

Multi-Family Apartment Complex Air Monitoring For Mold

8-21-25

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Overture Indoor Air Quality

Building A – Executive Summary

- Out of 158 apartments, there were 6 apartments with sustained high dew points over the past 30 days
- ASHRAE states that maintaining indoor dew points to 60°F and below is crucial for preventing mold
- These 6 apartments should be inspected for water leaks and tenant behavior that would lead to these high dew points

Building A Apartment Number	Percent Time Above 60°F Dew Point Over Last 30 Days
602	27.9
915	23.4
805	23.1
513	19.2
304	12.9
808	10.7

Building B – Executive Summary

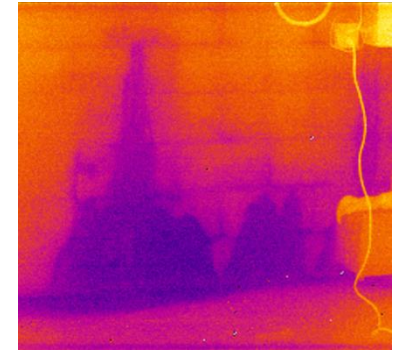
- Out of 162 apartments, there were 3 apartments with sustained high dew points over the past 30 days
- ASHRAE states that maintaining indoor dew points to 60°F and below is crucial for preventing mold
- These 3 apartments should be inspected for water leaks and tenant behavior that would lead to these high dew points

Building B Apartment Number	Percent Time Above 60°F Dew Point Over Last 30 Days
211	37.2
407	19.5
303	14.6

Proposed Remedies for High Dew Point Apartments

- **Locate and Fix Water Leaks** – Using Infrared Cameras, inspect each apartment for cold (blue) areas caused by the evaporation of moisture; identify root cause and remedy
- **Change Behaviors** – Cover aquarium tops, use bathroom exhaust fans when showering, use kitchen exhaust fans when cooking, close windows when the AC is on, etc.
- **Automate Ventilation** – Consider smart controls to automatically turn on bath fans and kitchen range hoods when high moisture levels are sensed
- **Install Supplemental Dehumidification** – Consider adding supplemental dehumidification to the high dew point apartments; this solution should solve the issue

*IR Camera
Showing
Moisture*



*Automated
Ventilation*



Supplemental DH



Room A-602

Observed: 27.8% of the month was spent at dew points exceeding 60°F

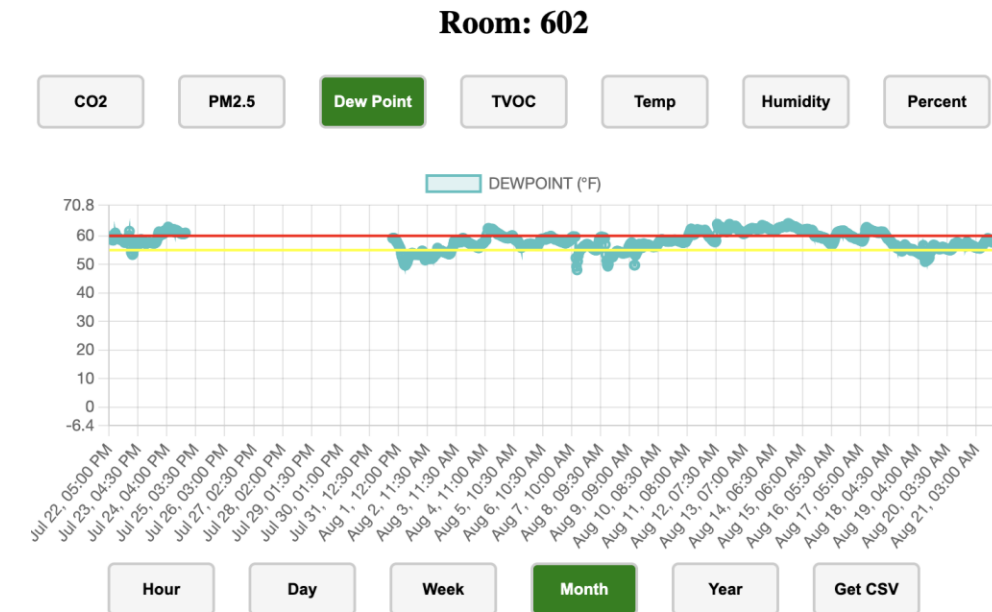
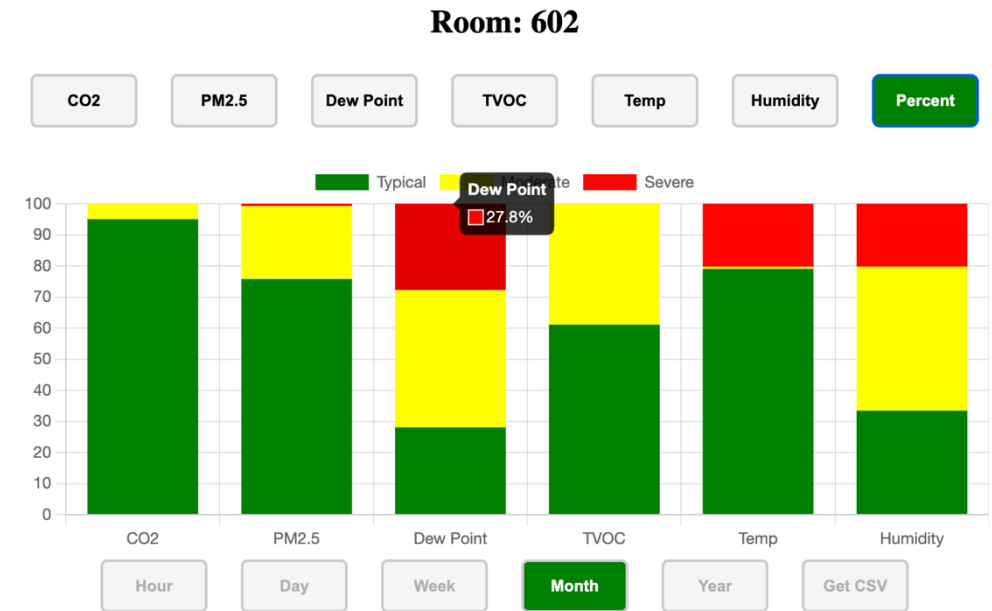
Takeaway: CO₂ levels are mostly in the green range, so this tells me that high occupancy levels are not causing the high dew points

Takeaway: PM_{2.5} levels are rarely in the red range, so this tells me the high dew points are not from cooking

Takeaway: Occupant behavior or a water leak is likely driving high dew points

Graph Keys

- Blue line represents the actual dew point temperature in °F – no blue line means the sensor was unplugged or wifi was down
- Yellow is the “high” level
- Red is the “very high” level



Room A-915

Observed: 23.5% of the month was spent at dew points exceeding 60°F

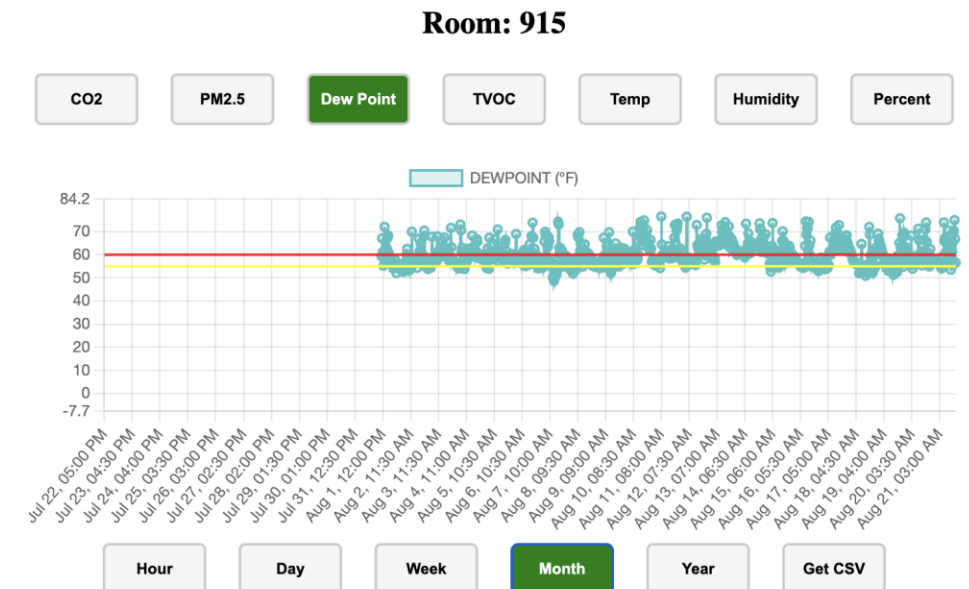
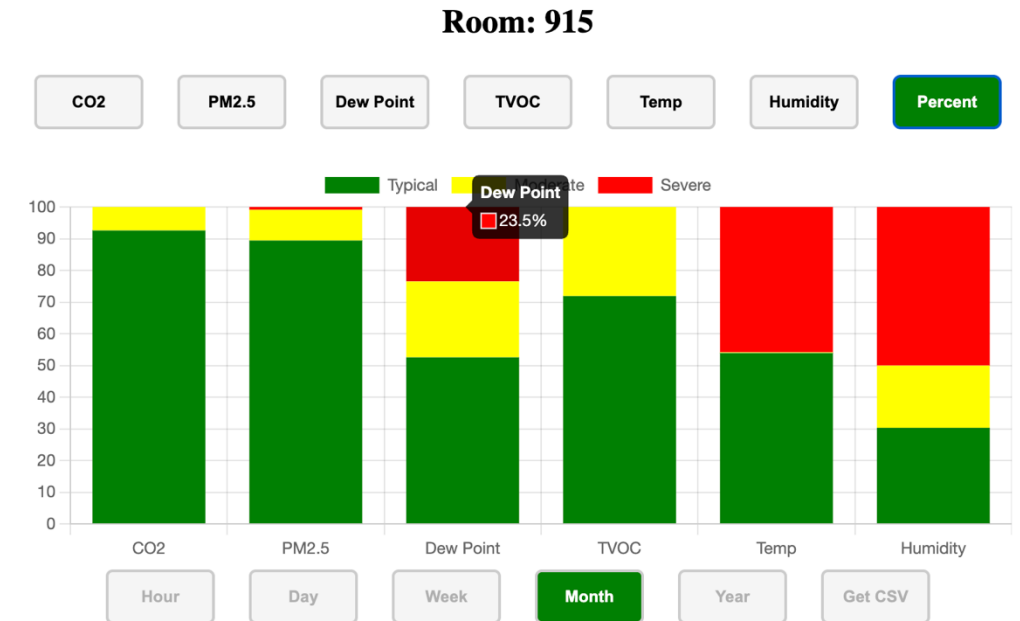
Takeaway: CO₂ levels are mostly in the green range, so this tells me that high occupancy levels are not causing the high dew points

Takeaway: PM_{2.5} levels are rarely in the red range, so this tells me the high dew points are not from cooking

Takeaway: Occupant behavior or a water leak is likely driving high dew points

Graph Keys

- Blue line represents the actual dew point temperature in °F – no blue line means the sensor was unplugged or wifi was down
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- Red is the “very high” level



Room A-805

Observed: 23.1% of the month was spent at dew points exceeding 60°F

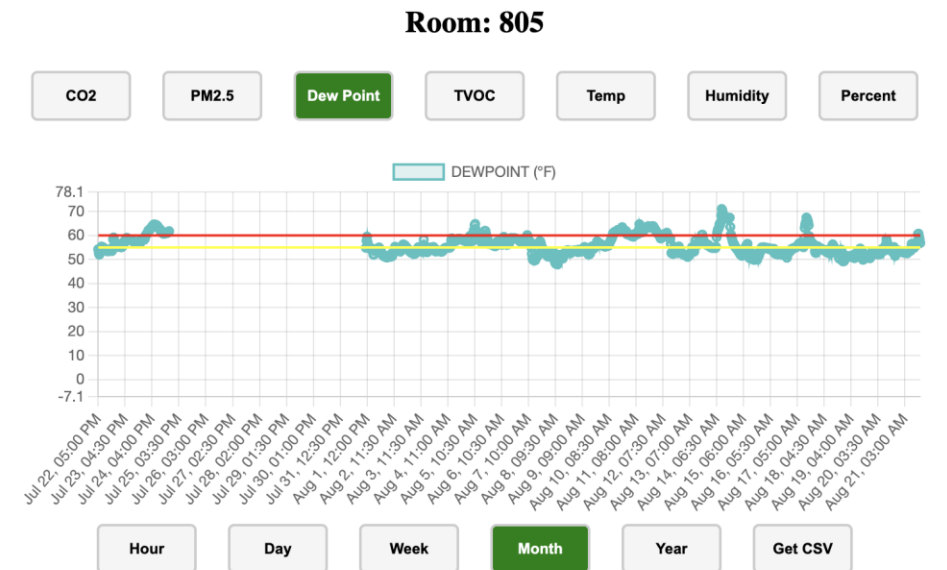
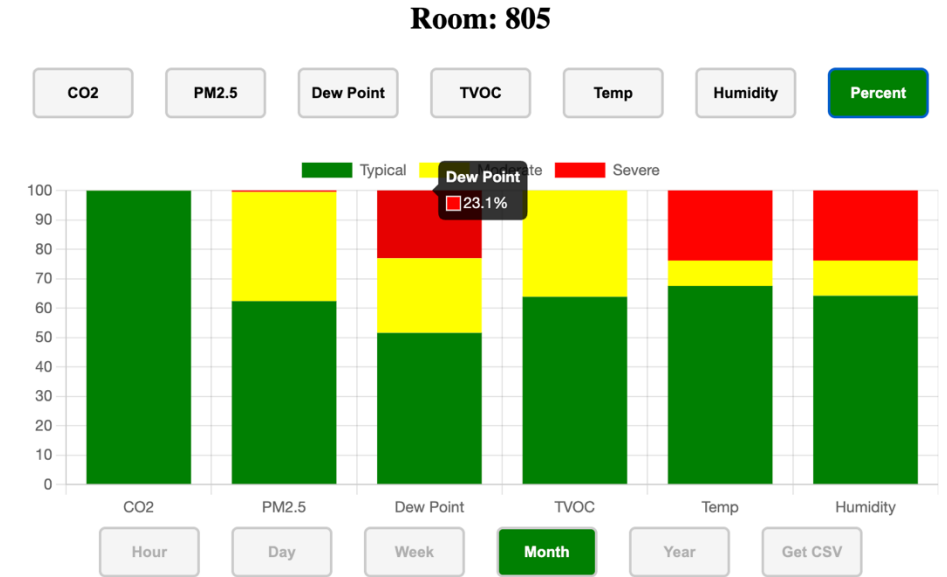
Takeaway: CO₂ levels are mostly in the green range, so this tells me that high occupancy levels are not causing the high dew points

Takeaway: PM_{2.5} levels are rarely in the red range, so this tells me the high dew points are not from cooking

Takeaway: Occupant behavior or a water leak is likely driving high dew points

Graph Keys

- Blue line represents the actual dew point temperature in °F – no blue line means the sensor was unplugged or wifi was down
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- Red is the “very high” level



Room A-513

Observed: 19.2% of the month was spent at dew points exceeding 60°F

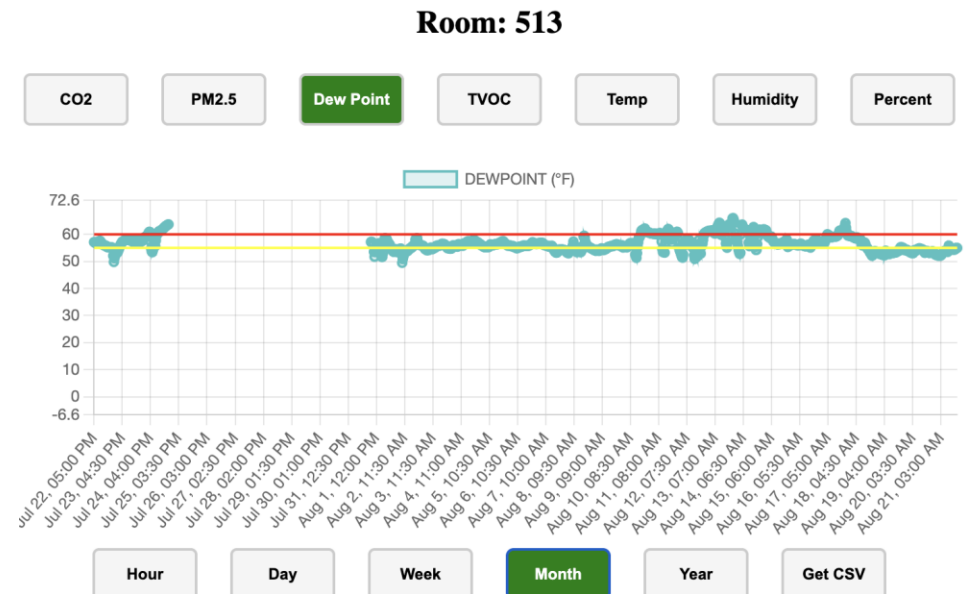
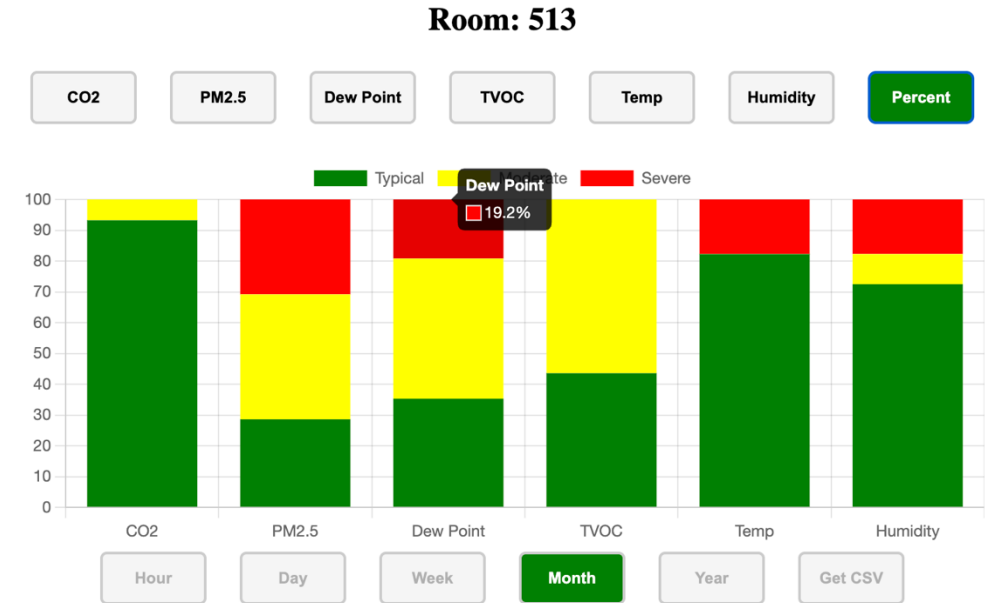
Takeaway: CO₂ levels are mostly in the green range, so this tells me that high occupancy levels are not causing the high dew points

Takeaway: PM_{2.5} levels were in the red range for almost 31% of the month, so the tenant may be generating high dew points due to boiling water

Takeaway: Occupant behavior (cooking) or a water leak is likely driving high dew points

Graph Keys

- Blue line represents the actual dew point temperature in °F – no blue line means the sensor was unplugged or wifi was down
- Yellow is the “high” level
- Red is the “very high” level



Room A-304

Observed: 12.8% of the month was spent at dew points exceeding 60°F

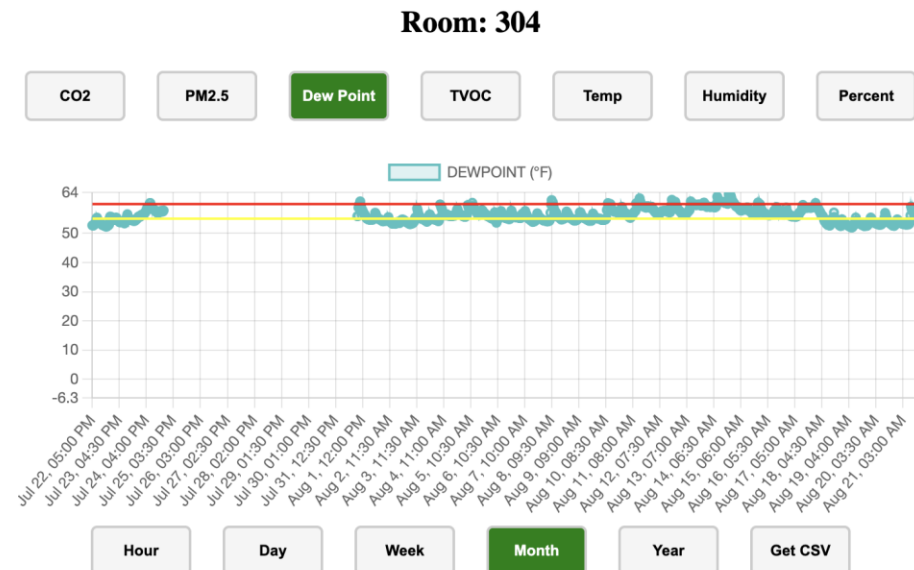
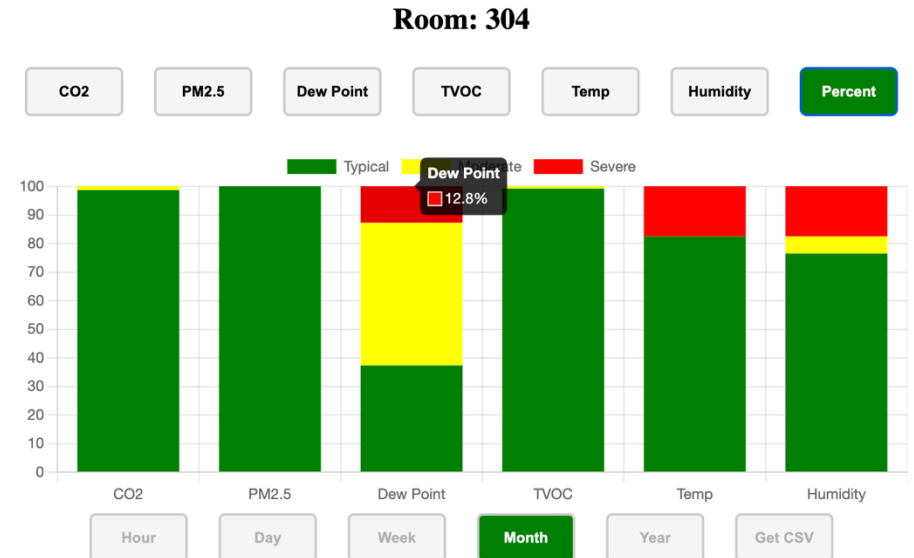
Takeaway: CO₂ levels are mostly in the green range, so this tells me that high occupancy levels are not causing the high dew points

Takeaway: PM_{2.5} levels looked great over the past 30 days, so the high dew points were not caused by cooking or boiling water

Takeaway: Occupant behavior or a water leak is likely driving high dew points

Graph Keys

- Blue line represents the actual dew point temperature in °F – no blue line means the sensor was unplugged or wifi was down
- Yellow is the “high” level
- Red is the “very high” level



Room A-808

Observed: 10.7% of the month was spent at dew points exceeding 60°F

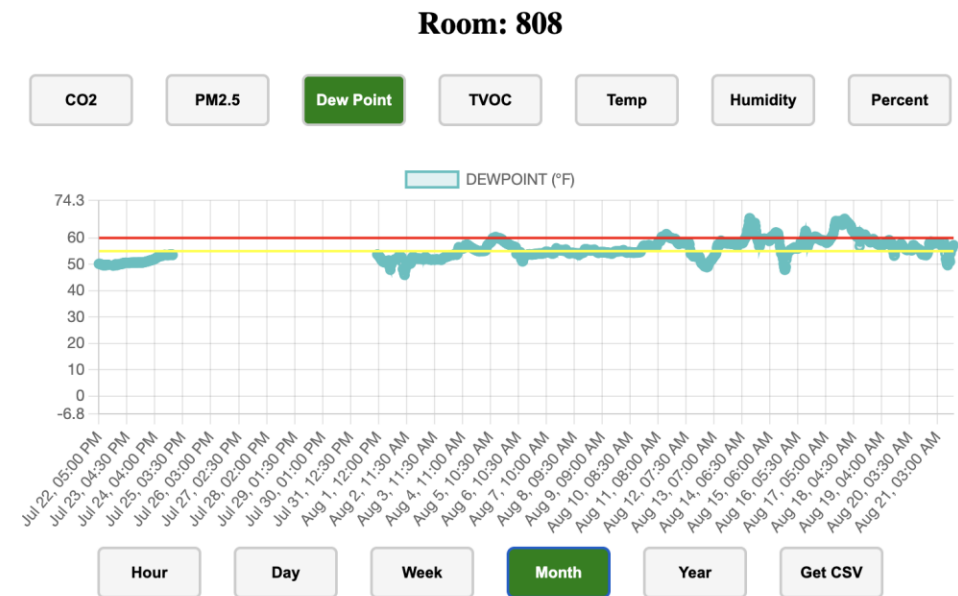
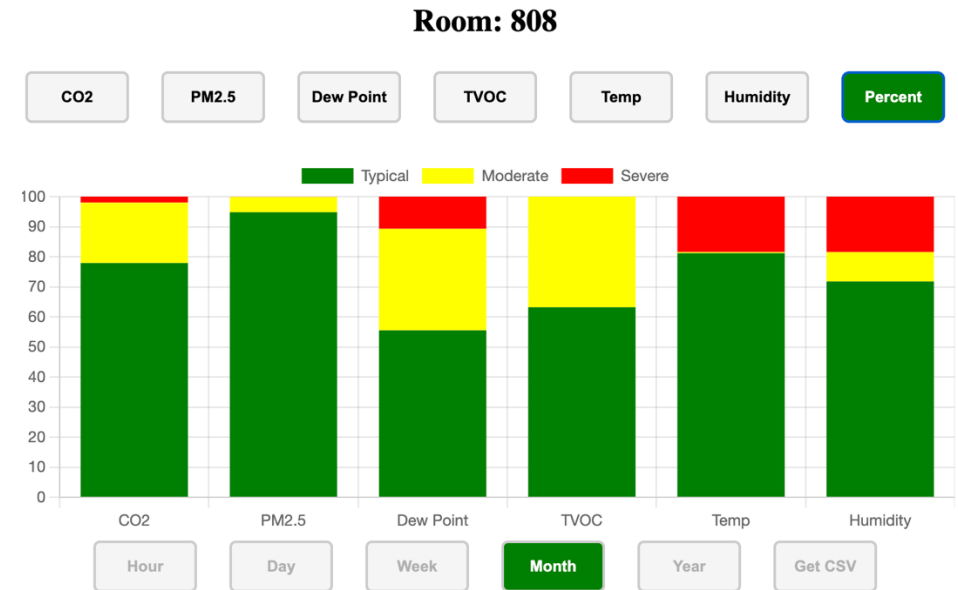
Takeaway: CO₂ levels were in the yellow/red range ~ 22% of the last month, meaning that high occupancy levels or exertion rates could have driven higher dew points

Takeaway: PM_{2.5} levels were good over the past 30 days, so the high dew points were not caused by cooking or boiling water

Takeaway: Occupant behavior (high occupancy) or a water leak is likely driving high dew points

Graph Keys

- Blue line represents the actual dew point temperature in °F – no blue line means the sensor was unplugged or wifi was down
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- Red is the “very high” level



Room B211

Observed: 37.1% of the month was spent at dew points exceeding 60°F

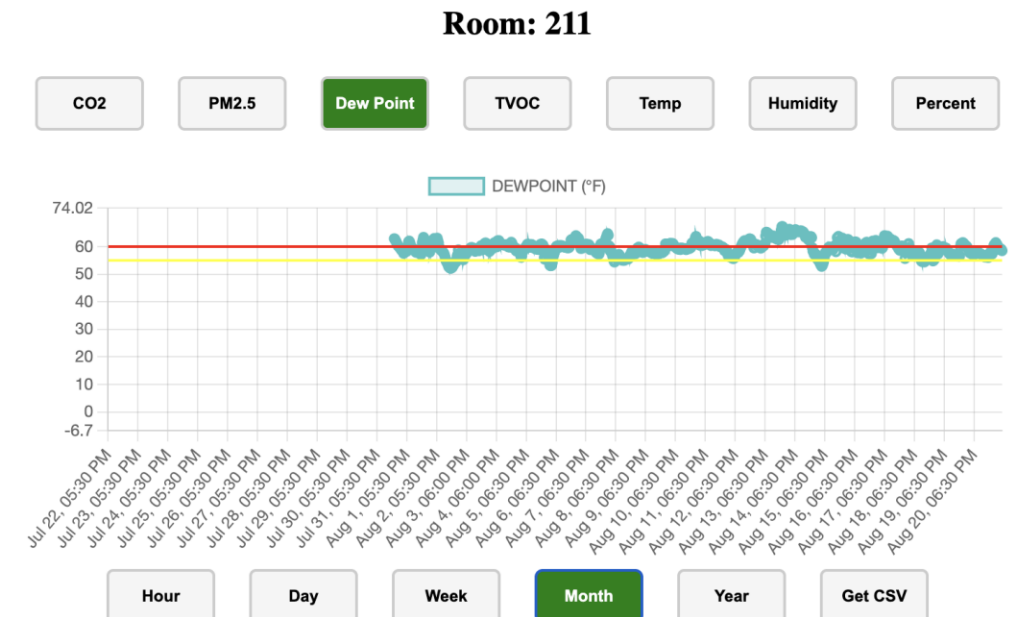
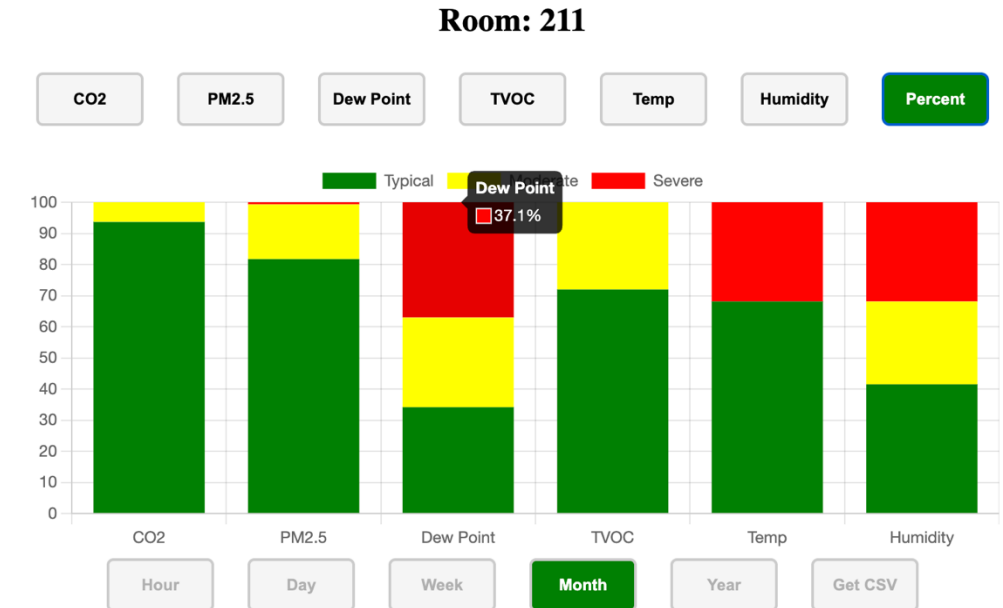
Takeaway: CO₂ levels were in the green range for 94% of the month, so occupancy did not drive high dew points

Takeaway: PM_{2.5} levels were decent over the past 30 days, so cooking likely did not drive high dew points

Takeaway: Occupant behavior or a water leak is likely driving high dew points

Graph Keys

- Blue line represents the actual dew point temperature in °F – no blue line means the sensor was unplugged or wifi was down
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- Red is the “very high” level



Room B-407

Observed: 19.5% of the month was spent at dew points exceeding 60°F

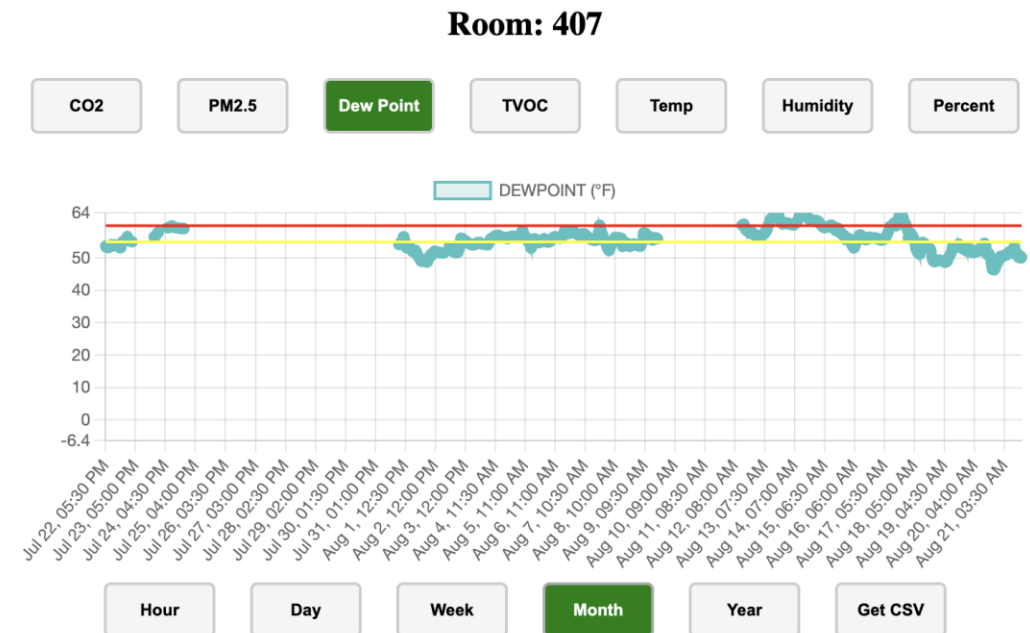
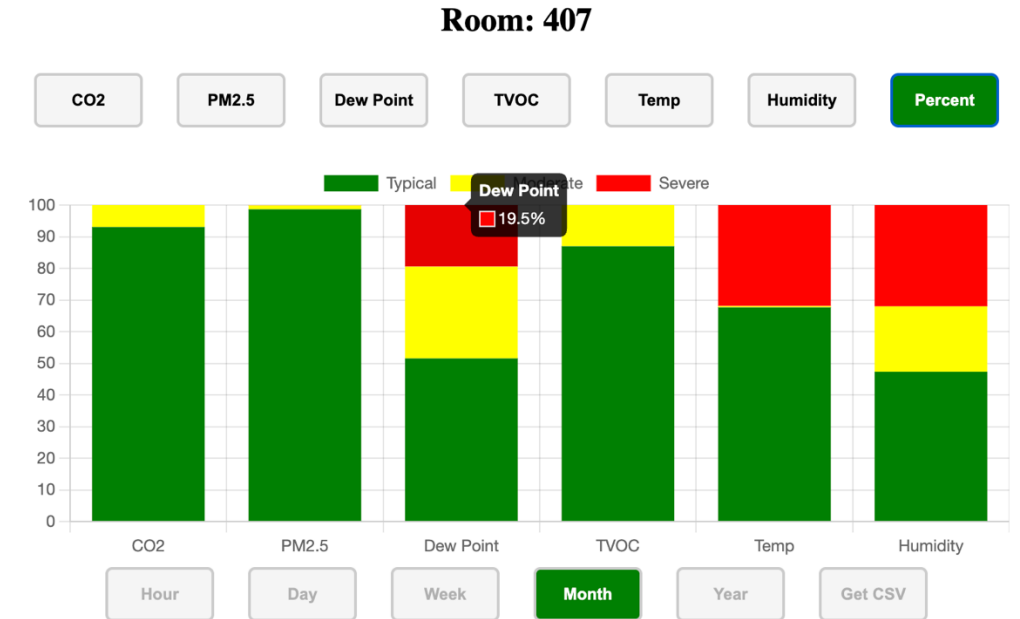
Takeaway: CO₂ levels were in the green range for 93% of the month, so occupancy did not drive high dew points

Takeaway: PM_{2.5} levels great over the past 30 days, so the high dew points were not caused by cooking or boiling water

Takeaway: Occupant behavior or a water leak is likely driving high dew points

Graph Keys

- Blue line represents the actual dew point temperature in °F – no blue line means the sensor was unplugged or wifi was down
- Yellow is the “high” level
- Red is the “very high” level



Room B-303

Observed: 14.6% of the month was spent at dew points exceeding 60°F

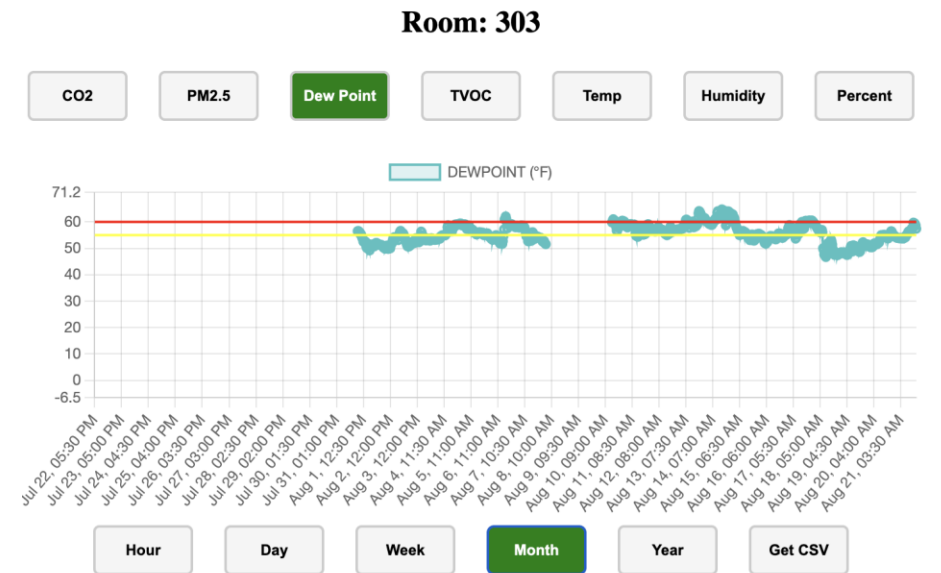
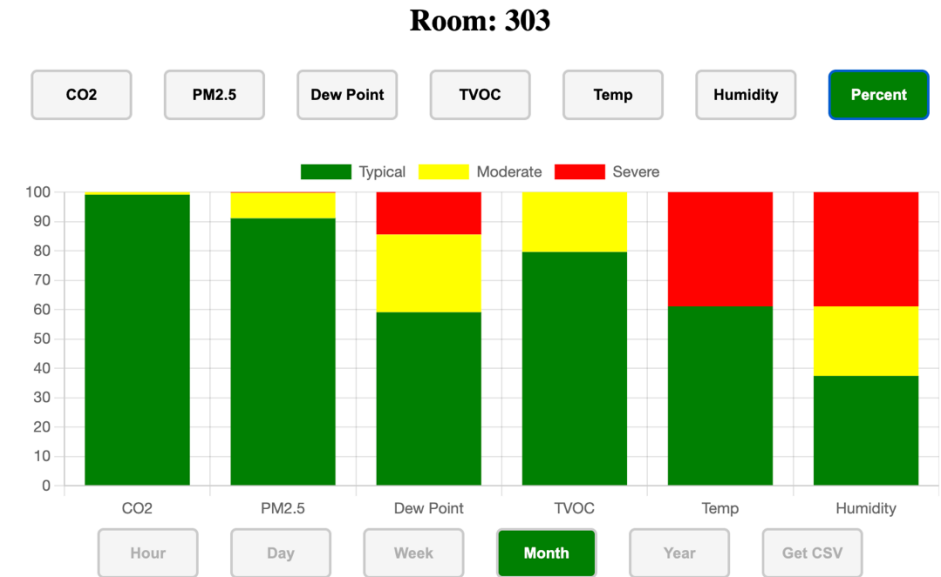
Takeaway: CO₂ levels were in the green range for 99% of the month, so occupancy did not drive high dew points

Takeaway: PM_{2.5} levels good over the past 30 days, so the high dew points were not caused by cooking or boiling water

Takeaway: Occupant behavior or a water leak is likely driving high dew points

Graph Keys

- Blue line represents the actual dew point temperature in °F – no blue line means the sensor was unplugged or wifi was down
- Yellow is the “high” level
- Red is the “very high” level



Appendix – IAQ Variables Explained

- Dew Point
- PM 2.5
- CO2
- Benchmark Apartment
- Visualization Interface

Dew Point (°F)

Components that Affect IAQ

Dew Point is the measurement of the absolute amount of humidity in the air. Surfaces at or below the dew point temperature of the air will condense water.

Dew Points at **too low** levels can cause

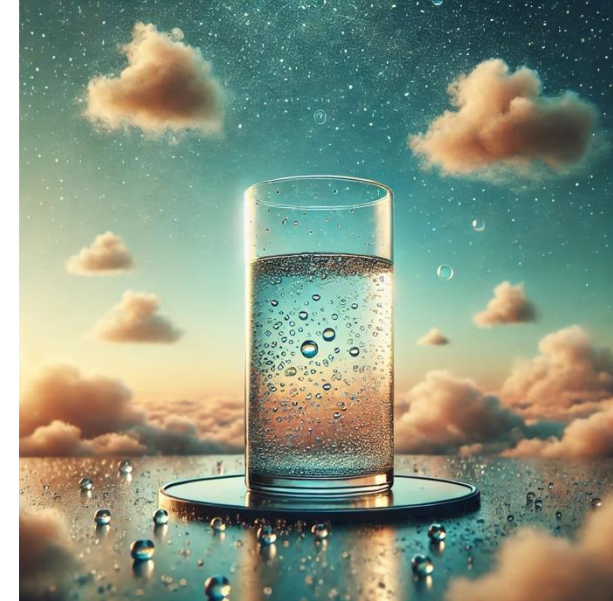
- Dry skin/lips and scratchy throats/noses
- Viruses and bacteria to thrive
- Wood floors and furnishings to shrink and separate

Dew Points at **too high** levels can cause

- Condensation on cooler surfaces
- Mold/mildew growth
- Oppressive mugginess and discomfort

Dew Point ranges

- Below 55°F – Excellent
- Between 55°F and 60°F – Acceptable
- Greater than 60°F – Needs improvement



5.12 Mechanically or Indirectly Evaporatively Cooled Buildings.

Systems that cool by mechanical means or indirect evaporation shall be designed to limit the indoor humidity to a maximum dew point of 60°F (15°C) during both occupied and unoccupied hours whenever the outdoor air dew point is above 60°F (15°C). The dew-point limit shall not be exceeded when system performance is analyzed with outdoor air at the dehumidification design condition (that is, design dew point and mean coincident dry-bulb temperatures) and with the space interior loads (both sensible and latent) at cooling design values and space solar loads at zero.

ASHRAE 62.1-2022 Section 5. Systems and Equipment

Particulate Matter (PM)

Components that Affect IAQ

PM 10 – Inhalable particles with diameters that are generally 10 micrometers and smaller

PM 2.5 – Fine inhalable particles with diameters that are 2.5 micrometers and smaller

Sources of PM 2.5

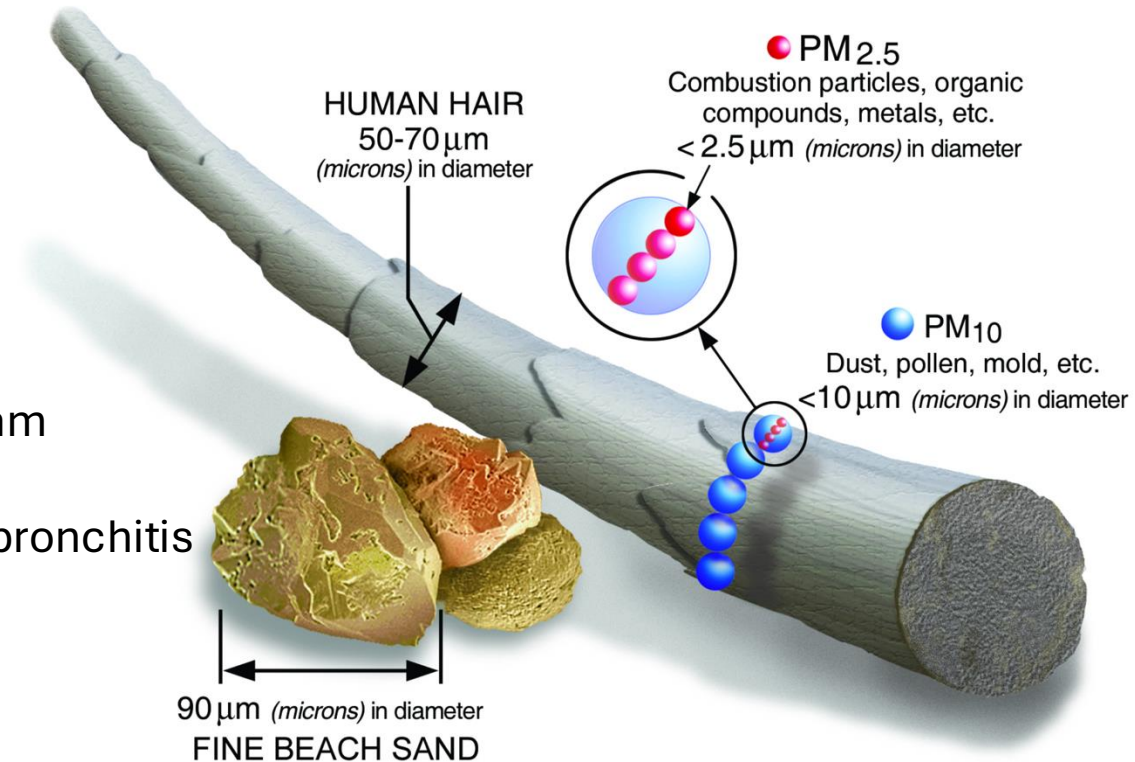
- Construction sites, wildfires, combustion emissions
- Complex reactions in the atmosphere (SO₂ and NO_x)
- Cooking and cleaning (resuspension)

Harmful effects of PM 2.5

- Travels deep into the lungs and can enter the bloodstream
- Premature mortality due to heart and lung impact
- Increased hospital admissions for asthma and chronic bronchitis

PM 2.5 Ranges

- 0-12 µg/m³ – Excellent, lower is always better
- < 250 µg/m³ – Acceptable
- > 250 µg/m³ – Needs improvement



PM 2.5 indoors can be reduced by exhausting polluted air, dilution by bringing in outside air, or capture using HEPA filtration

Carbon Dioxide (CO₂)

Components that Affect IAQ

CO₂ concentration outdoors is ~ 0.04 percent of the air or 400 ppm

Increased CO₂ levels influence

- The control of breathing -> stimulates respiration
- Vascular dilation or constriction -> increases cardiac output
- Body fluid pH -> decreases pH level (increase acidity)

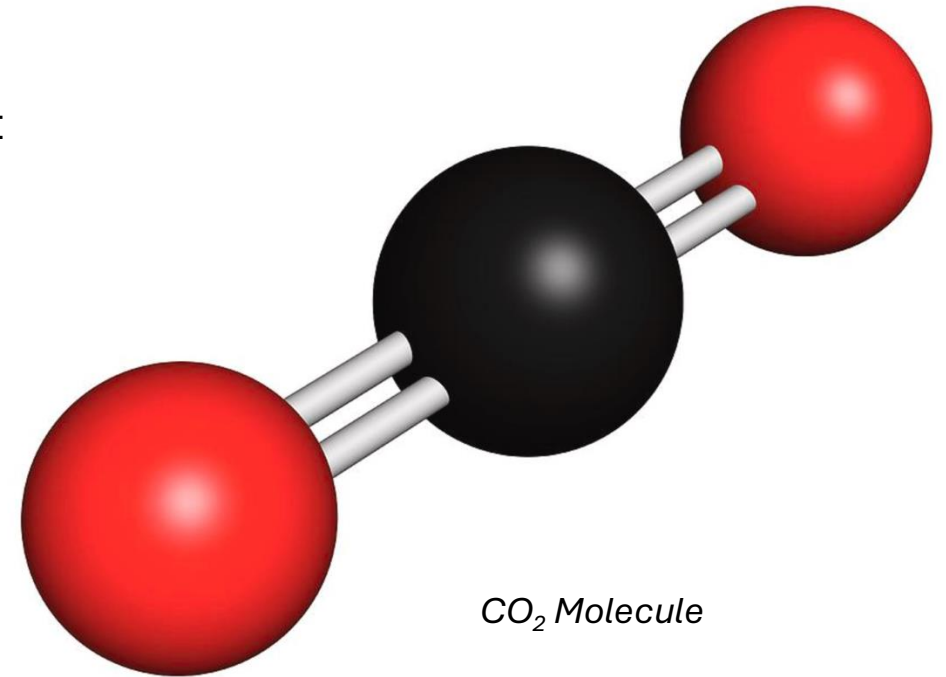
Increased CO₂ levels can cause

- Drowsiness and headaches
- Poor concentration and loss of attention
- Reduced ability to solve complex problems

CO₂ Ranges

- 400-800 ppm – Excellent
- 800-1200 ppm – Acceptable
- > 1200 ppm – Needs improvement

<https://www.epa.gov/sites/default/files/2015-06/documents/co2appendixb.pdf>



Source: CO₂ levels usually driven by human respiration in a closed space and are lowered by bringing fresh air inside

Room B-308 - Benchmark

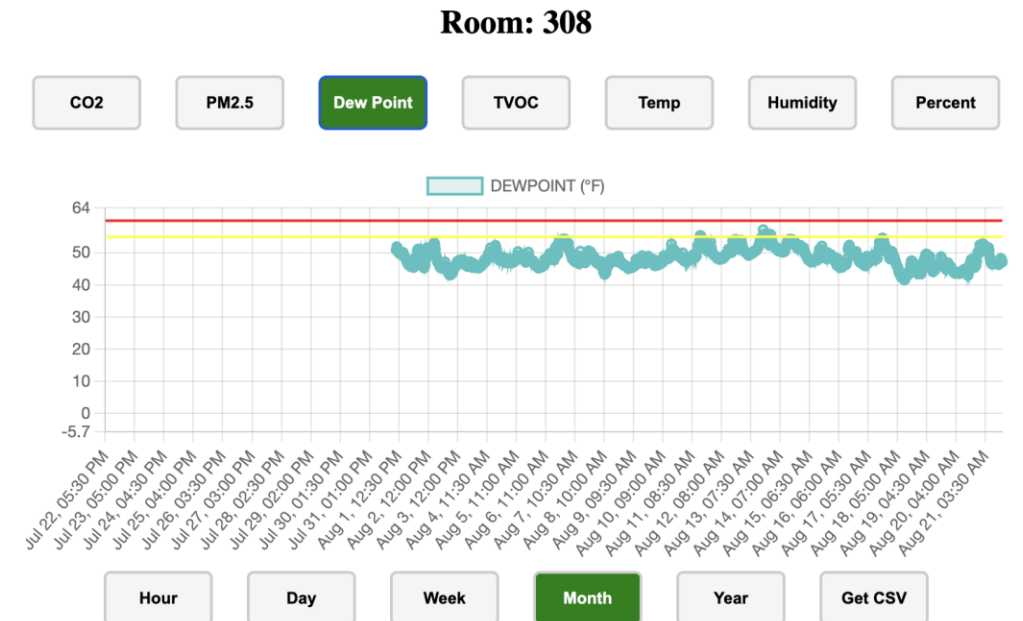
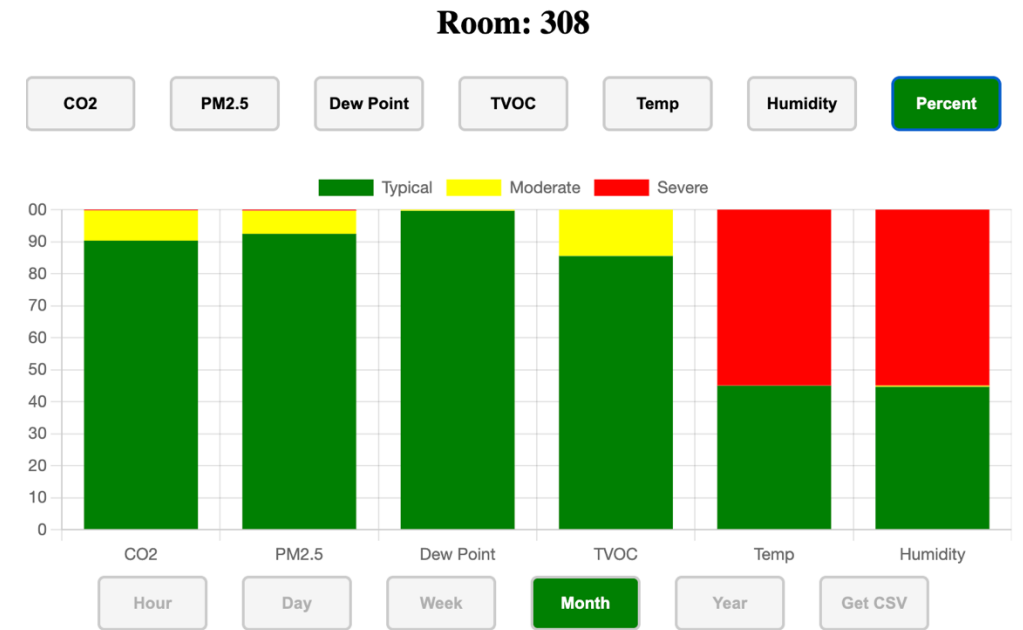
Observed: 0.0% of the month was spent at dew points exceeding 60°F

Takeaway: CO2 levels were in the green range for 90% of the month – so fresh air ventilation was good

Takeaway: PM2.5 levels were in the green range for 92% of the month – so exhaust fans were likely used when cooking

Graph Keys

- Blue line represents the actual dew point temperature in °F – no blue line means the sensor was unplugged or wifi was down
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Overture Visualization Interface

