

Chippewa Valley Astronomy Update *Friday May 19, 2023*

To Infinity and Beyond! by Bert Moritz

It was 1995 when comic movie icon Buzz Lightyear declared his goal of going the distance to the impossible. The United States had succeeded in going as far as the Moon but had gone no further since 1972. Now, with the optimistic spirit of Mr. Lightyear in mind, we have started a mission to go beyond the Moon. This mission is called Artemis.

John Kennedy said, "We choose to go to the Moon because it is hard." Why do we choose to go back now? For scientific discovery, economic benefit, inspiration for the next generation and continued American dominance in space and technologies. The Artemis Program is complicated. The planning is long range and the goals are lofty.

When successful, humankind will have changed its place in the solar system. It begins with using innovative technologies and fifty years of American space exploration experience in collaboration with our international partners to place humans on the surface of the Moon again. But that's not where it stops. The Moon will be a stepping off point to placing humans on Mars.

Here's how its going to work. The Artemis Program begins with the most powerful machine ever built by humans. It is a rocket called the Space Launch System. There will be multiple launches of the Space Launch System and each payload will eventually include the Orion Capsule, astronauts and construction materials. The program continues with humans exploring the lunar surface and the building of a space station in orbit around the Moon. This station, called Gateway, will include the Human Landing System. This spacecraft will ferry astronauts and their equipment down and back up from the Moon's surface. A lunar workshop, named Artemis Base Camp, will be built on lunar soil. The camp will include a lunar cabin, a rover and a mobile home. It is here that research and materials processing will be done to prepare for the missions to Mars.

The first flight, dubbed Artemis I, was launched November 16, 2022. This crew-less mission proved the capability of the Space Launch System rocket by putting the Orion capsule in orbit around the Moon and then returning it safely to Earth. Artemis II will be launched November, 2024 and it will carry four astronauts in the Orion capsule on a 10-day mission. They will orbit the Moon but not land.

During the mission after that, humans will walk on the Moon. Then the construction phase will begin with more flights. After that, while we may not be going "To Infinity and Beyond!" we will be on our way to going beyond the Moon. We will be sending humans to Mars!

--Bert Moritz is a member of the Chippewa Valley Astronomical Society

Figure caption: The crew of NASA's Artemis II mission was announced in April 2023. From left to right: Christina Hammock Koch, Commander Reid Wiseman (seated), Victor Glover, and Jeremy Hansen. Hansen is from the Canadian Space Agency, demonstrating the international nature of the mission. The "Moon to Mars" Artemis mission successfully sent "Artemis I" to orbit the moon with no crew, and Artemis II will orbit the moon with this crew in 2024. Image credit: NASA

