



MONTANA GEOLOGICAL SOCIETY

NEWSLETTER

Vol 65 No. 1



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Letter from the Editor

Greetings MGS Members,

2020. Time to send it. Many of us have been affected by 2020 in one way or another, and the MGS has seen its share of struggles as well. We appreciate those of you that have already stepped forward with your membership dues and continued commitment to supporting our mission. While luncheons, presentations, and classes were postponed or canceled, we look forward to getting back on track in 2021. To achieve this, I urge a call out to you, our membership – we need your help. We're looking for ways to continue providing for our community, in a time where many just need distractions from everything around them.

· Presentations; We are open to just about anything related to earth science, and many of you have backgrounds that may be new and exciting to share. The MGS can help you digitally present information, even if it is merely a simple subsurface investigation you performed on the soil in your backyard this most recent quarantine period.

· Field trips; what better way to social distance than by getting out on a hike looking at the splendid beauty of this planet and learning a thing or two along the way? Although certainly not the same thing, a digital field trip could be made into something enjoyable for those of our membership quarantined and unable to venture out to the field.

· New Members; the MGS is like every other society, transitioning in a time where funds are tight and membership is dwindling. Montana's population appears to be poised for an increase this census cycle, find your friends who are not yet members and let us get their voices heard.

· Officers; the most recent (MGS) election cycle was not a high priority for many of us, I am sure, compared to other elections. We need fresh minds and ideas to step up and continue to usher in a new decade for the MGS. Your current officers will cover treasurer duties for the time being, but we are still searching for a treasurer.

As a side note, 2020 marked the 40th anniversary of Star Wars Episode V: The Empire Strikes Back, and as a lover of Star Wars, I want to take a deeper dive into one of my favorite moments, the ice-covered planet Hoth, as we prepare for our deep freeze (maybe?) here in Montana:

The Battle of Hoth occurred on the sixth planet in a remote star system in a galaxy far, far away. As many of you know, Hoth is a rocky planet covered entirely in snow and ice. George Lucas taught us life can exist in many ways, and Hoth was no exception, with herbivorous Tauntauns and carnivorous Wampas. Ice worlds are most certainly not science fiction, and we have some in our own solar system. We know Earth has endured multiple ice ages and severe fluctuations in climate, but perhaps Earth is not too far off what Hoth is. In fact, Earth is hypothesized to have been entirely covered with snow and ice, known as "Snowball Earth", sometime earlier than 650 million years ago during the Cryogenian period. The driving factors behind "Snowball Earth" include glacial deposits at the tropics, and that these deposits are hypothesized to have come from active glaciers at different locations at the same time. But where Hoth is far from its sun, allowing for snow and ice to persist, what could cause a rocky planet so close to its star like

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Earth, to become encumbered by widespread glaciation? The generally accepted hypothesis includes an initial cooling mechanism, and if enough snow and ice were to accumulate, particularly to within 30 degrees of the equator, a run-away cooling effect would occur. The initial mechanism could have been from many things; the breakup of Rodinia, an eruption of a supervolcano, reduction in atmospheric concentrations of greenhouse gases, changes in Solar energy output, fluctuations of Earth's orbit, or as some may believe, "aliens". As additional ice builds, incoming radiation is reflected to space, further cooling the planet. This runaway effect is known as a positive feedback system, wherein the output feeds back into the input, increasing its magnitude each time. Eventually, the climate at the equator was like modern-Antarctica. However, the Earth persists, and global climate change attributed to increased greenhouse gases likely caused by volcanic eruptions, flips the switch from cooling to warming and the ice retreats. The demise of this icy time may have allowed for the subsequent explosion of multicellular life. Snowball Earth may still be a hypothesis, but it presses that the ideas surrounding Hoth are not entirely impossible for a world much closer to its star, and that when times get bleak, progress is just around the corner.

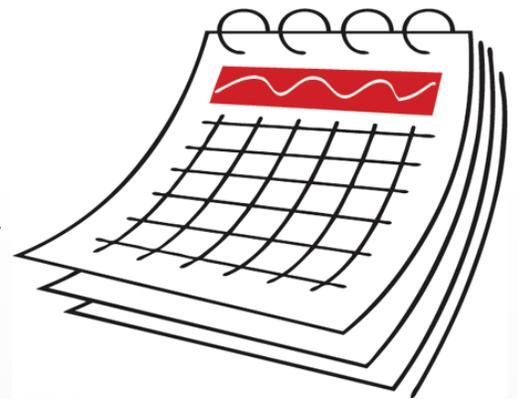
2021 will certainly be a tough year as we rebuild from the struggle of 2020, but together as geoscientists we know that time is constant, and life will press on. So, in similar fashion to Snowball Earth, let us flip the switch, keep our heads up and move forward, for whatever 2021 sends our way will be met with strength and courage, and we will persevere.

MGS President,
Spenser Kuhn

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Happy New Year
from the MGS!

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Meet Your New Officer: Michael Hofmann



“I am an Associate Research Professor at the University of Montana, CEO of AIM GeoAnalytics (a Montana based rock analytical lab), and co-founder of Cartalytics (a spatial data analytical platform).

In the most general terms, I am a geologist who seeks to understand the processes responsible for transportation, deposition, and preservation of sediments, at a variety of scales from pore scale to basin scale. As such, it is critical to me to look at processes that shape our world holistically, and to consider their dependencies when studying the rock record. Rocks exposed in outcrops or cores are the best archive of these interdependencies and are at the heart of my work, although my research is supplemented by a multitude of other methods and data, including remote sensing, geophysical, geochemical, paleontologic, geomorphic, and numerical modeling.

After receiving my Dipl.-Geol.-Univ. (M.S. equivalent) degree from the University of Erlangen-Nuremberg, Germany, I made my way to Montana and received a Ph.D. in Geology from the University of Montana. Following my academic training, I worked as a senior geologist for ConocoPhillips' Subsurface Technology, Sedimentary Systems, and Shale Stratigraphy groups in Houston, TX. About 10 years ago, and after working in sedimentary basins and on projects from around the globe, I was fortunate enough to be able to come back to Montana. Here I continue working on rocks from from around the globe, across North America, and I am lucky to work with my students on projects right here in Montana. I am honored to be on the MGS board and look forward to contribute to the MGS with my global and local experience and with my background as a hybrid academic and industry trained geologist.”

AAPG Representatives



Congratulations to our new AAPG Representatives!

John Pantano will serve as our MGS Delegate,
with Michael Hofmann as the MGS Alternate.

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Geology Podcast

Tippet Rise



*The following entry was submitted by
Past President Sarah Friedman:*

“I had the pleasure of working on a project for Tippet Rise Art Center this past month. Tippet Rise is a non-profit located in Fishtail, MT. The art center is situated on 12,000 acres of ranchland and has the Beartooth mountains as a backdrop. Part of their mission is for the center to be “... an intersection where art, music, land, sky, and poetry can weave together into an algorithm which is greater than the sum of its parts”.

In the past, Tippet Rise would host geology tours, to help facilitate the incorporation of “land” with the other components of the mission statement. In order to continue to engage with people about this unique hidden gem in Montana during the COVID days I worked with Zachery Patten, from Tippet Rise, and Dr. John Weber, from Grand Valley State University, to create a podcast about the land that forms Tippet Rise.

The podcast is free to listen to, it can be found at: <https://tippetrise.org/podcasts/the-story-of-the-land>. You can also read along with the podcast and follow with a geologic map at that site. I hope during this time, the picture that is painted through words can inspire you to visit and see this location when they open again (planned for 2021).”



MONTANA GEOLOGICAL SOCIETY

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