



# AUDIBLE ECOSYSTEM

Sonifying Invisible Forces at Lakeside Lab

**What's the sound of temperature? How about humidity, radiation, and pressure, among the many ecological forces that we experience but don't hear?** I considered questions like these as I collected environmental data with a device called the Arable Mark that monitors weather, plants, soil, and irrigation. I wrestled with how to create sounds that represent these invisible forces in our ecosystem, so took inspiration from Lakeside Lab—conversations, classes, and the natural environment—and chose five themes to collect and create sounds for: a walk through the forest (which I did every day), a large mound of wood (which I scavenged materials from), kayaking on the lake, learning about diatoms, and exploring prairie grass (like those found at Lakeside Labs).

I collected and created sounds for these five themes, each of which were assigned to one of the environmental data points that the device produces (listed below). This allowed me to hear the invisible forces as they evolved over time (often with the weather), through changes to pitch, volume, reverb, speed, and frequency.

Five compositions result from this experimentation. Experience them for yourself at Lakeside Lab. Each of the five stations has a brief description, a QR code that gives you access to the compositions (from a website), and descriptions of how I created each sound. My hope is that it helps you more deeply connect with the invisible ecological forces at work.

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## Environmental Data Monitored with the Arable Mark

**TEMPERATURE** (measure of how hot or cold the air is), **PRECIPITATION** (any form of water—rain, snow, sleet, hail—falling from the sky), **PRESSURE** (force of the air on a surface that affects weather patterns), **HUMIDITY** (amount of water vapor in the air), **WIND** (air movement from high to low-pressure areas), **VAPOR PRESSURE DEFICIT** (difference between the amount of moisture in the air and how much it can hold when saturated), **DEW POINT TEMPERATURE** (temperature at which air becomes saturated and dew forms), **SOLAR RADIATION** (energy from the sun reaching the earth's surface), **NORMALIZED DIFFERENCE VEGETATION INDEX** (measure of plant health based on how plants reflect light at certain wavelengths), **CHLOROPHYLL INDEX** (measure of the amount of chlorophyll in plant leaves, indicating their health and productivity), **CROP EVAPOTRANSPIRATION** (sum of water evaporation and plant transpiration from the land), **LEAF WETNESS** (amount of water on leaf surfaces), **CANOPY TEMPERATURE** (temperature of the plant canopy), **HEAT STRESS** (physical stress on plants or animals due to high temperatures), **IRRIGATION PRESSURE**: The force of water applied to crops during irrigation.

AUDIBLE ECOSYSTEM: SONIFYING INVISIBLE FORCES AT LAKESIDE LAB

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