Tuesday, March 8, 2011
POSTER SESSION I: ENVIRONMENTAL ANALOGS: NOT EXACTLY CLUB MED
6:00 p.m. Town Center Exhibit Area

Romig B. A. Kosmo J. J.
Desert Research and Technology Studies (D-RATS) 2010 Mission Overview **[#2572]**
The 13th annual Desert RATS remote analog field test was conducted in August and September 2010 near Flagstaff, Arizona. A dual rover traverse was conducted over 14 days under different commununications and operational concept scenarios.

Love S. G.
The Role of the Spacecraft Operator in Scientific Exploration **[#1139]**
Pilot and flight engineer crew members can improve scientific exploration missions and effectively support field work that they may not understand by contributing leadership, teamwork, communication, and operational thinking skills.

Eppler D. B. Ming D. W.
Planetary Surface Science Operations for Human Missions: The 2010 DesertResearch and Technology Test **[#1811]**
Desert RATS is a hardware and operations test carried out annually in the Arizona desert. These activities exercise science operations teams, crew and hardware in a multi-day roving test, defining requirements for future planetary science operations.

Eppler D. B. Ming D. W.
Science Operations Development for Field Analogs: Lessons Learned from the 2010 Desert Research and Technology Test **[#1831]**
RATS 2010 tested varied communication states and rover operations. Effective science operations and the best science return occur when the science team and crew members have a background in the science mission and training in the mission operations.

Gruener J. E. Lofgren G. E. Bluethmann W. J. Bell E. R.
NASA Desert RATS 2010: Preliminary Results for Science Operations Conducted in the San Francisco Volcanic Field, Arizona **[#1499]**
Science operations conducted during NASA’s 2010 Desert RATS activities consisted of four two-person rover crews, with each crew conducting six days of field exploration. Each crew traveled over 60 km, and approximately 200 kg of samples was collected overall.

Hörz F. Gruener J. Lofgren G. Skinner J. A. Jr. Graf J. Seibert M. DRATS Science Team
The Traverse Planning Process for the DRATS 2010 Analog Field Simulations **[#2054]**
DRATS 2010 operated simultaneously 2 rovers in the field for 12 days, mandating the design of 24 individual traverses within numerous technical and operational constraints.

Skinner J. A. Jr. Fortezzo C. M.
Traverse Planning for Desert Research and Technology Studies (DRATS) 2010 Activities: Strategic Guidance from Photogeologic Mapping **[#2727]**
We summarize NASA/JSC and USGS collaborative efforts in support of DRATS 2010 with particular attention to the construction and use of project-specific photogeologic maps.

Evans C. A. Bell M. S. Calaway M. J. Graff T. Young K. Desert RATS Science Team
GeoLab's First Field Trials, 2010 Desert RATS: Evaluating Tools for Early Sample Characterization **[#1564]**
We built a habitat-based laboratory, GeoLab, with a glovebox for handling samples and an instrument for collecting preliminary data to characterize those samples. GeoLab was tested as part of the 2010 Desert Research and Technology Studies.

Calaway M. J. Evans C. A. Bell M. S. Graff T. G.
GeoLab Hardware Operational Testing and Evaluation: As Integrated into NASA's 2010 Habitat Demonstration Unit 1 — Pressurized Excursion Module **[#1473]**
Test evaluation summary for GeoLab 2010, which was designed to provide an analog isolation containment system for preliminary examination, curation decisions, and return-to-Earth prioritization of geologic material collected on a planetary surface.

Deans M. C. Lees D. Smith T. Cohen T. Morse T. Fong T.
Field Testing Next-Generation Ground Data Systems for Future Missions **[#2765]**
Our exploration ground data system provides software for science ops, including planning, monitoring, archiving, and search. In 2010, xGDS supported three field tests with different teams, goals, schedules, and complimentary lessons learned.

Young K. E. Bleacher J. E. Hurtado J. M. Jr. Rice J. Garry W. B. Eppler D.
Conducting Planetary Field Geology on EVA: Lessons from the 2010 DRATS Geologist Crewmembers **[#1951]**
We present the 2010 DRATS crewmember opinions on conducting field geology while on EVA. Through our experience in a terrestrial analog environment, we gained insights into technology and procedures that can be adopted in the next planetary surface exploration mission.

Hurtado J. M. Jr. Bleacher J. E. Rice J. Young K. Garry W. B. Eppler D.
Lessons Learned for Geologic Data Collection and Sampling: Insights from the Desert RATS 2010 Geologist Crewmembers **[#1334]**
This contribution reports on the Desert RATS geologist crew experiences and lessons learned regarding the collection of field geologic data and samples.

Bleacher J. E. Hurtado J. M. Jr. Young K. E. Rice J. Garry W. B. Eppler D.
Desert RATS 2010 Operations Tests: Insights from the Geology Crew Members **[#1774]**
The 2010 Desert Research and Technology Studies tested several communications and exploration strategies. We discuss the strengths and weaknesses of each from the perspective of the geology crew members who participated in the test.

Yingst R. A. Cohen B. A. Ming D. W. Eppler D. B.
Comparing Apollo and Mars Exploration Rover (MER) Operations Paradigms for Human Exploration During NASA Desert-RATS Science Operations **[#1891]**
We compare results from Desert-RATS field tests that utilize models based on science conducted for Apollo (integrated science backroom) and the Mars Exploration Rovers (science backroom split into tactical and strategic tasks).

Steele A. Amundsen H. E. F. Fogel M. Benning L. Schmitz N. Conrad P. Younse P. Backes P. AMASE 2010 Team
The Arctic Mars Analogue Svalbard Expedition (AMASE) 2010 **[#1588]**
AMASE 2010 was the latest of a series of expeditions that bring NASA and ESA scientists and engineers together in a Mars analogue environment.

Younse P. DiCicco M. Morgan A. R. Conrad P. Steele A. Amundsen H. E. F. Backes P. AMASE 2010 Team
AMASE Rover Platform for Testing Instrumentation for Potential Astrobiology and Mars Sample Return Missions **[#1581]**
The AMASE rover platform used to test instruments, sample acquisition, and caching systems for potential astrobiology and Mars sample return missions is described.

McAdam A. C. ten Kate I. L. Stern J. C. Mahaffy P. R. Blake D. F. Morris R. V. Steele A. Amundson H. E. F. AMASE 2010 Team
Field Characterization of the Mineralogy and Organic Chemistry of Carbonates from the 2010 Arctic Mars Analog Svalbard Expedition by Evolved Gas Analysis **[#2136]**
Carbonate data show that evolved gas analyses similar to those planned for the MSL SAM instrument suite can give constraints on sample organic chemistry, organic matter-mineral associations, and volatile-bearing minerals present at minor abundances.

Stern J. C. McAdam A. C. ten Kate I. L. Mahaffy P. R. Steele A. Amundson H. E. F.
$\delta^{13}C$ of Mars Analog Carbonates Using Evolved Gas — Cavity Ringdown Spectrometry on the 2010 Arctic Mars Analog Svalbard Expedition (AMASE) **[#2403]**
The capability of the SAM instrument suite to measure $\delta^{13}C$ of CO_2 from thermal decomposition of carbonate was simulated using a Hiden EGA-MS system and a Picarro Cavity Ringdown CO_2 isotope analyzer on the AMASE 2010 expedition to Svalbard, Norway.

Conrad P. G. Steele A. Younse P. Di Cicco M. Morgan A. R. Backes P. Eigenbrode J. E. Marquardt D. Amundsen H. E. F.
Mono Lake Analog Mars Sample Return Expedition for AMASE **[#2218]**
An analog mission to test a coring and caching concept for Mars Sample Return (MAX-C) architecture.

Lee P. Braham S. Deans M. Fong T. Heggy E. Helper M. Hodgson E. Hoffman S. J. Schutt J. W.
Pressurized Rover-Based IVA Field Science: Lessons Learned from Moon and Mars Analog Studies at the Haughton-Mars Project, Devon Island, High Arctic **[#2656]**
Analog field studies at the Haughton-Mars Project (HMP) on Devon Island suggest that productive planetary field science can be conducted by humans from within the confines of a highly mobile, well-equipped, and well-instrumented pressurized vehicle.

Heggy E. Helper M. A. Fong T. Lee P. Deans M. Bualat M. Hurtado J. M. Jr. Hodges K. V.
Potential In Situ Exploration of Subsurface Ice on the Moon Using EVA and Robotic Follow-Up: The Haughton Crater Lunar Analog Study **[#2829]**
We performed a simulated EVA experiment and a robotic follow-up using Lidar, GPR, Panoramic, and Micro-Imaging Cameras and XRF to re-explore the sites with the main objective of providing metric observations to quantify *in situ* subsurface ice presence.

Deans M. C. Bualat M. G. Fong T. Heggy E. Helper M. Hodges K. V. Lee P.
Field Testing Robotic Follow-Up for Exploration Field Work **[#2601]**
In the summer of 2010, we conducted a simulation of a robotic follow-up mission with a robot at Haughton Crater and mission control at NASA Ames. The test improved our understanding of how robots can help increase productivity and complement human crews.

Marion C. Osinski G. R. Antonenko I. Barfoot T. Battler M. Beauchamp M. Cloutis E. Cupelli L. Chanou A. Daly M. Ferrière L. Flemming R. Francis R. Ghafoor N. Grieve R. A. F. Hodges K. Hussain M. Jolliff B. L. Mader M. M. McCullough E. Otto C. Preston L. Redman D. Shankar B. Singleton A. Stooke P. Sylvester P. Tornabene L. L. Unrau T. Veillette D.
A Lunar Analogue Mission: Sample Return to the South Pole-Aitken Basin **[#2515]**
In support of future sample return missions, our team has successfully completed the first of three deployments in a lunar analogue mission to the South Pole Aitken Basin.

Shankar B. Antonenko I. Osinski G. R. Mader M. M. Preston L. Battler M. Beauchamp M. Chanou A. Cupelli L. Francis R. Marion C. McCullough E. Pickersgill A. Unrau T. Veillette D.
Lunar Analogue Mission: Overview of the Site Selection Process at Mistastin Lake Impact Structure, Labrador, Canada **[#2594]**
We provide an overview and lessons learned for site selection processes for a CSA funded lunar analogue mission to the Mistastin Lake Impact Structure in Labrador, Canada.

Antonenko I. Mader M. M. Osinski G. R. Battler M. Beauchamp M. Cupelli L. Chanou A. Francis R. Marion C. McCullough E. Pickersgill A. Preston L. Shankar B. Unrau T. Veillette D.
Issues of Geo-Focused Situational Awareness in Robotic Planetary Missions: Lessons from an Analogue Mission at Mistastin Lake Impact Structure, Labrador, Canada **[#2576]**
Geo-focused situational awareness issues (scale, relief, geologic detail, and time constraints) are experienced differently by mission control than by field geologists. Operations and instrumentation planning must take these aspects into account.

Beauchamp M. Osinski G. R. Unrau T. Marion C. Mader M. Antonenko I. Barfoot T.
Ground Penetrating Radar (GPR) Investigations of the Mistastin Lake Impact Structure: A Case for GPR on the Moon. **[#2147]**
We examine the use of ground penetrating radar by a "simulated rover" at the Mistastin Lake impact structure and the potential applications to using this instrument on lunar rovers.

Russell P. S. Grant J. A. Williams K. K. Carter L. M. Garry W. B. Bussey D. B. J.
Ground Penetrating Radar Field Studies of Lunar-Analog Geologic Settings and Processes: Barringer Meteor Crater and Northern Arizona Volcanics **[#2097]**
In order to assess the capabilities of GPR in planetary geologic studies, we measure and characterize GPR signatures of geologic environments that may be encountered on the Moon and compare them with ground-truth observations of subsurface exposures.

Boivin A. Samson C. Vrionis H. Qadi A. Scott C. Stromberg J. Cloutis E. Berard G. Mann P.
Site Selection for Mars Methane Analogue Mission: Geological, Astrobiological, and Robotic Criteria **[#1472]**
Geological, astrobiological, and robotic criteria for the selection of the Jeffrey Mine in Asbestos, Québec, Canada as a micro-rover roving site for the Mars Methane Analogue Mission.

Cloutis E. Vrionis H. Qadi A. Bell J. F. III Berard G. Boivin A. Ellery A. Jamroz W. Kruzelecky R. Mann P. Samson C. Stromberg J. Strong K. Tremblay A. Whyte L. Wing B.
Mars Methane Analogue Mission (M^3): Analytical Techniques and Operations **[#1174]**
The Mars Methane Analogue Mission (M^3) project is designed to simulate a rover-based search for, and analysis of, methane sources on Mars at a serpentinite open pit mine in Quebec, using a variety of instruments.

Stoker C. R. Clarke J. D. A. Direito S. Foing B.
Properties of Subsurface Soil Cores from Four Geologic Provinces Surrounding Mars Desert Research Station, Utah: Characterizing Analog Martian Soil in a Human Exploration Scenario **[#1231]**
We present results of analysis of sulfate-rich soil cores from Mars analog site in Utah.

Nelson J. V. Westenberg A.
Summary of the 2009–2010 Season at the Mars Desert Research Station **[#1690]**
The Mars Desert Research Station in Hanksville, Utah is the most accessible, cost-effective martian analog station available. Each year the station is host to dozens of research projects from disciplines including biology, engineering, geology, hydrology, and psychology.

Graham P. Snyder G.
Analogue Mars and Lunar Outpost and Habitat Design Considerations, with Lessons Learned from Existing Mars Habitats **[#2824]**
For planetary mission planning, analogue operations are being used. This poster examines considerations based on observations from two Mars stations. This poster is some of the information gathered for habitat design for the OpenLuna Outpost.

Bell M. S. Baskin P. J. Todd W. L.
NEEMO - NASA's Extreme Environment Mission Operations: On to a NEO! **[#2162]**
NEEMO (NASA's Extreme Environment Mission Operations) at the Aquarius underwater habitat off Key Largo, Florida provide valuable mission planning and operations experience as well as crew training for living and working in the extreme environment of a planetary surface such as a NEO.

Pompilio L. Pepe M.
DAta Model Architecture (DAMA) for Easily Archiving and Widely Sharing Hyperspectral Field Surveys of Planetary Analogue Test Sites **[#1792]**
DAMA is a comprehensive and standard Web-distributed DB of hyperspectral field surveys based on an interoperable SOA. The uniqueness of DAMA lies upon the innovative data model design and proper OWS for Discovery, Access and Transformation of data.

Garry W. B. Zimbelman J. R. Bleacher J. E. Braden S. E. Crumpler L. S.
Lava Flow Inflation Features on the Moon?: A Comparison of Ina with Terrestrial Analogs **[#2605]**
The enigmatic lunar volcanic feature, Ina, has a distinct morphology and complex origin. We propose a lava flow inflation model for the formation of Ina based on our field observations of lava flow inflation features in Hawaii, Idaho, and New Mexico.

Smekens J-F. Christensen P. R.
The Effect of Weathering and Outcrop Variability on Thermal Infrared Multispectral Remote Sensing Data: A Comparative Study in Gila Bend, AZ **[#2743]**
In this study we compare TIR spectra from two different lithologies at three levels of resolution (laboratory spectrometer, TIMS, and ASTER) in an attempt to identify discrepancies and constrain the reasons for those differences.

Bristow T. F. Milliken R. E.
The Use of Mineral Facies Models of Terrestrial Saline Lakes as Potential Guides to the Origin of Martian Phyllosilicates **[#2457]**
Physiochemical controls on the spatial and stratigraphic trends of clay minerals in terrestrial saline lakes are presented with the aim of providing additional criteria for determining the origins of martian phyllosilicates.

Berard G. M. Cloutis E. A. Stromberg J. M. Mann P. Horgan B. Rice M.
A Hypersaline Spring Analogue in Central Manitoba for Arabia Terra's Potential Ancient Spring Deposits **[#2436]**
Both the concentrations of dissolved ions and molecules in the water, and the precipitation of ferric minerals and gypsum, decrease with increasing distance from the main springs, indicating that the springs are their primary source.

Glamoclija M. Steele A. Fogel M. L.
Microbial Influences on Aeolian Sulfates; A Case Study of a Dune Field at White Sands National Monument, New Mexico **[#2183]**
Similarly to martian sulfate-rich dunes, the White Sands National Monument exhibits partially different mineral signatures of dune crests and interdune areas. At the WSNM these differences are caused by diagenetic processes and by biological activity.

Stromberg J. Berard G. Mann P. Cloutis E.
Intracrater Evaporite Deposits of the Lake St. Martin Impact Structure: Implications for Mars **[#2170]**
The gypsum-rich intracrater evaporate deposits of the Lake St. Martin impact structure and its spectrally detectable endolithic microbial communities make it a relevant analogue for similar deposits on Mars.

Quinn J. E. Golden D. C. Graff T. G. Ming D. W. Morris R. V. Douglas S. Kounaves S. P. McKay C. P. Tamppari L. K. Smith P. H. Zent A. P. Archer P. D. Jr.
Chemistry and Mineralogy of Antarctica Dry Valley Soils: Implications for Mars **[#2670]**
The aim was to characterize the chemistry and mineralogy of soils from two sites, a subxerous soil in Taylor Valley, and an ultraxerous soil in University Valley. The style of aqueous alteration may have implications for pedogenic processes on Mars.

Berard G. M. Stromberg J. M. Cloutis E. A. Mann P. Horgan B. Rice M.
Desiccation of Algal Mats from Analogue Sites when Exposed to Mars-Like Conditions **[#2489]**
After exposure of biotic materials to Mars-like conditions, precipitated minerals are visible in the spectra and a 0.67-µm absorption band indicates the presence of chlorophyll even after desiccation.

Davatzes A. E. Monshizadegan C.
In Situ Chemical Analyses of Archean Rocks: Terrestrial Analog for Planetary Field Studies **[#1989]**
XRF and laser Raman analysis of chemical and potential microbial-mat sediments from the Barberton greenstone belt, South Africa.