EGU23-13888, updated on 29 Mar 2024
https://doi.org/10.5194/egusphere-egu23-13888
EGU General Assembly 2023

Lend Me Your Ears: Space Weather Citizen Science Through Harnessing Sonification

Martin Archer[1], Michael Hartinger[2], Marek Cottingham[1], Xueling Shi[3], Evaldas Vidugiris[2], Anne Holland[2], James Harold[2], Emmanuel Masongsong[4], Duke Hill[3], Michael Fox[1], Shane Coyle[3], Robert Alexander[5], Alessandra Pacini[6], and Robert Candey[7]

[1]Space and Atmospheric Physics, Imperial College London, Department of Physics, London, United Kingdom of Great Britain – England, Scotland, Wales (m.archer10@imperial.ac.uk)

[2]Space Science Institute, USA

[3]Virginia Tech, Blacksburg, USA

[4]Department of Earth, Planetary, and Space Sciences, University of California Los Angeles, USA

[5]Auralab, USA

[6]National Centers for Environmental Information, National Oceanic and Atmospheric Administration, Boulder, USA

[7]Space Physics Data Facility, NASA Goddard Space Flight Center, Greenbelt , USA

The changing conditions in near-Earth space cause space weather. This poses a risk to our everyday lives through the technology we rely upon through impacts on crucial power, communications, navigation, and transport systems. Analogues of sound in the space plasmas around our planet, known as Ultra Low Frequency (ULF) waves, are one means by which energy is circulated from the solar wind to the radiation belt, auroral, and ionospheric regions. Time-series data of ULF waves is often analysed visually, however, such data lends itself more naturally to our sense of sound. Guided by experts in audio, citizen science, and public engagement, we have developed sonification tools that render ULF waves audible. Alongside this, a graphical user interface has been developed, enabling citizen scientists to highlight signals within this audible data that standard methods can struggle to identify. These efforts are part of a NASA-funded pilot project called HARP (Heliophysics Audified Resonances in Plasmas), where high-school students and members of the public contribute to space weather science through listening. We provide an overview of how we carefully developed and tested this citizen science project before launching it publicly.