CO_2 and Climate Resilience

GLOBE Annual Meeting 2024

Topics in this presentation

1. Development of CO_2 sensors for possible use within the GLOBE program and to establish a Carbon Dioxide protocol to work in conjunction with established Carbon Cycle activities and new Climate Change activities.

2. Provide a CO_2 sensor for students, schools and citizen scientists to use and gather data.

3. Have GLOBE provide research quality CO_2 data for schools, universities and research institutions to use.

Across the U.S., more frequent and destructive climate events are impacting our day-to-day lives and communities.

The collection of data can help us develop solutions for these ever increasing events.

Carbon dioxide in the atmosphere **warms the planet,** causing climate change. Human activities have raised the atmosphere's carbon dioxide content by 50% in less than 200 years.

Some **seasonal cycles** have emerged showing how the increase in **CO_2** has **caused** temperature changes and a **massive change in photosynthesis through the seasons.**

Changes in precipitation – where and when precipitation falls seems to be changing. **Storms are occurring more frequently and are more severe in parts** of the United States. While the opposite seems to also be true. **Dry areas seem to be dryer** for longer periods of time.

Studying CO_2, one of the major greenhouse gasses can **help us** answer these and other questions regarding climate change and how to **survive**.

Carbon sequestration solutions

Providing the GLOBE community with the tools to prepare.

Student/School CO_2 Sensor

1. Development of CO_2 sensors for possible use within the GLOBE program and to establish a Carbon Dioxide protocol to work in conjunction with established Carbon Cycle activities.

2. CO2 sensor for student, school and citizen scientist use.

Plus, coding and programming activities

Temperature, Pressure, Relative Humidity, CO_2 and PM 2.5

Infinite HOPE
Help Our Planet Earth

VOC_Chart

Name
Toth_Data
(All)
Null
Fizzeelabs_monitor
PA_GLOBE
Toth_Data
Date
(Multiple values)

Name	
Toth_Data	94.30

Name
Toth_Data

Data which can be corrected before sending to GLOBE

Infinite HOPE
Help Our Planet Earth

VOC_Chart

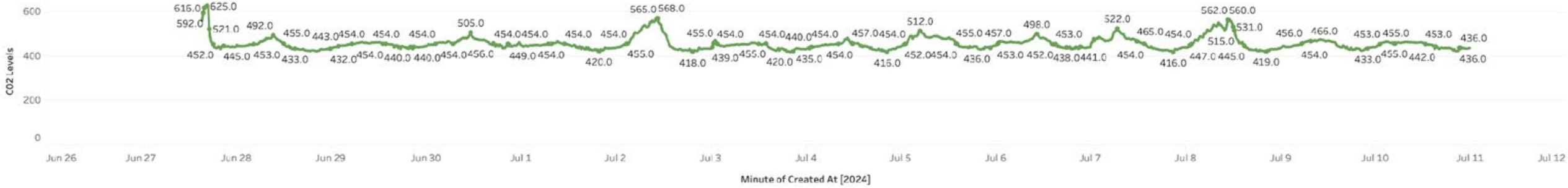
Name
Toth_Data 94.30

Name
Toth_Data

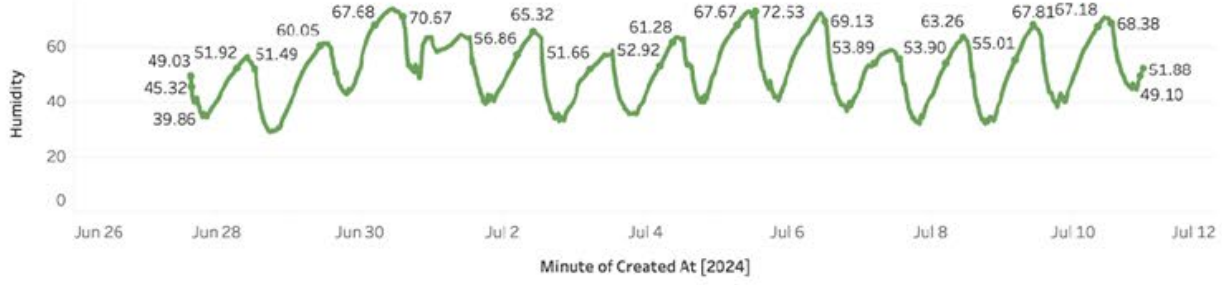
Name
Toth_Data
(All)
Null
Fizzeelabs_monitor
PA_GLOBE
Toth_Data

Date
(Multiple values)

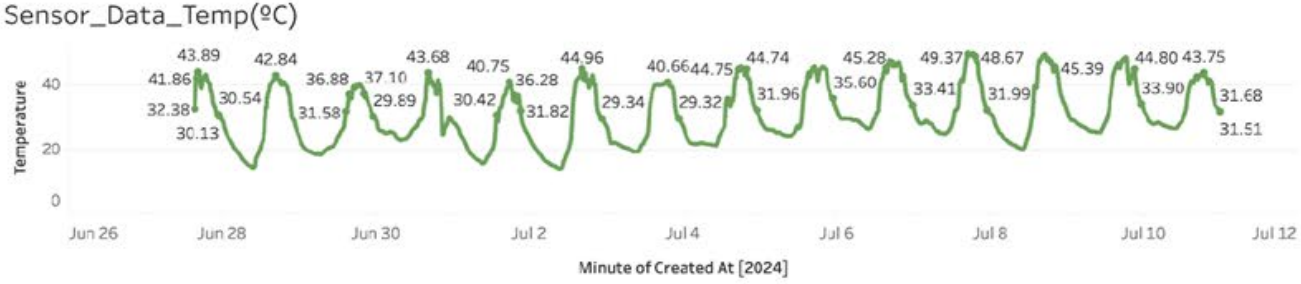
Sensor_Data_CO2(ppm)



Sensor_Data_Humidity



Sensor_Data_Temp(ºC)



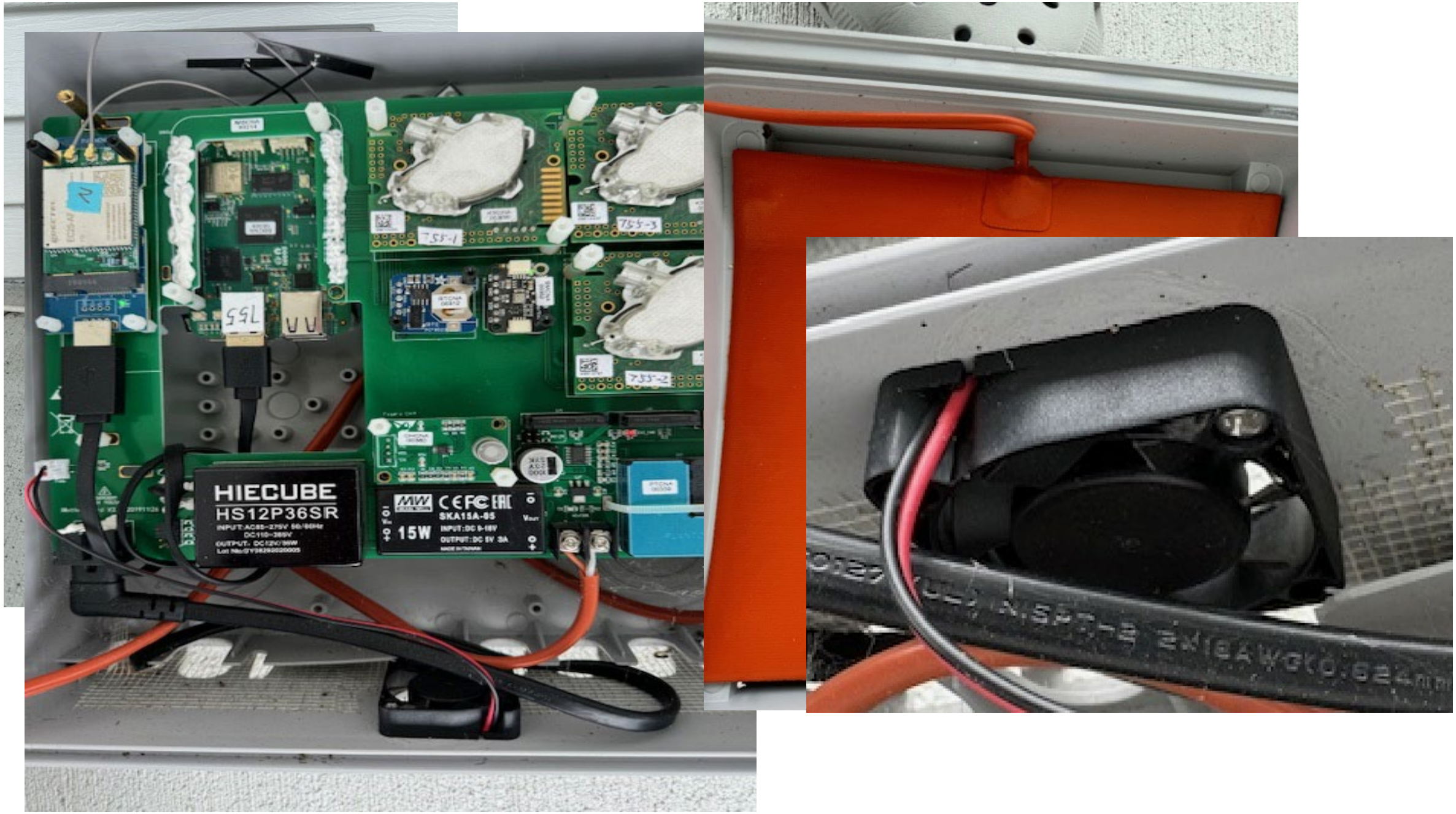
View: Original Save Custom View Watch Share

Research quality CO_2 s

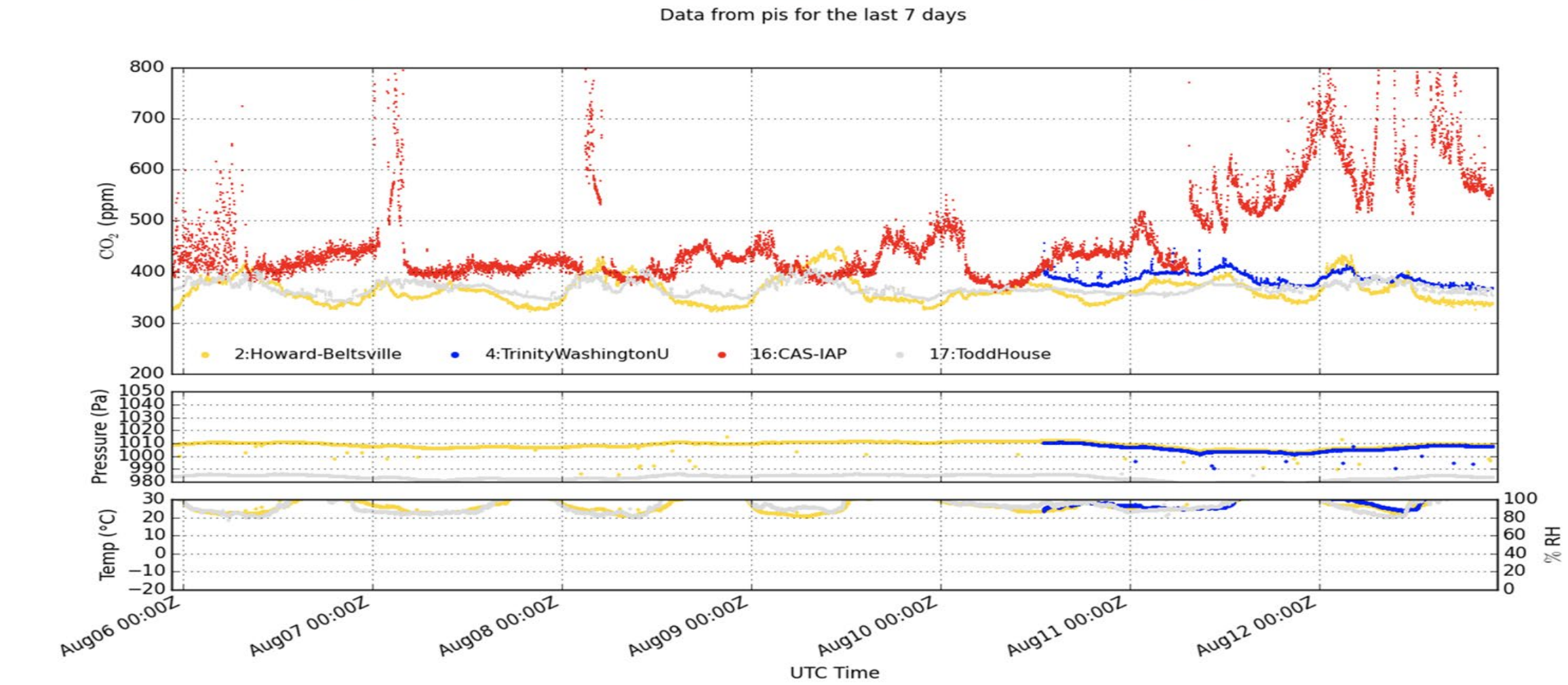
Model A

What it can measure:

Air Temperature
Air Pressure
Relative Humidity
CO_2
PM 1.0, 2.5, 10


HIECUBE
HS12P36SR
15W
SKA15A-05

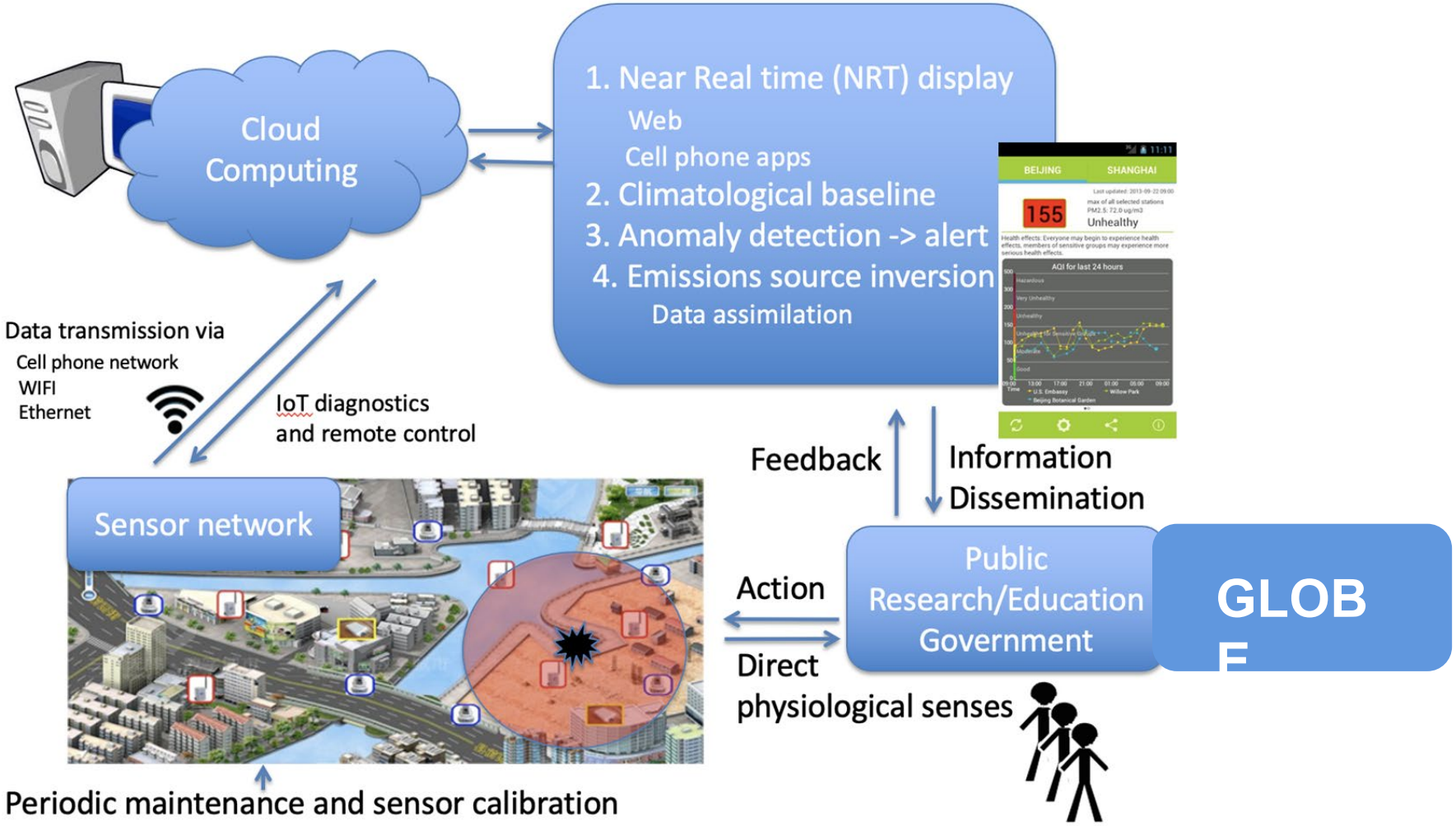
1 week Aug 2015: Beijing vs. Washington



Plot created: 2015-08-12 22:31 UTC

Gray data is from my home in Pennsylvania

Smart network: the Internet of Things (IoT) approach to community environmental monitoring: an end-to-end system



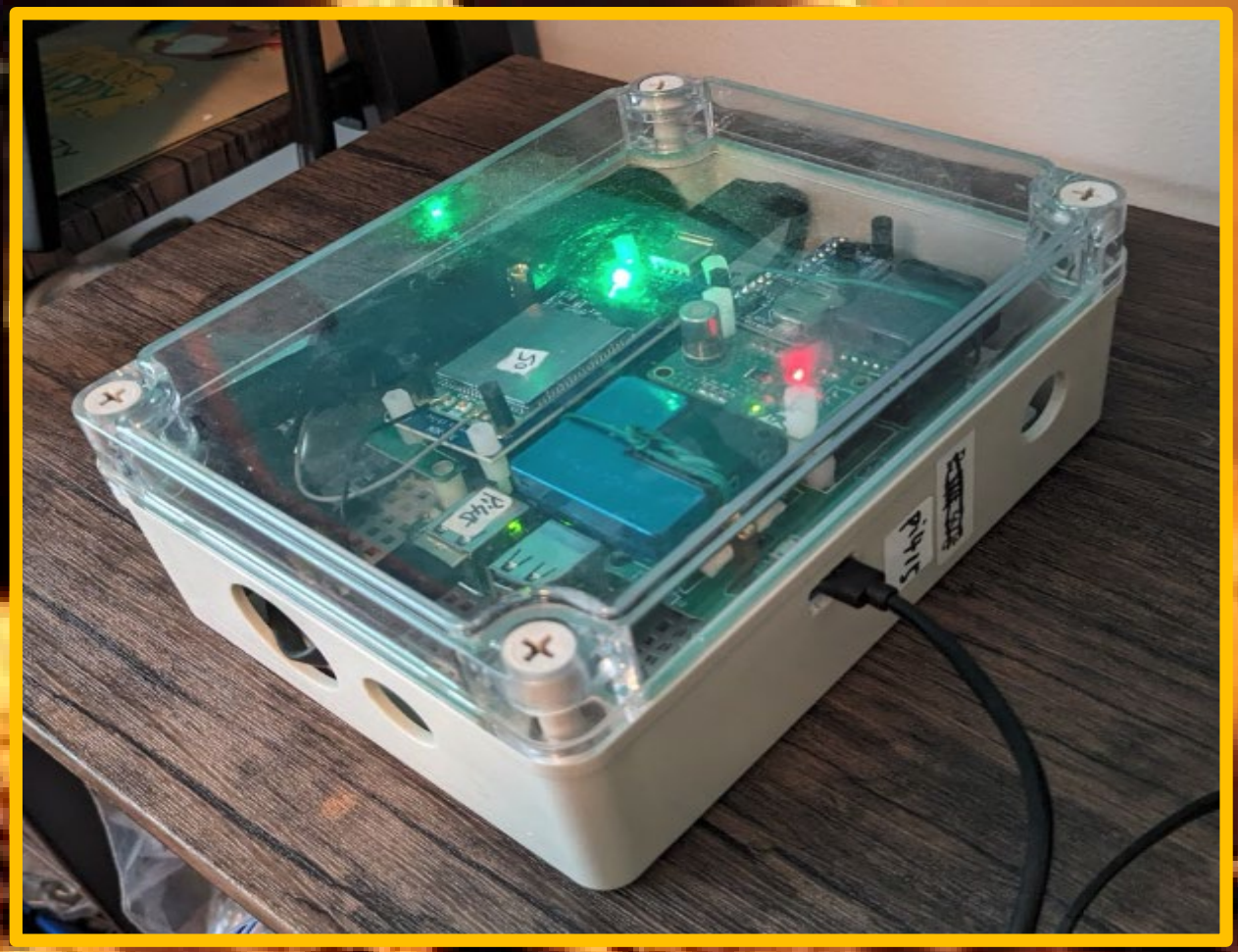
*Similar data network set up used by Fizzee Labs – data accuracy/sensitivity corrected before sending to GLOBE

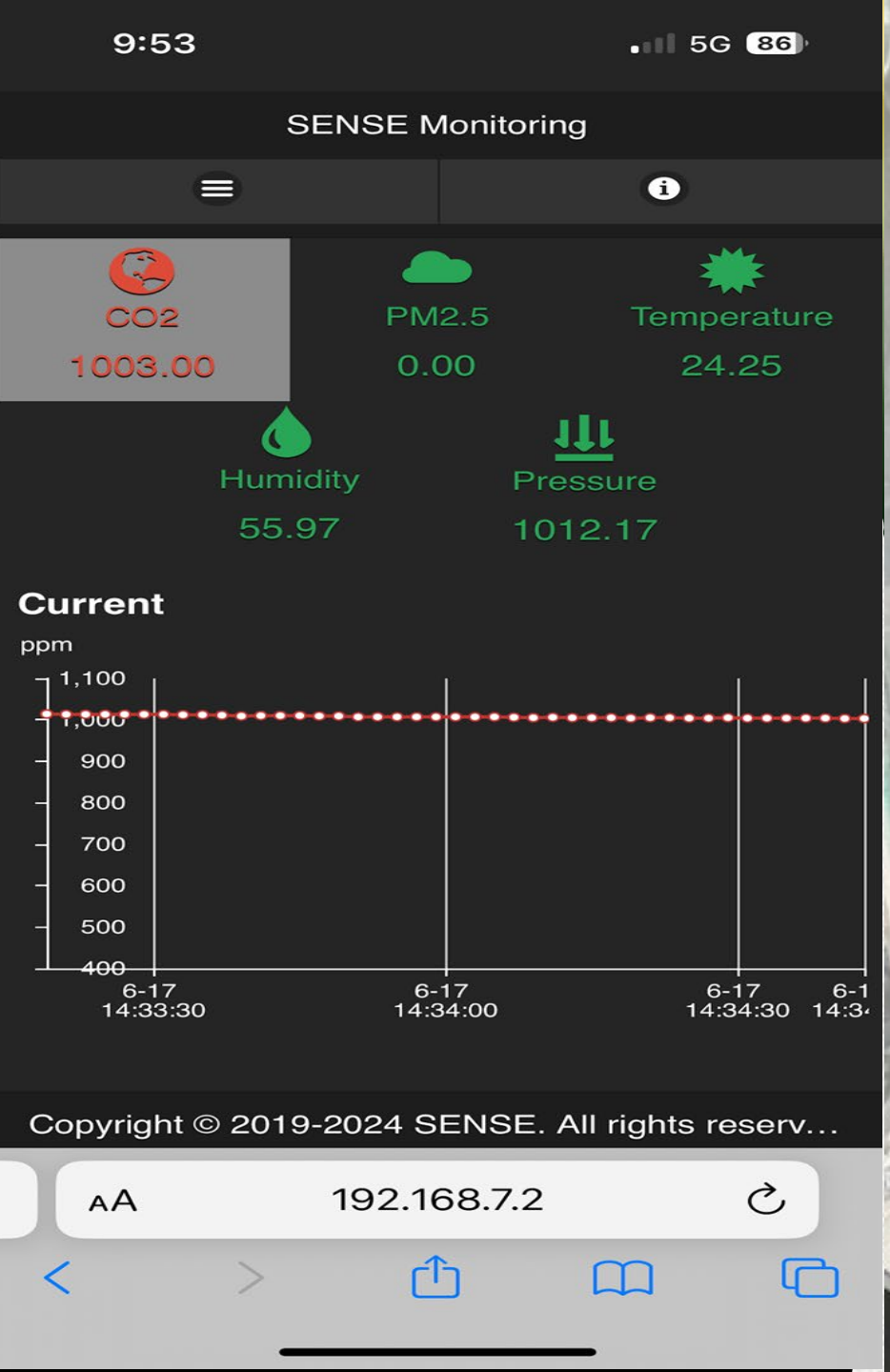
Research quality CO_2 sensor

Model I (Indoor version)

What it can measure:

Air Temperature
Air Pressure
Relative Humidity
CO_2
PM 1.0, 2.5, 10

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5G 86
SENSE Monitoring
CO2
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PM2.5
0.00
Temperature
24.25
Humidity
55.97
Pressure
1012.17
Current
ppm
1,100
1,000
900
800
700
600
500
400
6-17
14:33:30
6-17
14:34:00
6-17
14:34:30
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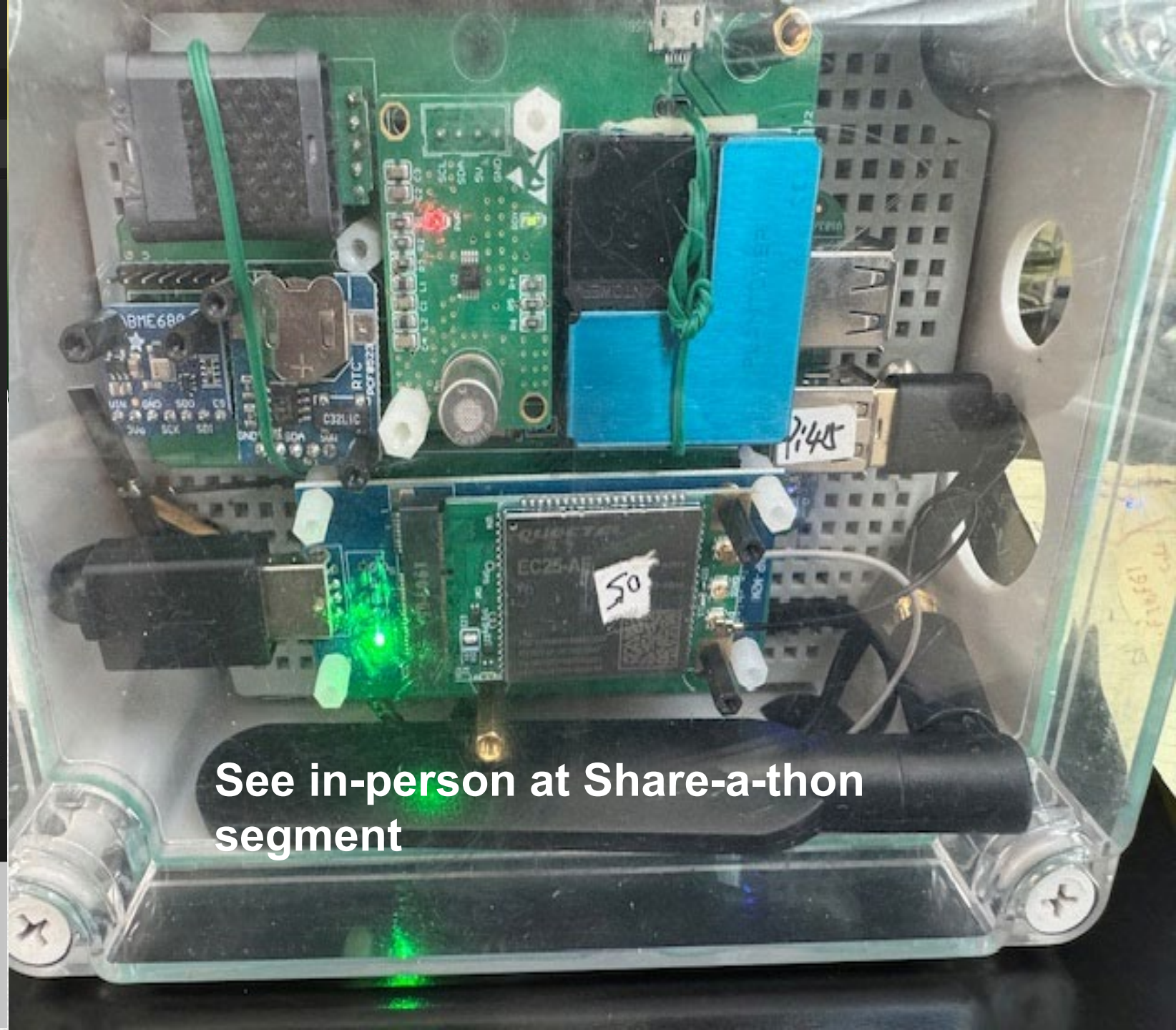
AA
192.168.7.2


See in-person at Share-a-thon segment

Research quality CO_2 sensor

Model S

What it can measure:

Air Temperature Air Pressure Relative Humidity
CO (CO_2) PM 1.0, 2.5, 10 O_3
N_2O SO_2

EPA type data


Heating pad
Fans

All 4 versions will be available for viewing in the Share-a-thon session

Why should GLOBE study CO_2's affect on climate?

NASA scientists have found "ample physical evidence which shows that carbon dioxide (CO_2) is the single most important climate-relevant greenhouse gas in Earth's atmosphere."

A critical aspect of climate resilience deals with informing people how to adapt to and mitigate **climate** change.

GLOBE can and should do this!