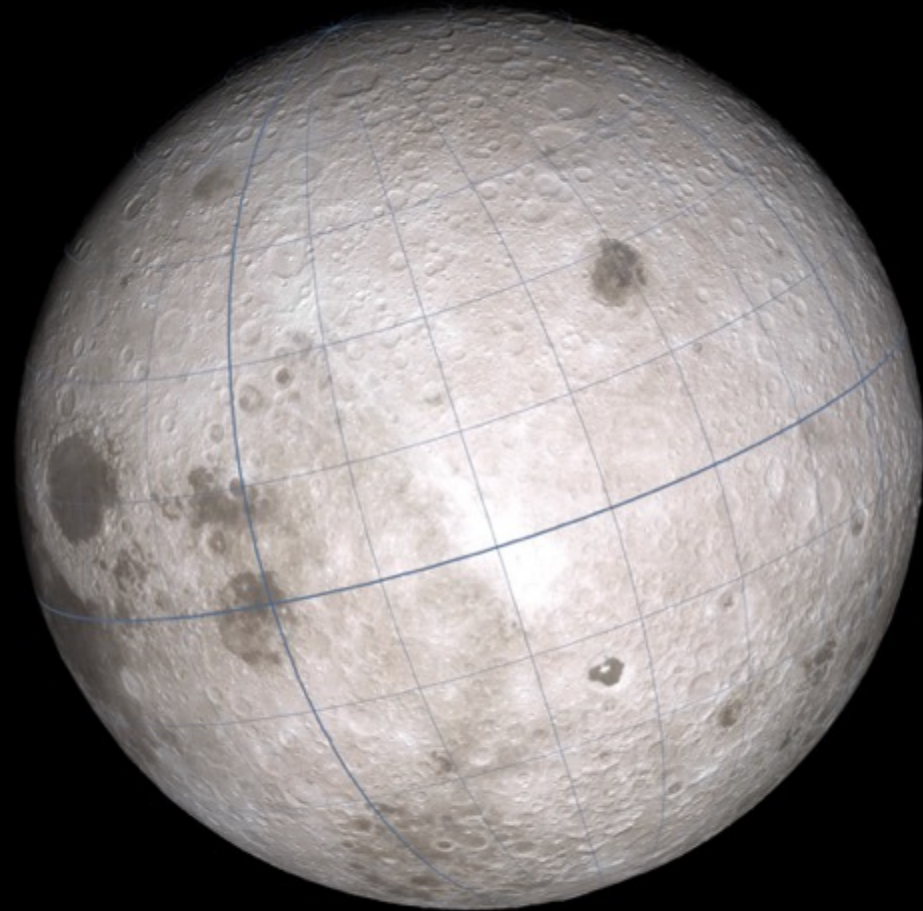
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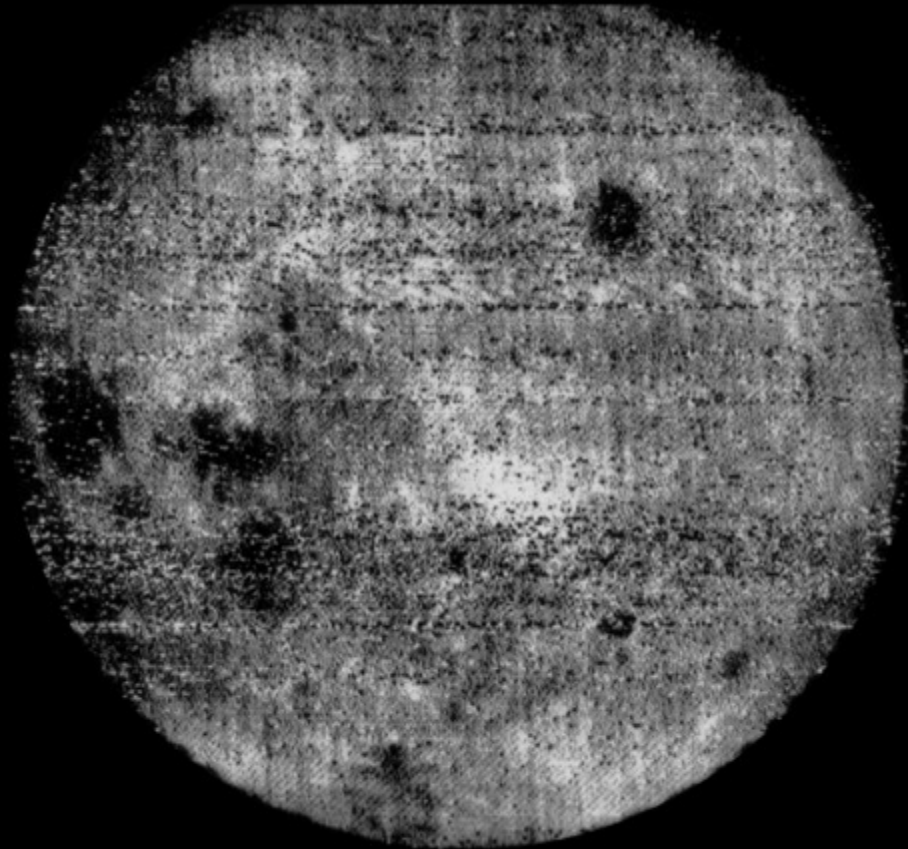




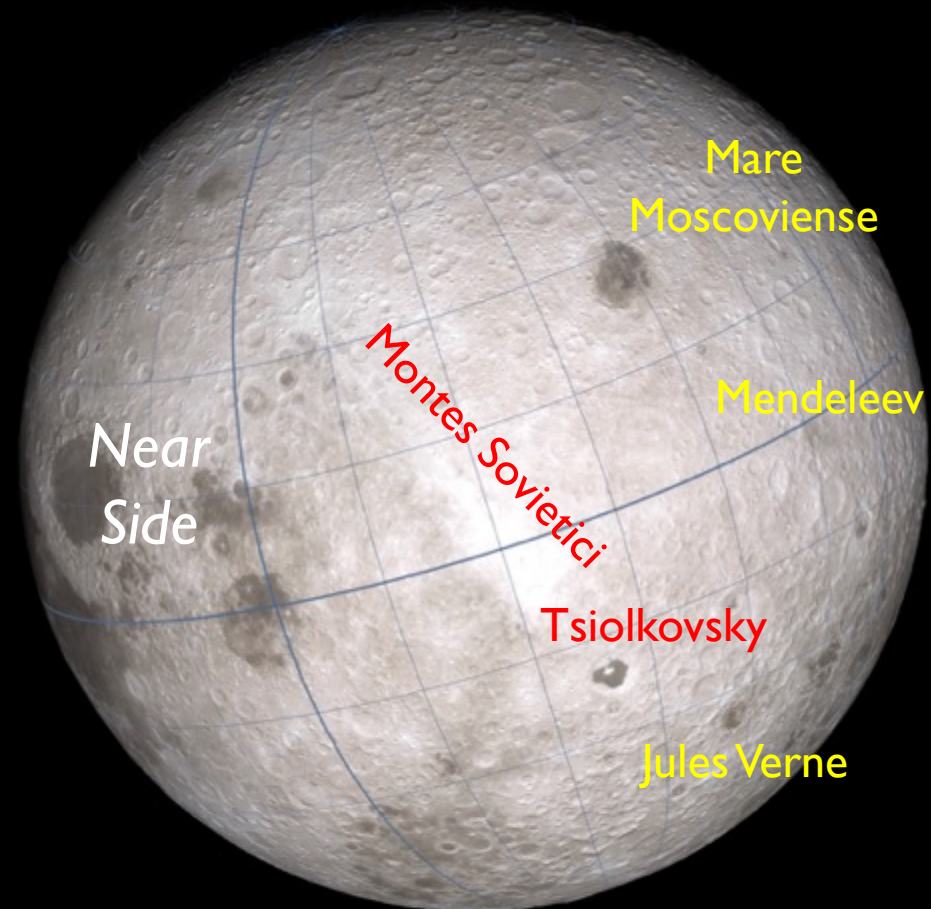
Luna 3
Launched in 1959



Lunar Reconnaissance Orbiter
Launched in 2009

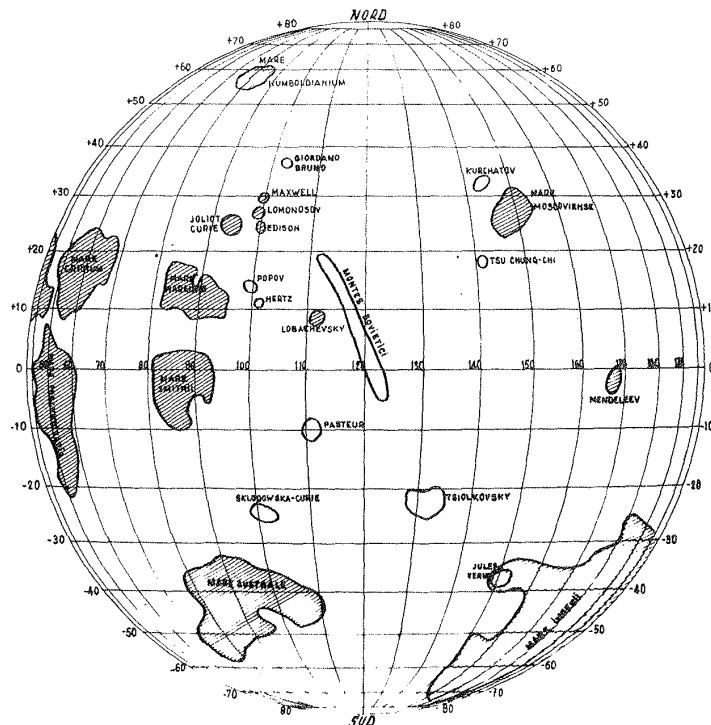


Luna 3
Launched in 1959



Lunar Reconnaissance Orbiter
Launched in 2009

Désignation	n° du catalogue	Coordonnées sur la carte	
		longitude	latitude
Tsu Chung-Chi	1	141	+18
Kurchatov	2	144	+32
Jules Verne	5	151	-37
Mendeleev	10	167	-2
Popov	71	99	+14
Hertz	74	101	+11
Edison	83	100	+24
Lobachevsky	88	112	+9
Pasteur	95	111	-10
Sklodowska Curie	112	102	-23
Tsiolkovsky	151	131	-22
Lomonosov	177	99	+28
Joliot Curie	183	93	+25
Maxwell	185	99	+30
Giordano Bruno	208	103	+36
Montes Sovietici	103	(de 111 à 124)	+19 -5
Mare Ingenii	150		
Mare Moscovienne	152	149	+27



Commission 16, Résolution no. 2: Carte indiquant les désignations de la surface lunaire non observable de la Terre.

Commission 16, Resolution no. 2: Chart showing the recommended nomenclature for the surface

Berkeley GA (1961):

First IAU approved names on the far side of the Moon (Resolution 2 of Commission 16)

From "Atlas of the far side of the Moon", Moscow, 1960

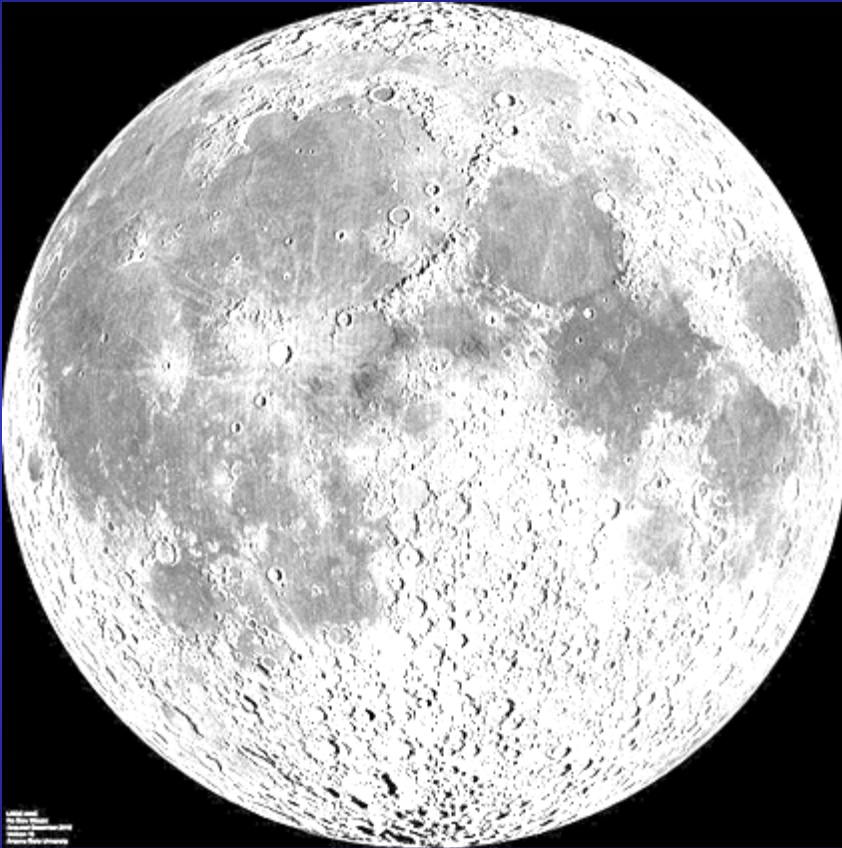
- Some IAU rules were broken by the Acad. Sci. USSR, but accepted (names "Mare Moscovienis", "Montes Sovietici")
- Other names accepted, but re-arranged (Joliot-Curie, Slodowska-Curie)
- Crater Tsu Chung-Chi to please China

The first Moon maps from space

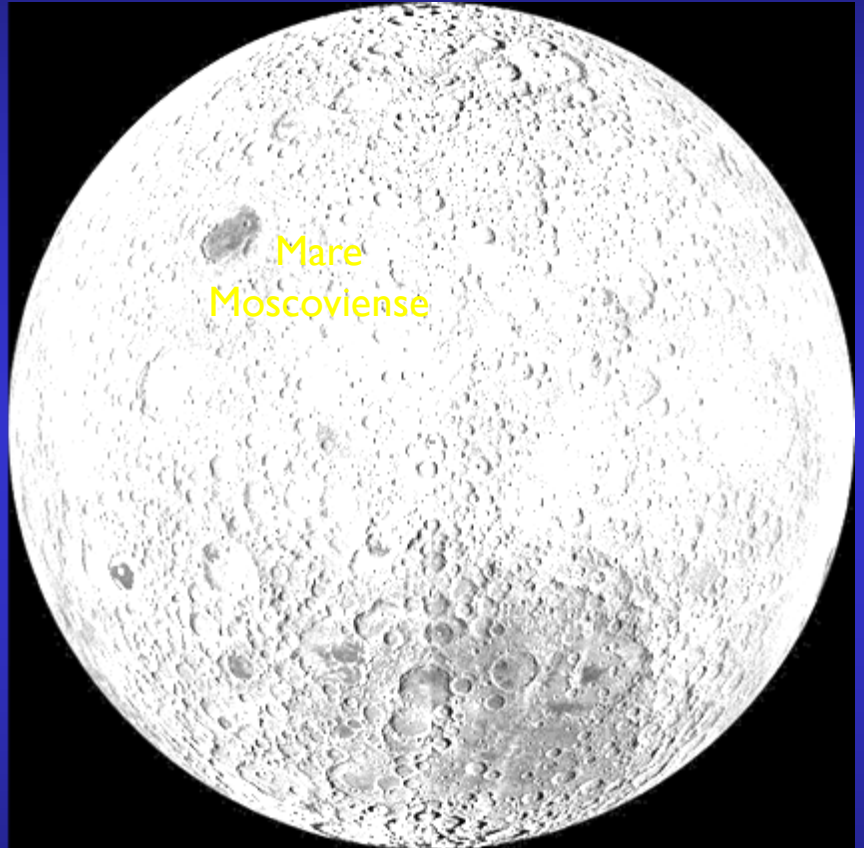
- Zond-3 (1965): flyby (9200 km), 25 excellent photographs
- Lunar Orbiter program (1966-1968)
 - 1-3: probes to look for Apollo landing sites
 - 4 & 5: polar orbit
 - Elliptic orbits (40-1500 km; 2500-6000 km; 100-6000 km)
 - Resolution ~ 1-30m
- Apollo 8 (1968)
 - Visual discovery of surface features by astronauts: “informal” naming
- => **nomenclature problem** (high-res cartography: 1/250,000)
- => *impact on the press and the (US) public*
- => key role of IAU Commission 17 (A. Dollfus, D. Menzel, B. Levin; M. Minnaert (-> 1970))



The Moon



Near side



Far side



- Conflict within the WG: “discoverer’s” (i.e. Russian) names vs. IAU rules (international names)
- Follow: discussions between Levin, Minnaert, Dollfus; negotiations with Acad. Sci. USSR in the background
- Necessity to reach consensus in time for the 1970 GA in Brighton, with a lot of new data (maps) from NASA preparing the Apollo program
- Other problems:
 - [names: transliteration; phonetics]
 - Pressure from the (US) press
 - how to honor deceased and living astronauts and cosmonauts



The US Press: You name it !

NY Times Aug 16 - 1968 -

Soviet Astronaut Asks Renaming of a Lunar Sec

By THOMAS J. HAMILTON
Special to the New York Times

VIENNA, Aug. 15—The Soviet astronaut Lieut. Col. Alexei A. Leonov proposed today that the Ocean of Storms, one of the most prominent features of the lunar landscape, be renamed the Ocean of Gagarin in honor of the first man in space.

Col. Yuri A. Gagarin of the Soviet Union made the first manned orbit on April 12, 1961. Colonel Leonov made his proposed change after reading a newspaper article about the Apollo 8 mission, which is scheduled to be the first manned landing on the moon.

Landing Perils Cited

Leaders of Project Apollo had hoped to skip the last mission scheduled before the manned landing. In this next-to-last flight a manned Apollo spacecraft was to orbit the moon's equator, as on the last mission, but there was to be no detachment and landing by the lunar excursion module. This is the part of the Apollo

At a U.N. Parley He Proposes 'Ocean of Gagarin' to Honor the First Man in Space

"I wish my American friends very success," he said.

Asked whether the Soviet Union would try to beat the United States to the moon, Colonel Leonov quoted Leonid I. Brezhnev, first secretary of the Soviet Communist party, as having said that "it is a

packed with visitors today while only a few persons were to the American exhibit.

According to United States sources, the recent cut in appropriations for the National Space and Aeronautics Administration did not leave money for a more elaborate exhibit.

A spokesman said that James V. Webb, director of the agency and head of the United States delegation, had no comment or opinion on Colonel Leonov's proposal to honor Colonel Gagarin.

30 April 1969

Lunar features—many still await labels

Names for the moon really run the gamut

The following article tells how naming lunar landmarks is going a bit of a problem. Fourth of a series on the American manned moon program.

By Neal Standish
Staff correspondent of The Christian Science Monitor

Washington

There's a mountain on the moon named Marilyn. She is Marilyn? The wife of astronaut James A. Lovell of the Apollo 8 crew which orbited the moon last December.

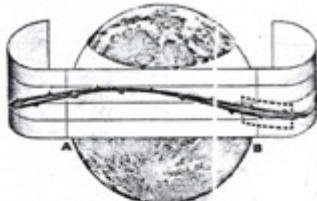
The crew also named three moon craters after themselves: Craters Frank Borman, James A. Lovell, and William A. Anders. They landed there more after their father

contradict: Virgil I. Griffin, Edward R. White II, and Roger B. Chaffee, killed in the pad fire in January, 1967. Three others they christened Mercury, Gemini, Apollo, after the three models of spacecraft used in manned flight.

Then they began naming mountains and craters about as fast as they came across them. Former NASA administrator James E. Webb was so memorialized. So is his successor, Dr. Thomas Paine. They in honored Dr. Earl H. Doherty who runs the Kennedy Space Flight Center; Dr. Werner von Braun, who directs the Marshall Space Flight Facilities; Dr. Robert Gilchrist, who heads up the Houston Manned Space Flight Center.

Dr. Robert H. Goddard, the country's first

★ Please turn to Page 18



MOON NAMES: A NEW LUNAR WHO'S WHO?

Explorers traditionally name the landmarks they discover, and the Apollo 8 crew has been no exception. As their ship hurtled from the lunar day through lunar twilight to total night on the dark side, the astronauts bestowed several dozen names on the peaks and craters of the pale surface below.

Some of the names honor dead astronauts like Virgil I. Griffin, Edward R. White II and Roger B. Chaffee. Some names seemed somewhat whimsically chosen: there is, for instance, a Crater Dennis, named after Dennis L. Bentley, who helped the astronauts with their preflight checklists. Lovell named a lunar mountain after his wife, Marilyn. There is also a Crater Borman, a Crater Lovell and a Crater Anders. Yet neither John F.

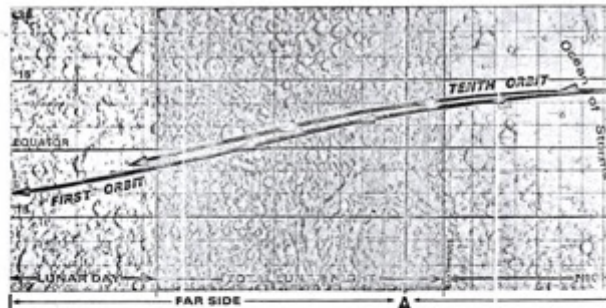
Kennedy who put the space program on its lunar trajectory nor Col. John Glenn, the first American to orbit the earth, was honored.

The christenings were done innocently and almost lightheartedly—in order, said NASA, to enable the crew to give its position to Houston quickly and accurately. But this effort to honor friends and colleagues while making navigation easier involved the astronauts in one of astronomy's most ancient and tradition-bound preserves.

The ritual of naming lunar features is almost as old as scientific astronomy itself. Johannes Hevelius, a German astronomer, first began naming lunar features in the middle of the seventeenth century. Hevelius named the moon's mountains for those on earth. Hence the lunar Caucasus. As Latin was the language of scholars and scientists in those days, he used it automatically. Other scholars followed Hevelius' example,

and even today lunar topographical names are officially given in Latin. Hevelius' colleague, Giovanni Battista Riccioli, introduced another tradition—that of naming lunar features after great scientific and historical figures.

As more astronomers began training telescopes on the moon, names for craters and other features proliferated and so did the confusion. To bring some order to the profusion of names, the International Astronomical Union's lunar nomenclature commission began standardizing the designations in 1935. Today, for the name of a lunar feature to be official it must be approved by the commission and the IAU's general assembly. In selecting new names suggested by astronomers and scientific academies, the nomenclature commission, chaired by Donald H. Menzel of Harvard, follows three general guidelines: big features like the seas are named for states of mind and places; smaller features like craters



(6/1/1969) Newsweek



New York Times
MONDAY, DECEMBER 2, 1968

CORNELL SCIENTISTS DISCOVER LUNAR SEA

ITHACA, Dec. 1 (AP)—Three Cornell University astronomers say they have discovered a 600-mile-long Mare, or dry sea, on the far side of the moon—the side facing away from the earth.

The astronomers, Brian T. O'Leary, Malcolm J. Campbell and Carl Sagan, scientists at Cornell's Center for Radiophysics and Space Research, say the new sea is the moon's largest. The discovery was announced in a paper presented to the American Geophysical Union's meeting in San Francisco.

The three astronomers propose naming the new sea Mare Occultum, or Hidden Sea. Scientists believe that the lunar seas, first discovered by Galileo, the Italian astronomer, were produced early in the moon's existence by heavenly bodies exploding into it.

French-Speaking Allowed

MONCTON, New Brunswick (AP)—French may be spoken in public now at a station Army home for elderly men here. The superintendent, Maj. R. G. Ellsworth, explained that residents previously had been forbidden to speak French except in their rooms with visitors because the home was an English-speaking institution.

AD/JA

Prof. D. MENZEL

Prof. M. MINNAERT

Prof. B. LEVIN

Objet : Groupe de travail de l'U.A.I. sur la Nomenclature Lunaire

Analyse d'une procédure d'exception en faveur du premier
débarquement d'un être humain sur la Lune.

Mes chers Collègues,

La lettre du Prof. Menzel du 1er décembre dernier, dont le contenu me paraît d'une très grande importance, me suggère quelques réflexions personnelles que je me permets de vous développer ci-dessous :

- La première observation de la face de la Lune opposée à la Terre, en 1961, a constitué une réalisation mondiale d'une incontestable importance philosophique pour l'humanité. Elle a été reconnue comme telle par l'U.A.I. qui lui a consacré une exception majeure aux règles de nomenclature lunaire en usage, dans des conditions très semblables aux circonstances présentes. Cette proposition avait été acceptée à l'unanimité par la Commission et l'U.A.I. toute entière, sans aucune objection, et dans un esprit de très haute tenue scientifique.

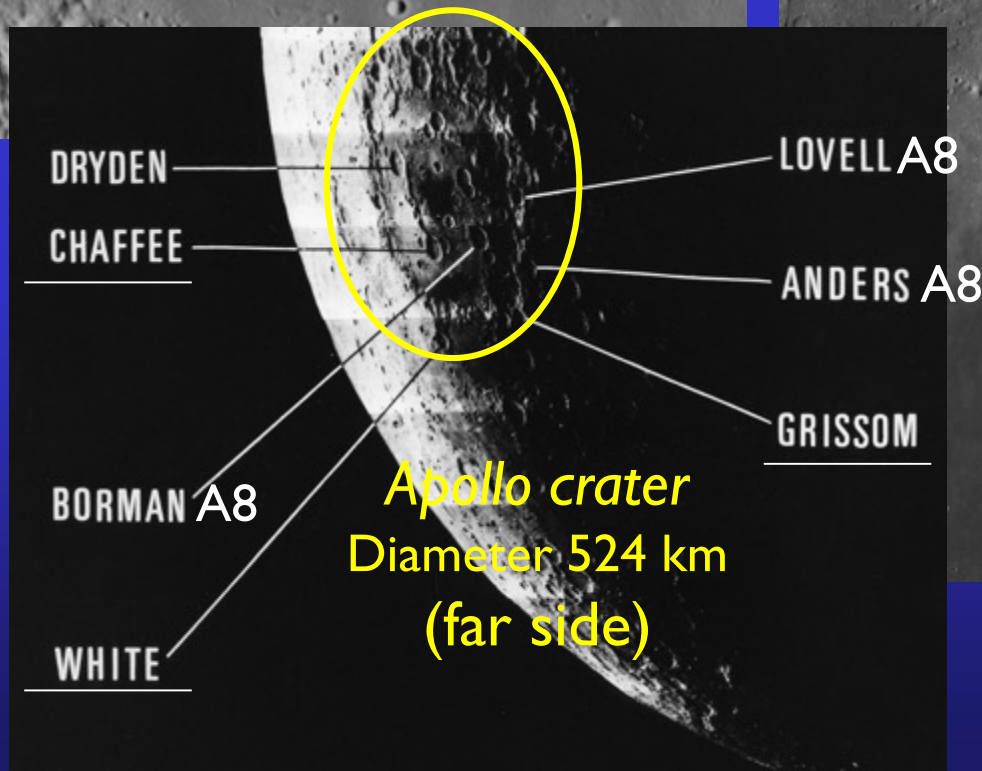
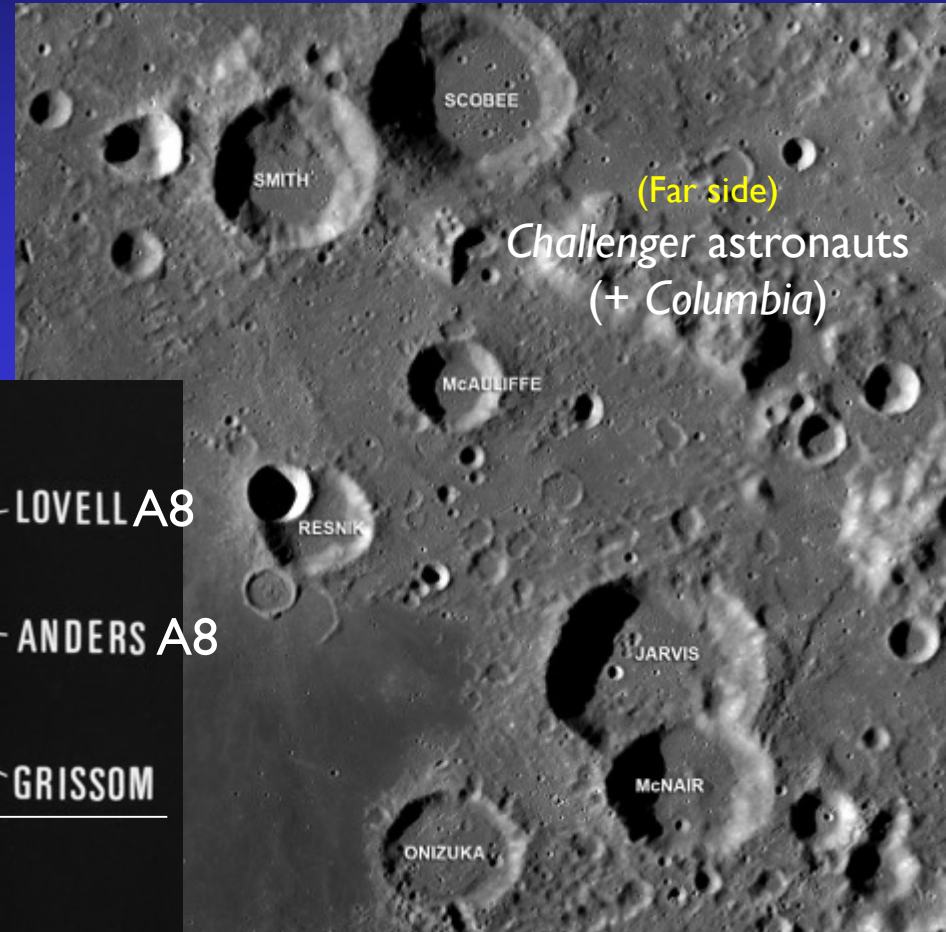
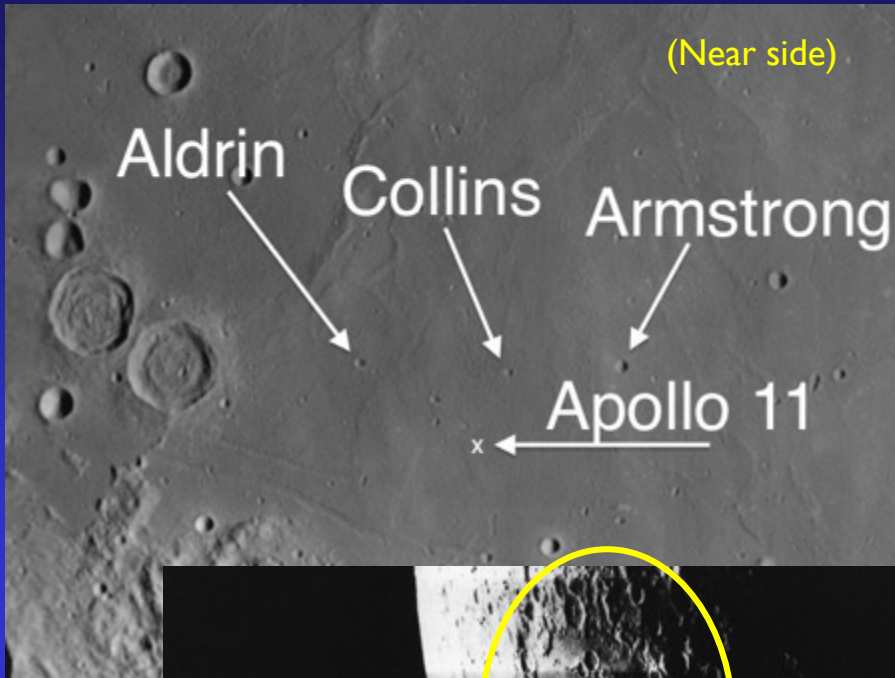
- Me trouvant alors être personnellement responsable de cette proposition devant l'U.A.I., j'avais tenu à l'associer d'une réaffirmation claire des principes traditionnels qui servent de base à la nomenclature lunaire acceptée par l'U.A.I., tant pour réhausser encore la valeur de l'exception que pour prévenir le précédent qu'elle risque de constituer pour la suite des travaux de la Commission dans ce domaine (Trans. U.A.I. 1961).

- Le premier débarquement d'un être humain sur un astre représenté pour l'humanité une étape d'une telle importance qu'elle impose une attribution particulière et évidente sur la Lune. S'y dérober me paraîtrait une faute grave. A mon avis, elle se fera de toute façon, sous la simple poussée de l'opinion publique; mais cela pourrait être en dehors des attributions relevant de l'U.A.I., par exemple, pour désigner les premières bases technologiques permanentes déposées sur la Lune. C'est la raison qui a motivé ma réponse au télégramme du Prof. Lévin en proposant, puisqu'il y a conflit, de revenir strictement à l'application des principes traditionnels limitant les désignations des cratères à des personnes décédées.

.../...

In French !





Evolution from the Brighton GA

- In 1967, 700 named formations on the near side, + ~ 8,000 features (close to named formations) designated by letters (“Mädler system”)
- In 1970, 513 (large) features named on the far side (Zond-III + Orbiters); no attempt to designate smaller features
- In 1971, letter from the UN received [next] that *triggered a major crisis with the IAU and within the IAU*
 - address the problem of smaller features (high-res. maps): letters, coordinates, names (memorial, etc.), other languages ? Enormous work !
- In the mean time: urgency, Apollo continues! (6 landings 1969-1972)



The Dollfus archives: crisis with the UN (1971-1975)

- Creation by the UN of a “Group of Experts on Geographical names”
 - Letter by A. Komkov (VP; geographer) sent to A. Dollfus (Jul. 21, 1971)
 - « *following the directions of the Secretary General [of the UN] [the Group] has included the problems of nominations of extraterrestrial topographic features in its scope* »
 - Announces the « Second UN Conferences on the standardization of geographic names » in London, May 1972
 - Advocates « a close collaboration of our working groups »; asks for views on this collaboration;
 - Sends a 12-page report of a meeting previously held by the Group (New York, March 1970), which takes into account the Brighton GA
 - In essence, says that the interest of space concern many more scientists than astronomers; criticizes the IAU for its nomenclature methodology (refers to Antarctica as an example)



UNITED NATIONS NATIONS UNIES

GROUP OF EXPERTS ON GEOGRAPHICAL NAMES

Prof. A.Dollfus
President, IAU Commission 17,
Observatoire de Paris
Meudon 61,
Paris, France

July, 1971

N 7-32

Dear Sir,

I have the honour to inform you that the UN Group of Experts on geographic names following the directions of the Secretary-General has included the problems of nomination of extraterrestrial topographic features in its scope. In this connection a special Working group has been set up and I have been named its coordinator.

The session of the Group of Experts held in New York in February 1971 discussed the paper "Concerning the names of extraterrestrial topographic features" presented by me. A decision was adopted to prepare the final report on the subject to be presented at the Second UN conference on the standardization of geographic names which will be held in May 1972 in England.

I believe that the progress in studying the problem of nomination of extraterrestrial topographic features (minor features of the lunar surface first of all) as well as the elaboration of any recommendations will be a success provided close collaboration of our working groups is organized. Your view on the possible ways of our collaboration would be very helpful.

I would be much obliged to you for your comments to my report a copy of which I am sending you herewith. Simultaneously I am sending another copy to Prof. D.H.Menzel, Chairman of the Working Group of the IAU Commission 17, The Moon, and ask him to express his opinion on this matter.

Respectively yours

A.M.Konkov

Vice-President, UN Group of
Experts on geographic names



- IAU: already existence of an “Inter-Union Committee on the Moon”, with IUGS (geology), IUGG (geodesy and geophysics), IUG (geography), IUPAC (applied chemistry), IUTAM (mathematics), and also COSPAR, founded by A. Dollfus (first ideas ~ 1965)
- Officially created by decision of ICSU in 1972
- Reply from De Jager: naming of lunar features should be left to the IAU, in cooperating with IUCM, which as the relevant interdisciplinary scientific expertise
- Komkov insists on “legal aspects” to enforce standardization and adoption of new names internationally => *UN only authority* (examples: Antarctica, seafloor)
- The Group of Experts considers new, ad hoc systems for naming extraterrestrial features (alphanumeric coordinates, “Lunese I”, etc.)



10th International Congress of Onomastic Sciences. Proceedings. Disputations ad montium vocabula aliorumque nominum significationes pertinentes. Tom. II
Wien, 1969.

X/3

SYNTAX AND SEMANTICS OF LUNESE I,

A MICROLANGUAGE FOR LABELING

TOPOGRAPHICAL FEATURES OF THE LUNAR SURFACE

CASIMIR BORKOWSKI

Department of Computer Science
Graduate School of Library and Information Sciences
The Knowledge Availability Systems Center

UNIVERSITY OF PITTSBURGH
Pittsburgh, Pennsylvania

Motivation for Lunese I.

Our present system of assigning names to the features of the lunar surface antedates the space age. The existing lunar nomenclature was set up by astronomers at a time when the moon was still inaccessible and when the amount of information about its surface was still very small.

In spite of the advent of space travel and the consequent jump in the amount of data concerning the lunar surface, we continue the use of our ancient lunar naming practices -- many of which date back to the middle of the XVIIth century (for example, our use of such inappropriate topographical terms as "sea" and our practice of assigning the names of persons to features of lunar topography (e.g., "Crater Schiaparelli").

While classical lunar nomenclature served adequately the needs of early generations of lunar astronomers, this was probably due to the fact that, until recently, the interest in the features of the lunar surface was negligible and the increase in the number of named lunar features correspondingly slow (from 200 in the year 1651 to 700 in the year 1951).

With the advent of space age, the problem of assigning names to lunar features changed drastically. The International Astronomical Union, which validates new astronomical names, is about to be swamped with name proposals for the many newly identified topographical features of the moon, and there is intermittent international bickering over the selection of lunar names. Face to face with a lunar "information explosion", classical lunar nomenclature is proving to be outmoded, slow, and controversial.

...

X/3

are: $10^0, N 12^0$ (where "10⁰" stands for the longitude and "N 12⁰" for the latitude) and the digits of the coordinate reference "0", "1", "2", "3", "4", "5", etc. have been uniquely correlated with, respectively, the syllables "ze", "ne", "to", "te", "fo", "fi", etc., while letters "N" and "S", abbreviations for, respectively, "North" and "South" have been uniquely correlated with syllables "no" and "so", then the proper name for that feature shall be "Nezenoneto" -- where "Ne" stands for "1", "ze" for "0", etc.

Proper names derived from more precise coordinate information will be correspondingly longer. Thus, the coordinates: $010^0, 00^0, 0; N 12^0, 00^0, 0$ shall generate the Lunese I proper name: Zezezezezezenonetozezeze. However, since a syllable string of this length would be unwieldy in normal use, procedures are available in Lunese I for abbreviating without loss of information overlong proper names. Thus, the abbreviated form of the above name shall be: "Zezeze nonetozeze", where the exponents "4" and "3" indicate, respectively, a fourfold and a threefold repetition of the preceeding syllable.

The procedure adapted in Lunese I for expressing information about distinctive topographical characteristics of various portions of the lunar surface by means of a unique topographical term is conveniently simple. A description of the successive steps of this procedure follows.

As a first step, we compiled a list of existing lunar topographical terms. Among the entries on this list were such common lunar topographical terms as: "bay", "crater", "craterlet", "hill", "marsh", "mountain", "sea", etc. The use made in classical lunar nomenclature of several terms on this list is topographically incorrect (e.g., "bay", "marsh", "sea"), while other terms -- although their usage is topographically correct -- fail to indicate the lunar location of the features which they designate.

Because of the anticipated detrimental effect on lunar information processing due to the inherent ambiguity, vagueness, and frequent incorrectness of current lunar topographical terms, we substituted for each such term a new term which is unambiguous, precise, and topographically correct. Most of these replacement terms are loanwords from Greek modified in accordance with the rules of English phonology. For instance, the terms "bay", "crater", "craterlet", "hill", "mountain", and "sea" were replaced by the terms: "kolpos", "krater", "kraterlet", "choros", "oros", and "pontos".

As a final step, we compiled a short dictionary of newly coined lunar topographical terms. This dictionary is available for use in Lunese I for assigning topographical terms to lunar features. Among the entries in the dictionary are:

kraterlet (traditional name: craterlet): a portion of the lunar surface approximately circular in form, with diameter ranging from 1 to 100 m., with central depression of unspecified depth and surrounded by a rim rising from 1 to 100 m. above adjacent terrain.

choros (traditional name: hill): a portion of the lunar surface elevated above its surroundings and reaching the altitude of from 1 to 500 m. above its surroundings.

oros (traditional name: mountain): a portion of the lunar surface elevated above its surroundings and reaching altitudes higher than 500 m. above them. The summit area of an oros is small in proportion to the area of its base.

UNITED NATIONS NATIONS UNIES

INTEROFFICE MEMORANDUM

TO:

Date: _____ 195__

THROUGH:

FILE NO.: _____

FROM:

SUBJECT:

EXTRACT FROM DRAFT REPORT OF THE CONFERENCE
Document E/CONF. 61/3, 30 May 1972

R e s o l u t i o n s
adopted by the 2nd United Nations Conference
on the Standardization of Geographical
Names (London, 10-31 May, 1972)

RESOLUTION 21. Standardization of names of extra-
terrestrial topographic features

The Conference,

Having discussed the present situation with regard to
the naming of extraterrestrial topographic features,

Recognizing that greatly increased lunar and planetary
exploration, study and associated detailed large scale mapping
require a new perspective on the naming of extraterrestrial
features and a wider base for international agreement,

Recommends that the United Nations Group of Experts on
Geographical Names study the question of drafting an international
convention on the standardization of extraterrestrial
nomenclature, in co-operation with other competent international
bodies.

RESOLUTION 25. Names of features beyond a single
sovereignty

The Conference,

Considering the necessity of an international standardizat:

No mention of IAU !



Crisis within the WG itself !

- Agreement within the WG that UN should accept IAU decisions on nomenclature (after consultation; not the opposite !);
- Call for guidance from EC
 - No evidence in Archives, but presentation by De Jager (GS, also COSPAR President) at *UN Committee on Peaceful Uses of Outer Space* advocating preeminence of IAU over UN geographers
- However, strong disagreements between:
 - Keep the Mädler system or not (especially on the far side)
 - Menzel + Dollfus (“progressists”) + Kuiper (later) vs. Cartographers (experts added to the WG) + Levin (“conservatives”)
 - Keep the tradition or not of naming features after astronomers/scientists
 - Menzel + Dollfus vs. Kuiper + Levin



October 21, 1972

to object that the charts would then be "monotonous and unartistic," because of the frequent repetition of the same letter on a given map. But now it seems that the cartographers are the ones who have adopted this new technique and at the same time object to the introduction of any new system.

In Paris, Professor Dollfus and I discussed in detail a new system that has received considerable support from both professional and amateur astronomers. The list of names on the far side, approved by the IAU in 1970, has been criticized by some people because of the rather narrow restriction to astronomers, other physical scientists, and a few individuals who had in some way contributed to the moon.

There were many other groups of distinguished people who might also have received consideration, except for our restriction. There was also the expressed opinion, popular in these days of "Women's Lib" that we might have honored more women. But since distinguished women in the physical sciences have been rather in the minority, our final list contains very few names of distinguished females. This is not a particularly important point, but we might have added a few, had we considered such classifications as "Great Singers," or "Great Authors."

I gather, also, from the discussions I heard at the meeting of the United Nations Conference on Geographical Names, in May, 1972, that such considerations lie in part in the desire expressed by some of the members that they, rather than the International Astronomical Union, should have the remaining responsibility of lunar nomenclature. I objected strongly to that point of view, and no action was taken at the May meeting.

A Committee of the International Astronomical Union, examined and tried to bring order out of the conflicting systems of lunar nomenclature. The report, adopted by the IAU at its meeting in 1932, was published under the title of "Named Lunar Formations," by Mary A. Blagg and K. Müller. The report consisted of the names and/or other designations of identifiable lunar formations and 14 maps, whose quality leaves much to be desired.

Of the 6050 named features, approximately 700 were listed as primary objects and the remaining 5350 as satellites. Capital Roman letters were used for craters, valleys, and other depressions; lower case Greek letters were used for hills, mountains, and other "eminences."



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MOSCOU 93 15 1337 = PAGE 1/50 =

PROFESSOR DOLLFUS OBSERVATOIRE
MEUDON/PARISFRANCE

PROFESSOR MENZEL WITHOUT AUTHORIZATION FROM WORKING GROUP
CIRCULATED WORLDWIDE THROUGH US STATE DEPARTMENT REQUEST FOR
NAME DISTINGUISHED WRITERS MUSICIANS ARTISTS SINGERS ETS FOR
NAMING THOUSANDS MORE CRATERS STOP THIS MOOVE INTEND FORCE IAU
ACCEPT WITHOUT PAPPAPPROVAL COMMISSION 17 AND GENERAL ASSEMBLY
MENZEL ' S REVISION OF

~~COL APPROVAL 17 MENZEL ' S~~

SUF323 PROFESSOR DOLLFUS = PAGE 2/43 =

IAU RULES NAMING LUNAR CRATERS OPPOSED BY KUIPER MYSELF AND OTHERS
STOP STRONGLY PROTEST STOP INSIST RESTORE NORMALE PROCEDURE
STOP INTERIM REPORT DATED DECEMBER ELEVEN EXPOSES MAINLY
MENZEL ' S OWN VIEWS NOT WORKING GROUP DECISIONS STOP REQUEST
THROUGH SCIENTIFIC ANALYSES OF NEEDS AND POSSIBILITIES
NR 30 LEVIN

The road to Sydney (1973 GA)

- To summarize: painful disputes within the WG
- The UN continues to insist that it is the only body having the legal rights to approve and enforce extraterrestrial nomenclature (Moon & planets)
- Under pressure from NASA and the UN interpretation, Menzel and Dollfus eventually convince the WG to adopt Moon nomenclature via memorial names of a broad variety of famous international persons (deceased -except astronauts); given names for very small craters (< 1 km)
- However, letters may be temporarily given to small features if necessary, waiting for names
- List of $\sim 1,400$ names approved by the GA
- $\Rightarrow$ *Fait accompli* sent to the UN
- *[But no record of UN-IAU crisis in official IAU documents !?]*
- In fact, “legal aspects” not really relevant since the international agreement is obtained via the IAU (Commission 17, then **WVG on Planetary Surface Nomenclature, created at the Sydney GA**)



The Moon today... and tomorrow

- In 1982, the crater census (NASA catalog) was:
 - Named craters: 796 (near side), 599 (far side) => total 1395
 - Lettered craters: 5345 (near side), 1667 (far side) => total 7102
- After 50 years of “inaction”, renewed interest for the Moon today, especially the South Pole region
 - Crater hidden from Earth, but easy communications
 - Possible water resources
- New countries come into the game:
 - Successful landing (Dec. 2018) of the Chinese rover *Chang’e-4*:
IAU approves landing site feature names
 - Unsuccessful attempt (Sep. 2019) to land the Indian probe *Vikram*
 - Renewed role of the IAU in nomenclature process; no interference from the UN !



Wikipedia: list of lunar crater names (sorted by approval date)

Crater	Coordinates	Area (km²)	Year	Notes
Aitken	16.44°S 172.96°E	129.69	1970	Robert Aitken (1864–1951)
Al-Biruni	18.07°N 92.62°E	80.41	1970	al-Biruni (973–1048)
Alden	23.51°S 111.11°E	111.44	1970	Harold Alden (1890–1964)
Aldrin	1.41°N 22.09°E	2.8	1970	Buzz Aldrin (born 1930)
Alekhin	67.94°S 131.85°W	74.82	1970	Nikolai Alekhin (1913–1964)
Älter	16.74°N 107.8°W	64.73	1970	Dinsmore Älter (1888–1968)
Amici	10.06°S 172.23°W	52.03	1970	Giovanni Amici (1786–1863)
Anders	41.31°S 143.3°W	41.33	1970	William A. Anders (born 1933)
Anderson	15.5°N 170.79°E	105.33	1970	John August Anderson (1876–1959)
Antoniadi	69.3°S 173.06°W	137.92	1970	Eugene Antoniadi (1870–1944)
Apollo	35.69°S 151.48°W	524.23	1970	Apollo program
Appleton	37.05°N 156.17°E	64.59	1970	Edward Victor Appleton (1892–1965)
Armstrong	1.35°N 24.94°E	4.21	1970	Neil Armstrong (1930–2012)
Arthenius	55.58°S 91.45°W	40.93	1970	Svante Arthenius (1859–1927)
Artamonov	25.44°N 103.79°E	62.45	1970	Nikolaj N. Artamonov (1906–1965)
Artem'ev	10.4°N 145.22°W	66.39	1970	Vladimir A. Artemyev (1885–1962)
Avicenna	39.63°N 97.28°W	72.99	1970	Avicenna (980–1037)
Avogadro	63.21°N 165.36°E	129.84	1970	Amedeo Avogadro (1776–1856)
Abbot	5.56°N 54.74°E	10.4	1973	Charles Greeley Abbot (1872–1973)
Al-Khwarizmi	7.02°N 107.01°E	56.25	1973	al-Khwarizmi (died c. 825)
Artsimovich	27.61°N 36.63°W	7.96	1973	Lev A. Artsimovich (1909–1973)
Abetti	20.11°N 27.82°E	1.6	1976	Antonio Abetti (1846–1928) and Giorgio Abetti (1882–1962)
Acosta	5.65°S 60.14°E	13.06	1976	Cristobal Acosta (1515–1580)
Akis	20.01°N 31.76°W	2.28	1976	(Greek female name)
Alan	10.93°S 6.17°W	1.44	1976	(Celtic male name)
Al-Bakri	14.34°N 20.25°E	12.21	1976	Abu Abdullah al-Bakri (1010–1094)
Al-Marrakushi	10.45°S 55.77°E	8.57	1976	Ibn al-Banna al-Marrakushi (fl. c. 1261–82 AD)
Aloha	29.79°N 53.86°W	2.55	1976	(a Hawaiian greeting)
Ameghino	3.3°N 57.04°E	9.2	1976	Florentino Ameghino (1854–1911)
Ammonius	8.52°S 0.83°W	8.55	1976	Ammonius Hermiae (died c. 517)
Amontons	5.34°S 46.78°E	2.47	1976	Guillaume Amontons (1663–1705)
Andronov	22.66°S 146.11°E	16.57	1976	Aleksandr Aleksandrovich Andronov (1901–1952)
Ange	20.48°N 32.34°W	0.87	1976	(African male name)
Ann	25.11°N 0.05°W	2.12	1976	(Hebrew female name)
Annegrit	29.43°N 25.64°W	1.29	1976	(German female name)
Anville	1.84°N 49.51°E	10.26	1976	Jean-Baptiste Bourguignon d'Anville (1697–1762)
Armiński	16.36°S 154.22°E	26.76	1976	Franciszek Armiński (1789–1848)
Artemis	25.03°N 25.36°W	2.28	1976	Greek goddess
Asada	7.25°N 49.9°E	12.37	1976	Goryu Asada (1734–1799)
Atwood	5.88°S 57.78°E	28.64	1976	George Atwood (1745–1807)
Avery	1.32°S 81.37°E	10.73	1976	Oswald Theodore Avery (1877–1955)
Alder	48.63°S 177.88°W	82.12	1979	Kurt Alder (1902–1958)
Aruchin	48.85°S 101.66°E	62.14	1979	Dmitry Nikolayevich Aruchin (1843–1923)
Aryabhata	6.2°N 35.17°E	21.89	1979	Aryabhata (476 – c. 550)
Andersson	49.95°S 95.46°W	13.42	1985	Leif Erlend Andersson (1943–1979)
Ashbrook	81.1°S 110.58°W	157.68	1994	Joseph Ashbrook (1918–1980)
Aspinus	87.96°N 109.69°W	16.74	2009	Franz Aspinus (1724–1802)
Albert	36.3°N 35°W	0.1	2012	German male name





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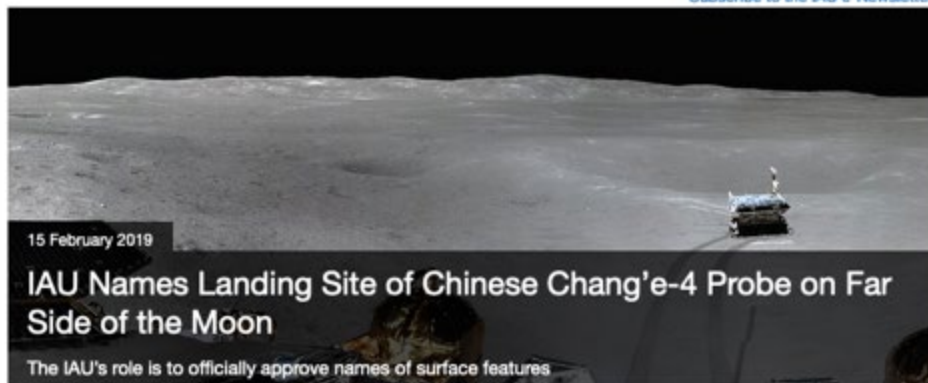
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15 February 2019

IAU Names Landing Site of Chinese Chang'e-4 Probe on Far Side of the Moon

The IAU's role is to officially approve names of surface features

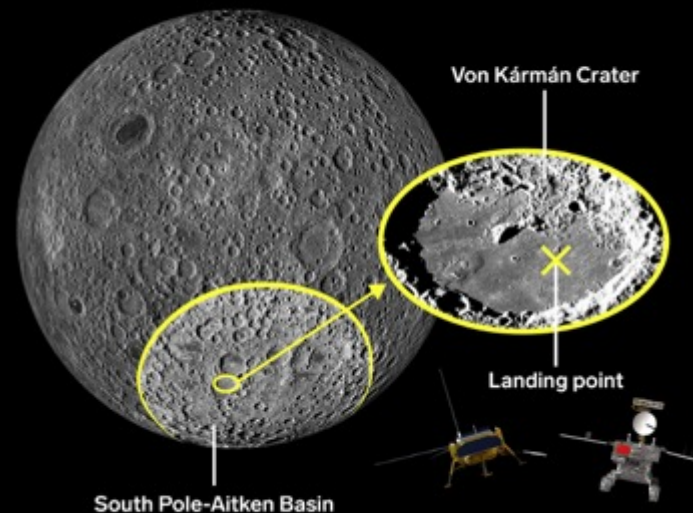
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Five sites on the far side of the Moon now have official names, including Chang'e-4's landing site. The names have significance in Chinese culture, reflecting the background of the probe's team.

The IAU [Working Group for Planetary System Nomenclature](#) has approved the name Statio Tianhe for the landing site where the Chinese spacecraft [Chang'e-4](#) touched down on 3 January this year, in the first-ever landing on the far side of the Moon. The name Tianhe originates from the ancient Chinese name for the Milky Way, which was the sky river that separated Niulang and Zhinyu in the folk tale "[The Cowherd and the Weaver Girl](#)".

Four other names for features near the landing site have also been approved. In keeping with the theme of the above-mentioned folk tale, three small craters that form a triangle around the landing site have been named Zhinyu, Hegu, and Tianjin, which correspond to characters in the tale. They are also names of ancient Chinese constellations from the time of the [Han dynasty](#). The fifth approved name is Mons Tai, assigned to the central peak of the crater [Von Kármán](#), in which the landing occurred. Mons Tai is named for [Mount Tai](#), a mountain in Shandong, China, and is about 46 km to the northwest of the Chang'e-4 landing site.

China's landing on the far side of the moon



Sources: NASA/Arizona State University (moon imagery); CASC/CNSA (lander/rover renderings) Insider Inc.



Area where *Vikram* crashed

Traffic signs needed on the Moon ?



"For heaven's sake, Elroy! . . . NOW look where the earth is! . . . Move over and let me drive!"

1969



1972



2029 ?

[Ad Astra, 2019]

