

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

DIVISION ON ENGINEERING AND PHYSICAL SCIENCES
SPACE STUDIES BOARD

Achieving Science Goals with CubeSats
September 2-4, 2015
Beckman Center
100 Academy Drive, Irvine, CA

Wednesday, September 2, 2015

8:00 am	Registration Opens	
9:00 am	Welcome and Introduction - Thomas Zurbuchen, University of Michigan, Committee Chair	
9:20 am	CubeSats and Science Return Keynote presentation: - Eugene Tu, NASA Ames Research Center Director - David Korsmeyer, NASA Ames Research Center Director of Engineering Audience Joins the Discussion	<i>(30 minutes)</i> <i>(10 minutes)</i>
10:00 am	Technology Trends Keynote presentation: - Richard Welle, The Aerospace Corporation Audience Joins the Discussion	<i>(30 minutes)</i> <i>(10 minutes)</i>
10:40 am	<i>Coffee and muffins in the atrium</i>	
11:00 am	CubeSats in Heliophysics Keynote presentation: - Harlan Spence, University of New Hampshire Panel Discussion: - Jonathan Cirtain, NASA Marshall Space Flight Center - Geoff Crowley, ASTRA LLC - John Dickinson, Southwest Research Institute - David Klumpar, Montana State University Audience Joins the Discussion	<i>(35 minutes)</i> <i>(20 minutes)</i> <i>(30 minutes)</i>
12:25 pm	<i>Lunch in the dining room</i>	

1:55 pm	CubeSats in Planetary Science	
	Keynote presentation:	<i>(35 minutes)</i>
	- Julie Castillo-Rogez, Jet Propulsion Laboratory	
	Panel Discussion:	<i>(20 minutes)</i>
	- Erik Asphaug, Arizona State University	
	- Pamela Clark, Jet Propulsion Laboratory	
	- Wayne Nicholson, University of Florida	
	Audience Joins the Discussion	<i>(30 minutes)</i>
3:20 pm	<i>Coffee and snacks in the atrium</i>	
3:40 pm	CubeSats in Astronomy and Astrophysics	
	Keynote presentation:	<i>(35 minutes)</i>
	- Kerri Cahoy, Massachusetts Institute of Technology	
	Panel Discussion:	<i>(20 minutes)</i>
	- Philip Kaaret, University of Iowa	
	- Matthew Beasley, Planetary Resources	
	- Evgenya Shkolnik, Lowell Observatory	
	Audience Joins the Discussion	<i>(30 minutes)</i>
5:05 pm	Poster Session and Reception	<i>(85 minutes)</i>
6:30 pm	<i>Adjourn for the day</i>	

Thursday, September 3, 2015

8:00 am	Registration Opens	
9:00 am	Welcome and Summary of Day 1	
	- Thomas Zurbuchen, University of Michigan, Committee Chair	
9:15 am	CubeSats in Earth Science	
	Keynote presentation:	<i>(35 minutes)</i>
	- Antonio Busalacchi, University of Maryland	
	Panel Discussion:	<i>(20 minutes)</i>
	- Steven Reising, Colorado State University	
	- Jack Kaye, NASA Science Mission Directorate	
	- Christopher Ruf, University of Michigan	
	- Jordi Puig-Suari, Tyvak	
	Audience Joins the Discussion	<i>(35 minutes)</i>
10:45 am	<i>Coffee and muffins in the atrium</i>	

11:00 am	Technology for CubeSats	
	Panel Discussion:	<i>(20 minutes)</i>
	<ul style="list-style-type: none"> - Mason Peck, Cornell University - David Korsmeyer, NASA Ames Research Center - Michael Gazarik, Ball Aerospace - Daniel Hegel, Blue Canyon Technologies - Jonathan Sauder, Jet Propulsion Laboratory 	
	Audience Joins the Discussion	<i>(40 minutes)</i>
12:00 pm	<i>Lunch in the dining room</i>	
1:30 pm	CubeSats for Technology Development	
	Panel Discussion:	<i>(20 minutes)</i>
	<ul style="list-style-type: none"> - David Ardila, The Aerospace Corporation - Michael Johnson, NASA Goddard Space Flight Center - Helen Reed, Texas A&M University - Michael Ryschkewitsch, The Johns Hopkins University Applied Physics Laboratory 	
	Audience Joins the Discussion	<i>(40 minutes)</i>
2:30 pm	Industry Capabilities	
	Panel Discussion:	<i>(20 minutes)</i>
	<ul style="list-style-type: none"> - Robbie Schingler, Planet Labs - Tom Ingersoll, Spire - Valerie Skarupa, Spaceflight Industries - William Pomerantz, Virgin Galactic 	
	Audience Joins the Discussion	<i>(40 minutes)</i>
3:30 pm	<i>Coffee and snacks in the atrium</i>	
3:50 pm	CubeSats in Education	
	Panel Discussion:	<i>(20 minutes)</i>
	<ul style="list-style-type: none"> - Benjamin Malphrus, Morehead State University - Tirupalavanam Ganesh, Arizona State University - Capt. Joseph Kim, Air Force Research Laboratory - Brian Gilchrist, University of Michigan 	
	Audience Joins the Discussion	<i>(40 minutes)</i>
4:50 pm	Summary and Wrap Up	
	<ul style="list-style-type: none"> - Thomas Zurbuchen, University of Michigan, Committee Chair 	
5:15 pm	<i>Adjourn</i>	

The following information is provided for any members of the general public who may be in attendance:

This meeting is being held to gather information to help the committee conduct its study. This committee will examine the information and material obtained during this, and other public meetings, in an effort to inform its work. Although opinions may be stated and lively discussion may ensue, no conclusions are being drawn at this time and no recommendations will be made. In fact, the committee will deliberate thoroughly before writing its draft report. Moreover, once the draft report is written, it must go through a rigorous review by experts who are anonymous to the committee, and the committee then must respond to this review with appropriate revisions that adequately satisfy the Academy's Report Review committee and the chair of the NRC before it is considered an NRC report. Therefore, observers who draw conclusions about the committee's work based on today's discussions will be doing so prematurely.

Furthermore, individual committee members often engage in discussion and questioning for the specific purpose of probing an issue and sharpening an argument. The comments of any given committee member may not necessarily reflect the position he or she may actually hold on the subject under discussion, to say nothing of that person's future position as it may evolve in the course of the project. Any inferences about an individual's position regarding findings or recommendations in the final report are therefore also premature.