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Message from the Chair:

Greetings fellow planetary geologists,

Although the past year has been an exciting time for planetary science, with the arrival of InSight at Mars and OSIRIS-Rex at Bennu, we are deeply saddened by the sudden passing of our colleague and friend, Josh Bandfield. Josh earned his PhD from Arizona State University in 2000 and was most recently a Senior Scientist at the Space Science Institute in Boise, Idaho. His
research focused on determining the mineralogical, thermophysical, and morphological properties of planetary surfaces, and I remember him best for his involvement with the TES instrument on Mars Global Surveyor. One thing that makes GSA unique relative to other scientific conferences is our remembrance sessions – it’s a really nice way to honor the contributions of colleagues. Please email me if you would like more information in putting together a GSA session in Josh’s memory.

Now that the Lunar and Planetary Science Conference (LPSC) is in the rear view mirror (see the recap below), we are eagerly looking forward to the GSA Annual Meeting in Phoenix (22–25 September, 2019). The abstract deadline is upon us, and we have a great line up of planetary sessions covering a wide range of geologic processes across a variety of planetary bodies (see page 5).

The G.K. Gilbert Award Session this year will honor Dr. Alfred McEwen, who was recently named the winner of the 2019 G.K. Gilbert Award for his outstanding contributions to the field of planetary geology. The Gilbert session is titled Thrilling Discoveries in Planetary Geology and Geophysics, and talks will focus on first-hand accounts of exciting discoveries in planetary geology and geophysics over the past 60 years. The goal of this session is to inspire students to pursue careers in planetary science, and to encourage early career scientists to persist. Congratulations, Alfred!

When you register for the Annual Meeting, please take note of the amazing field trips and short courses. PGD Board Member, Nick Lang, is leading a field trip to Miocene-aged volcanic terrain in northwest Arizona to “Unraveling volcanic and related processes using remotely sensed data sets.” Also, be sure to purchase your ticket(s) to the PGD banquet (Tuesday night of the meeting, see page 4) at the time you register for the meeting. Keep an eye out for the student travel grant to attend the Annual Meeting, where details (and deadlines!) will be posted on our website. In celebration of the 50th anniversary of the Apollo moon landing, the PGD is sponsoring a viewing of the Smithsonian Channel’s ‘Apollo’s Moon Shot’ series: Last Men on the Moon’ at the Annual Meeting in Phoenix. PGD Board Member Debra Needham will be hosting a Q&A session after the episode! Check the program for scheduling.

We kicked off our fundraiser for the Dwornik Award at LPSC, and it’s now in full swing! The Dwornik Award started in 1991 with a generous endowment by Stephen E. Dwornik to encourage U.S. students to become involved with NASA and planetary science. The PGD manages the Dwornik Award, which has grown to be the planetary community’s most competitive student award. The awards recognize outstanding student presentations (in both poster and oral categories) at LPSC each year.

Over the years, the Dwornik Award has become increasingly competitive with record number of students (125+) participating each year. The PGD, as stewards of this endowment, strive to ensure the award keeps pace with the growing number of students in the planetary field, as well as inflation. The Dwornik Award began as a way to support and recognize outstanding graduate students, and was expanded in 2013 to include undergraduate students. The PGD, under consultation with the GSA Foundation, aims to raise $15,000 to secure the future of the Dwornik fund, and make it self-sustaining. The current award structure is $1,500 in monetary awards and 8 plaques (annually), and the PGD would eventually like to increase the value of the award. Our
fundraising campaign will go through the end of 2019. **So far we have raised just over $1,100.** We have an exciting **donation matching opportunity** that we will post on our website soon, so stay tuned!

You can donate to the Dwornik Fund through the [gofundme](#) page, or directly via the [GSA Foundation](#). There is also an opportunity to donate when you renew your annual GSA registration. Thank you in advance for your consideration and support! Your donation is fully tax deductible.

We hope to see you at the PGD booth in the Exhibit Hall of the Annual Meeting for the famous meteorite raffle and the latest in space-related merchandise – remember all proceeds go toward our PGD student travel grants! It’s been an honor serving as your Division Chair, and I and the other PGD officers look forward to seeing you in Phoenix!

*Sharon Wilson Purdy*
*PGD Chair*

**The PGD at LPSC**

The PGD set up a booth at LPSC this year to raise awareness that one of our major volunteering tasks is to coordinate the annual Dwornik Awards. We had a great time talking with members, future members, and students who were interested in pursuing internship or graduate opportunities. We distributed copies of the student opportunities list curated on our website by PGD student representatives Kelsey Crane and Mallory Kinczyk, which was well received.

In addition to giving away mission swag, we handed out our newest PGD Buttons (see logo at the beginning of this section). This year’s design by Samuel Cartwright, was selected out of five awesome submissions. Sam is a recent Middlebury College graduate hailing from Utah, and is currently a post-baccalaureate intern with the CRISM instrument team at the Johns Hopkins University Applied Physics Laboratory. The button celebrates the 50th anniversaries of LPSC and Apollo 11 with a design showing our blue marble as it rises above a trace of human exploration’s crowning achievement. The number of stars and points add up to 50 and there are 11 segments to the boot print’s tread. Thanks to the 182 folks who voted in this year’s competition and to the five individuals who submitted designs. Our remaining 2019 buttons will be available at the PGD booth in Phoenix during the Annual Meeting of GSA. For our 2020 button, we will hold the next iteration of the PGD Button Design competition in February, so start brainstorming your button designs now!

*PGD Officers at the 2019 LPSC Booth (Brad Thomson, Mallory Kinczyk, Sharon Wilson Purdy, Emily Martin, and Debra Needham).*
PGD 2020 Button Design Contest

Our 2019 PGD Button Design Contest was a big hit again at LPSC this year, and we look forward to holding the 2020 PGD design contest! This is your chance to get creative and show us what you think should be on next year’s button. Rules for submissions include: (1) Design must be completed within a 6 cm diameter circle. (2) Letters “PGD” and year “2020” must be included as a central feature in the artwork. (3) Group submissions are acceptable. (4) Any media/software can be used as long as the scanned image sent to the PGD is clear. Additional details: Submission must include brief biographical information about the artist, a brief (500 character limit) description of the artwork, a PDF of the artwork and a JPEG (min 600 dpi) of the artwork. All submissions must be sent to Laura Chaves (lchavesm@purdue.edu) by 5pm EST February 3, 2020. All PGD members may vote on the semi-finalists’ buttons (as determined by PGD officers) starting soon after the submission deadline. The winner will be announced soon after.

Upcoming 2019 Annual Meeting

Mark calendars for the upcoming 2019 GSA Annual Meeting in Phoenix, Arizona from September 22-25.

Abstract deadline: 25 June 2019
Early registration deadline: 19 July 2019

Note that the abstract deadline is earlier than it has been lately. More information about the meeting can be found at:


Be sure to check out all of the planetary-geology-themed aspects of this year’s meeting! From several planetary geology sessions to field trips to short courses, there will be something for everyone in Phoenix!

The Planetary Geology Division Banquet

Join us at 1130 The Restaurant on Tuesday, September 24th at 7:00 pm for our annual banquet. Tickets for the meal can be purchased at the time you register for the meeting and will not be available at the door. Student tickets are $40 and Professional tickets are $60. The number of student tickets is limited—once they are sold out, only professional tickets will be available. 1130 The Restaurant is located at 455 N. 3rd Street, Suite #1130 in Phoenix, AZ and is an approximately 10-minute walk from the Phoenix Convention Center.

PGD Exhibition Hall Booth

Our division looks forward to continuing the tradition of hosting our booth in the Exhibition Hall where we sell planetary-related gear and have daily meteorite raffles. This year we plan to have merchandise including t-shirts, tote bags, as well as spacecraft earrings, meteorites and assorted toys. You never know what we’ll have so you
should come by early to do some holiday shopping.

Staffed by PGD officers throughout the conference, the booth constitutes our chief fundraising effort for the year and is the primary means by which our division pays for student travel awards to the annual GSA meeting. Providing exemplary students the means to present their best work at a national conference is a powerful career development tool, and we look forward to continuing to support their endeavors. Please share any feedback you might have about the booth!

**Student Travel Grants**

As in recent years, the PGD is offering two travel grants to help defray costs for PGD student members who are traveling to the GSA Annual Meeting to present first-authored papers. Applicants for student travel awards must:

1. Be first author and presenter of a paper that has been submitted to (and accepted for presentation at) the GSA Annual Meeting.
2. Be a Student Member of both GSA and the Planetary Geology Division.
3. Be registered for the meeting before applying for a travel grant.
4. Submit a completed Travel Grant Application, current CV (2 page max), and a short justification (~300–500 words) for why travel funding is needed.

Checks will be presented at the meeting, following the student’s talk or poster. The Application Form and more information are available at:

http://rock.geosociety.org/pgd/travel-grants.html

Completed application materials should be submitted as a single PDF file, due **Wednesday, August 21st, 2019**, to PGD 2nd Vice-Chair Debra Hurwitz Needham (debra.m.hurwitz@nasa.gov).

**PGD Sponsored Sessions, Short Courses, and Field Trips at the 2019 Annual GSA Meeting:**

**Sponsored Sessions:**

**T22. Basaltic Volcanism on Earth and Beyond: Exploring the Physical Controls on Eruptive Styles and Associated Deposits**

Jean-Francois Smekens, Erika Rader, Amanda B. Clarke, Kurt Roggensack, Brett B. Carr

*GSA Planetary Geology Division*

We welcome abstracts that investigate the causes and consequences of basaltic volcanism of all scales and styles, using two or more approaches, such as field, laboratory, and numerical techniques.  
Submit Abstract to this Session

**T31. Deformation at Multiple Scales: From Atoms to Minerals to Rocks to Planets**

Roberta L. Flemming, Phil J.A. McCausland

*Mineralogical Society of America*

We welcome all investigations of deformation, using multiple techniques, at multiple scales, from any stress regime and geodynamic setting—tectonism to impacts. Only by integrating observations from all scales can we understand our planet. 
Submit Abstract to this Session

**T32. Data-Driven Discovery of Carbon-Bearing and Other Earth Materials**

Daniel R. Hummer, Grethe Hystad, Shaunna M. Morrison

*GSA Geoinformatics and Data Science Division*

This session will explore the diversity and relationships of solid earth materials found on Earth or other planetary bodies using large data resources and techniques.  
Submit Abstract to this Session
T48. Unconventional Ideas and Outrageous Hypotheses: In Honor of Warren B. Hamilton
Gillian Foulger, K. Howard, Donna M. Jurdy
GSA Structural Geology and Tectonics Division
This is an interdisciplinary session to present and discuss new, innovative ideas from any branch of earth or planetary science, including field geology, geophysics, petrology, early evolution of Earth, and the geology of the terrestrial planets.
Submit Abstract to this Session

T88. The InSight Mission to Mars: Geology of the Landing Site
John A. Grant, Matthew P. Golombek, Sharon A. Wilson, Nicholas H. Warner
GSA Planetary Geology Division
This session will use lander and/or orbital data to explore the range of geomorphic processes, including impact, eolian, and mass wasting, that modified the surface of the InSight landing site on Mars.
Submit Abstract to this Session

T89. The G.K. Gilbert Award Session: Thrilling Discoveries in Planetary Geology and Geophysics
Sharon A. Wilson, Emily S. Martin
GSA Planetary Geology Division
We solicit first-hand accounts of exciting discoveries in planetary geology and geophysics, anytime in the past 60 years, along with description of the science significance. This session honors the 2019 winner of GSA’s Planetary Geology Division’s G.K. Gilbert Award, Dr. Alfred McEwen.
Submit Abstract to this Session

T90. The Big Picture from Small Bodies: Dwarf Planets, Asteroids, and Comets
Jennifer E.C. Scully, Debra L. Buczkowski, David A. Williams, Kynan H.G. Hughson
GSA Planetary Geology Division
We welcome presentations about Vesta, Ceres, Pluto, Ultima Thule, Bennu, Ryugu, 67P, and more, using data from spacecraft, telescopes, models, and laboratories to learn about the objects themselves and the evolution of the solar system.
Submit Abstract to this Session

T91. Shake 'n Break: Volcanism and Tectonism through the Solar System
Debra L. Buczkowski, Paul K. Byrne, Christian Klimczak, Danielle Y. Wyrick
GSA Planetary Geology Division
This session solicits abstracts on volcanic, tectonic, or volcano-tectonic landforms and processes on solar system bodies, and encompasses surface geology, interior and thermal evolution, and comparative planetary studies with observational, experimental, or theoretical approaches.
Submit Abstract to this Session

T92. Remote Sensing of Mineralogy on the Earth and Planets
John C. Mars, William H. Farrand
GSA Planetary Geology Division
Remote mapping and characterization of surface mineralogy has been enabled through hyperspectral remote sensing. Applications and examples of detailed mineralogical information derivable through these technologies will be presented.
Submit Abstract to this Session

T93. Lunar Reconnaissance Orbiter: Ten Years Exploring the Moon
Jeffrey B. Plescia, Mark S. Robinson, Jaclyn D. Clark
GSA Planetary Geology Division
Recent observations have fundamentally changed our view of the Moon; it is an even more complex body than previously recognized. The session focuses on the recent discoveries, arising new questions, and future measurements.
Submit Abstract to this Session
T94. Impact Cratering: A Most Penetrating Geologic Process
Jeffrey B. Plescia, Christian Koeberl
GSA Planetary Geology Division; GSA Continental Scientific Drilling Division; GSA Geophysics and Geodynamics Division; GSA Mineralogy, Geochemistry, Petrology, and Volcanology Division; GSA Structural Geology and Tectonics Division
Impact cratering is a key geologic process across the solar system. This session focuses on the geologic, geochemical, and geophysics signatures of impacts, impact flux, and implications for geologic evolution.
Submit Abstract to this Session

T95. Geomorphology and Landscape Evolution of Mars: Insight into the Climate History of the Red Planet
Sharon A. Wilson, Marisa Palucis, Nicholas P. Lang, Elena Favaro
GSA Planetary Geology Division; GSA Soils and Soil Processes Division; GSA Quaternary Geology and Geomorphology Division
This session welcomes abstracts on fluvial, alluvial, and lacustrine landforms that use orbital and/or rover data to investigate the geomorphology, geology, and climate history of Mars, as well as related Earth analogue studies.
Submit Abstract to this Session

T96. Friends of Hoth: Episode IV—Bodies of the Outer Solar System
Emily S. Martin, D. Alex Patthoff
GSA Planetary Geology Division
We welcome abstracts relating to surface, impact, structural, and tectonic processes; interior and thermal evolution; and planetary analogs as they pertain to solid bodies in the outer solar system. This includes experimental, observational, and theoretical approaches.
Submit Abstract to this Session

T97. Dynamic Moon: Redefining Surface Evolution with a Decade of Lunar Reconnaissance Orbiter Observations
Jaclyn D. Clark, Emerson Speyerer
GSA Planetary Geology Division
The first 10 years of the Lunar Reconnaissance Orbiter mission has changed our perspective with the discovery of young tectonism, new impact craters, and ephemeral alterations to the lunar surface that can now be measured.
Submit Abstract to this Session

T98. Best Practices and Exciting Discoveries in Identifying, Mapping, and Analyzing Planetary Landforms and Terrestrial Analogues
Kelsey T. Crane, Jeannette M. Wolak, Nicholas P. Lang
GSA Planetary Geology Division; U.S. Geological Survey Astrogeology Center; GSA Quaternary Geology and Geomorphology Division
We welcome abstracts that investigate the methodology of planetary and terrestrial landform analysis or that explore and utilize these methodologies as a means of achieving insight into the evolution of those landforms.
Submit Abstract to this Session

T99. Aeolian Activity across Our Solar System
Mackenzie D. Day, Matthew Chojnacki, Serina Diniega, Sharon A. Wilson
GSA Planetary Geology Division
Aeolian activity has been identified or suggested on seven different bodies in our solar system. We explore the forefront of aeolian research by bringing together topics related to Earth, planetary, modern, and ancient aeolian geoscience.
Submit Abstract to this Session
Short Courses:

523. Planetary Geologic Mapping for Students
Instructors: Jeannette Wolak (Tenn. Tech Univ.) and Kelsey Krane (Univ. of Georgia)
Date: Sat., Sept. 21, 8 am – 5 pm
Cost: $114
Limit: 25 people
Abstract:
The purpose of this course is to complement traditional field and geologic mapping curriculum for undergraduate and graduate students interested in planetary mapping techniques. Hands-on exercises will use remotely-sensed data from spacecraft to illustrate first order mapping principles including identification of linear features and selection of appropriate mapping units. Cross-cutting relationships and stratigraphic context of deposits will be used to interpret geologic processes operating on other rocky bodies in the solar system. All mapping materials will be provided, and both undergraduate and graduate students are encouraged to enroll. Prerequisite planetary geology or geologic mapping classes are not required.

527. Introduction to Planetary Image Analysis with ArcGIS
Instructors: Zoe Learner Ponterio (Cornell Univ.), David Nelson (Arizona State Univ.)
Date: Sat., Sept. 21, 9 am – 5 pm
Cost: $20
Limit: 30 people
Abstract:
This workshop introduces participants to the basic tools available in ArcGIS for use in image analysis, focusing on tasks and features most commonly used in planetary geology and utilizing Mars Reconnaissance Orbiter data. It is accessible to participants with no prior experience in GIS, but includes optional advanced activities relevant to experienced users. Participants will be eligible for a free one-year ArcGIS license.

Upon completion of the course, a GSA bookstore voucher will be given for US$20.

Field Trips:

5. Unraveling volcanic and related processes using remotely sensed data sets: Perspectives from a Miocene-aged volcanic terrain in northwest Arizona
Trip Leaders: Nick Lang (Mercyhurst Univ.), Susanne McDowell (Research Square), Cole Nypaver (Univ. of TN), Brandt Gibson (Vanderbilt Univ.), Briana Li-Vidal (Terracon)
Dates: Thurs – Saturday (Sept. 19-21)
Cost: $448/person
Trip Description:
Remotely sensed datasets of the Earth and other planetary bodies afford an incredible opportunity to see the geology of large and inaccessible locations. However, critical to fully understanding what those datasets can (and cannot) tell us is an understanding of geologic relationships observable through “boots on the ground” fieldwork. In this three-day/two-night trip, we will explore the level of detail that can be gleaned from various types and resolutions of remotely sensed data (e.g., UAV data, satellite data, etc.) by visiting the southern Black Mountains of northwest Arizona—a site of voluminous magmatism during the Miocene. Post-volcanic extension and erosion of this area affords the opportunity to examine a volcanic terrain in detail using both fieldwork and remotely sensed data. We will work our way through the exposed volcanic section and observe shallow intrusions; deposits from explosive, effusive, and sedimentary processes; and the results of subsequent faulting. Petrologic, physical volcanic, and morphologic characteristics of the observed outcrops will be discussed at each field stop and will be used as a point of discussion for observations of presumably volcanic terrains on other planetary bodies.
27. The “Holey” Tour: Ron Greeley’s Introductory Planetary Geology Field Trip

*Trip Leaders:* David A. Williams (Arizona State Univ.), Steven A. Kadel, and R. Scott Harris  
*Dates:* Thurs – Sat. (Sept. 26-28)  
*Cost:* $475/person  
*Trip Description:*  
This field trip is designed to introduce participants to the spectrum of geologic processes that produce crater-like topographic depressions that are relevant to planetary geology. The “Holey” Tour stops at a variety of geologic holes in the state of Arizona, along the I-17 corridor between Phoenix and Flagstaff, and regions in the Flagstaff area. Stops include the Verde Valley (river valley), Montezuma’s Well (karst sinkhole), Stoneman Lake (pit crater), Mormon Lake (volcano-tectonic depression), Meteor Crater (impact crater), Rattlesnake Crater (maar crater), Lava River Cave (lava tube), and the South Rim of the Grand Canyon. Volcanic features visited on the trip include Joe’s Hill (shield volcano), Mount Elden (silicic dome), Sunset Crater National Monument (cinder cone and lava flow field), San Francisco Peaks overlook (stratovolcano), and Cinder Lake (testing ground for the Apollo lunar rovers). Target Group: Planetary geology students outside of Arizona and professors/teachers who teach planetary geology from outside of Arizona. Transportation: Leaders will provide SUVs capable of 4WD, best for Forest Service Roads. Most driving is however on paved highways. Lodging: Two nights in a Flagstaff hotel. Logistics: Participants will receive a spiral-bound field trip guide. We have a version with blanks for students to fill in, as well as an instructor’s version with answers. This field trip was published by GSA in Special Paper 483, p. 377–391 (Greeley, R., 2011).

30. Walk in the Footsteps of the Apollo Astronauts

*Trip Leaders:* R. Greg Vaughn (USGS), Kevin Schindler, Jeanne Stevens, and Ian Hough  
*Dates:* Fri. – Sat. (Sept. 27-28)  
*Cost:* $265/person  
*Trip Description:*  
Every astronaut who ever walked on the Moon trained in Flagstaff, Arizona. USGS scientists carried out this training, teaching geologic principals and techniques. Flagstaff scientists and engineers also developed and tested scientific instrument prototypes and communication and transportation technologies that would aid in lunar exploration. Astronomers and cartographers also played a key role, preparing lunar charts for navigation at landing sites. This historical/educational field trip will take participants along a historical path to some of the key sites where the Apollo astronauts trained. Field trip participants will see: (1) Grover, the geologic rover simulator on which the astronauts trained, which is on display at the USGS Astrogeology Science Center; (2) telescopes at Lowell Observatory used to map the lunar surface, as well as some of the original airbrushed maps; (3) the Bonito lava flow training area at Sunset Crater Volcano National Monument and the Cinder Lake crater field (in 1967, using explosives to make craters of varying sizes, depths, and ages, USGS geologists created a simulated lunar landscape for training astronauts and testing equipment); and (4) the Black Point Lava flow, where other test craters were created and where NASA continues to test new technologies for planetary exploration.
2019 Award Recipients

2019 Dwornik Award

The Dwornik Award was endowed by Stephen E. Dwornik in 1991 to encourage students in the field of planetary science. The Dwornik Award originally acknowledged the best oral presentation at both LPSC and GSA, with the winners traveling to Washington, DC to accept their award. Due to the overwhelming number of planetary-related presentations at LPSC relative to GSA, the award later became a LPSC-only competition but expanded to include honorable mentions and poster presentations. A brief biography of Stephen Dwornik’s influential career can be found on our Dwornik Award webpage: http://rock.geosociety.org/pgd/dwornik.html.

Nearly 200 judges at the 50th LPSC worked hard to judge another outstanding group of entries for the 2019 Dwornik Prize—we received 57 entries for the oral presentation (46 grads, 11 undergrads) and 72 entries for poster presentations (55 grads, 17 undergrads). The PGD would like to thank PGD 2nd Vice Chair Debra Needham for being the Dwornik Coordinator this year, and all of our members who judged students. Without your help, we would not be able to honor our students! Please remember to sign up to judge Dwornik award presentations at the 2020 LPSC!

The 2019 Dwornik winners are:

Best Graduate Oral Presentation: Clara Maurel, Massachusetts Institute of Technology, “Partial Differentiation and Magnetic History of the IIE Iron Meteorite Parent Body.”


Honorable Mention—Grad Poster: Amanda Ostwald, University of Nevada Las Vegas, “Parental Melt of Nakhlites as Determined from Melt Inclusions.”

Undergraduate Oral: Patrick Matulka, Colgate University, “Rounding and Comminution Rates of Ice Clasts Using the Titan Tumbler: Fluctuating Roundness and Stepped Mass Loss.”


Undergraduate Poster: Walter Zimmerman, University of Alaska Anchorage, “Bands on Europa: A New Geometry-Based Classification to Explain Why Bands Form.”


2019 Pellas-Ryder Award

The Pellas-Ryder award is given to the Planetary Science Best Student Paper published during the preceding year. The award is jointly given by the Meteoritical Society and the Planetary Geology Division of the Geological Society of America and includes a $500 award from the Meteoritical Society and a plaque awarded by the PGD.
This year’s Pellas-Ryder award was awarded to Simon J. Lock, currently a postdoc at Cal Tech (previously a postdoc at Harvard University), for his paper in the Journal of Geophysical Research titled, “The Origin of the Moon within a Terrestrial Synestia.” In this paper, Lock modeled the Moon forming within a new type of astronomical object, called a synestia. In the aftermath of a high-energy, high-angular-momentum Giant Impact the vaporized Earth-Impactor body forms a rapidly spinning donut-shaped object that is the synestia. Formation within a terrestrial synestia can explain the Moon’s unusual chemical relationship and isotopic similarity with the Earth. Congratulations Simon!

Call for Applications & Nominations

Ronald Greeley Award for Distinguished Service: The PGD is now accepting nominations for the 2019 Ronald Greeley Award for Distinguished Service, and all members are encouraged to submit nominations. This award was established in 2011 as the PGD Distinguished Service Award, and in 2012 the PGD membership voted to change the name to commemorate Ronald Greeley and his contributions to the Planetary Geology Division. This award may be given to those members of the PGD, or those outside of the Division and GSA, who have rendered exceptional service to the PGD over a multi-year period. The award is not open to currently serving Division officers, but may be awarded to past officers who have provided exceptional service to the PGD after their term on the Management Board has ended. Nominations for the award, which should include a description of what the nominee has given to the PGD community, may be made by any PGD member prior to June 30, 2019. Approval of the award will be by majority vote of the Management Board. The award consists of a certificate signed by the Chair, and will be presented at the Division's Business Meeting/Awards Reception at the Annual Meeting.

Eugene M. Shoemaker Award: Dr. Carolyn Shoemaker established the Eugene M. Shoemaker Memorial Fund for Crater Studies in memory of her husband in 1998. She established this endowment so that students will have an opportunity to pursue studies of impact craters, which were the focus of her husband’s graduate studies and a large part of his professional career. Friends, scientific colleagues, and companies have contributed to the fund (and continue to do so) to ensure its success.

The Shoemaker Impact Cratering Award is for undergraduate or graduate students, of any nationality, working in any country, in the disciplines of geology, geophysics, geochemistry, astronomy, or biology. The award, which will include $3000, is to be applied for the study of impact craters, either on Earth or on the other solid bodies in the space.
Areas of study may include but shall not necessarily be limited to impact cratering processes; the bodies (asteroidal or cometary) that make the impacts; or the geological, chemical, or biological results of impact cratering. The electronic application form opens on or around July 1, 2019, and must include a CV, research proposal, timeline and budget, and two letters of recommendation. For more details and to access the online application forms, go to: http://www.lpi.usra.edu/science/kring/Awards/Shoemaker_Award/.

Questions regarding this award should be directed to Dr. David Kring, (kring@lpi.usra.edu). The Planetary Geology Division officers strongly encourage all of our Division members to actively recruit promising students to apply for this prestigious award.

**Upcoming Meetings & Workshops**

**10th Planetary Crater Consortium:** The 10th Planetary Crater Consortium meeting will be held August 7-9, 2019, at the US Geological Survey in Flagstaff, AZ. The Planetary Crater Consortium is open to all planetary scientists interested in any aspect of impact cratering on solar system bodies (including Earth!), incorporating observational, theoretical, experimental, field, and/or numerical studies. The meeting is a combination of contributed talks, posters, and open discussion and is designed to encourage and provide adequate time for in-depth discussion of crater-related issues and topics to enhance research collaborations. Abstract deadline is Monday, June 24, 2019. An optional field trip around the rim of Meteor Crater will be arranged for Saturday, August 10, 2019, if there is sufficient interest. For more information, see www.planetarycraterconsortium.nau.edu/ or contact Nadine Barlow (Nadine.Barlow@nau.edu).

**The Ninth International Conference on Mars:** The Ninth International Conference on Mars will be held at the California Institute of Technology (Caltech) in Pasadena, California, beginning the morning of Monday, July 22, and ending after a full day on Thursday, July 25. The Ninth International Mars Conference will be an ideal time to step back and summarize our current understanding of Mars, so as to highlight the paradigm-changing discoveries and progress on the primary science questions that has been made since the last conference in this series, five years ago. We will also discuss how to build on our scientific understanding and answer the most important outstanding questions by refining the scientific goals to be pursued, including over the decade that will be the subject of the upcoming U.S. Planetary Science Decadal Survey (2023–2032) and a period when several nations will have ongoing Mars mission.

Registration deadline is July 11, 2019. For more information, see https://www.hou.usra.edu/meetings/ninthmars2019/.

**NASA Exploration Science Forum:** The 2019 Exploration Science Forum will feature scientific discussions about the Moon and other exploration targets of interest, such as near-Earth asteroids and the moons of Mars. Participants will learn about recent mission results and in-depth analyses of science and exploration studies that reflect the direction of the Agency and community. Dedicated side conferences for students and young professionals, along with public engagement discussions, will be interwoven among science topics. This year, SSERVI is excited to announce that on July
24th, as a part of the Forum, we will visit the USS Hornet on the 50th anniversary of the Apollo 11 Splashdown. Transportation to/from the Hornet will be provided by SSERVI. Please indicate your interest on the registration form.

**Late Mars Workshop:** The temporal and geographical scale of liquid water on early Mars is thought to have been much more ubiquitous and long-standing than it is today, as current boundary conditions exhibit extreme aridity, generally low atmospheric pressure, and mean temperatures largely below the freezing point of water. The observation of geologically recent gully-formation and -flow, the ephemeral but iterative presence of RSLs, as well as the widespread distribution of possible glacial and periglacial landscapes, suggest that liquid water may have played a much more dynamic, if not enigmatic, role in the Late Amazonian Epoch than might be expected. On the other hand, others suggest that CO2 or various dry processes are the only plausible agents of landscape change under current or relatively recent conditions.

Registration deadline is July 14, 2019. For more information, see [https://www.hou.usra.edu/meetings/latemars2018/](https://www.hou.usra.edu/meetings/latemars2018/).

**Extreme Solar Systems IV:**
This conference, the fourth in a series that began in 2007 (Santorini meeting on Extreme Solar Systems, followed by ExSS II in Jackson Hole, Wyoming, in 2011, and ExSS III in Hawaii, in 2015) will cover all aspects of research on exoplanets. It will take place at the Harpa Center in Reykjavik, Iceland. The dates of the meeting happen to coincide approximately with the 70th birthday of our friend Doug Lin.

Meeting is August 19-23, 2019 in Reykjavik, Iceland. Abstract submission is not open as is registration. For more information, see [https://sites.northwestern.edu/iceland2019/](https://sites.northwestern.edu/iceland2019/).

**Symposium on Water in the Universe:**
Formed from two of the most abundant elements in the universe, the special chemical and physical properties of water make it a uniquely important molecule in the quest to understand our origins. Dramatic advances in observational capabilities from millimeter-wave to infrared wavelengths and in our ability to study water vapor, liquid water, and water ice from first principles calculations and with ever more capable laboratory methods now enables astronomers, planetary scientists and chemists to follow the "water trail" from the interstellar medium to mature (exo)planetary systems. The timing of the proposed meeting is particularly relevant to this topic, as by summer 2019 the Atacama Large Millimeter Array (ALMA) will have completed two observing cycles with its full suite of imaging and high frequency capabilities that are particularly critical to studies of water and the Transiting Exoplanet Survey Satellite (TESS) will have over a year of scientific results in hand. Although delayed until 2021, the launch of the James Webb Space Telescope (JWST) will provide another orbital observing platform to study exoplanet atmospheres. Thus, exoplanet science is entering the phase that explores the nature of potentially habitable terrestrial planets. This symposium will highlight the cosmic history of water, its critical role in the formation and early evolution of planetary systems, and the means by which habitable environments are created across the universe. With a strong focus on the chemistry of, and enabled by, water, and the interplay between studies of our own and exoplanetary systems, we aim to create a program that will draw in a wide range of chemists and (planetary) astronomers.

Meeting is August 25-29, 2019 in San Diego, CA. For more information, see [https://sites.northwestern.edu/iceland2019/](https://sites.northwestern.edu/iceland2019/).

**Workshop on Binary Asteroids 5:** Held in Fort Collins, CO from Sept. 3-5, 2019. Abstract submission and meeting registration are now open. For more information, see http://binaryast5.org/index.html.

**Large Meteorite Impacts and Planetary Evolution VI:** The process of impact cratering, its planetary effects, and its environmental implications have been the subject of five previous Large Meteorite Impacts and Planetary Evolution conferences. These previous conferences took place, respectively, in Sudbury, Canada (1992, 1997 and 2013); Nördlingen, Germany (2003); and in the Vredefort Dome in South Africa (2008). Note that the LMI in 2019 will be held for the first time in South America. In recent years, several major international drilling and field projects on terrestrial impact structures, as well as new spacecraft missions to the Moon, neighboring planets, asteroids, and comets, have delivered important new insights into impact cratering processes within the solar system. LMI VI will provide a forum for discussion of recent results and advances, based on natural observations, spacecraft data, experimental results, and numerical simulation studies. LMI VI will also provide a forum for discussion of pertinent advances in multidisciplinary research on planetary and terrestrial impact cratering, and the effects of this process on target rocks and minerals, as well as its environmental consequences. Remote sensing, geophysical and numerical modeling, geological, geochronological, mineralogical and geochemical, and astrobiological results and implications will be discussed. In addition, the future of impact cratering research, in the broadest sense, will be evaluated.

This year’s meeting will be held from Sept. 30 – October 3, 2019 in Brasilia, Brazil. For more information, see https://www.hou.usra.edu/meetings/lmi2019/.

**The Venus Exploration Analysis Group:** The Venus Exploration Analysis Group is NASA’s community-based forum designed to provide scientific input and technology development plans for planning and prioritizing the exploration of Venus over the next several decades. VEXAG is chartered by NASA’s Solar System Exploration Division and reports its findings to NASA. Open to all interested scientists, VEXAG regularly evaluates Venus exploration goals, scientific objectives, investigations, and critical measurement requirements, including especially recommendations in the NRC Decadal Survey and the Solar System Exploration Strategic Roadmap.

The 17th meeting of VEXAG will be held November 4-7, in Boulder, CO. For more information, see https://www.lpi.usra.edu/vexag/.

**Annual Meeting of the Lunar Exploration Analysis Group:** The Annual Meeting of the Lunar Exploration Analysis Group (LEAG) will occur on October 28-30, 2019, in the Washington D.C. area. For more information, see https://www.hou.usra.edu/meetings/leag2019/.

**Seventh International Conference on Mars Polar Science and Exploration:** The Seventh International Conference on Mars Polar Science and Exploration is the latest in a continuing series of conferences intended to promote the exchange of knowledge and ideas regarding the polar
regions of Mars. This group is international and interdisciplinary, and we welcome any interested scientist with relevant theoretical, experimental, or field experience.

The conference is designed to highlight and define the current state of Mars polar research, pulling together expertise from many fields, including geology, atmospheric science, and climate science. Primarily, the aim is to focus on advances made since the sixth conference, and to give attendees the opportunity to share their research with like-minded colleagues. The focus will also be on terrestrial analogs that can enhance our interpretation of remote sensing data from Mars, and on concepts for future missions. Several optional field trips before, after, and during the conference will highlight the beauty of Patagonia and its relevance as a terrestrial analog to the polar and ice-populated regions of Mars. With the overarching goal of fully understanding the polar environments on Mars and contributing to the advance of planetary science, we will synthesize outstanding questions and developments in a publication dedicated to the results of this conference.

Meeting is from January 13-17, 2020 in Ushuaia, Argentina. For more information, see https://www.hou.usra.edu/meetings/marspolar2020/.

Special Thank You and Congratulations!

We wanted to end this newsletter with a special thank you to our outgoing Senior Student Advisory Member, Kelsey Crane. Kelsey has been a valuable member of the PGD officer crew for the past couple of years and has been a strong advocate for students. Kelsey has recently finished her PhD at the University of Georgia and is moving into a tenure-track position at Mississippi State University where she will continue her work on mountain building processes on Earth and other planets. Congratulations on your position, Kelsey, thank you for your service, and we very much look forward to continuing to work with you!
We need your help!

This would be a great time to make a contribution to the Dwornik, Shoemaker, G. K. Gilbert or student travel grant funds! Unlike many other charitable donations, your donation to these funds will produce positive results you can see for yourself as you encourage and support planetary scientists, both current and future. Donations can either be made online (https://www.gsaafweb.org/donate/) or by mail. If by mail, please include a check or money order, made payable to Planetary Geology Division, GSA.

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Also, if you have not done so already, please check out the Dwornik Award Fundraiser and consider contributing. Your donations to this fundraiser will help ensure that this important fund will continue to help recognize outstanding students in the field of planetary science! For more information about this fundraiser and to contribute, please see: https://www.gofundme.com/dwornik-award-fund?member=1834286.

Need more information about PGD? Check out our website: http://rock.geosociety.org/pgd/index.html
2018-2019 Division Officers

(Chair) Wilson Purdy, Sharon A. Research Interests: I investigate Mars geology, geomorphology, landscape evolution, climate history and geologic mapping. Affiliation: Center for Earth and Planetary Studies, Smithsonian National Air and Space Museum, Washington, DC 20013; purdys@si.edu

(1st Vice-Chair) Martin, Emily S. Research Interests: I am interested in studying icy satellites, tectonics, faults and fractures, and geologic mapping. Affiliation: Center for Earth and Planetary Studies, Smithsonian Institution, National Air and Space Museum, Washington, DC 20013; martines@si.edu

(2nd Vice-Chair) Needham, Debra H. Research Interests: I study planetary volcanology and lava flow emplacement dynamics, and I work with engineers to integrate science in robotic and human exploration. Affiliation: NASA Marshall Space Flight Center, Huntsville, AL, 35805; debra.m.hurwitz@nasa.gov

(Past-Chair) Thomson, Bradley J. Research Interests: I am interested in understanding the nature and timing of the physical processes that have shaped the surfaces of planetary bodies, including impact, aeolian, fluvial, lacustrine, and volcanic processes. Affiliation: Dept. of Earth and Planetary Sciences, University of Tennessee, Knoxville, TN 37996; bathom@utk.edu

(Senior Student Advisory Member) Mallory Kinczyk. Research Interests: I use remote sensing and numerical modeling techniques to investigate the cratering and tectonic histories of icy satellites. Affiliation: Planetary Research Group, Dept. of Marine, Earth, and Atmospheric Sciences North Carolina State University, Raleigh, NC 27695; mallory.kinczyk@ncsu.edu

(Junior Student Advisory Member) Laura Chaves. Research Interests: My research is focused on space weathering on airless bodies; I use various techniques such as SEM, TEM, EDX, and ultramicrotomy to analyze asteroidal regoliths. Affiliation: Dept. of Earth, Atmospheric, and Planetary Sciences, Purdue University, West Lafayette, IN; lchavesm@purdue.edu

(Secretary-Treasurer) Lang, Nicholas P. Research Interests: I use geologic mapping to understand volcanic and tectonic processes that have occurred on Earth, Venus, and Mars. Affiliation: Dept. of Geology, Mercyhurst University, Erie, PA; nlang@mercyhurst.edu