

Draft Minutes for the 1576<sup>th</sup> meeting of the Geological Society of Washington

March 23, 2022

John Wesley Powell Auditorium, Cosmos Club, Washington, D.C.

President Larry Meinert called the meeting to order at 20:08 EDT.

#### Attendance

There were 54 attendees, 21 in-person and 33 on Zoom.

#### Minutes

The meeting began with the approval of the minutes from the previous meeting (1575<sup>th</sup>). The minutes of the 1575<sup>th</sup> meeting had been posted online and a Minute's Minute was read aloud at the 1576<sup>th</sup> meeting. No corrections were noted, and the minutes were accepted.

#### New Members and Guests

One new member was introduced: Sasha LaPonsa (U.S. House of Representatives).

One guest was introduced: Mary Ackerson (Mike Ackerson's (NMNH) mother).

#### Announcements

Mike Purucker announced the giveaway of a NASA 2022-23 fourteen-month calendar featuring agency scientists and stunning images of Earth and beyond.

#### Informal Communication

There was no informal communication.

#### Obituaries

There were no obituaries.

#### Formal Program

The formal program commenced at 20:10 EDT and consisted of three speakers: Dr. Anne Pommier (Earth and Planets Laboratory, Carnegie Institution of Science), Dr. Robert Poirier (United States Geological Survey) and Dr. Jan Hellmann (Dept. of Geology, University of Maryland).

Dr. Anne Pommier presented "The Interior of Terrestrial Planets and Moons as Revealed by Their Electrical Properties." Pommier stated that an outstanding goal in planetary science is to understand how terrestrial planets and moons evolved to have the composition, thermal state, and magnetic field that we observe today. To achieve that goal requires the integration of datasets from space missions with experiments in the laboratory. Over the past decade, technological advances have enhanced the capability to conduct in situ measurements of physical properties on samples that are analogs to planetary mantles and cores. Pommier explained how electrical conductivity experiments at extreme pressures and temperatures are used to probe the structure and dynamics of the Earth and other terrestrial bodies. She shared data showing that electrical properties are closely connected to models of the thermal evolution and composition of cores. Pommier also highlighted applications to several metallic cores, as well as connections with field observations from space. *Talk Length: 21'25"*

Questions were asked by: Jamie Allan (NSF), Liz Cottrell (NMNH), Yasmina Martos (NASA), Mike Purucker (NASA), George Helz (UMD) and Larry Meinert (Economic Geology & CSM).

Dr. Robert Poirier presented "Paleo-perspectives on Future Sea Level Projections for the U.S. Atlantic Coast." Poirier opened by noting that a recent NOAA report concludes that sea level is expected to rise on average by 0.25-0.30m (i.e., 10-12 inches) along the contiguous U.S. coastline, and up to 0.45m (i.e., 18 inches) along the

Atlantic Coast, by the year 2050. While these estimates should be viewed as generally robust, they also identify the need for continued improvements to our understanding on various processes affecting sea level. Poirier said that research that builds upon previous efforts to reconstruct late Quaternary and Holocene sea level of the U.S. Atlantic coastline is providing a means to more effectively isolate and understand various contributions to local and regional sea level, including land-based ice melt, thermal expansion, vertical land movement, and changes in the ocean circulation system. He reviewed the key contributors to regional sea level on the U.S. Atlantic Coast and presented results from multiple time periods that can be used to improve model reconstructions of past sea level change. Poirier concluded his talk by addressing the long-term plan. He said that ultimately, insights from the recent past can be applied to provide better constraints on what can be expected in the future under various scenarios. *Talk Length: 19'48"*

Questions were asked by: Larry Meinert (Economic Geology & CSM), Gabriela Farfan (NMNH), Jamie Allan (NSF), Laura Dwyer (U.S. Army Corps of Engineers, Retired) and Yasmina Martos (NASA).

Dr. Jan Hellmann presented "Fractionation and Mixing Processes in the Early Solar System Inferred from Tellurium Isotope Variations in Chondrites." Hellman explained that fractionation and mixing processes in the early Solar System is important to understand because ultimately, they define the chemical characteristics of the planetary building blocks and Earth. For instance, meteoritic and planetary materials are variably depleted in volatile elements compared to the composition of CI chondrites and the Sun. However, the origin of these volatile element fractionations and how they are related to volatile loss during high-temperature processes within the solar nebula, remains poorly understood. Hellman showed how variations in stable tellurium (Te) isotopic compositions can constrain the origin of volatile element depletion in carbonaceous chondrites and described how these insights hold important clues on the nature and origin of the materials that contributed to Earth's volatile element budget. *Talk Length: 20'59"*

Questions were asked by: Steve Shirey (Carnegie Institution), Liz Cottrell (NMNH), Mike Walter (Carnegie Institution), Graham Lederer (USGS) and Mike Ackerson (NMNH).

President Meinert announced that the next meeting is on April 6<sup>th</sup> and will be virtual. He then adjourned the 1576<sup>th</sup> meeting at 21:51 EDT.

Respectfully submitted,

Beth Doyle