

Draft Minutes for the 1607th meeting of the Geological Society of Washington
January 29th, 2025
Carnegie Earth and Planets Laboratory

President Ved Lekić called the meeting to order at 20:08 EDT.

Attendance

There were 64 attendees in-person, and 9 online.

Minutes

The meeting began with the approval of the minutes from the previous meeting (1606th). The minutes of the 1606th meeting had been posted online and a Minute's Minute was read aloud at the 1607th meeting.

Guests and New Members

Six guests were announced, including two students from UMD, as well as attendees from the USGS, NOAA, the Bureau of Engraving and Printing, and an aerospace engineer. One new member was announced: Sara ElShafie (Milken Institute).

Obituaries

A moment of silence was held for Sorena Sorensen (Smithsonian and 1998 GSW President), followed by remembrances from Brooks Hanson (AGU) and Jamie Allan (NSF), both former Smithsonian postdocs. B. Hanson spoke about Sorensen's dedication to rigorous research, her commitment to mentorship, and her efforts to improve the culture of science and collaboration. J. Allan shared warm anecdotes about Sorensen's impactful mentorship and her lasting contributions to GSW. He also highlighted her wit and conciseness, encouraging all to read the GSW minutes she recorded as meeting secretary in 1988, available on the GSW website under the *Search Database* tab, within the *Browse the GSW Minutes* section.

Announcements

President Ved Lekić made three announcements. He thanked the team at Carnegie Science for hosting the meeting, including Mike Walter, Rachel Rausch, Alycia Alexander, Joshua Skrine, and the EPL facility team. He reminded attendees that it is membership renewal season and encouraged members with questions about their status or number to reach out to him or Jonathan Tucker, noting that Jonathan Tucker and Dan Doctor are working on transitioning to the new membership platform. He also announced that meetings will not always be held at the Cosmos Club this year, with GSW returning to Carnegie Science for two more meetings and implementing a hybrid format.

Informal Communication

None.

Formal Program

The formal program commenced at 20:37 EDT and consisted of three speakers: Elizabeth ‘Zibi’ Turtle (Johns Hopkins University), Sinéad Farrell (University of Maryland), and Marc Neveu (NASA Goddard / University of Maryland).

1st formal talk: Zibi Turtle presented, “Exploring the Ocean Worlds Europa and Titan with Europa Clipper and Dragonfly.” For the Europa Clipper mission, she discussed its science objectives, the unique challenges of a flyby mission, instrument characteristics (particularly the cameras), and strategies for detecting activity. Over 800 people contributed to the development of the cameras for this mission. For more details, a recent paper has been published in *Space Science Reviews* (DOI: 10.1007/s11214-024-01115-9). For the Dragonfly mission, she covered key mission elements, scientific goals—including prebiotic chemistry, habitability, and the search for biosignatures—and the exploration strategy. An augmented reality model of Dragonfly is available online at dragonfly.jhuapl.edu. *Talk length: 20 minutes.*

Questions were asked by: Mike Purucker (NASA), John Christoph (Smithsonian), Mike Wong (Carnegie), Jeff Grossman (NASA), and Johnathon Tucker (National Academies), and *unknown name* (NASA Goddard). Many of the questions focused on the logistics of the Dragonfly mission, including whether and how JWST contributes to the mission, the likelihood of unexpected features at the landing site, and strategies to prevent icing due to Titan’s weather conditions. Additional questions addressed biosignatures on Titan and the opportunity to study other moons during the Europa Clipper mission.

2nd formal talk: Sinéad Farrell presented, “Pole to Pole: Earth’s Declining Sea Ice.” She discussed the physical processes driving sea ice changes, including air-ice-ocean interactions, ice growth and loss, and the annual sea ice cycles. She highlighted the multi-decadal decline in Arctic sea ice, regional changes, and the loss of the oldest, thickest ice, as well as the abrupt decline in Antarctic sea ice. She also touched on how these changes are measured using remote sensing, particularly ICESat-2 and its Advanced Topographic Laser Altimeter System (ATLAS). *Talk length: 25 minutes.*

Questions were asked by: Liz Cottrell (Smithsonian), Dan Doctor (USGS), John Christoph (Smithsonian), and Ved Lekić (UMD). Questions regarded the drivers of atmospheric circulation, connections between ice formation in the Arctic and Antarctic, the influence of petrologic characteristics like porosity and density on ice dynamics, and the significance of observed step changes in ice behavior.

3rd formal talk: Marc Neveu presented, “How depressurization during cryovolcanic eruption affects relative abundances of amino and fatty acids sought as biosignatures on ocean worlds.” He discussed recent work (Neveu et al. 2024, *EPSL*, DOI: 10.1016/j.epsl.2024.118622) and the Simulator of Ocean World Volcanism (SOWCr) setup. He detailed the procedure for simulating plume ejection, the impact of liquid-to-vacuum transitions on amino acid abundance ratios, and how cryovolcanic processes influence the relative abundances of amino and fatty acids. He also mentioned upcoming work on an advanced "Super" SOWCr model. *Talk length: 21 minutes.*

Questions were asked by: Ved Lekić (UMD), Zibi Turtle (JHU), Francesca Miozzi (Carnegie), and *unknown name* (NASA Goddard). Questions covered technical aspects of the model, including variations

along its length and its application to plumes, particularly regarding temperature, as well as the biotic vs. abiotic fraction on Earth.

President Lekić adjourned the meeting at 22:25 EDT.

Submitted by Jessie Bersson (Smithsonian), GSW meeting secretary