

LESSONS LEARNED FROM 4 YEARS OF INTERNATIONAL OBSERVE THE MOON NIGHT. B. C. Hsu,¹ S. Buxner², A. Shaner³, M. Wenger⁴, InOMN Coordinating Committee. ¹Lunar and Planetary Institute, USRA (8800 Greenbelt Rd, Greenbelt MD 20771 Brooke.C.Hsu@nasa.gov), ²Planetary Science Institute (1700 East Fort Lowell, Suite 106, Tucson, AZ 85719-2395, buxner@psi.edu), ³Lunar and Planetary Institute, USRA (3600 Bay Area Blvd, Houston, TX 77058, shaner@lpi.usra.edu), ⁴Planetary Science Institute (1700 East Fort Lowell, Suite 106 Tucson, AZ 85719-2395, mwenger1701@gmail.com).

Introduction: International Observe the Moon Night (InOMN) is an annual public outreach event that is designed to engage the public in a conversation about the Moon and to inspire them to want to learn more about our nearest neighbor. InOMN began as a grass roots movement in late 2009. In early 2010, word spread through our partners, and InOMN quickly expanded to include international audiences. Over the course of the past four years, InOMN has become a widely attended event by audiences young and old alike. Efforts to characterize large scale public outreach events, and understand participants' attitudes, behaviors, and motivations for attending these events have largely gone unstudied. InOMN presents the opportunity to understand the role large scale public outreach events play in the lives of the general public. Data collected from the first four years of InOMN are presented, and implications for evaluating large scale public outreach events is discussed.

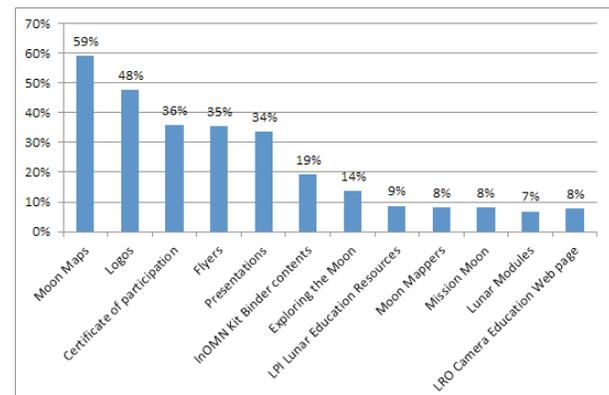
Background: On August 1, 2009, Education and Public Outreach (EPO) teams for the Lunar Reconnaissance Orbiter (LRO) and the Lunar CRater Observing and Sensing Satellite (LCROSS) held public events at their respective institutions (Goddard Space Flight Center (GSFC), Greenbelt MD; and Ames Research Center (ARC), Moffett Field CA) to celebrate the successful launch and capture of both satellites into orbit around the Moon. These events attracted a combined total of 2,000 members of the general public, signaling a desire for large-scale public events focusing on lunar content. In response to the success of these events, a nation-wide event intended to engage members of the public in making observations of the Moon was initiated, called "National Observe the Moon Night".

Due to efforts achieved at that time by the International Year of Astronomy (IYA), interest in the event grew rapidly around the globe, and "National Observe the Moon Night" quickly became "International Observe the Moon Night (InOMN)." The first annual InOMN was held on September 18, 2010. Subsequent events were held on October 8, 2011, September 22, 2012, and October 12, 2013.

Methods: The InOMN goals, and hence evaluation tools used have evolved over time. Across all four years, InOMN tools focused on event hosts and participants as distinct audiences. Tools used in 2010 and 2011 focused on understanding the needs of event hosts as well as the experiences participants had at

events. Two types of tools - registration forms and post event surveys - were used to gather data from event hosts. Registration forms gathered logistical data about the event. Information obtained from registration forms included physical location, contact information, and descriptions (which were optional). Host surveys gathered information about the types of activities presented at the events, event duration, estimated number of event attendees, event location type (museum, park, etc), and evaluation tools used (optional for hosts). Additional data gathered from hosts and participants include event pictures, and the use of the #moonnight2010 and #moonnight hash tags on Twitter. Evaluation tools in 2011 were designed to understand InOMN participants and their families (survey cards) and the activities (interviews) in which they participated. In 2012 and 2013, participant evaluation tools asked content and motivation questions in alignment with LRO EPO program goals and objectives.

Results: Over the past four years, approximately 750,000 people have attended one of 2,204 InOMN events in 81 countries. Surveys were returned by 444 event hosts, representing a 20% response rate. From year to year, the distribution of event location types remained fairly consistent. Among the categories from which event host could choose, "Observatory," "Public Park," and "Planetarium" remain the most common event location types reported. The two most commonly used resources reported by hosts were the yearly "Moon Maps" (59%) and InOMN logos (48%). "Certificates of Participation" (36%), "Flyers" (35%), and "Presentations" (35%) were also frequently used by hosts [Fig 1.]. The two most frequently reported event lengths were 2 and 3 hours.



Participant data were analyzed from online surveys (n= 193) and in-person (n=749) evaluation tools (visitor information cards - 2011; interviews and surveys: 2011-2013). The number of participants reporting attending an InOMN event as a family ranges from 53% (2011) to 73% (2013). The most commonly reported age group was children aged 6-10. Data collected in 2010 show that Caucasians comprised the majority (69%) of event attendees. Participation by Black/African Americans (8%), Asians (8%), and Hispanics (9%) were approximately equal. Over half (52%) of participants report "Moon Observation" as their favorite part of an InOMN event. Data collected in 2012 and 2013 reveal that many InOMN participants have participated (>50% in 2012; 79% in 2013) and are likely (98% in 2012; 69% in 2013) to attend another Moon related event.

Discussion: The InOMN email distribution list, which contains contact information from all InOMN hosts, consists of over 1,100 contacts. When compared to the number of events that have taken place over the past 4 years (2,204), it becomes clear that a group of individuals are responsible for hosting repeat events from year to year. Survey data also suggest that all materials provided to InOMN hosts on the website are used, albeit to varying degrees. The prominence of observatories, public parks, and planetariums suggest that amateur astronomers provide a large amount of support for InOMN events. While the InOMN host surveys ask the person completing the survey to identify their role in the event, further information regarding other event support staff would need to be gathered to elucidate this hypothesis.

Gathering data from participants at large scale public outreach events is a challenging endeavor. Although not specifically discussed above, InOMN organizers have attempted to gather data in person via offering incentives for interviews, provided QR codes participants can use to fill out surveys online, and have handed out short survey cards at event entrances. All of these methods have been met with mixed success. Most participants have demonstrated a willingness to fill out short (½ page) event cards. Fewer are willing to be interviewed, and the time-intensive nature of participant interviews limits the amount of data that can be gathered at a short event. QR codes have the highest potential to reach a large, geographically disperse audience, but incentives for participants to utilize this mechanism are lacking. Regardless, the data that have been gathered to date at InOMN events has been enlightening. Four years of data have shown that InOMN events are excellent for reaching families with young children. Participant data indicate that InOMN is achieving its core goals of engaging the public with the Moon and inspiring them to want to learn more.

Conclusions: International Observe the Moon Night has proven to be an excellent outlet to begin to understand how best to reach audiences in a large scale public outreach setting. Four years of data gathered from event hosts and participants has shown that in order for an event to be sustained, hosts must be supported in their efforts to reach their local audiences, and an understanding of the participants is essential for success. Further refinement of the data collection tools and methods is needed to quantify the impact these events have on those who attend large scale public outreach events.