Geological, geochemical and geophysical studies on the Moon: Combination of manned and robotic approaches

E. M. Galimov and A. T. Basilevsky

Vernadsky Institute of Geochemistry and Analytical Chemistry
Russian Academy of Sciences
Moscow, Russia

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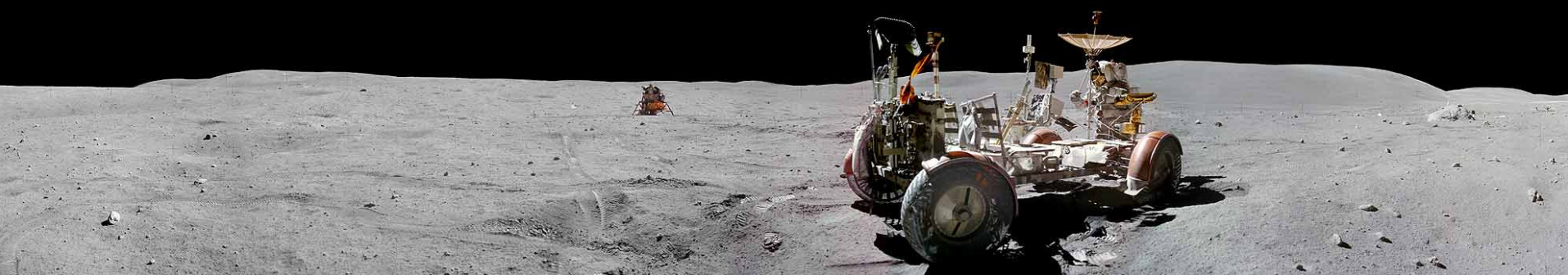
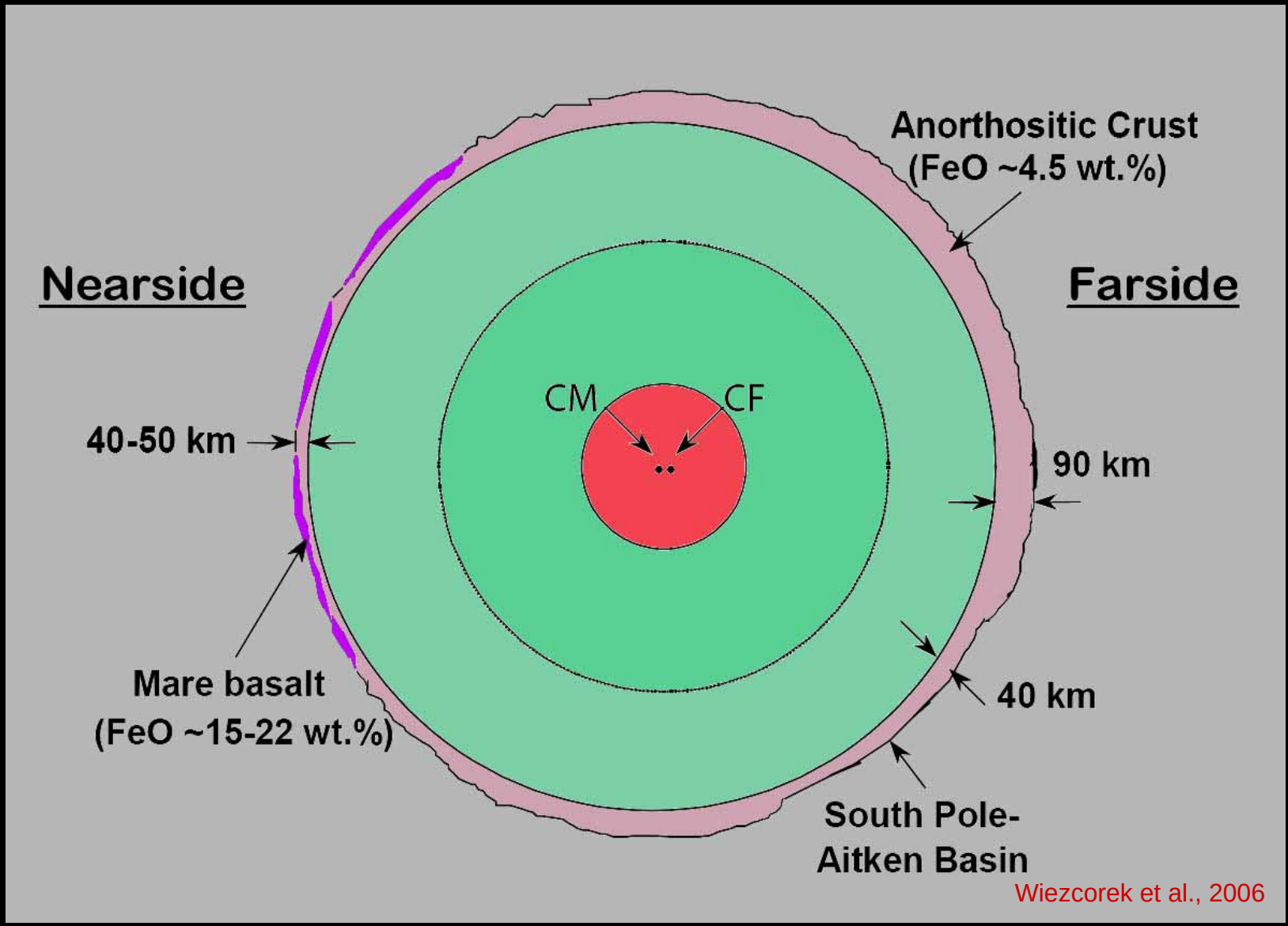
Moon: What we know and what we do not know?

- Internal structure is known not very well.
- Polar “caps” => Volatiles in eternal shadow => What they are?
- He-3 accumulations in lunar regolith => How to prospect?
- What happened on the Moon during the first 600 m.y.
- Until what time lasted waning stages of lunar volcanism?

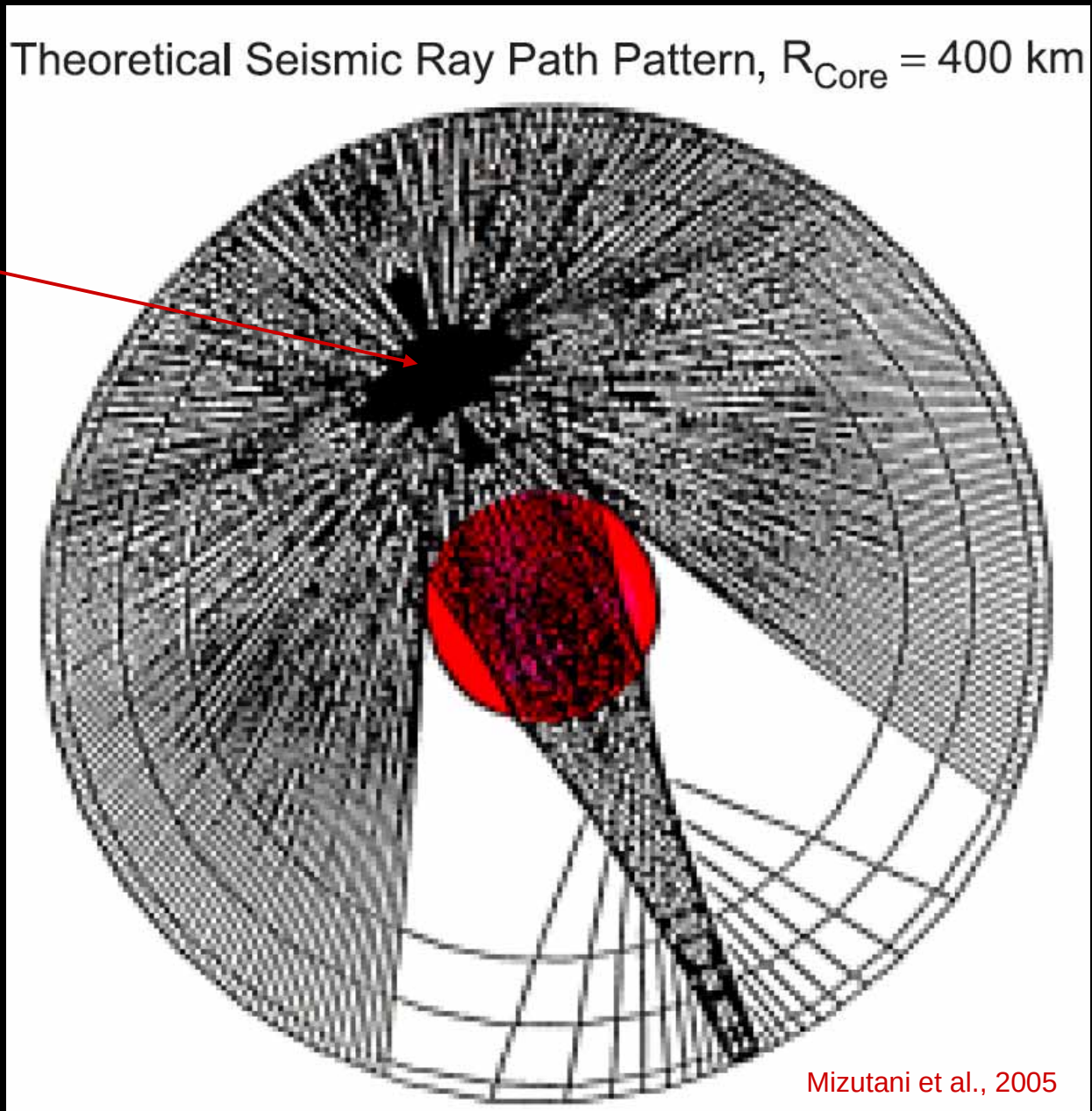


Internal structure of the Moon

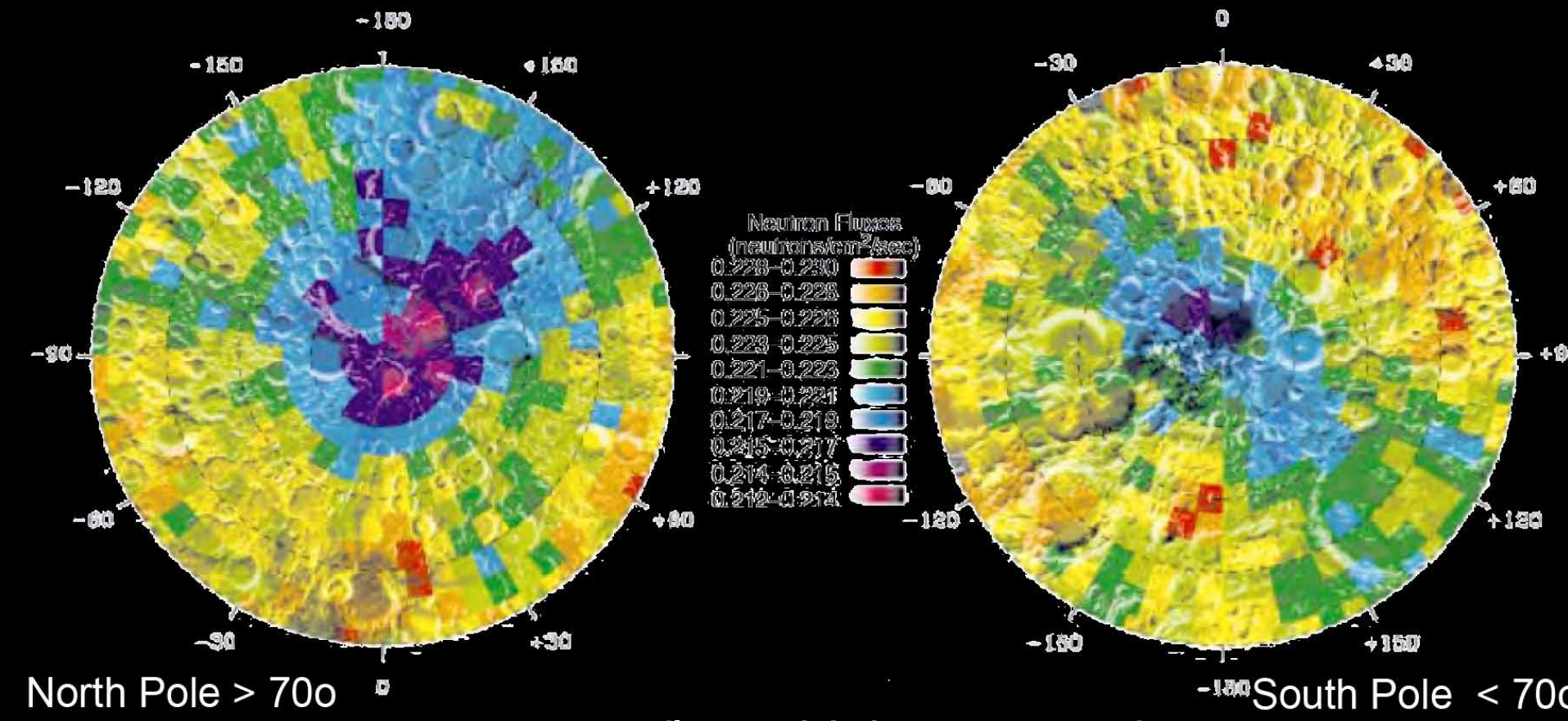


Known not very well. Indicative on how the Moon formed

Seismic sounding and monitoring



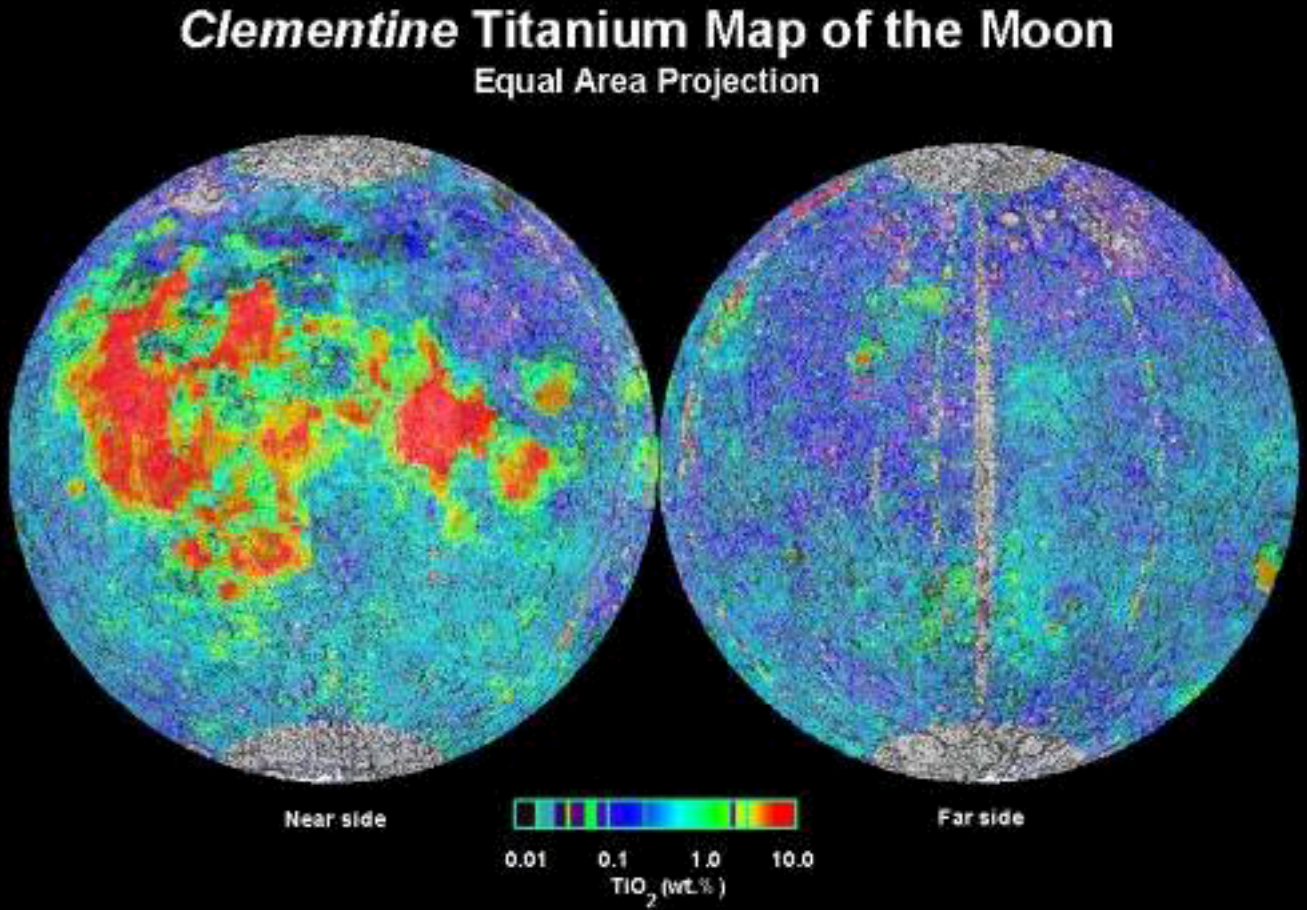
Polar deposits on the Moon as a source of water



Low neutron flux = high content of H

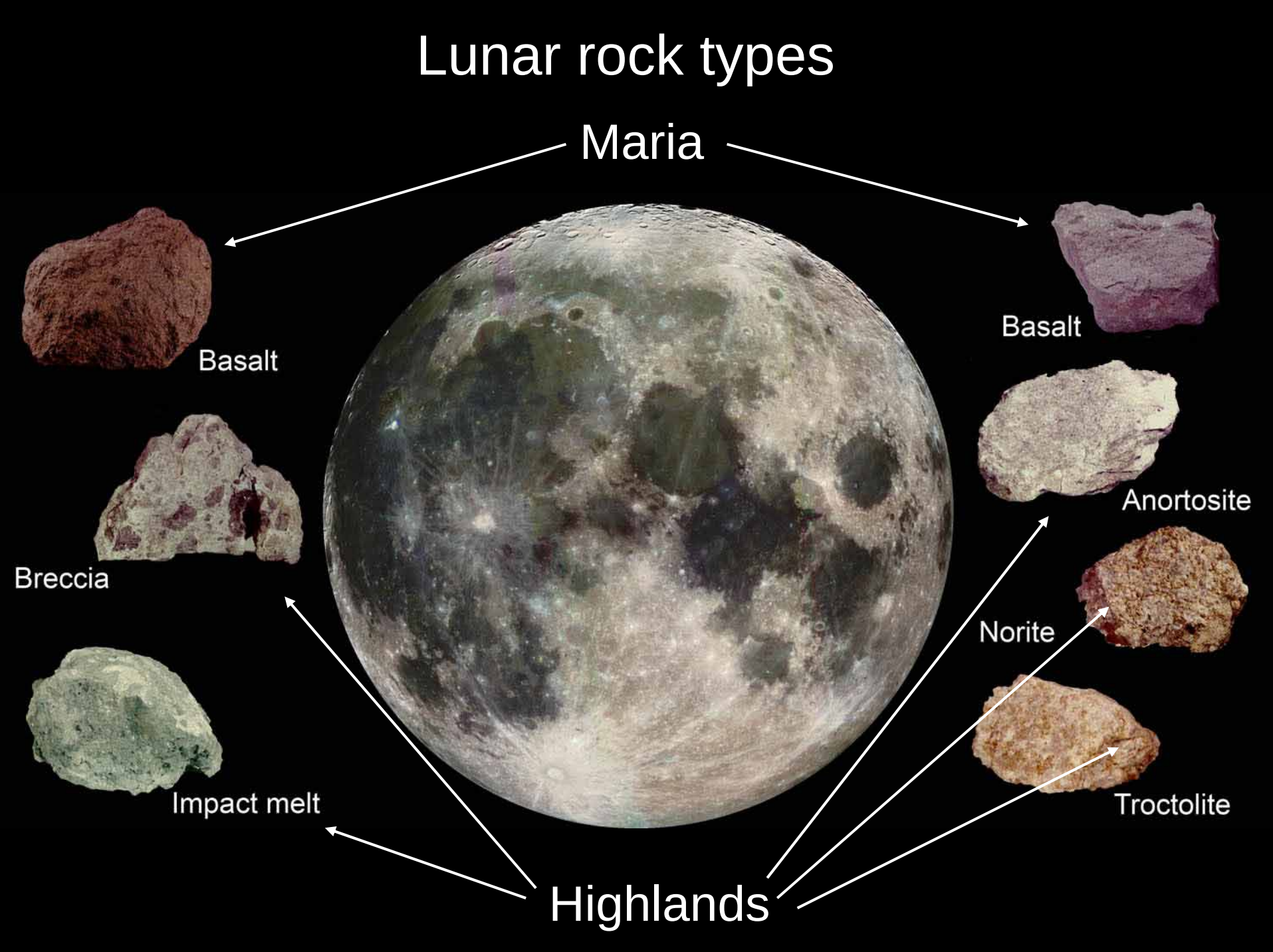
In what form hydrogen is present:
Water ice, ammonia, organics, protons captured by solids?
How large these resources are?

Helium-3 resources on the Moon

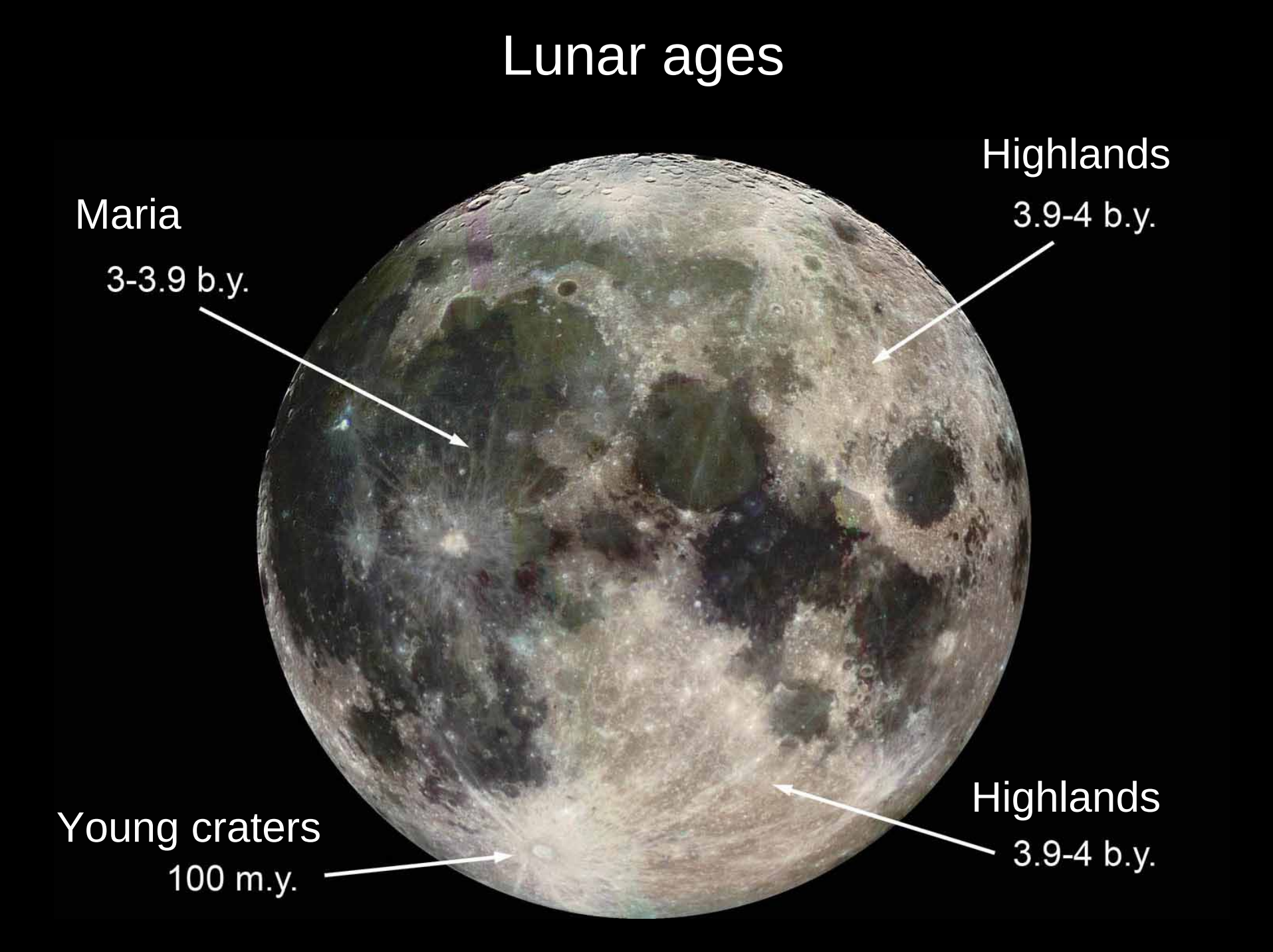


Maximum concentrations of He-3 are found in regolith samples formed on high-titanium basalts

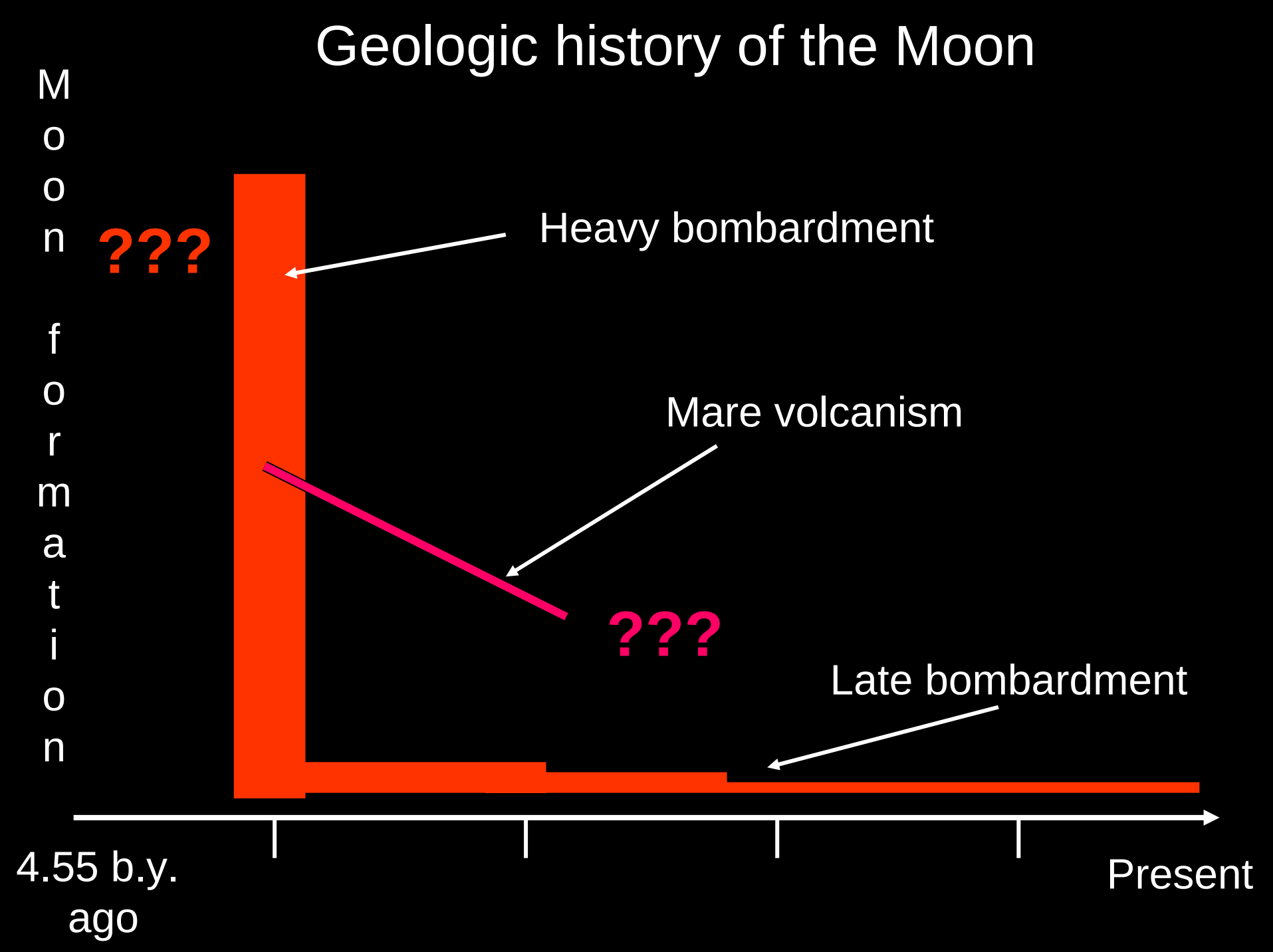
Lunar rock types



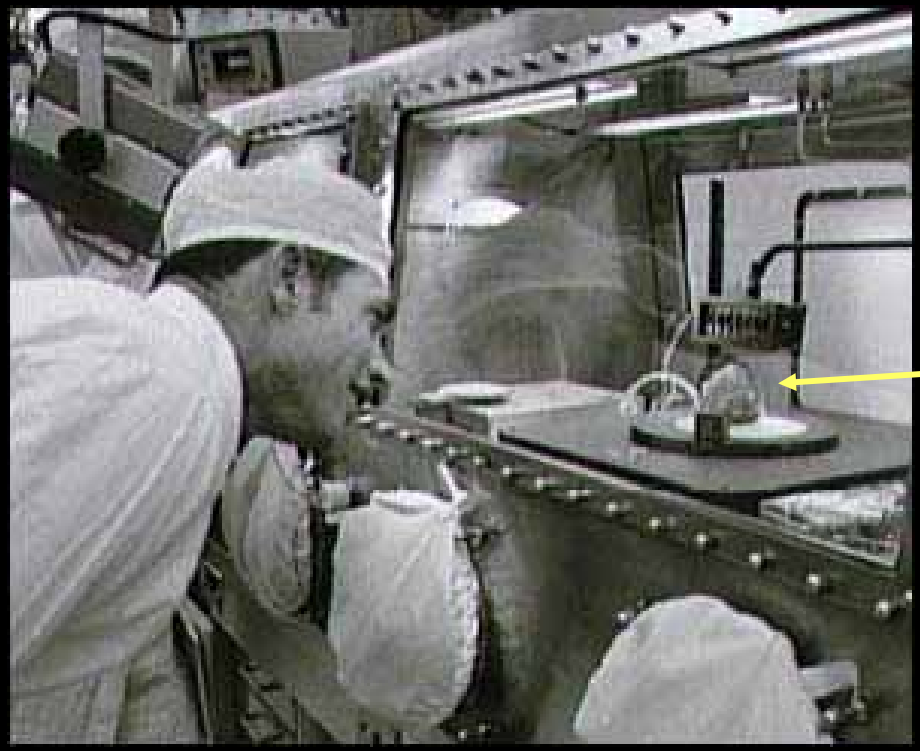
Lunar ages

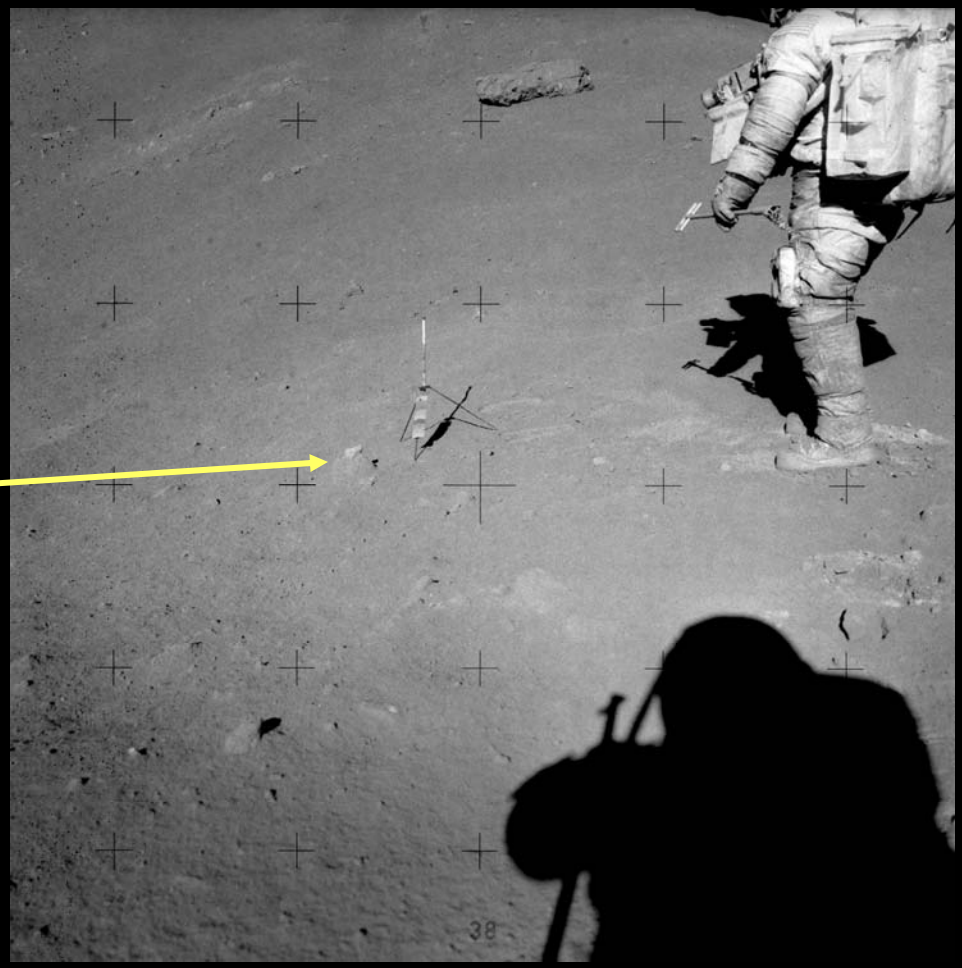

Highlands
3.9-4 b.y.
Maria
3-3.9 b.y.
Highlands
3.9-4 b.y.
Young craters
100 m.y.

Geologic history of the Moon



Genesis rock, Anortosite of 4.5 b.y. old
Found by Apollo 15 expedition





We should hunt for such rocks in future studies

Field and other activities on the Moon: Combination of man power and robots

People are good where creativity and ingenuity are needed.

Robots are good for monotonous and risky activities.