NASA Exploration Science Forum 2020 Program

Wednesday, July 8, 2020		
7:45	Schmidt	**NESF Welcome and Announcements**
		Plenary Session 1: Forward to the Moon (Chairs: Greg Schmidt & Ariel Deutsch)
8:00		**NASA HQ Programs Panel**
	Bussey	Exploration Science Strategy and Integration Office (ESSIO) Update
	Bleacher	Human Exploration and Operations Mission Directorate (HEOMD) Update
	Noble	Planetary Science Division (PSD) Update
	Klima	The Lunar Surface Innovation Consortium
	Petro	Planning for Communications and Navigation Services at the Moon
9:00	Bridenstine	NASA Artemis Program
9:30	Khalil	Inclusion in Exploration Science
9:45		NESF2020 Photo / Discussion / Break
		Plenary Session 2: Exploration Missions (Chairs: Kelsey Young & Nandita Kumari)
10:15	Walsh	OSIRIS-REx at Bennu - Time to Collect a Sample
10:27	Adams	The Double Asteroid Redirection Test (DART): NASA's First Planetary Defense Mission
10:39	Sefton-Nash	The ESA PROSPECT Payload For Luna 27: Development Status
10:51	Ehlmann	Lunar Trailblazer: A Pioneering Small Satellite for Lunar Water and Lunar Geology
11:03	Watkins	New Insights Into the Lunar Surface From LROC NAC-Scale Photometric Investigations
11:15	Petro	The Gift that Keeps on Giving: LRO at 11
11:27		Discussion / Break
11:57		**Student Lightning Round Talks (Chair: Kristina Gibbs)**
		Plenary Session 3: ISRU & VIPER Missions (Chairs: Parvathy Prem & Ashley Clendenen)
12:15	Andrews	VIPER: Pathfinding Lunar Resource Understanding
12:27	Colaprete	The Volatiles Investigating Polar Exploration Rover (VIPER) Mission: Measurement Goals and Traverse Planning
12:39	Zacny	TRIDENT (The Regolith and Ice Drill for Exploring New Terrain) for VIPER Rover
12:51	Neal	Regolith Materials for ISRU in Vacuum Conditions: Effects on Phase Evolution, Character, and Composition by X-ray Photoelectron Spectroscopy and In Situ Calorimetry
13:03	Schieber	Experimental Evaluation of Heat Transfer and Mass Transfer for the Development of Lunar Thermal H2O Mining
13:15	Neal	How is the Artemis Base Camp Sustainable?
13:27	Fujimoto	**Hayabusa2 and MMX Mission Updates**
13:40		Discussion
13:40-14:40		**ePoster Session**

Thursday, July 9, 2020		
		Plenary Session 4: Solar System History and Astrophysics (Chairs: Greg Schmidt & Zach Ulibarri)
7:30	Green	When the Moon had a Magnetosphere
7:45	Burns	Transformative Astrophysics from the Farside of the Moon
8:00	Shearer	Apollo Next Generation Sample Analysis (ANGSA). The Importance of Lunar Sample Return and Preparing for Artemis
8:15		**SSERVI Awards (Chairs: Greg Schmidt, Kristina Gibbs, Brian Day)**
9:15		Transition to Parallel Sessions
		Parallel Session 1: Solar System History (Chairs: Kerri Donaldson Hanna & Jennifer Larson)
9:20	Galiano	Distribution of NIRS3 Spectral Slope for the Characterization of the Ryugu Surface
9:32	Palomba	Spectral Properties of Bright and Dark Areas on Ryugu Surface
9:44	Delbo	Observing the Planetesimal Size Distribution Amongst Main Belt Asteroids
9:56	Schmerr	Geophysical Exploration of the Dynamics and Evolution of the Solar System (GEODES)
10:08	Hsieh	The Themis Asteroid Family: A Potential, Source of Ice-rich Near-Earth Asteroids
		Parallel Session 2: Radiostronomy on the Moon (Chairs: Joseph Lazio & Neil Bassett)
9:20	Rapetti	Global Neutral Hydrogen Data Analysis Pipeline for a Lunar-Based Satellite
9:32	Hibbard	Modelling the Galactic Foreground and Beam Chromaticities for Lunar-Based Global 21-cm Experiments

9:44	Bordenave	Earth Based Evaluation of Dynamic Polarimetry for Future Global 21-CM Cosmology Observations from the Moon
9:56	Collier	The Lunar Environment Heliospheric X-ray Imager (LEXI): A Lunar Surface Instrument to Observe the Solar Wind-Magnetosphere Interaction
10:08	MacDowall	Status of the Radio Observations at Lunar Surface of Photoelectron Sheath Payload
10:20		Discussion / Break
10:50		**Student Lightning Round Talks (Chair: Brian Day)**
11:05	U.Mich Team	**XHAB / BLISS**
		Plenary Session 5: Impacts and Space Weathering (Chairs: Ryan Watkins & Marina Gemma)
11:17	Pieters	Lunar Sample 61016 Documents a Rapid Development of Weathering Products in the Lunar Environment
11:29	Farrell	Mapping the Surface Potential and Ion Flow in the Lunar South Polar Region
11:41	Yingling	Impact Melt Emplacement on Terrestrial Bodies
11:53	Avdellidou	Hypervelocity Impacts on Carbonaceous Asteroids Analogue Materials
12:05		Discussion / Break
		Parallel Session 3: All Things Asteroids (Chairs: Faith Vilas & Yaeji Kim)
12:35	Dyar	A Quantitative Machine Learning-Based Modern Taxonomy for Asteroids
12:47	Hsu	Electrostatic Loss of Fine-grain Regolith on Sub-kilometer Asteroids
12:59	Prettyman	Carbon and Organics on Ceres: Exploration Connection
13:11	Campins	Searching for Exogenous Material on Asteroid (99942) Apophis
13:23	Kim	The Sensitivity of (99942) Apophis' Neck to Resurfacing During the 2029 Earth Flyby
13:35	Sánchez	Seismic Waves in the Asteroid Environment
13:47	Larson	Implementing the DART impact as a Benchmark for the Rebound Ejecta Dynamics Package
		Parallel Session 4: Human and Robotic Exploration (Chairs: Jeff Gillis-Davis & Arun Kumar)
12:35	Schleicher	Constructing a Probabalistic Seismic Hazard Analysis Framework for the Moon
12:47	Noe Dobrea	Rover Science Autonomy in the Field: Implementing the Hypothesis Map
12:59	Day	NASA Solar System Treks: New Worlds, New Portals, New Updates
13:11	Young	Developing Advanced EVA Informatics for Field Portable Instrumentation and Science Operations During Crewed Planetary Surface Exploration
13:23	Moses	Heads-Up Display Technology for Deep-Space Spacewalks
13:35	Parker	Self-Assembling Mesh Networks of Femto-Scale Sensor Motes for Planetary Exploration
13:47	Menon	Enabling ARTEMIS and the FARSIDE Low Frequency Radio Telescope Missions with URSSA – a Testbed for Extra-Planetary Surface Telerobotics Research
14:00		Discussion

Friday, July 10, 2020

7:30 - 8:30		**ePoster Session**
8:30	Glaze & Kirasich	**NASA HQ Leadership Q&A (Invited)**
9:00		Transition to Parallel Sessions
		Parallel Session 5: Health Issues and Public Engagement (Chairs: Andy Shaner & Aisha Khatib)
9:05	Nekvasil	Do We Really Know How Toxic Lunar Dust Actually Is?
9:17	Hendrix	Chemical Reactivity and Potential Toxicity of Lunar Soils: A Study of the Olivine Solid Solution Series
9:29	Shaner	Scientists Should Engage Young Students: Why and How
9:41	Wasser	Share your Field Work with NASA Expeditions, a Loanable NASA Social Media Account
9:53	Keller	“FORWARD! Lunar Exploration and Beyond” Fiske Fulldome Film
		Parallel Session 6: Lunar Geology and Landers (Chairs: Noah Petro & Sarah Valencia)
9:05	Sun	Multispectral Imaging and Hyperspectral Profile of the First Dissection for Core 73002
9:17	Huang	Diverse Rock Types Detected in the Lunar South Pole-Aitken Basin by the Chang'E-4 Lunar Mission
9:29	Qiao	Mare Domes in Mare Tranquillitatis: Identification, Characteristics, and Implications for the Oldest Lunar Volcanism
9:41	Battler	Autonomous Soil Assessment System: Contextualizing Rocks, Anomalies and Terrains in Exploratory Robotic Science (ASAS-CRATERS)
9:53	Donaldson Hanna	Mapping the Composition of the Moon Using Thermal Infrared Spectroscopy: Current and Future Observations from Orbital and Landed Missions
10:05		Discussion / Break
		Plenary Session 6: Water and Ice (Chairs: Karl Hibbitts & Ariel Deutsch)
10:35	Honniball	Molecular Water on the Sunlit Lunar Surface: Detection of the 6 μm H-O-H Fundamental with the SOFIA Airborne Observatory
10:47	Kring	Potential Water and Dry Ice Distribution in the Lunar South Polar Region
10:59	Lucey	Relative Magnitudes of Water Sources to the Lunar Poles

11:11	McLain	Solar Wind Proton Induced Hydroxylation on Lunar Soil 78421
11:23	Huang	Molecular Dynamics Simulations of Water and Hydrogen Formation on Lunar Surface
11:35	Gillis-Davis	Lunar Regolith Surface Features as Indicators of Volatile Release
11:47	Costello	Impact Gardening of Ancient Ice on the Moon
11:59	Schorghofer	What Ice on Ceres Might Tell Us About Ice on the Moon
12:11	Horanyi	Exploration of Resources in Lunar Polar Regions
12:23	Cannon	A Geologic Model for Lunar Ice Deposits at Mining Scales: Updates and Lessons for Prospecting Campaigns
12:35	Prem	Lunar Volatiles Science at the Lander Scale
12:47	Killen	Coronagraphic Observations of the Lunar Sodium Exosphere 2018-2019
12:59		Discussion / Break
13:30		**Student Poster Award**
		Plenary Session 7: Lunar Swirls, Dust, Regolith (Chairs: Deborah Domingue & Benjamin Farr)
13:45	Head	Rethinking Lunar Mare Basalt Regolith Formation: New Concepts of Lava Flow Protolith and Evolution of Regolith Thickness and Internal Structure
13:57	Kumari	Different Trends of Variation in Christiansen Feature on the Lunar Surface: Effects of Iron Content and Particle Size
14:09	Blewett	Lunar Swirls in the Maria and Highlands: Near-Ultraviolet and Near-Infrared Space-Weathering Trends
14:21	Domingue	Regolith Structural Characterization of Lunar Swirls within Mare Ingeii
14:33	Jordan	Observational Evidence for Dielectric Breakdown Weathering on the Moon
14:45	Yeo	Triboelectric Charging of Lunar Dust by Rover Wheels
14:57	Metzger	Quantifying Engine Exhaust Ejecta from Landing Large Spacecraft on the Moon
15:09	Pieters	**The Importance of our Moon Beyond the Current Environment**
15:21	Schmidt	**Closing Remarks**