

Draft Minutes for the 1562<sup>nd</sup> meeting of the Geological Society of Washington  
February 17, 2021  
Video Conference via Zoom

President Liz Cottrell called the meeting to order at 20:04 EST.

#### Attendance

There were 83 attendees.

#### Minutes

The meeting began with the approval of the minutes from the previous meeting (1561st). The minutes of the 1561st meeting had been posted online and a Minute's Minute was read aloud at the 1562nd meeting. No corrections were noted, and the minutes were accepted.

#### Guests and New Members

Twelve guests were introduced: Ann Benbow (Mineralogical Society of America), Larry Malinconico (Lafayette College), Kristina Walowski (Western Washington U), Catherine O'Hara (U Oregon), Puneet Singh (U South Florida), Charlotte Devitre (Cornell U), Kara Brugman (Carnegie Institution), Hannah Shamloo (Oregon State U, Central Washington U in 2022), Bryana McKay (U Montana), Madeline Mennenga (Grand Valley State U), George Guice (NMNH) and Ellen Olsen (U Oregon).

No new members were introduced.

#### Announcements

1. Larry Meinert raised an objection to minutes from 25 years ago. He noted that one of the historic GSW talk titles displayed at the opening of this 1562nd meeting contained a typographical error. Charles Cunningham's 1996 presentation at the 1273<sup>rd</sup> meeting should read "Age and thermal history of Cerro Rico de Potosi, Bolivia: the world's largest silver deposit."

2. Liz Cottrell urged all to join or renew their GSW membership as dues are critical to the financial health of the Society. Renewal notices were emailed out and may be in junk or other folders. The application is on the GSW website and early career and student memberships are discounted. Soon members will be able to sponsor memberships. Questions about membership can be sent to Everett Johnson whose email address was posted in the Chat.

3. Mong-Han Huang announced that NASA will show the live session of the Perseverance landing on Mars tomorrow at 2:30 p.m. EST. This rover is expected to enter the atmosphere at 3:30 p.m. and to land at 3:55 p.m.

4. Liz Cottrell put out a call for a new GSW database manager. The current manager, Dan Doctor converts the meeting minutes into a searchable format in the SQL Server. Anyone interested in taking over this position should connect with Liz whose email is posted in the Chat. Liz added

that GSW Archivist Tim Mock pointed out that if the position is not filled then 42 years from now the history slides cannot be made.

### Obituaries

There were no obituaries.

### Informal Communication

1. Mike Ackerson circled back on the pre-meeting exchange about NMNH collections and noted that the Smithsonian's National Rock and Ore Collection is an amazing historical resource. Anyone interested in seeing some "sciency" rocks can contact him.

2. Mike Ackerson shared information about URGE (Unlearning Racism in Geoscience), an NSF-funded and geoscientist-led initiative where working groups ("pods") meet to learn more about racism in the geosciences and to develop and refine anti-racist strategies. Mike also encouraged all to check out the URGE website for excellent resources.

### Formal Program

The formal program commenced at 20:24 EST and consisted of three speakers:

Dr. Michelle Muth (University of Oregon), Dr. Yan Zhan (EPL, Carnegie Science) and Dr. Kyle Anderson (USGS).

Dr. Michelle Muth presented "The Origin of Sulfur in Volcanic Arcs." Dr. Muth opened by pointing out that sulfur released during volcanic eruptions can have dramatic effects on local and global climate and that measurements of sulfur outgassing at volcanoes are also a key part of volcano monitoring efforts. Questions persist about sulfur behavior within volcanoes. At volcanic arcs, the ability to interpret sulfur measured in gases and rocks is especially hindered by uncertainty around its origins. Sulfur in arc volcanoes could be sourced from sulfide minerals within mantle peridotite, or from dehydrating fluids and melts released from subducting plates. These two potential sources can drive large differences in the behavior of sulfur once magmas rise into the Earth's crust. Muth shared how she uses the geochemistry of melt inclusions, tiny parcels of trapped silicate melt to reveal the origin of sulfur in arc magmas and how sulfur behaves during early magma differentiation. *Talk Length: 18'51"*

Questions were asked by Dennis Geist (NSF), Bill Burton (USGS Emeritus), Mong-Han Huang (UMD), Larry Meinert (USGS Emeritus), Steve Shirey (Carnegie Institution), Liz Cottrell (NMNH) and Janine Andrys (U Rhode Island and NMNH).

Dr. Yan Zhan presented "An Instant Pot Model for Volcanic Degassing." Dr. Zhan said that before most volcanic eruptions, restless behaviors, such as gas emission, surface deformation, temperature changes, and earthquakes can be observed. Quantitative tools are essential to

understand what is happening inside a volcanic system and help to determine when the volcanic system reaches a critical condition leading to the next eruption. Zhan walked us through a case study that used a thermo-mechanical model to explain the multiple precursory signals observed before the 2006 explosive eruption of Augustine volcano, Alaska. Zhan posited that an instant pot is a perfect analog of the model of Augustine. He explained that when bubbles exsolved from deep magma or soup can escape from a volcanic system or an instant pot, no pressure can be built to drive surface deformation. However, when the steam is not allowed to escape from a volcano or instant pot, the accumulated pressure can easily create deformation and finally break the system. *Talk Length: 15'06"*

Questions were asked by Liz Cottrell (NMNH), Mong-Han Huang (UMD) and Bill Burton (USGS Emeritus).

Dr. Kyle Anderson presented "Geophysical Insights From the World's Best-Documented Caldera Collapse: Kilauea Volcano, 2018." Dr. Anderson explained that the 2018 summit eruption and caldera collapse at Kilauea Volcano offers an unrivaled opportunity to understand basaltic caldera formation and the magma plumbing system. The caldera formed in a series of 62 discrete meters-scale collapse events and ultimately grew to a volume of 0.8 cubic kilometers and a depth of over 500 m. Anderson shared how caldera formation was documented using extensive geophysical monitoring networks, remote-sensing observations, and geological investigations. Abrupt geodetic offsets and very-long-period earthquakes were recorded during collapse events and shared many similarities with observations at historic basaltic collapses at other volcanoes, suggesting common physical processes. Anderson discussed recent and ongoing research efforts at Kilauea, as well as some open questions. He said that investigations have permitted remarkable insight into properties of the sub-caldera magma system (location, volume, and exsolved volatile content), the mechanics of caldera collapse, and the forces driving the eruption, with implications for basaltic caldera collapses around the world. *Talk Length: 20'09"*

Questions were asked by Mong-Han Huang (UMD), Ian Saginor (Independent Researcher), Bill Burton (USGS Emeritus), Larry Malinconico (Lafayette College) and Liz Cottrell (NMNH).

President Liz Cottrell adjourned the 1562nd meeting at 21:59 EST.

Respectfully submitted,

Beth Doyle