Data Sonification with the Seismic Signature of Ocean Surf

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As the explosion of data collecting technologies has led to complex datasets, a problem facing many fields of study is interpreting massive amounts of data. Sonification, transforming data into sound, offers an innovative solution to this, especially in the study of seismic data, which may yield information about wave conditions and have predictive value. Fourier transform of seismic data created frequency spectra that were filtered for areas of interest in both low and high frequency ranges. After filtering out values, parameter mapping was used by assigning frequency to pitch and amplitude to volume to create audio of seismic data. In generated sound files, distinct sonic events of loud booms of high and low frequencies and a "fluttering" effect signify important wave conditions. The loud, low frequencies represent long periodic waves with much energy, and the fluttering is the possible breaking up of such waves after hitting the shoreline. The loud high frequency wave has been interpreted as incident surfs. These distinguishable sounds show that sonification may be a useful method of processing seismic data and eventually may be used in real time for predicting dangerous surf conditions like rip currents.

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