The Ansible: A Space Data Synthesizer

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Motivation

Sonification (turning data into sound) is a popular method of representing space data.

Can we make sonifying space data interactive?
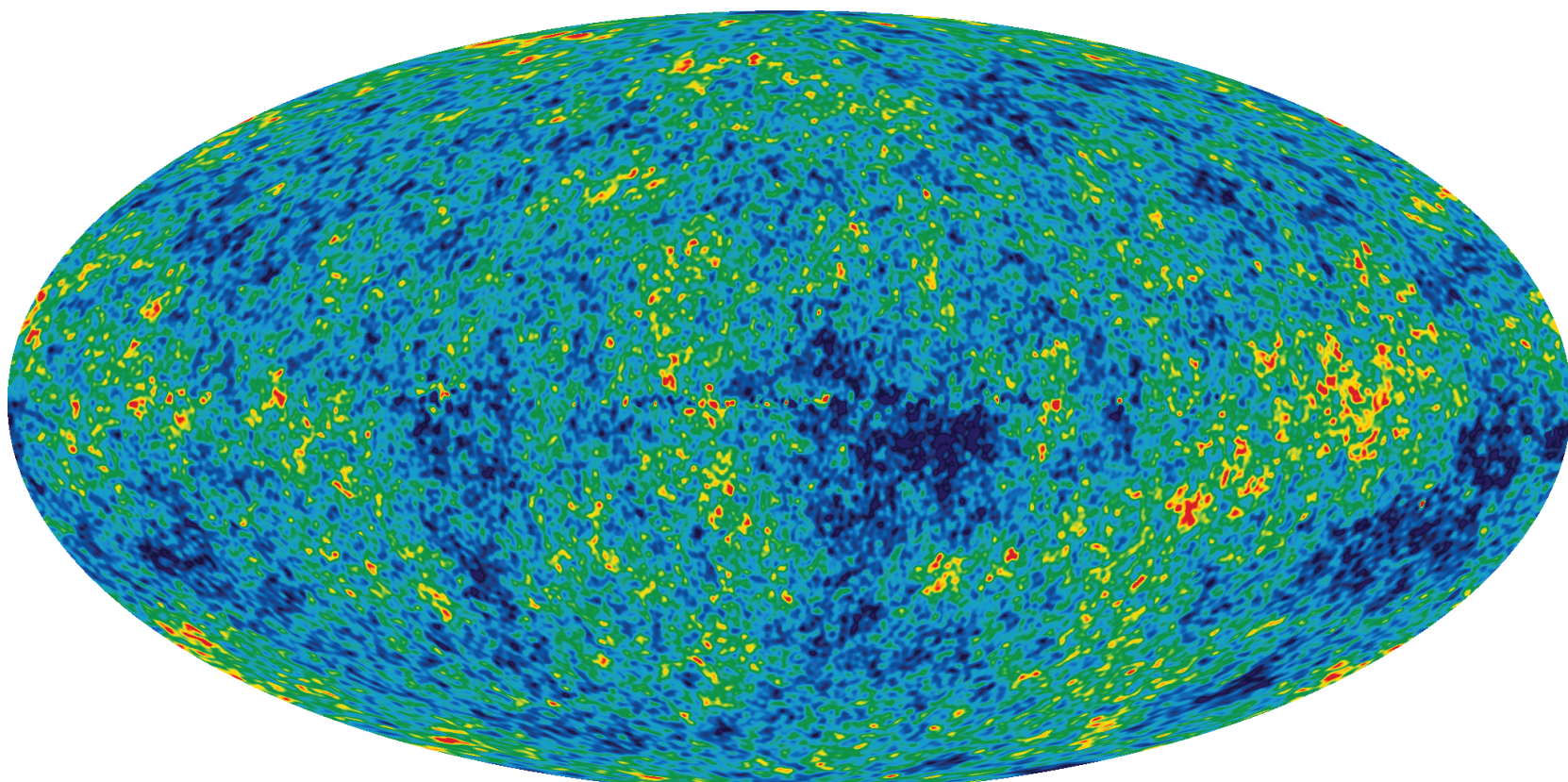
Background
(no pun intended)

Figure 1: WMAP's final "baby picture of the universe". The color represents temperature fluctiations in the range of ±200uK (0.0002 K)
Image credit: NASA / WMAP Science Team

Cosmic Microwave Background Radiation (CMBR) is radiation (heat) left over from the Big Bang

Previously thought to be the same temperature everywhere (isotropy), but was found to have small variations (anisotropy)

Variations were recorded by the Wilkinson Microwave Anisotropy Probe (WMAP) from 2001 to 2010 [1]

[1] https://map.gsfc.nasa.gov/mission/sgoals_universe.html

Goal

Develop a synthesizer that allows people to interact with CMBR data expressively, and deepens their understanding of CMBR.

Implementation
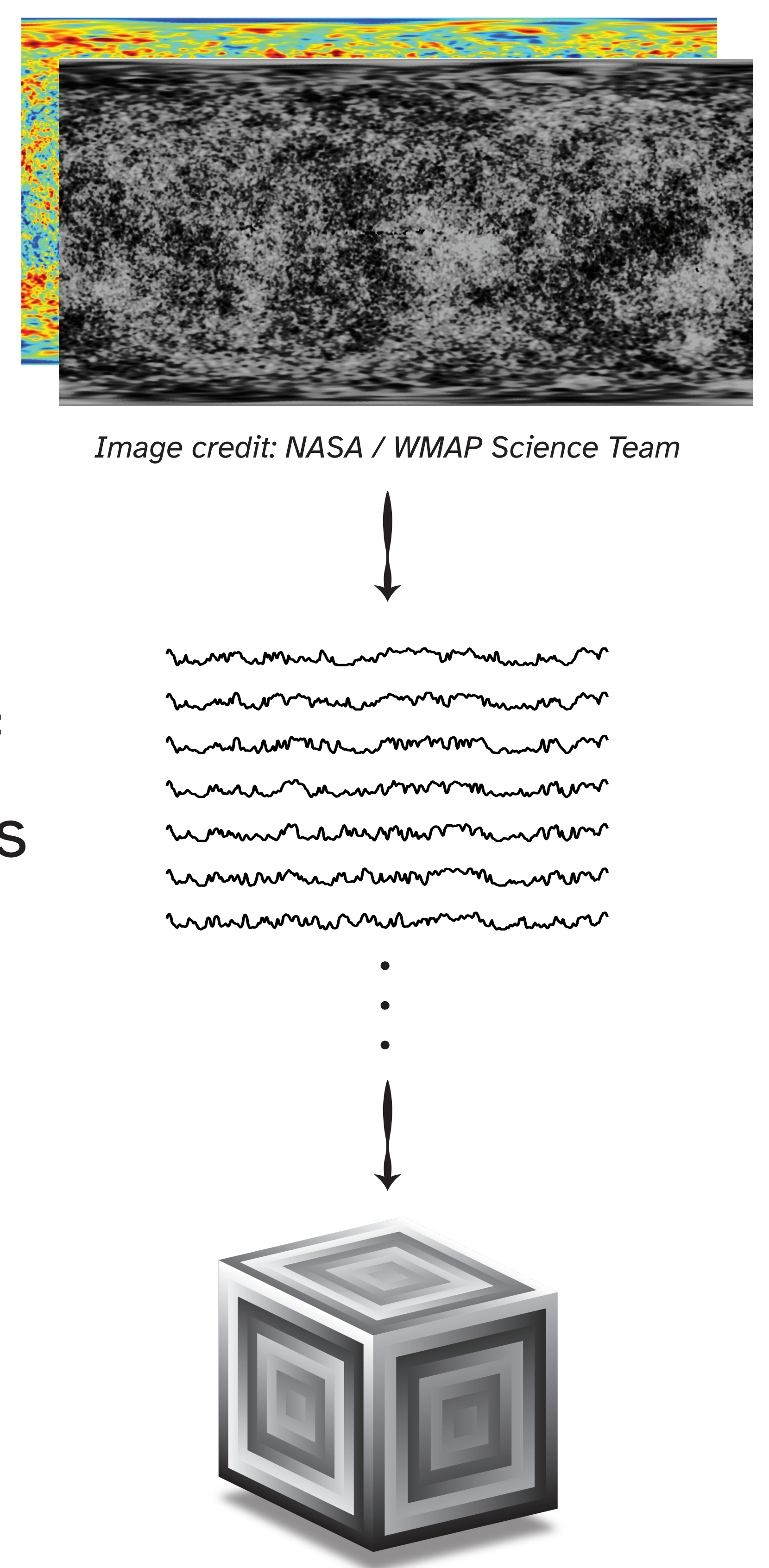
Extract hue information from original image

Image credit: NASA / WMAP Science Team

Convert each column of hue data into waveforms and store in audio file

Import waveforms into SuperCollider as a wavetable synthesizer

Results

Wavetable makes differences in position more noticeable

Sound produced vaires, tends to sound reed-like in the mid-high range and more gritty in the lower range

Sample tracks

GitHub

Try it for yourself! Links above lead to sample tracks, and the code used to write them, as well as the setup used for the physical synth.

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