

SEPM Planetary Sedimentary Geology Research Group Meeting

Inaugural Meeting, Virtual, June 24th, 2021

Organizers

- Ben Cardenas (Caltech)
- Cassie Turley (SEPM)

Speakers

- Katie Stack Morgan (JPL/Caltech)

Research Group Business

- Attendee introductions and opportunities
 - Hi Y'All, thanks for putting this on! My name is Casey Duncan and I'm currently a PhD candidate in geology at University of Utah and focusing on clastic stratigraphy & diagenesis. I'm in search of postdoc positions in clastic (alluvial/fluviol) stratigraphy, Mars sedimentology and diagenesis especially with Earth analog fieldwork components, and/or furthering integration of drones in sedimentology.
 - Hi, my name is Celeste Cunningham. I'm currently completing my PhD at the University of Ottawa, Canada, and am pursuing a postdoc in planetary sedimentology
 - Hello, I'm Dr Chris Howells FGS. I work on in the energy sector but am a process-based Sedimentologist. I a key role in NAfrica, I got to know a group using the Sahara desert as an a analogy for what may have happened to the climate of Mars. I have always maintained an interest in this. You can find me on LinkedIn. Later life professional
 - Hi, I'm Claire Mondro. Phd Candidate at University of Tennessee studying alluvial fans on Earth and Mars. Will likely be looking for a post doc position within a year but also just looking to make connections in the community, expand my network, and learn from others.
 - Introduction: Hi all, I'm Dan Mason. I'm currently a PhD student at the University of New Mexico, with a research focus broadly on Martian sedimentology and geomorphology, and specifically on the mechanics behind recurring slope lineae. Happy to be here!
 - Hello I'm David Ricardo Pedreros-Bastidas, I'm doing my PhD at Imperial College London, working with deep marine deposits, looking forward to be part of this community :)

- Intro: Murray Felsner mostly retired -- (Formerly) President, Associated Technical Consultants, performing satellite remote sensing to specific federal agencies; Publisher/Editor, Washington Remote Sensing Letter; Chief, Geological and Energy Applications, NASA Hqtrs; Senior Staff Geologist, EPA Hqtrs, SEPM Technical Program Chairman, 1977 Annual Meeting; Associate Director, Council on Education in the Geological Sciences, American Geological Institute; Geology Department Faculty, Syracuse University; Post-Doc under Gerry Middleton, MacMaster University; Ph.D. under Bob Folk, UTexas.
- John Tudek @West Virginia Geological Survey jtudek@wvgs.wvnet.edu
- Kathie Marsaglia, Cal State Northridge, co-Editor Journal of Sedimentary Research, Research interests in Martian sedimentary petrology
- I'm Kathy Benison. I am a sed. geologist and professor at West Virginia University. I study chemical sediments, brines, water-rock interactions, and astrobiology. I am member of Mars 2020 science team (and I am trying to pay attention to both this meeting and a Mars 2020 science meeting at the same time right now).
- Mackenzie Day; Assistant Professor at UCLA; Seeking PhD student for Earth/Mars field heavy project on aeolian dunes; contact daym@epss.ucla.edu!
- Michael Velbel, Michigan State & Smithsonian: How common are tangential delta foresets, and what controls angular vs. tangential lower contacts?
- Mogammad Hendricks. PhD student at the University of the Western Cape, Cape Town, South Africa. I am very keen to be involved in anything sedimentology-related especially extraterrestrial sedimentology. My research focus is based on sediment routing system analysis and high-resolution sequence stratigraphy. I am very excited for this group, rather late than never!
- Hi! My name is Molly Smith, I graduated from Florida Atlantic University with my PhD in Geosciences in August 2020 (dissertation was using machine learning to predict grain size and sand composition from imagery). I am currently in Boca Raton, Florida working in environmental consulting. I am looking for opportunities to work for/with NASA (change of career) or planetary sedimentary remote sensing research. Please reach me any time at 954-856-6217 or mesmithphd@gmail.com
- Morgan Lewis, PhD student with Dr. Chris Fedo at the University of Tennessee Knoxville. Contact: mlewis59@vols.utk.edu
- Norman Rosen, retired. Science Fiction fan!
- Prof. Ralph Milliken, Brown University, planetary science enthusiast
- Rene Jonk, sedimentologist/stratigrapher currently working in oil & gas, but with a hobby in cool geology from outer worlds..!
- Sebastian Kaempfe, PhDc @ Virginia Tech, Sedimentary Systems Research Group, doing research in the Cretaceous Magallanes Basin, looking connections for future collaborations
- Hi All! I'm Tim Goudge (pronouns: he/him), an Assistant Professor at the University of Texas at Austin. I will *probably* be looking for a graduate student

in this upcoming application cycle (to start Fall 2022). Feel free to reach out if interested - tgoudge@jsg.utexas.edu. Thanks!

- My name is Zach Williams, I'm an undergraduate geology senior at the University of Oklahoma, seeking graduate school opportunities, my contact info: zwilliams@ou.edu.
- Ben Cardenas presented slides:
 - Audience encouraged to share introductions in chat, to be shared in email to group.
 - SEPM Code of Conduct.
 - Who is this research group? Sedimentary geoscientists working on planets and moons, including Earth, from the grain scale to the landscape scale. This group hopes to unite planetary and Earth-focused scientists for the benefit of shared wisdom and innovative work.
 - Why join the research group? Network, meetings, listserv, access to SEPM community, channel for collaboration
 - 5 poll questions: 1) Are you an SEPM member? 2) Which best describes you (career point), 3) How did you hear about the virtual meeting?, 4) What is your preferred meeting frequency and format? 5) Which aspect of the Planetary Research Group are you most interested in? Answers to be shared in email to group.

Science Presentation and Discussion

- Katie Stack Morgan presented slides about the Mars 2020 Perseverance Rover Mission to Jezero crater, Mars.
 - Mars Exploration Program goals include determining if life ever existed, characterizing climate and surface evolution, and preparing for human exploration. Mars 2020 is specifically search for signs of life.
 - Mars 2020 is part of a multi-mission sample-return campaign to search for signs of life. Part of this will involve sample coring and caching.
 - Landing site in Jezero crater, some of the oldest sedimentary rocks on the planet. Lake and river delta deposits.
 - Locations and exposures named in Navajo language.
 - Major questions regarding the nature of stratified rocks at distance from the delta – are they erosional remnants? Drive paths may be altered to explore these.
 - Cross-stratified beds several m thick imaged in Mastcam-Z – the Kodiak outcrop, interpreted as a delta front remnant.
 - Outcrops that appear to be composed of boulders pointing to some sort of high-energy flow.
 - Coming up for the mission – a campaign is being planned to explore the crater floor lithology and its relationship with the Seitah outcrop and the delta. First samples will likely come from the crater floor and Seitah.
- Discussion points and questions
 - Delta front be reached at ~1 year
 - Nature of paleohydraulic reconstructions on a different planet

- Are there any indicators of glacial erosion? Team is keeping an eye out but hasn't seen typical signs of glacial scour yet.
- The tools and procedures for collecting samples, as well as the purpose of extra sample canisters.
- Several questions about the extent of the current delta, indicators that it was once much larger, and the general role of wind erosion in the morphology.
- The transition of Jezero from an environment of net deposition to one of net-erosion driven by wind.
- Discussion about the cross bedding as delta front vs. bar clinoform.