**First Annual Hercules Dome Ice Core Workshop & Open Science Meeting, May 10-11, 2021**

Monday, May 10, 2021: All Times Mountain Daylight Time

9:00-9:40. **Welcome, Introduction, and Project Update**

*Eric Steig*, University of Washington (UW) – Welcome
*Paul Cutler*, NSF – Update from the National Science Foundation
*Mark Twickler* & *Joe Souney*, University of New Hampshire – Project Planning and Logistics
*Jay Johnson*, University of Wisconsin – Drilling technology

9:40-10:45. **Session 1: Characteristics of Hercules Dome**

*T.J. Fudge* (UW) & *Nick Holschuh* (Amherst College) – Site selection and ice-sheet modeling
*Weisen Shen*, Stony Brook U. – Seismic & thermal structure beneath Hercules Dome and why we want to know more
*Tobias Staal*, U. of Tasmania – Geothermal heat flow in Hercules Dome region - results & uncertainties
10:15 Breakout rooms (10 min.) followed by Panel Discussion (20 min.)

10:45-12:15. **Session 2: Motivations and context for drilling at Hercules Dome**

*Marina Dütsch*, University of Vienna – Response of water isotopes in precipitation to a collapse of the WAIS in high-resolution simulations with the Weather Research and Forecasting Model
*Mackenzie Grieman*, University of Cambridge – SkyTrain Ice Rise
*Ed Brook*, Oregon State University – $CO_2$ changes during glacial terminations and inceptions
*Murat Aydin*, University of California, Irvine – SPICEcore trace gas measurements and implications for the Hercules Dome project.
11:45 Breakout rooms (10 min), followed by Panel Discussion (20 min.)

12:15 **Lunch/Afternoon Break (45 min.)**

1:00-2:20. **Session 3a: Short-version talks (<5 min.)**

*John Patterson*, University of California, Irvine – $H_2$ in Ice Cores
*Julia Marks-Peterson*, Oregon State University – Developing high precision $CO_2$ measurements
*Jenn Campos Ayala*, University of California – Acetylene from ice cores throughout the Holocene
*Vasilii Petrenko*, University of Rochester – $^{14}CO_2$ to improve the radiocarbon calibration curve
*Erich Osterberg*, Dartmouth – Circulation changes recorded in microparticle flux, size & chemistry
1:20 Discussion (10 minutes)
*Julia Andreasen*, University of Minnesota – Snow accumulation time series of coastal WAIS
*Thomas Chen*, Academy for Mathematics, Science, and Engineering – Machine learning for climate change insights from ice core data
*Erin Pettit*, Oregon State University – Deformation, climate, & physical properties from borehole observations
*Julien Bodart*, University of Edinburgh / BAS – Age-depth stratigraphy of Pine Island Glacier
1:55 Breakout rooms (10 min), followed by Panel Discussion (15 min.)

2:20 Break (10 min.)

2:30-3:30. **Session 4: Larger Context**

*Natalya Gomez*, University of Montréal – Links between Antarctic ice dynamics, glacial isostatic adjustment and global sea level
*Ted Scambos*, University of Colorado – The International Thwaites Glacier Collaboration
3:05 Panel Discussion

3:30 End for the day

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9:00-10:00. **Session 5. More on Hercules Dome characteristics**

*Murat Aydin*, University of California, Irvine – Welcome
*TJ Young*, University of Cambridge – Polarimetry methods
*Ben Hills*, University of Washington – Polarimetry Results at Hercules Dome
*Annika Horlings*, University of Washington – Surface mass balance at Hercules Dome
9:45 Discussion

10:00-11:00 **Session 6. Engagement with Antarctic Research**

*Guillaume Mauger*, UW – Washington Coastal Resilience Project and connecting sea level rise science to decision-makers
*Peter Neff*, U. of Minnesota – Role of social media in science engagement & broadening participation
*Helen Glazer*, Independent Artist – Art as a tool for communicating science
*Gifford Wong*, IDA Science and Technology Policy Institute – Science-policy interface and career pathways for science outside of academia
10:40 Discussion moderated by Heidi Roop

11:00 Break (10 min)

11:10-12:15 **Session 7: More motivations and context for Hercules Dome**

*Sarah Shackleton*, Princeton – Mean ocean temperature in Marine Isotope Stage 5: insight into early interglacial climate, and future work
*Dave Reusch*, UW – Observing and understanding precipitation, accumulation and meteorology in the Hercules Dome region
*Greg Balco*, Berkeley Geochronology Center – Subglacial bedrock recovery drilling and exposure dating
*Marissa Tremblay*, Purdue University – Noble gases in rock
12:00 Discussion (15 min.)

12:15 Lunch/Afternoon Break (45 min.)

1:00-2:20. **Session 8: Short-version talks** (<5 min., *= 10 min.)

**Juliana D'Andrilli*, Louisiana Universities Marine Consortium – Polar ice core organic matter signatures reveal past atmospheric carbon composition and spatial trends
**Paolo Gabrielli*, The Ohio State University – Elemental characterization of single mineral particles by mass spectrometry: a novel tool to infer past environmental and climate variability from ice cores
*Shuting Zhai,* UW – Anthropogenic Impacts on Tropospheric Reactive Chlorine since the Preindustrial
*Dominic Winski*, University of Maine – Holocene sea ice variability from South Pole ice core chemistry
1:30 Discussion (10 min.)
*Aaron Chesler*, University of Maine – The SPICEcore microparticle record.
*Jihong Cole-Dai*, South Dakota State University – Ice core chemical measurements - tools to date cores and to investigate ice sheet variations and ocean biogenic emissions
*Andrew Pauling*, UW – Non-linear modeled climate response to Antarctic topography change
*Jessica Badgeley*, UW – Inferring paleoaltimetry of the Antarctic Ice Sheet from ice cores
2:00 Panel Discussion (20 min.)

2:20 Break (10 min.)

2:30-3:30. **Session 9: Advances in Ice Core Research**

*Christo Buizert*, Oregon State University – Δage as a temperature proxy at Hercules Dome
*Laurence Yeung*, Rice University – Using the ice-core record to investigate the ancient free troposphere
3:05 Panel Discussion

3:30 *Hercules Dome Leadership Team* – Wrap up/next steps.