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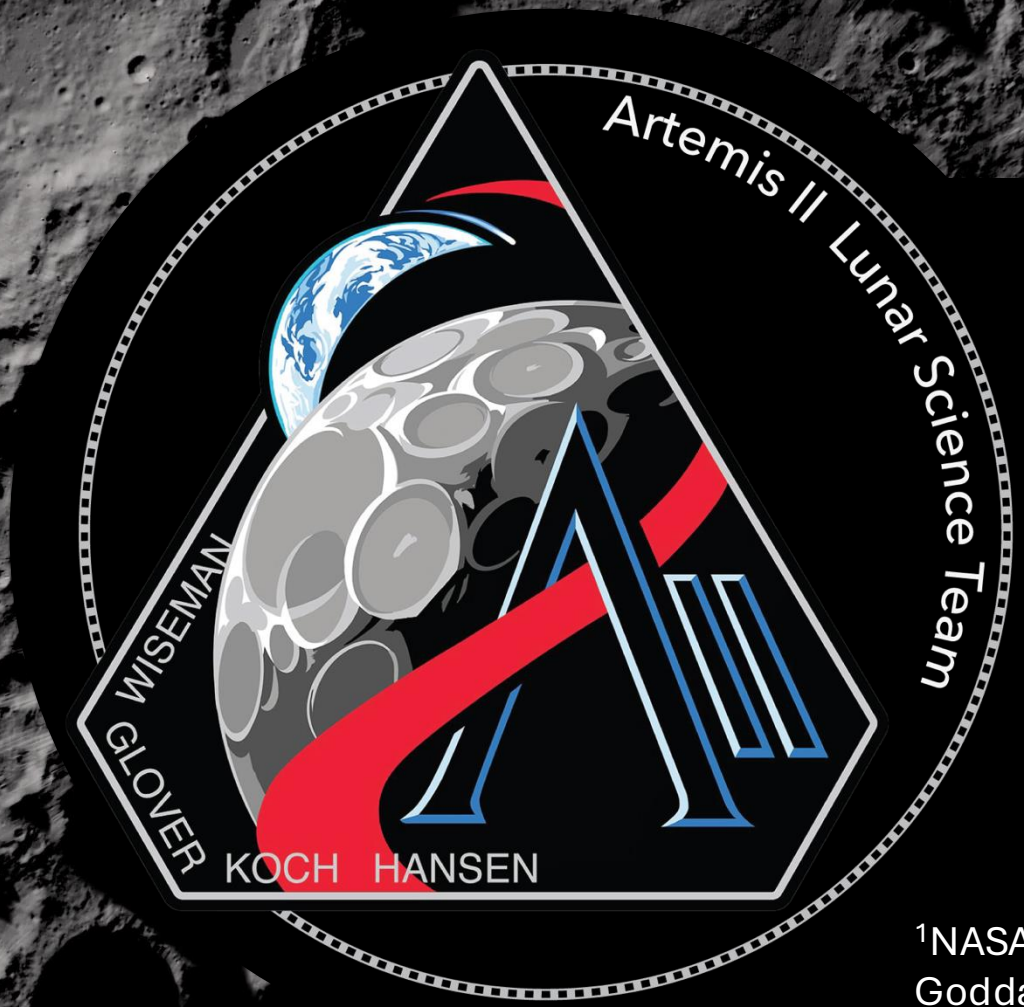

Training the Artemis II Astronauts for Observing the Moon

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ARTEMIS

Introduction

NASA's Artemis II Mission launched 1 April , 2026

- Artemis II included a lunar pass around the far side of the Moon
- The crew (Reid Wiseman, Victor Glover, Christina Koch, Jeremy Hansen) were trained as **mission scientists**, directly exploring the Moon's surface through their observations from orbit
    - They were able to see, describe, and image lunar surfaces that have never been directly observed by humans

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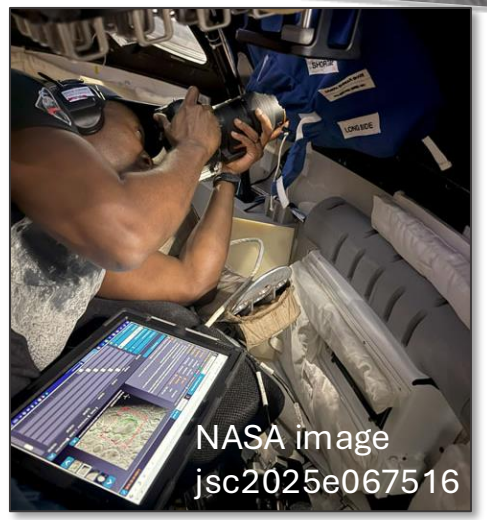
Training the Artemis II Crew to Observe the Moon

- The Artemis II Lunar Science Training Team developed a multi-faceted lunar science and science operations training program to train the crew as mission scientists.
- The training program leveraged Apollo lessons-learned and included:
  - Classroom instruction
  - Fieldwork
  - Hands-on technical/operational training
  - Operational simulations
  - Digital exercises to reinforce learning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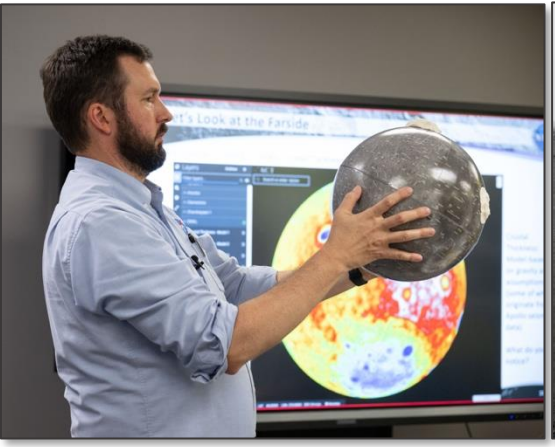
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Artemis II Training Program – Lunar Science in the Classroom


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Basic Training: Lunar Fundamentals

- Establish a baseline of lunar knowledge/literacy
- Included Flight Control Team members

- Week-long deep dive into the Moon's geological history and exploration legacy
- Lunar processes such as impact cratering, volcanism, and tectonic deformation
- Emphasis on lunar samples and volatiles
- Tools and datasets for modern lunar science
- Key talking points for their public appearances


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Artemis II Training Program – Lunar Science in the Field

Field training in terrestrial analogs to ground the crew's lunar science knowledge:

- Hands-on experience with **lunar-relevant rock types**
- Reinforced understanding of **lunar surface processes**
- Development of a **geologic vocabulary and a sense of scale**
  - **Kamestastin Impact Crater** (N. Labrador), September 2023. Three crew members explored and studied a terrestrial impact structure and directly observed impact breccias and melts in feldspathic target rocks.
  - **Icelandic Highlands**, Summer 2024. The entire crew conducted fieldwork in the Icelandic highlands, observing volcanic and tectonic features, as well as regolith (volcanic tephra) and icy regolith (an analog for volatile-rich regolith on the Moon).

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Artemis II Training Program – Science Plan for Lunar Observation


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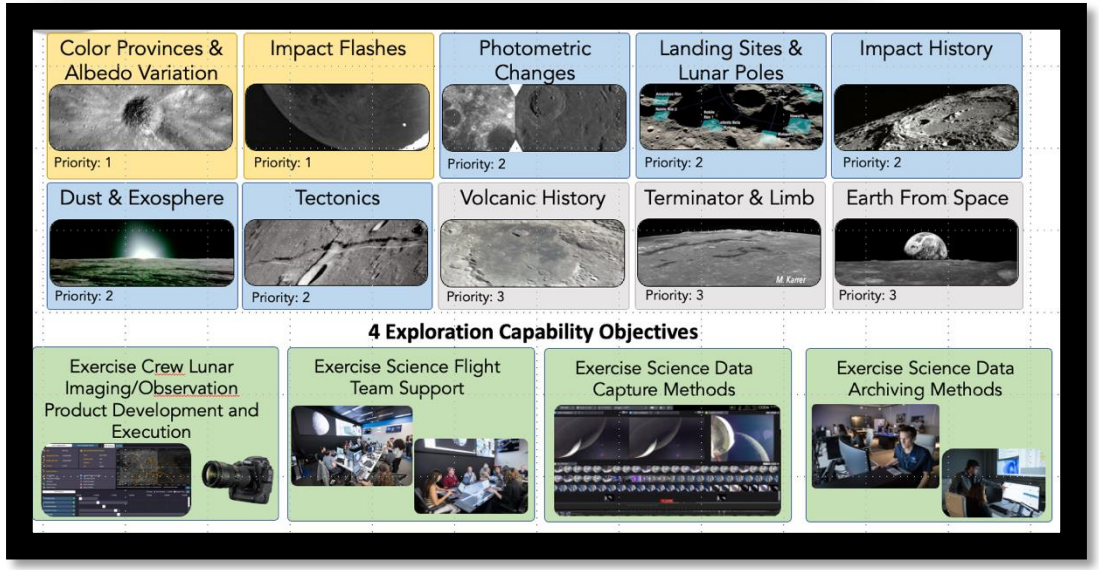
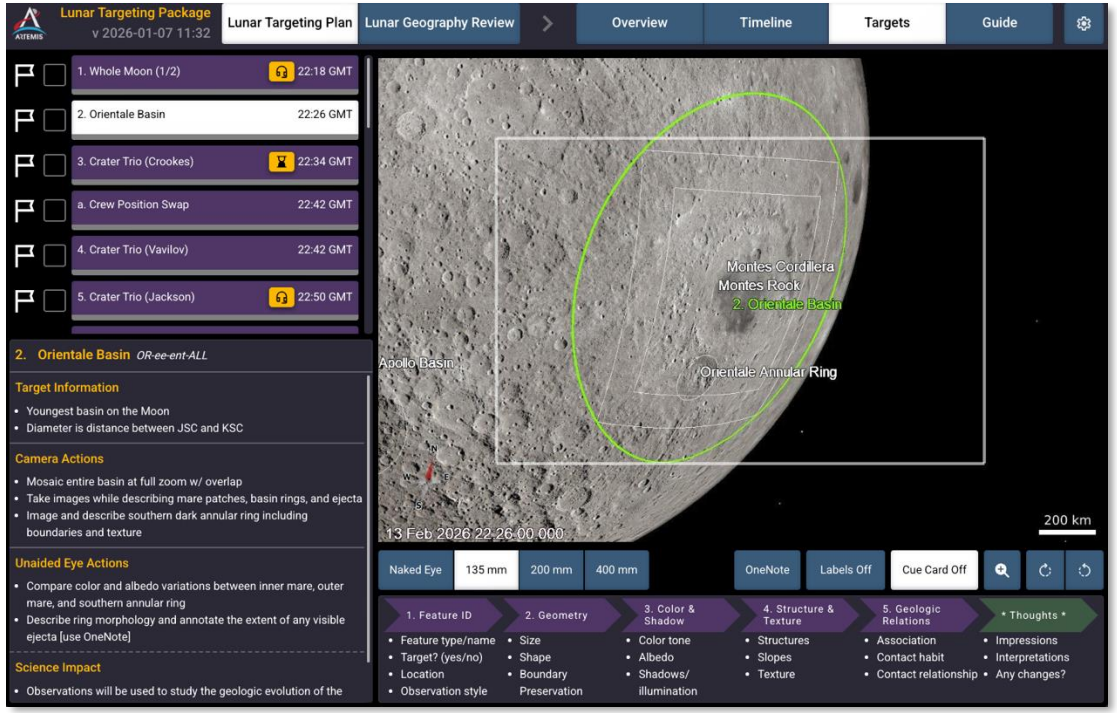
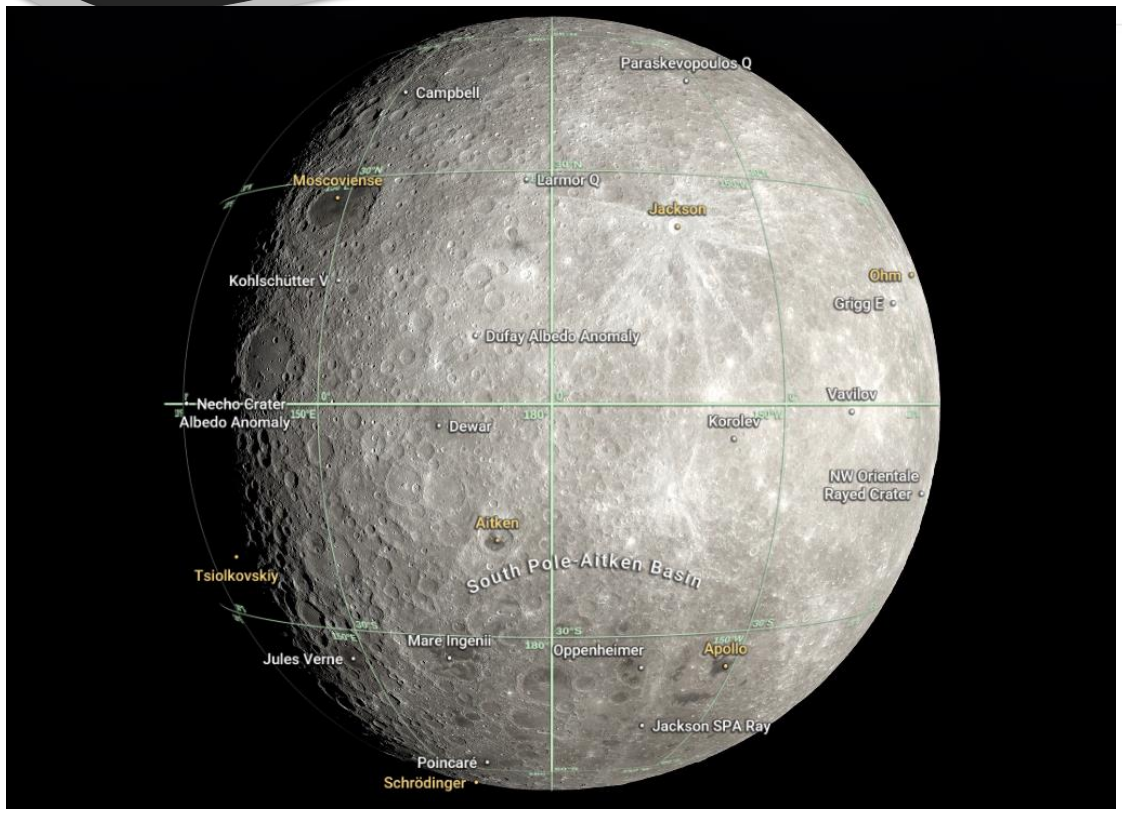
Training the crew on their science objectives

- Artemis II Science plan objectives and specific targets
- Illumination scenarios on the Moon's surface across launch dates
- Lunar geography and geology
- Visual observations and descriptions practice (including homework)
- One-on-one coaching for personalized feedback of visual observations and descriptions
- Lunar Geography and Targeting Plan software



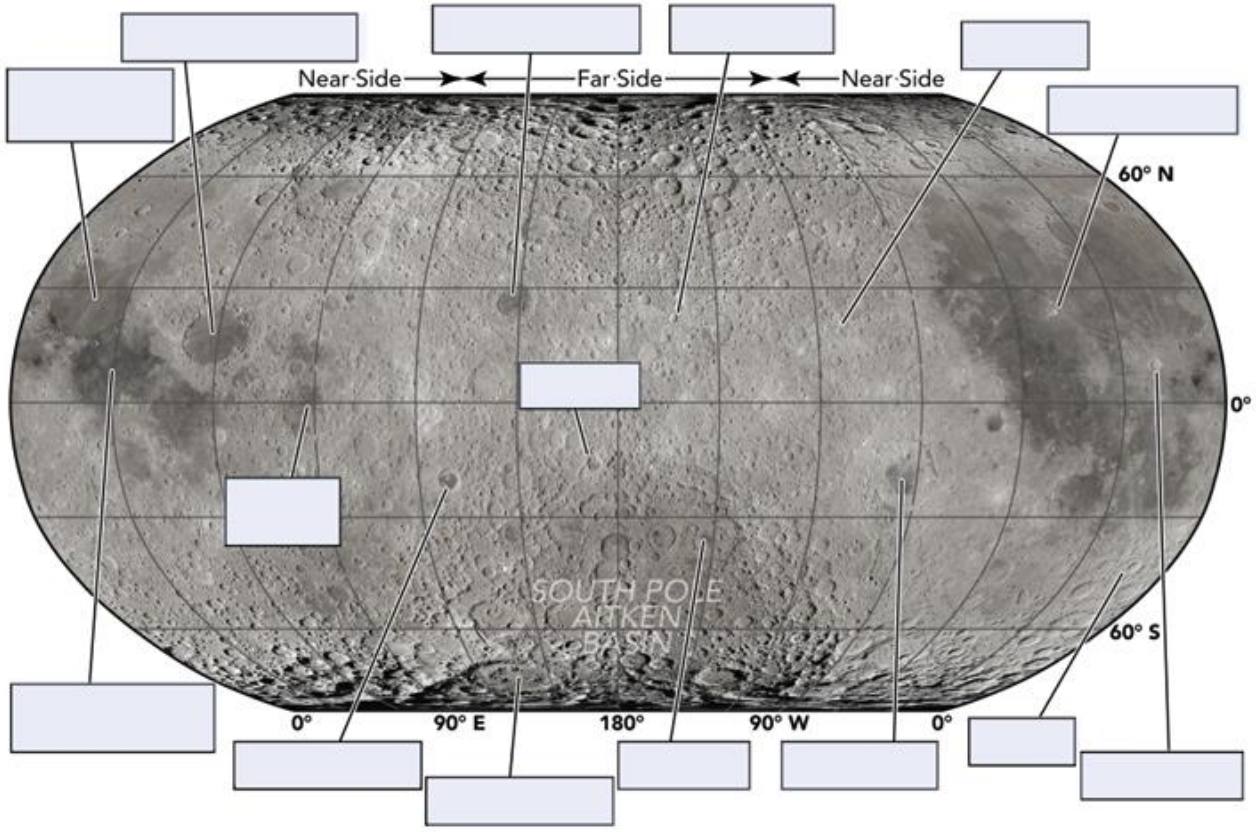


Artemis II Geography and Observations Homework



Step 1. Review the 15 Major Landmarks. Recollection of these features will help you navigate the lunar surface from above, no matter the orientation or illumination conditions present.

Fill in the boxes in the far side-centered global map of the Moon below. *Tip: Use the Views Tab (Minimum labels) of the LGR for assistance.*



The lunar homework activities were highlighted as an example that provided repeated exposure, helping the crew quickly build understanding and retain information

Artemis II Training Program – Lunar Observation Operations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Bringing it all together: Training the crew on their science operations

- Imagery/Camera Training
- Training on procedures with other hardware interfaces
- Crew-wide choreography for lunar observations
- Gaining familiarization with Lunar Targeting Plan and comfortable with feature descriptions
- Training in Orion capsule mock-ups
- Simulations with Flight Control Team

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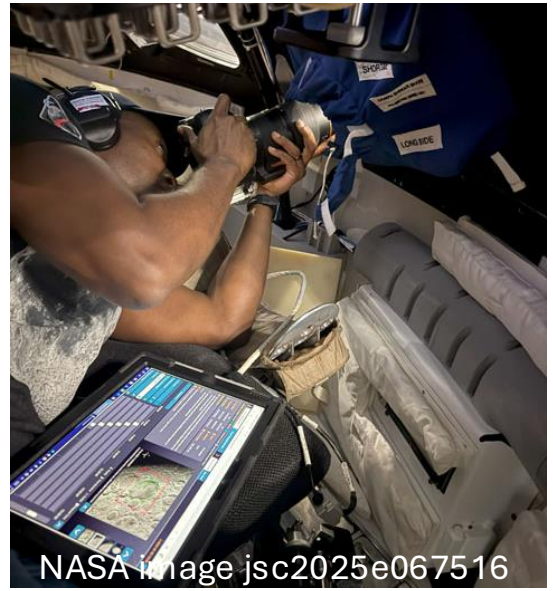
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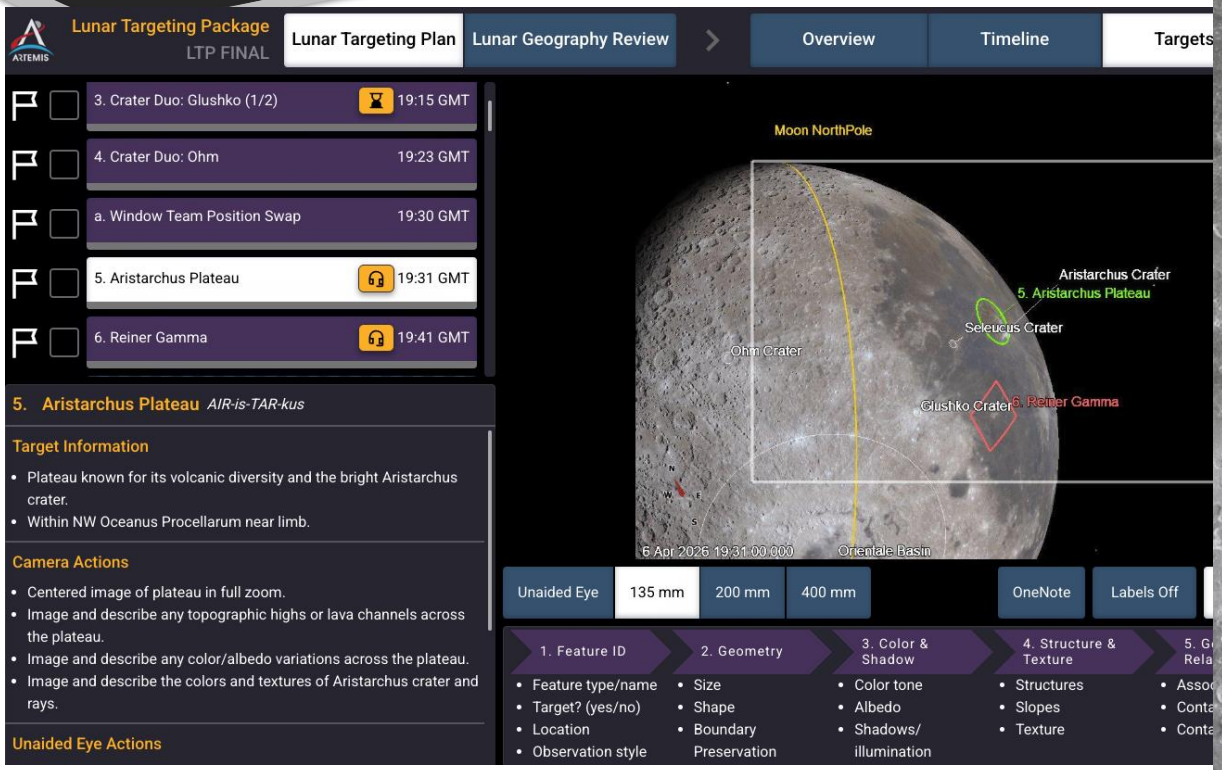
Artemis II Results



Lunar Targeting Plan

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Audio transcript from Artemis II (Hansen): I made some notes for Aristarchus Plateau ….I talked some more about how the **brownish colors** **look like deposits on top of the darker mare from crater ray systems.** To me, that creates the browns. **And Aristarchus Plateau is different. It's got greenish hues**.


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Artemis II Results
The Earth and Moon as members of the Solar System

Earth in Moonshine
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Moon in Earthshine
art002e009300

Artemis II leans into future Artemis missions to the Moon

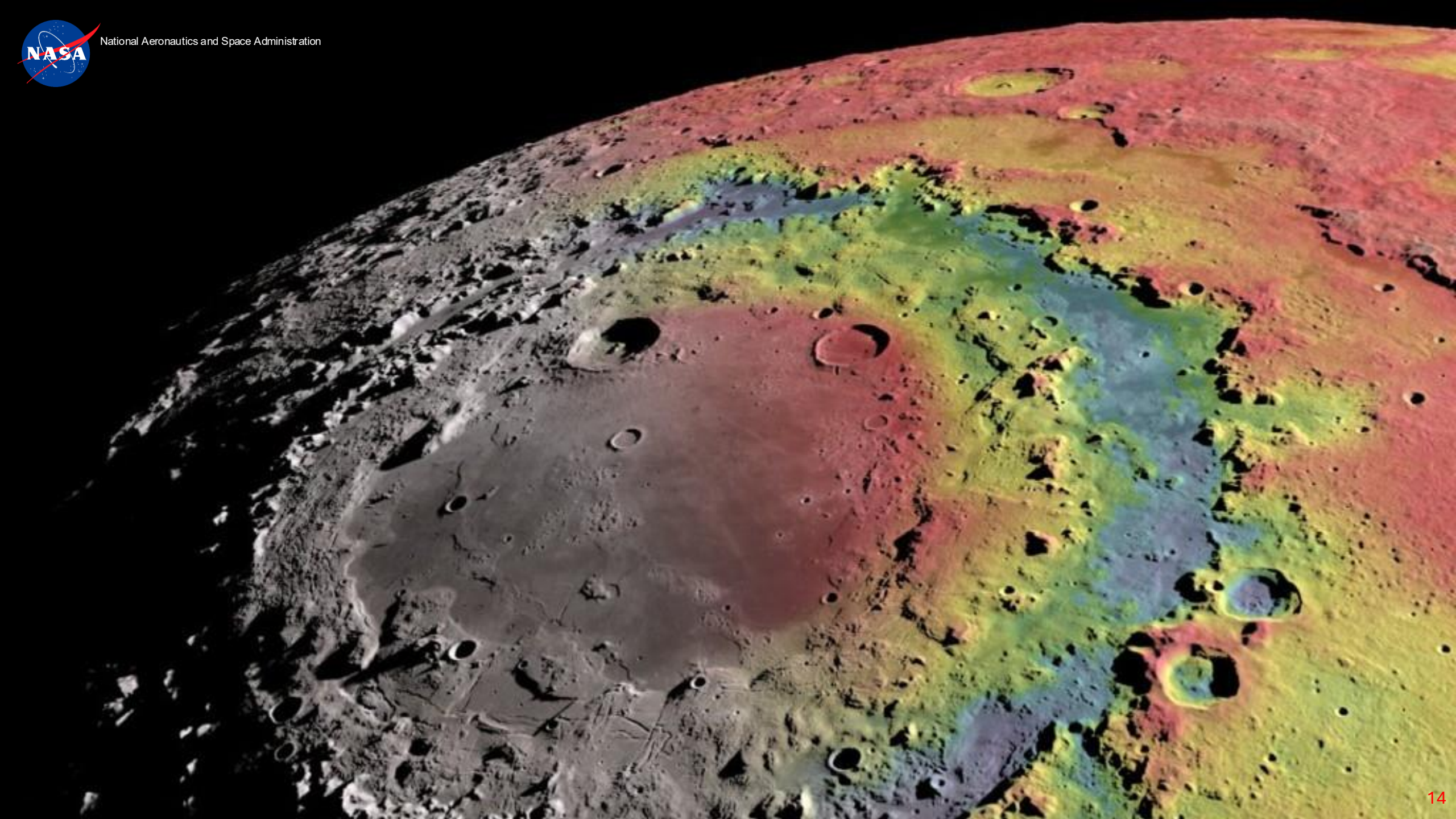
NASA's lunar science training team has a better understanding of the training environment for subsequent Artemis missions.

Science and operations training take-aways

- Hands-on, scenario-based practice helps progressively build required skills
- Frequent updates and refreshes for training content retention

- Artemis II crew were pathfinders for our future lunar science training
  - Feedback important for geology training for the next Artemis lunar missions with the same goal of providing crews with the knowledge and tools to be the scientists and curators on the Moon's surface.

Image art002e009302
Artemis 2 crew (Left to right): Victor Glover, Jeremy Hansen, Reid Wiseman, Christina Koch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