

# Atmospheric Orchestra

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# Statement

Having grown up in an isolated, conservative household in rural Georgia, I haven't had the luxury of taking inconsequential behavior for granted. [Average interactions are often extraordinary to me](#). Through my eyes, even the tedious and mundane provoke captivating exploration.

These observations leave me concerned with what constitutes the lowest possible level of how something is human. How is something feeling? Is it feeling the same way as I am? Can I consume, process, and replicate these feelings? Questions like these have spawned [funny and uncomfortable performance](#) and [immersive music compositions](#).

My interest, or fixation, with the most boring, granted human experiences is a futile quest to find a middle ground with everyone else. How can I unlearn the biases I've been fed? And if they've been good to me, how can I pass them along?

# Overview and Approach

## Climate change as an American problem

Ambivalent, indifferent, or overtly hostile, when it comes to facing climate change Americans are regarded as one thing - divided. Even American legislators charged with creatively solving this issue are in constant disagreement. Perceptually it seems clear that we can't agree, that we're ignorant to the threat, and that we don't wish to work toward a solution. The problems with these perceptions, however, is that they don't mesh with the data.

## Largely, Americans *are not* climate change deniers

The Center for Climate Change Communication in May 2017 surveyed 1,266 American adults across political affiliations and location and found that 70% of those surveyed agreed that climate change is occurring. Furthermore, 58% of American adults believed that climate change is anthropogenic. Finally, by a large percentage 48% of Americans also believed that humans have the capacity to limit or reverse climate change.

## Americans *are too optimistic about climate change*

The apparent trend is that most Americans currently believe in the anthropogenic cause of climate change and a plurality believe that we can affect climate trends to prevent future damage to our planet. Why then, despite the fact that Americans agree in the science of climate change, do only 40% believe that climate change will directly affect them or their families? Why do 71% believe that while climate change exists, it is only a threat for future generations?

## Reaction and emergence

In certain contexts, the symptoms of climate change move painfully slowly. Public reaction mirrors the slow speed of the initial appearance of change. This extended, nebulous, and difficult to witness problem leads climate change to be one of worst problems for humans to tackle. How then can we show the invisible data influencing climate that changes quickly and dynamically?

How can we illuminate a simple pathology of climate change?

# Proposed Installation

## A gas orchestra

The persistence of the idea that climate change is not a dynamic phenomenon - but a slow moving, predictable, and perceptually static concept, can be broken with live data readings translated into something that carries a strong, limbic, emotional response. I propose an orchestra of data collected live on emissions of carbon dioxide. Through the use of strategically placed sensors at various densities of people, altitudes, wind patterns, and indoor and outdoor locations, I will collect carbon dioxide readings in parts per million to sonify greenhouse gas, a widely understood contributor to climate change.

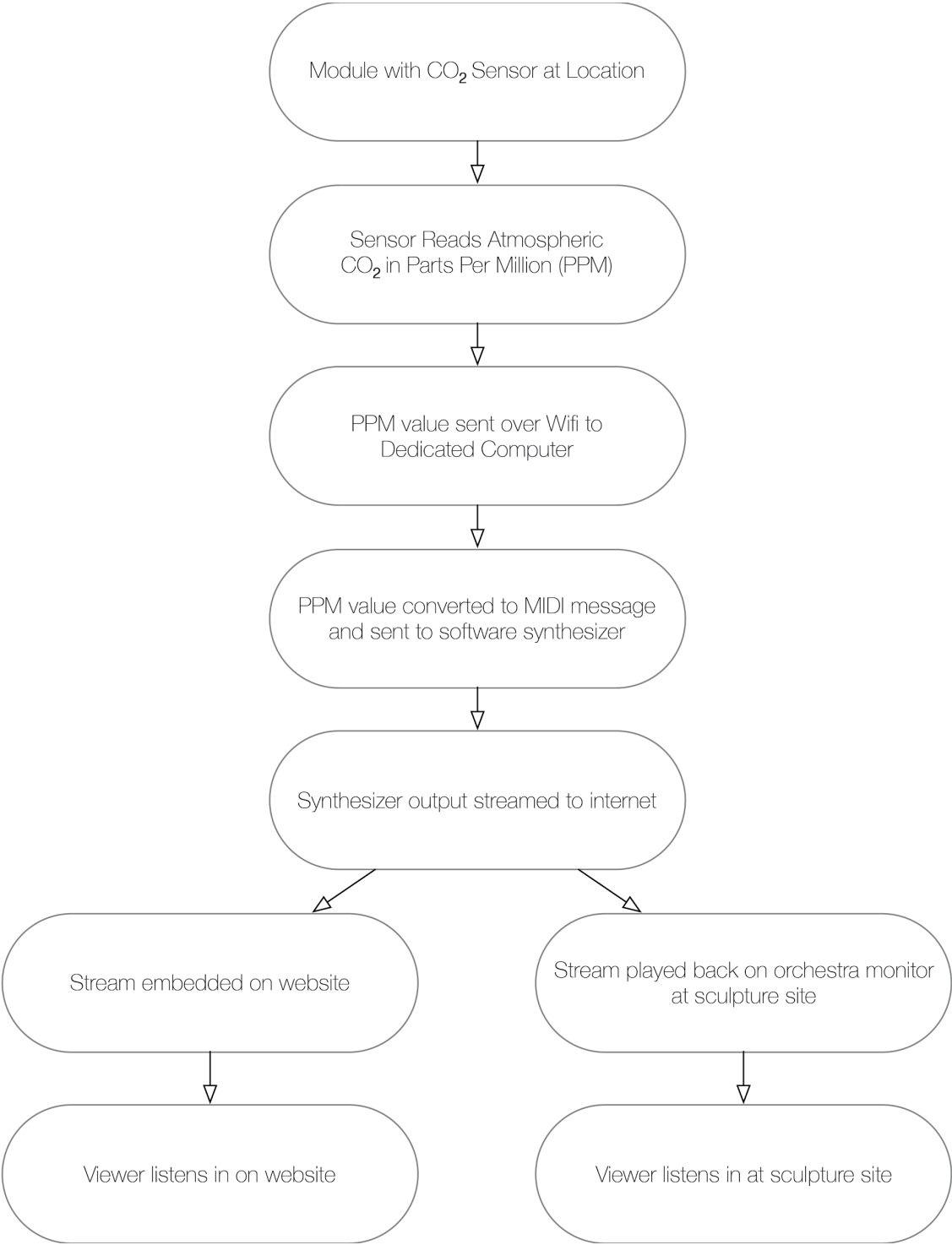
## Experience and interaction

Viewers will listen to the orchestra through two mediums - on site within the UIC planter installation and online through a microsite embedded in the Garden for a Changing Climate website. Viewers will be able to select one reading, multiple, or all readings and the sound they generate. This will allow the locations to be heard solo or in unison. Each reading will utilize a different synth instrument based on the essential orchestral groups of woodwinds, brass, percussion and strings. The music will be improvisational, gestural, and at times unpalatable. The genre could be described closely as acid jazz, experimental, ambient, and the piece as an atmospheric symphony. The music should at times feel uncomfortable, but inviting and curious.

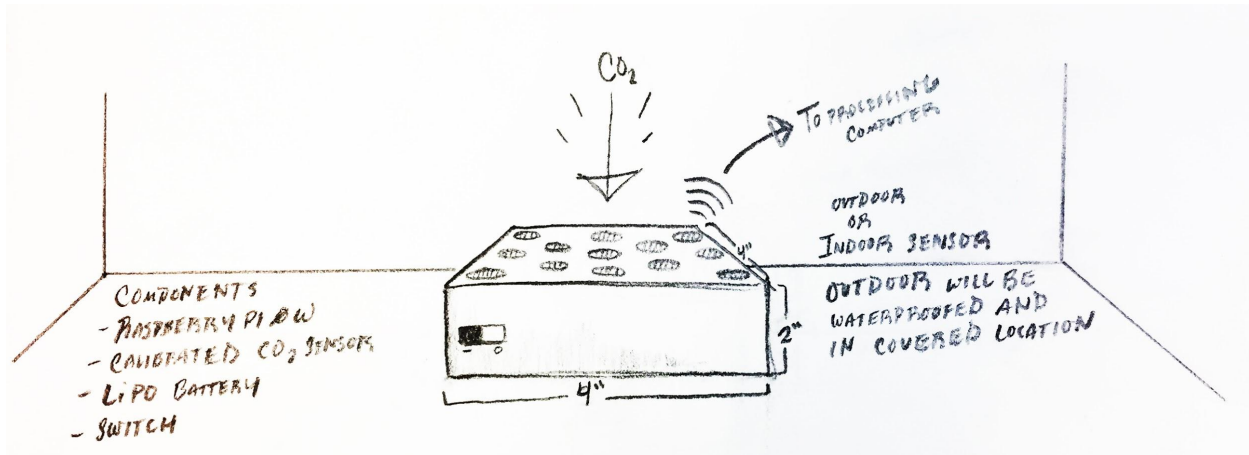
## Intent

The intent of this installation is not to educate about the mechanism or symptoms of climate change. The data is clear that Americans already believe in the concept, its physical and chemical mechanism, and its effects. The intent is to tie together the dynamic forces of what causes climate change and to spark interest in its rapid emergence and encourage fascination in its solution. By creating something mesmerizing and evocative, something that can be changed and manipulated, I hope to illustrate that humans can quickly influence the progression and outcome of climate change. Viewers should feel that it is not in fact a hopeless inevitability. Creating something that promotes intrigue, curiosity, and enjoyment plays on the human reward system of problem solving. Hopefully this approach is the start of a new, constructive way to view and solve this perennially vexing problem.

# Mechanism



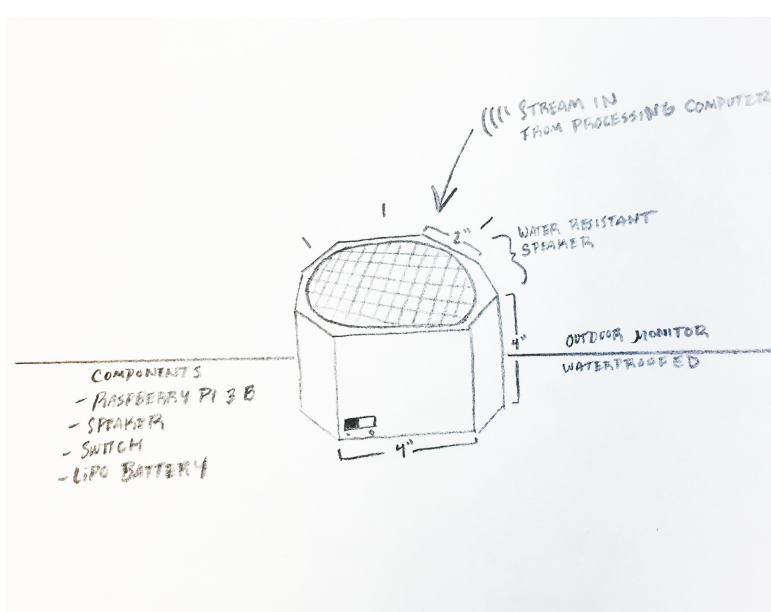
# Sensor Modules: The Instrument



## Sensor locations (detailed on next page)

Sensor locations will be located at various indoor and covered outdoor locations on UIC's east campus. The purpose of this arrangement is to ensure access to UIC's wireless network to process and stream collected carbon dioxide readings.

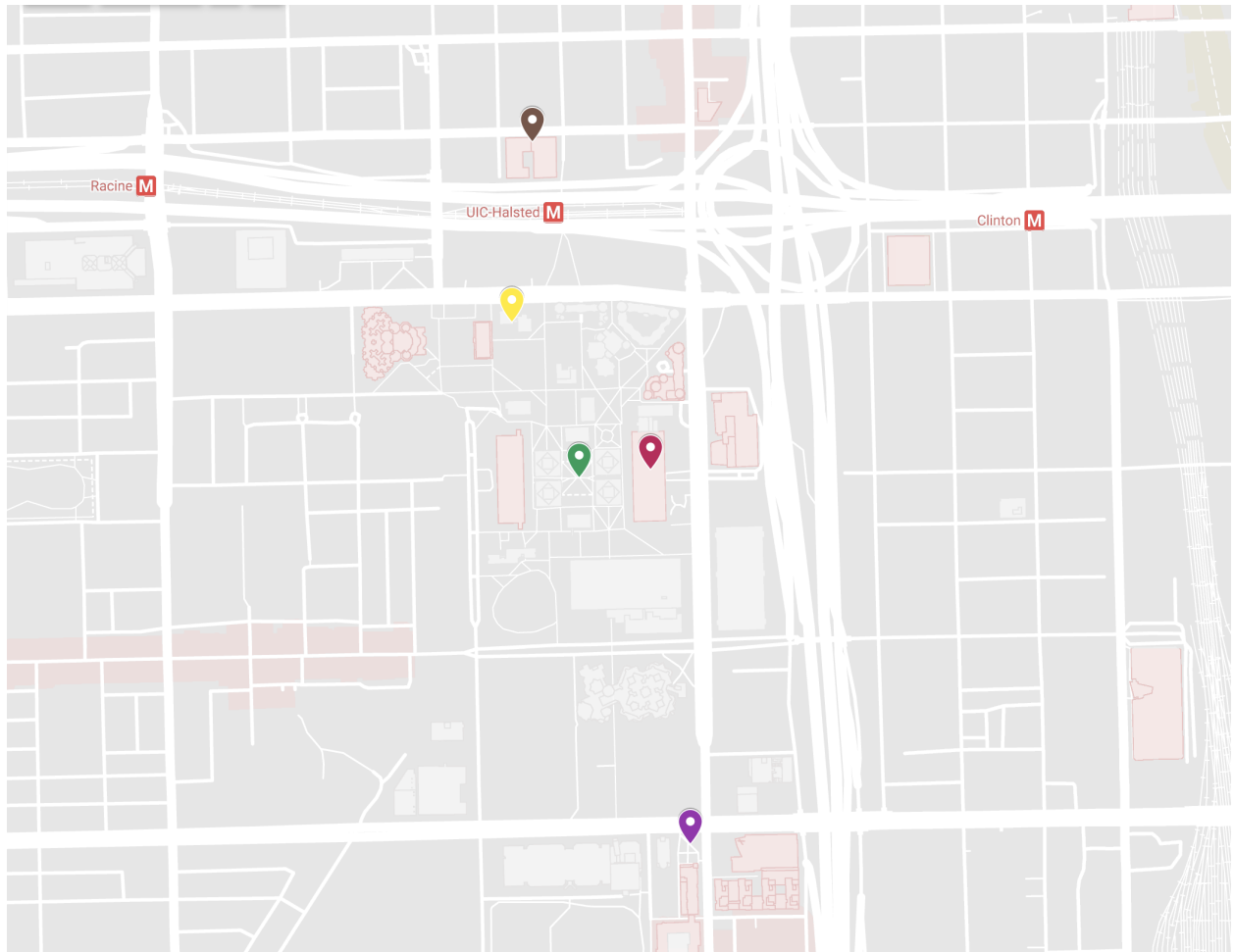
# Monitor: The Audience



## Monitor location

A single Orchestra Monitor will be approximately 5" x 4" and will fit within one planter at the UIC sculpture installation.

# Sensor Locations



- Gallery 400 (Indoor)
- Henry Hall (Indoor)
- Central Plaza (Outdoor, covered)
- Student Center East (Indoor)
- UIC Skyspace, James Turrell sculpture (Outdoor, covered)

**Orchestra monitor installation will be at sculpture site, location to be determined.**

# Fabrication and Technology

- Carbon Dioxide Sensor Modules
  - ◆ Raspberry Pi 0 W / Adafruit Feather ESP8266
  - ◆ Adafruit SGP 30 calibrated gas sensor
  - ◆ Wireless internet connection
  - ◆ Power supply, Lithium Battery
  - ◆ Designed and Fabricated Housing
  - ◆ Structure as laser cut plywood, 3D printed support
- Processing Module / Orchestra Monitor at the Sculpture Site
  - ◆ Raspberry Pi 3 B
  - ◆ Wireless internet connection
  - ◆ Weather-proof speakers
  - ◆ Power supply, Lithium Battery
  - ◆ Structure as laser cut plywood, 3D printed support
- Synthesizer to Web
  - ◆ Processing based software synth
  - ◆ Live stream to SoundCloud
- Orchestra Monitor on Microsite
  - ◆ Solo stream for each sensor location
  - ◆ Unified stream for entire orchestra
- Web interface on microsite
  - ◆ Solo track stream
  - ◆ Multi track stream
  - ◆ Option to add/remove tracks dynamically
  - ◆ Map showing approximate/inexact sensor locations
  - ◆ Project overview and artist's statement



# Materials and Lifecycle

## When is the environment considered?

Obviously, in light of the subject a key focus of this installation must be considerate material selection and lifecycle mapping.

Unfortunately, many electronics still contain toxic elements such as lead, mercury, and cadmium. Wherever possible, research will be done to minimize or eliminate the use of electronics that contain these elements and when necessary, to recycle electronics through a proper e-waste stream.

Ideally, Atmospheric Orchestra will have multiple uses, but it eventually will come to an end and the materials will need to be disposed of as they degrade.

As part of the delivery of the installation, a lifecycle and disposal plan will also be provided along with the known contents of pollutants in components used.

# Important Dates

## 16 February

- Proposal submitted
- Contact indoor space holders and UIC facilities management for approval for sensor locations

## 23 February

- Sensor and monitor prototype 1 enclosure designs finalized
- Sensor and monitor electronics assembled, code complete

## 2 March

- Sensor and monitor prototype fabricated and tested
- Internet infrastructure/back-end complete

## 16 March

- Prototype 2 revisions fabricated and tested
- Microsite front and back-end code complete, integrated into main GCC site

## 23 March

- GCC website launch
- Final sensor and monitor design fabricated and tested

## 30 March (TBD)

- Installation into UIC sculptural planters

## 6 April

- Online installation live, data collection and performance ongoing

## 22 April / Earth Day

- In-situ sculpture installation live

# Conclusion

## The music of an invisible disaster

Initially, I attempted to find a balance between education and the poetry of the quietly destructive forces of climate change. Once I discovered that the data indicate that we as a country are already acutely aware of the forces of climate change, I wondered how much my contribution would add to the existing educational conversation. So, I will assert that my first role is not as an educator. My role is intended to reframe what we might take for granted and provoke discomfort and growth.

Music is a shortcut to this growth. A sonified, poetic form of something so invisible, insidious, and something so fascinating can stir.

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