SONIFICATION: A TOOL FOR RESEARCH, OUTREACH AND INCLUSION IN SPACE SCIENCES
17 NOVEMBER 2022

BACKGROUND

UNOOSA is committed to advancing efforts towards an inclusive future for space sciences. The importance of science, technology and innovation will only grow in future. It is imperative to ensure that more people are empowered to access space sciences and contribute to international cooperation in the peaceful use and exploration of space.

For too long persons with disabilities have been excluded from full participation in space sciences. For persons who are blind and visually impaired (BVI), there are huge barriers to accessing the opportunities afforded by space science. One such barrier is the sector's reliance on data visualisation for research, outreach, and education. The power of spectacular images of space to inspire and spark curiosity is unquestionable, but by assuming that sight is the only way to explore space we exclude the BVI community, who have equal right to full participation in space sciences. In fact, astronomical data comes from multiple wavelengths that mostly cannot be seen by our eyes. By exploring different ways to interpret and communicate data we open doorways to new discoveries and a more inclusive future.

Sonification, in which non-verbal sound is used to interpret, analyse, and communicate data, is a powerful tool for equitable access to space sciences. However, there is much work still to be done. It is the responsibility of all of us, from UNOOSA to research institutions, to individuals, to encourage and advocate for tools like sonification, and commit to mainstreaming disability inclusion in our work. Only by working together can we build a truly diverse and inclusive space sector for the benefit of everyone.

INTRODUCTION

This online event aims to explore sonification as a tool that has the potential to contribute to scientific research, outreach and disability inclusion. This event comprises of two segments. Segment one showcases a diverse range of sonification projects in space sciences while segment two is an online panel discussion where we unpack the complexities surrounding the use of sonification in space sciences.

The panel discussion brings together professional astronomers and experts in sound perception, science communication and accessibility to discuss the current state of sonification in space science, challenges in implementation, recommendations on how to facilitate the advancement and adoption of sonification in space science research and outreach, and what to expect in the coming years.

Participants are encouraged to share their experiences and ask questions during the Q&A session. Ideas and information collected will inform an upcoming Space for Persons with Disabilities special report on sonification.

Participants are encouraged to view segment 1 before joining segment 2.

OBJECTIVES

1. To raise awareness of the challenges facing persons with disabilities, in particular the BVI community, in space science research and outreach and the need for innovative solutions
2. To explore the use of sonification as a tool to enhance the multi-sensory approach to scientific research and outreach, thereby advancing disability inclusion
3. To identify key challenges that need to be addressed to realise the potential of sonification for disability inclusion in space science
4. To collect ideas and information for a Space for Persons with Disabilities special report on sonification
5. To contribute to the implementation of SDG 10: Reduced Inequalities
6. To contribute to the implementation of the UN Disability Inclusion strategy

PROGRAMME

Date: Thursday, 17 November 2022

Time: 14:00 to 15:30 Central European Time

Location: Online, on MS Teams

Speakers:

- Wanda Diaz-Merced, astronomer, European Gravitational Observatory, pioneer in sonification of astrophysical data
- Kimberly Arcand, visualization scientist and emerging technology lead for NASA's Chandra X-ray Observatory
- Scott Fleming, astronomer, Mikulski Archive for Space Telescopes, Space Telescope Science Institute
- Christopher Harrison, astrophysicist, Newcastle University, Audio Universe Director
- Alice Oates, PhD candidate, polar studies, University of Cambridge

SPEAKERS' BIOS

- Wanda Diaz-Merced

Dr. Wanda Díaz-Merced is from Puerto Rico. Wanda received a doctorate in computer science from the University of Glasgow, Scotland. She specializes on the use of audio to study space science telemetry. Wanda was awarded the first google scholarship for peoples with disabilities and is an honorary ambassador of Soka University in Japan. She has worked for over 15 years on establishing a framework for sound to be used in scientific data analysis.

- Kimberly Arcand

Dr. Kimberly Arcand is a leading expert in astronomy visualization/vivification and has been a pioneer in 3D imaging, printing, and extended reality applications with astrophysics data. She has worked for NASA's Chandra X-ray Observatory at the Smithsonian Astrophysical Observatory since 1998. She is an expert in studying the perception and comprehension of high-energy data visualization across the novice-expert spectrum. Her current projects include sonification of spatial data, screen-based holograms and other intersections of emerging technology and astrophysics. She has co-written eight non-fiction science books including two science-related children's books.

- Scott W. Fleming

Dr. Scott W. Fleming has a PhD in astrophysics from the University of Florida, and is currently a Branch Manager at the Space Telescope Science Institute in Baltimore, Maryland, USA. His team of engineers and astronomers develops the search interfaces and tools for the Mikulski Archive for Space Telescopes (MAST), home to more than 20 missions in the ultraviolet, optical, and infrared. These missions include Hubble, Webb, TESS, and the upcoming Nancy Grace Roman space telescopes. He has published more than 70 peer-reviewed publications as an author or co-author. His science interests are exoplanets, brown dwarfs, and variable stars of all kinds in the ultraviolet, optical, and infrared. His is a proponent of open data, open-source programming, archival research projects, and increasing accessibility for professional astronomers.

- Christopher Harrison

Dr. Christopher Harrison is in astrophysicist at Newcastle University in the UK. Previously he held a fellowship at the European Southern Observatory in Germany. His primary research is studying the evolution of galaxies and their central supermassive black holes. However, over the last three years he has had a growing interest in developing multi-sensory approaches for astronomy research, education, and accessibility. Christopher and his collaborators, with their project, 'Audio Universe', have been researching and creating new methods to use sound and tactile models to represent astronomical data and concepts. You can find out more at www.audiouniverse.org.

- Alice Oates

Alice Oates is a PhD candidate at the University of Cambridge, UK. She was an intern in the Space for Persons with Disabilities project and played an integral role in the consultation phase of the sonification research project. Her PhD research focuses on polar studies in Antarctica via the history of Britain's Halley research station and is conducted in partnership with the Royal Geographical Society (with IBG) and Royal Society.

CONTACT

For more information, please contact unoosa-events@un.org

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