Future lunar landings could deliver potentially observable quantities of water to polar craters.

- LRO’s LAMP instrument is sensitive to surface ice frosts
- Water vapor is often a major component of the spacecraft exhaust gases released during lunar landings.
- Numerical models suggest that ~20% of water released during a landing near the south pole may be trapped in permanently shadowed craters, compared to ~3% of water released during the low-latitude Apollo landings.
- Heavy spacecraft landing near the south pole could alter the observed distribution of water frost.
- Monitoring the lunar environment before and after landings can test these predictions, and provide critical information for understanding the origins of water on the Moon.