LUNAR EXPLORATION MISSIONS SINCE 2006. S. J. Lawrence[1], L. R. Gaddis[2], K. H. Joy[3], N. E. Petro[4]
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Introduction: The announcement of the Vision for Space Exploration in 2004 [1] sparked a resurgence in lunar missions worldwide. Since the publication of the first "New Views of the Moon" volume [2], as of 2017 there have been 11 science-focused missions to the Moon. Each of these missions explored different aspects of the Moon's geology, environment, and resource potential. The results from this flotilla of missions have revolutionized lunar science, and resulted in a profoundly new emerging understanding of the Moon.

The New Views of the Moon II initiative itself, which is designed to engage the large and vibrant lunar science community to integrate the results of these missions into new consensus viewpoints, is a direct outcome of this impressive array of missions. The "Lunar Exploration Missions Since 2006" chapter will "set the stage" for the rest of the volume, introducing the planetary community at large to the diverse array of missions that have explored the Moon in the last decade.

Content: This chapter will encompass the following missions:

- Kaguya
- ARTEMIS
- Chang'e-1
- Chandrayaan-1
- Moon Impact Probe
- Lunar Reconnaissance Orbiter (LRO)
- Lunar Crater Observation Sensing Satellite (LCROSS)
- Chang'e-2
- Gravity Recovery and Interior Laboratory (GRAIL)
- Lunar Atmosphere and Dust Environment Explorer (LADEE)
- Chang'e-3

At the present time, we envision the content presented in this chapter as a succinct description of each mission, with only a limited discussion of mission discoveries and outcomes. For each of these missions, we will discuss in general terms the mission parameters and the capabilities of each spacecraft, with an emphasis on the instrument suites. The goal of this chapter is to serve as a reference so that subsequent chapters can simply cite this chapter for details about aspects of the mission, such as instrument performance and characteristics, and help avoid repetition in subsequent chapters of the NVMII volume.

The reason for this approach is that ideally, the discoveries and implications arising from each of these missions will be infused throughout the NVMII volume. By necessity, this means that the content presented in this chapter will be dependent to some degree upon the content presented in other chapters. Any discussion of discoveries and outcomes in this chapter will accordingly emphasize discoveries and outcomes not discussed in other chapters.

Future Work: In order to ensure that the perspective of each mission is adequately expressed in this chapter, we will contact members of each mission team to solicit input for specific subsections, and when necessary, define needed additional limited-scope prospective writing contributions. The lead author will work to integrate these specific contributions when needed into the chapter.

Expected Outcome: The goal of the NVMII initiative is to synthesize the emerging results of these missions into new consensus understandings of the Moon. This is a key aspect of understanding our Solar System and vital for defining the next decade of activity on and around the Moon with humans and their robotic precursors. By serving as a concise summary of recent lunar activity, we expect that this chapter will play an important role in the structure of the NVMII volume itself and serve as a useful reference for subsequent chapters and the larger planetary science community.

References: [1] NASA, "The Vision for Space Exploration [NP-2004-01-334-HQ]," NASA, Washington, D. C., NP-2004-01-334-HQ, 2004. [2] B. L. Jolliff, M. A. Wieczorek, C. Shearer, C. R. Neal (eds.), *Rev. Mineral. Geochem.*, vol. 60, no. 1, Jan. 2006.