President Liz Cottrell called to order the meeting, GSW’s first virtual session not mandated by the pandemic, at 20:03 EDT.

Attendance
There were 43 attendees.

Minutes
The meeting began with the approval of the minutes from the previous meeting (1569th). The minutes of the 1560th meeting had been posted online and a Minute’s Minute was read aloud at the 1570th meeting. No corrections were noted, and the minutes were accepted.

New Members and Guests
One new member was announced: John Counts (USGS).

Six guests were introduced: Sourabh Shubham (UMD), Brenden Fischer-Femal (UUTAH), Jenna Elizabeth Reimer (UFllorida), Francesca Miozzi (Carnegie Institution), Dionysis Foustoukis (Carnegie Institution) and Phil Piccoli (UMD).

Announcements
1. Dan Doctor announced a November 20th USGS-sponsored field trip that will focus on the tectonic and landscape evolution history at the boundaries of the Blue Ridge Anticlinorium. Details are posted on the GSW website.

2. Liz Cottrell announced that all in-person attendees of next month’s Bradley Lecture (November 17 at AGU) must show proof of vaccination (electronic or paper) to enter the building. No exceptions will be permitted. This meeting will be hybrid for those who want to attend virtually.

3. Liz Cottrell announced “Blackneum,” an initiative to share stories, perspectives, and knowledge of Black people in the Natural History Museum community. Register for this October 17 -23rd event on Twitter @BlackInNHMs Black in Natural History Museums.

Informal Communication
There was no informal communication.

Obituaries
No obituaries were announced.

Formal Program
The formal program commenced at 20:19 EDT and consisted of three speakers: Johanna Teske (Carnegie Institution for Science), James W. Dottin, III (University of Maryland, College Park & Carnegie Institution for Science) and Dr. Courtney Wagner (National Museum of Natural History, Smithsonian Institution).
Johanna Teske presented “Holistic Characterization of Small Planets with the Magellan-TESS Survey.” Teske shared recent results on the characterization of small planets. Two questions that she and her collaborators hope to answer are: (1) Is there a range of super-Earth and/or sub-Neptune formation mechanisms and (2) What is the precise and accurate planet mass-radius relation in the <3 Rearth regime. The Magellan-TESS Survey (MTS) is designed to address these two questions in a statistically robust framework, combining transiting and radial velocity techniques to connect observed planet distributions to true underlying populations. MTS will include mass constraints, host star compositions, and system architectures of 30 small planets detected by TESS across a range of insolation fluxes. Its statistical robustness arises from quantifiable and uniformly applied choices for transiting planet target selection and radial velocity observation cadencing, a new feature compared to most previous follow-up surveys. Teske presented the MTS findings and explained the hierarchical Bayesian modeling of the mass-radius relation. She discussed next steps for the survey including plans for combining it with atmospheric follow-up and stressed that the MTS-style approach to population studies will become increasingly important as the era of exoplanet characterization deepens, making observational constraints more technically challenging and expensive. Talk Length: 21’13”

Questions were asked by: Larry Meinert (Economic Geology & CSM), Carl-Henry Geschwind (Independent Researcher, retired), Ved Lekić (UMD), Beth Doyle (NVCC/Marymount U) and Liz Cottrell (NMNH).

James W. Dottin, III presented “Isotopic Constraints on the Lunar Sulfur Cycle.” Dottin described how he uses sulfur isotope measurements in lunar soils to place constraints on sulfur cycling on the lunar surface. The origin, evolution, and cycling of volatiles on the moon are established by processes such as the giant moon forming impact, lunar magma ocean degassing, mantle crystallization and degassing, and lunar surface gardening events. These processes are typically controlled by mass dependent fractionation processes and, as such, have been readily documented in a variety of stable isotope systems (such as K, Cl, Zn, S, etc.). However, a role for mass-independent processes, such as atmospheric photochemistry, has yet to be demonstrated and can have implications for the evolution of the tenuous lunar atmosphere with time and the potential establishment of an isotopically distinct lunar mantle from Earth. Dottin presented the first high precision quadruple sulfur isotope measurements on lunar soils and glasses collected during Apollo 17. He reported that mass-independent fractionation of sulfur in lunar regolith is observed from at least one site and not in regolith from other sites. This signature is attributed to photochemistry in sunlit regions and the absence of such a signature is ascribed to gardening in shadowed areas. Talk Length: 20’00”

Questions were asked by: Liz Cottrell (NMNH), Mark Tyra (NIST), Larry Meinert (Economic Geology & CSM), Mong-Han Huang (UMD) and Johanna Teske (Carnegie Institution for Science and Ved Lekić (UMD).

Courtney Wagner presented “Navigating through Environmental Disasters with Magnetofossils.” Wagner introduced us to characteristics of magnetotactic bacteria and magnetofossils and described how both inform aspects of environmental magnetism and environmental change. Talk Length: 18’52”

Questions were asked by: Carl-Henry Geschwind (Independent Researcher, retired), Mong-Han Huang (UMD), Liz Cottrell (NMNH), Ved Lekić (UMD) and Bev Walker (NSF).

President Cottrell adjourned the 1570th meeting at 22:14 EDT.

Respectfully submitted,

Beth Doyle