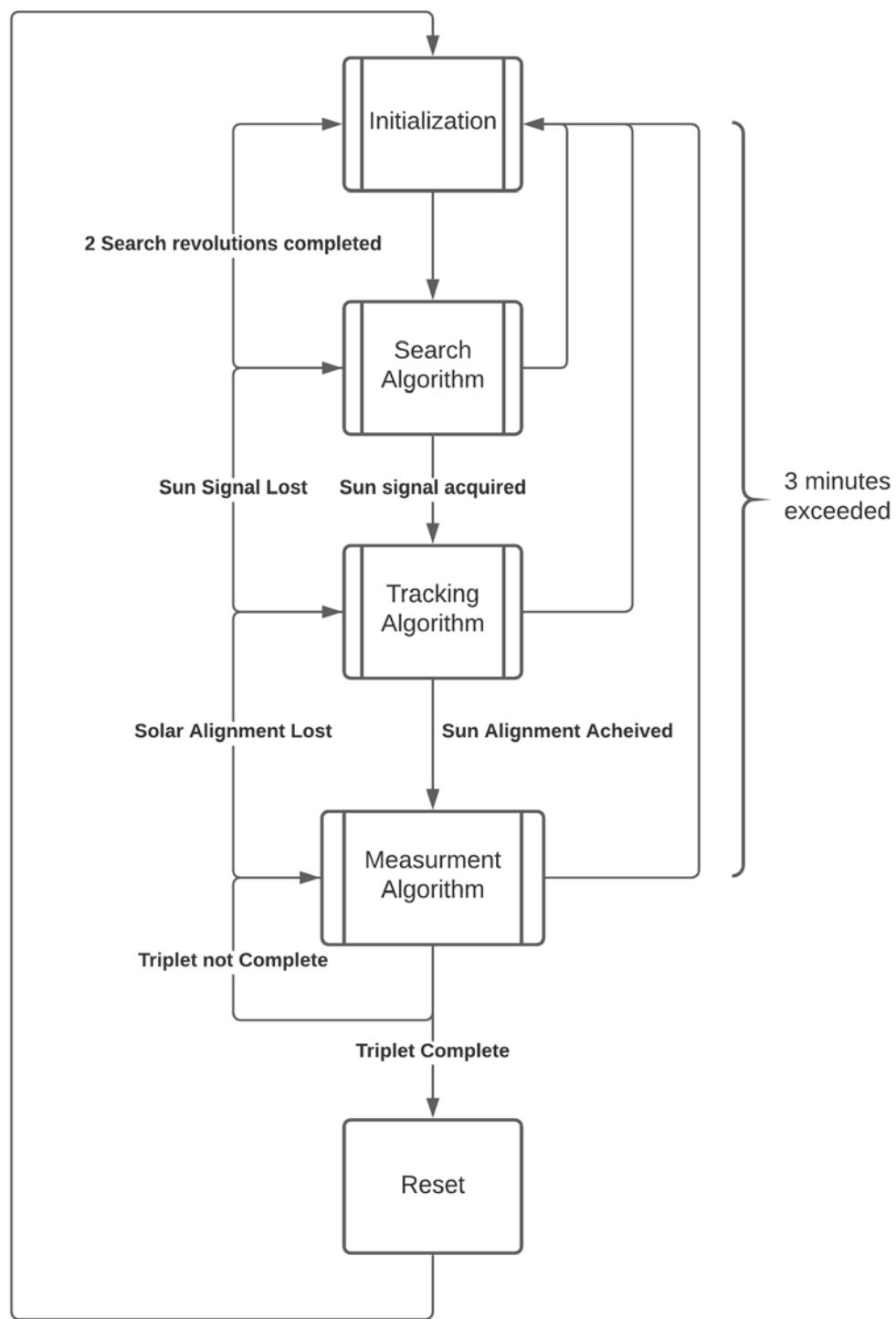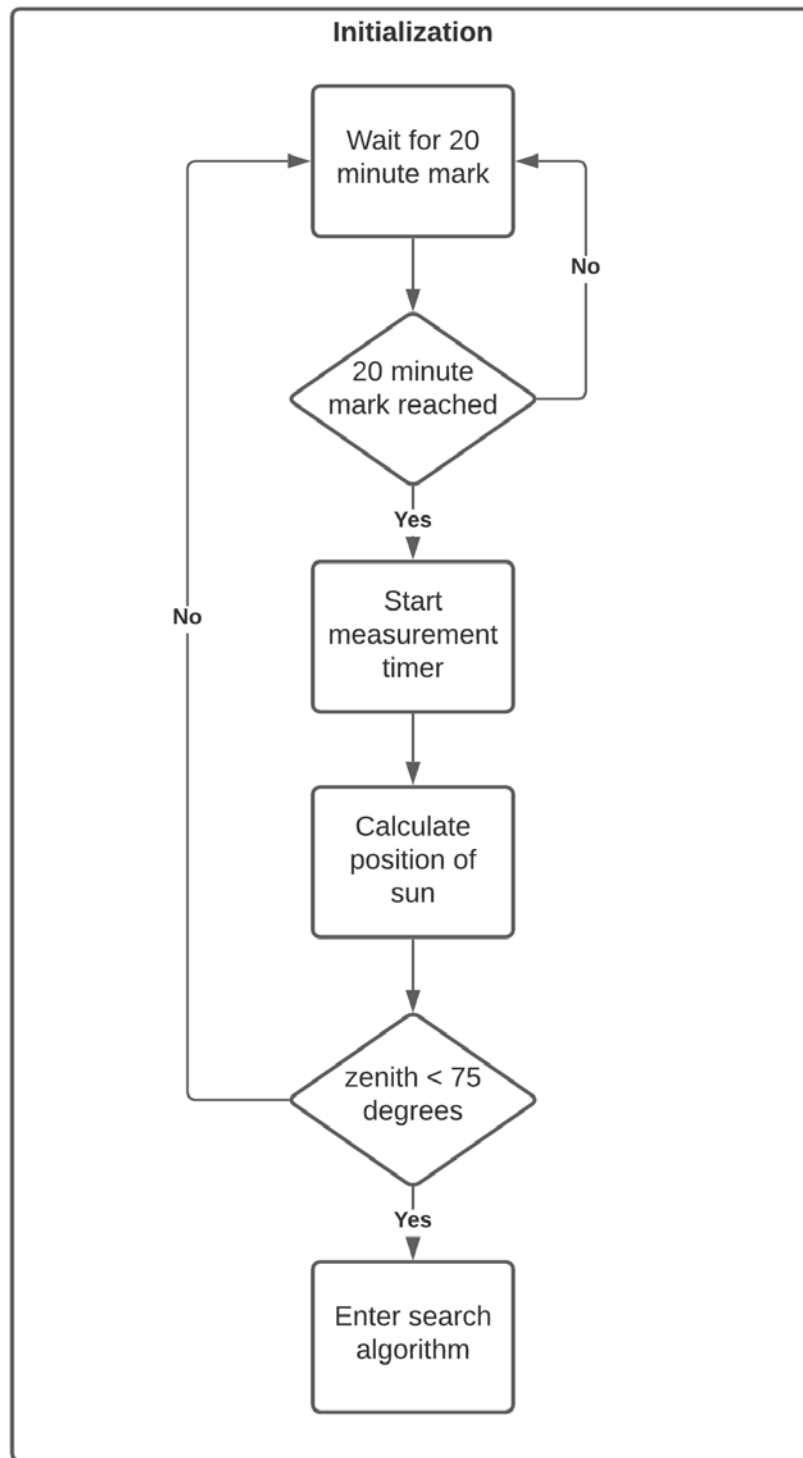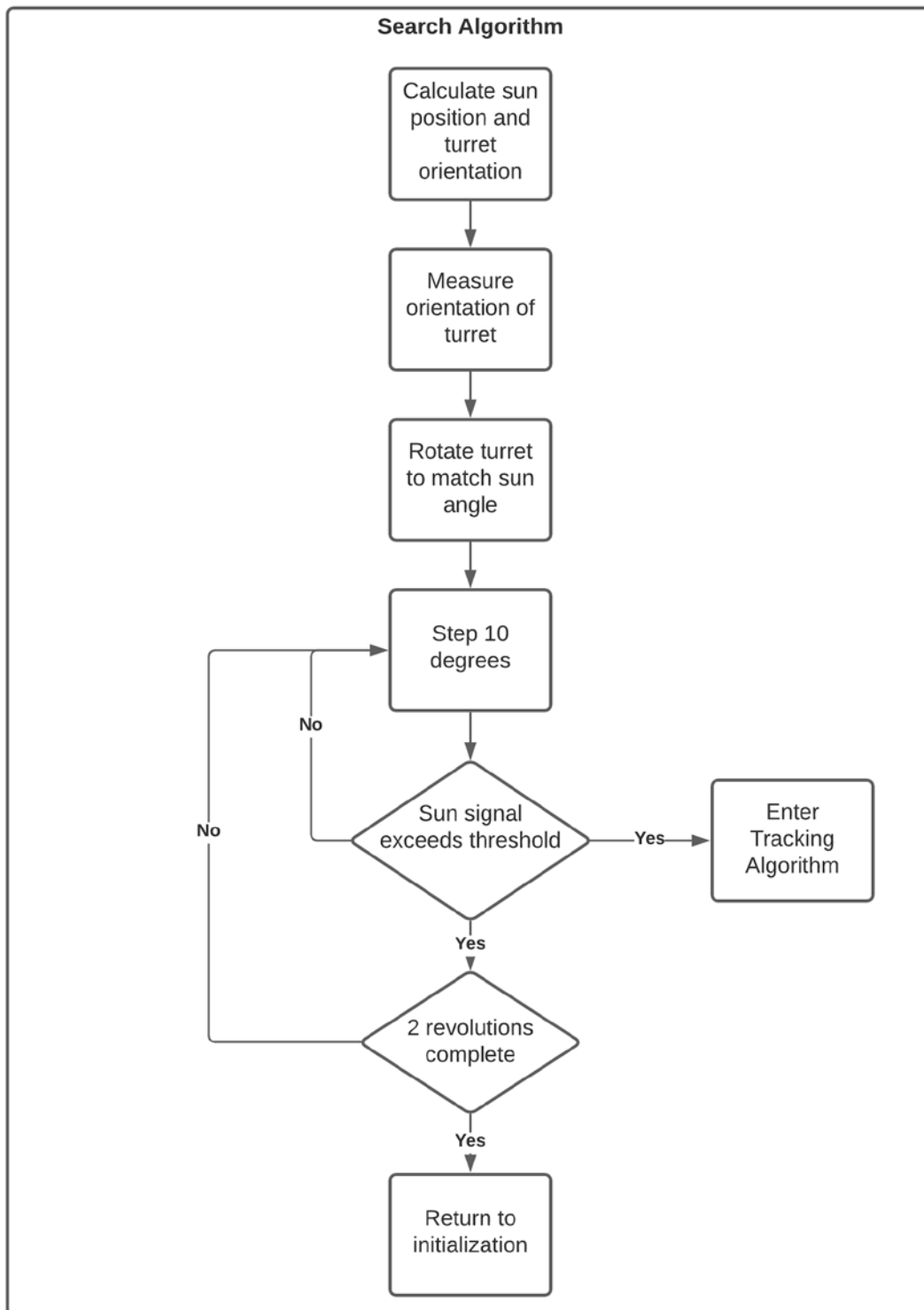**Figure S1:** Overview of real-time PM₂.₅ measurement protocol.
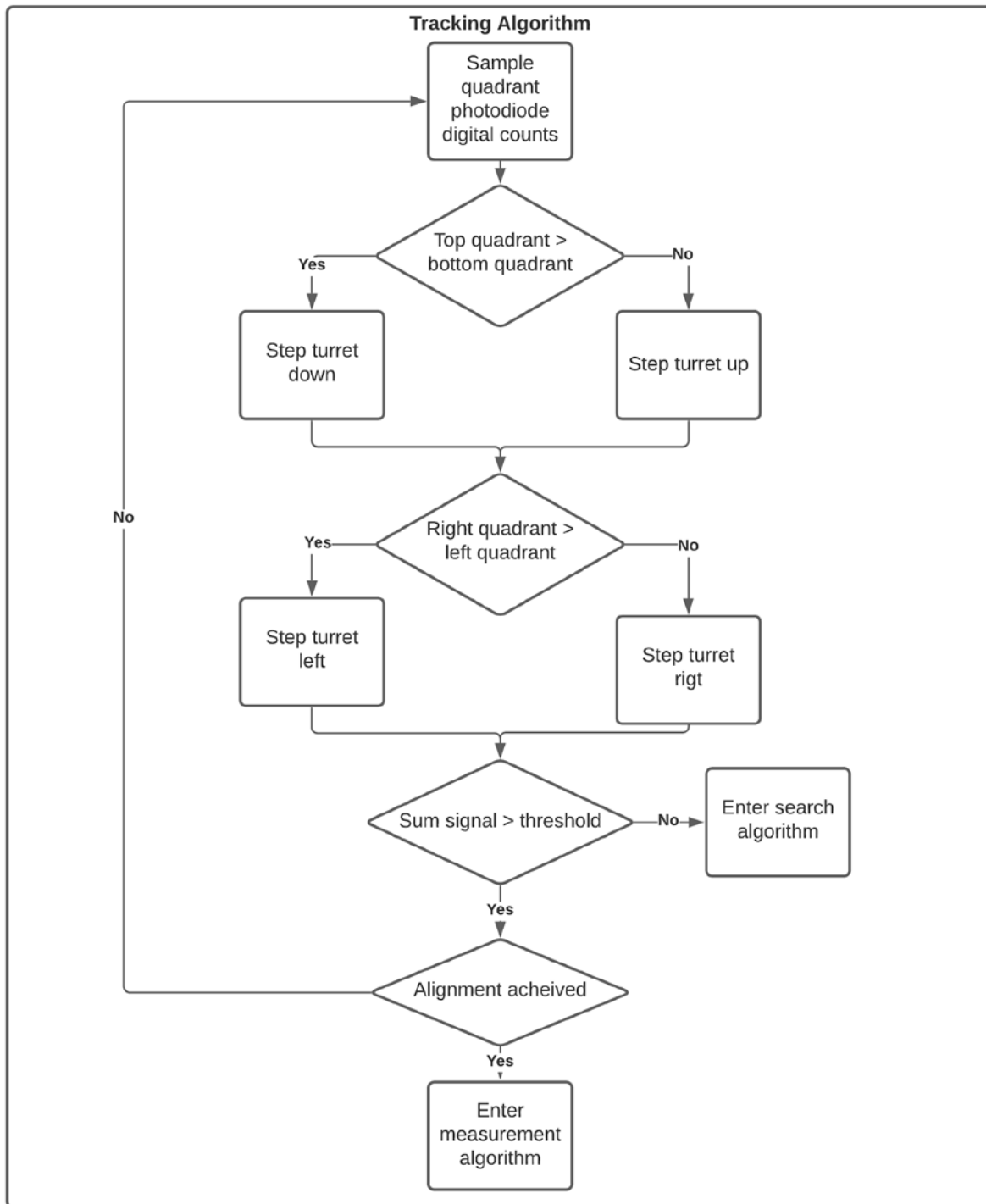
**Figure S2:** Overview of AOD measurement protocol. Initialization, search, tracking, and measurement algorithms are detailed in figures S2-S5.
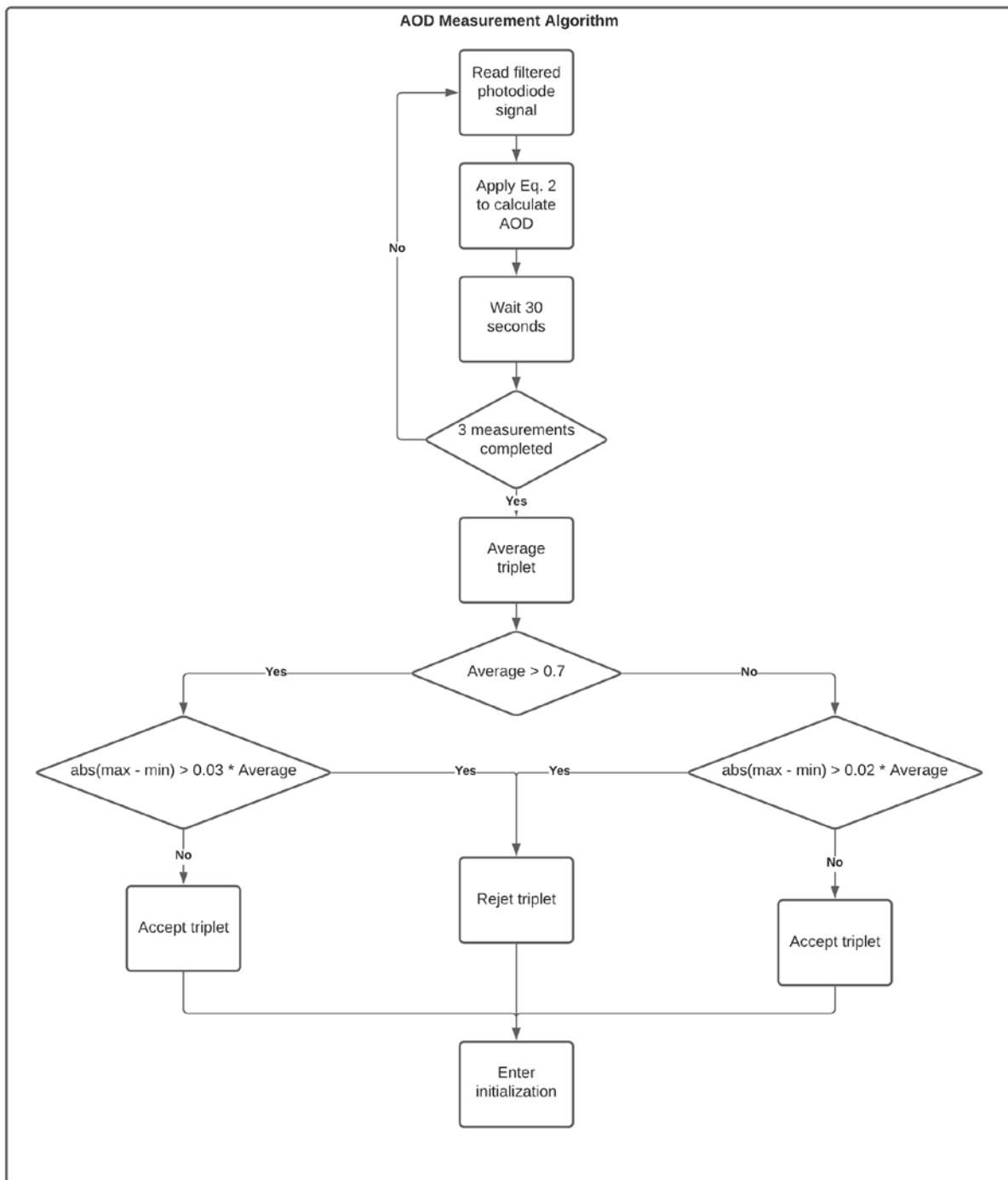
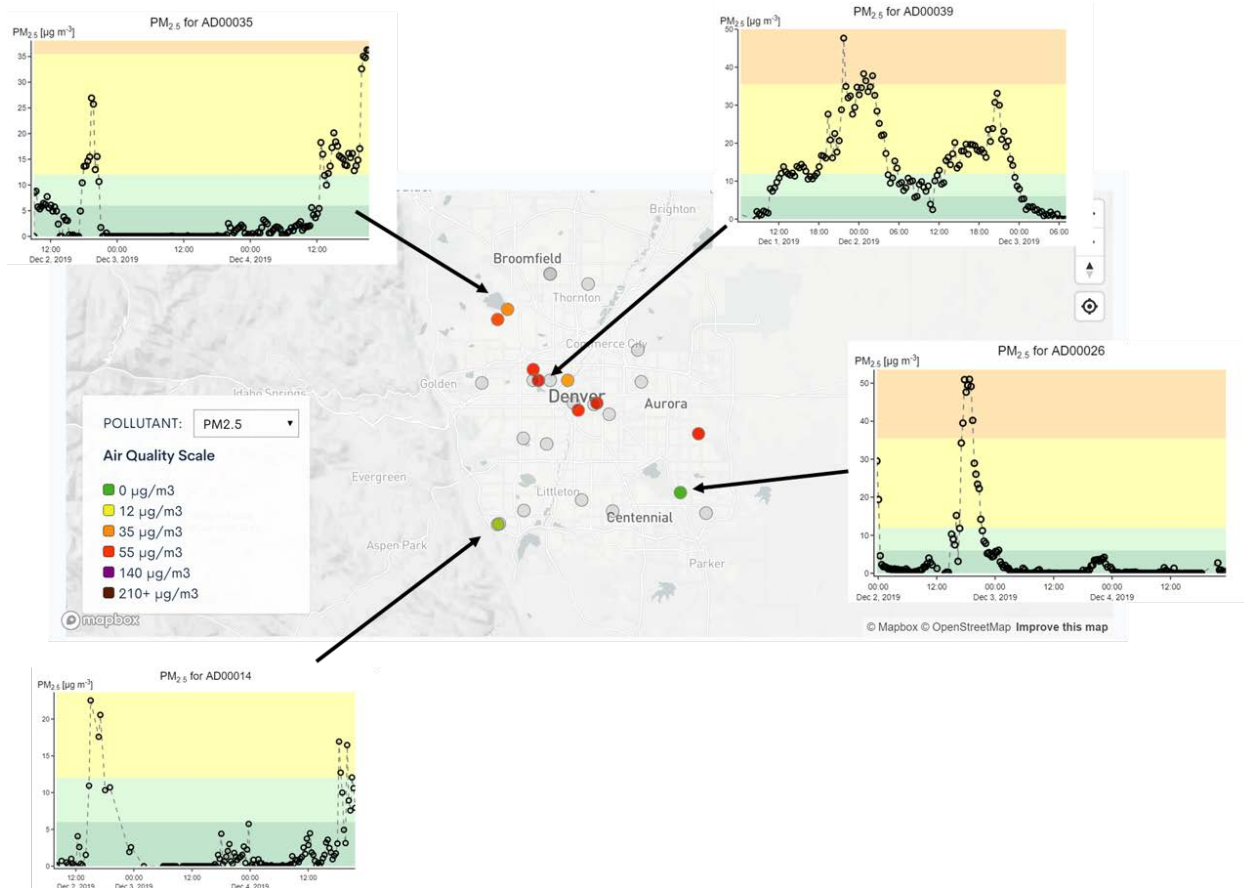**Figure S3:** AOD subsystem initialization protocol.

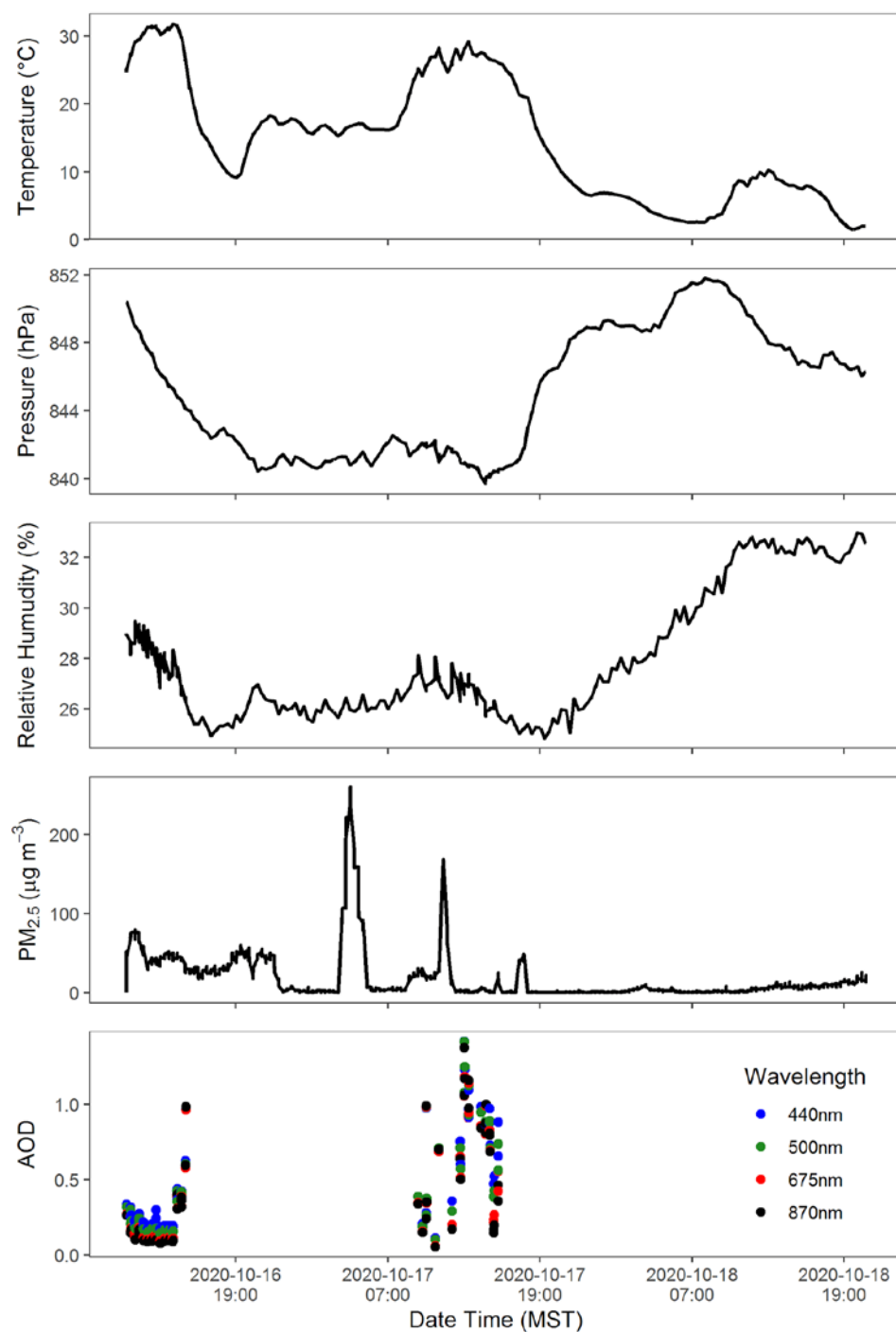**Figure S4:** AOD subsystem search algorithm.

**Figure S5:** AOD subsystem tracking algorithm

**Figure S6:** AOD subsystem measurement algorithm

**Figure S7:** Sample live map from sampler website csu-ceams.com overlaid with time series of PM$_{2.5}$. Colored circles represent active AMODv2s. Grey circles represent inactive AMODv2s. The color scale is determined by the current Air Quality Index (AQI) calculated based on the PM$_{2.5}$ measurement. The four sample PM$_{2.5}$ time series plots are linked to specific participant locations with arrows. Time series plots can be accessed by clicking on an active circle. Users may select the option to view AOD from a drop-down menu for both the map and the time series plot. Note: that this figure has been edited to show map and time series plots on the same page. On the actual website selecting a point displays only one simplified time series on the map itself. Detailed time series shown here are available on a separate page which can be accessed through selecting a unit on the map.

**Figure S8:** Sample time series from completed AMODv2 sample in MST. Temperature, pressure, relative humidity, and PM$_{2.5}$ reported at 30 second intervals are provided in the top four panels. The bottom panel gives screened AOD measurements, reported at 20 minute intervals. The presence of wildfire smoke on October 17 corresponded with increases in PM$_{2.5}$ and AOD.

**Table S1:** AMODv2 Cost of Goods and Assembly Summary

| Component | Manufacturer | Part Number | Cost |
|---|---|---|---|
| Printed Circuit Boards | Vergent Engineering | Custom Parts | $400 |
| 440 nm Filtered Photodiode | Intor | Custom Parts | $28 |
| 520 nm Filtered Photodiode | Intor | Custom Parts | $26 |
| 680 nm Filtered Photodiode | Intor | Custom Parts | $26 |
| 870 nm Filtered Photodiode | Intor | Custom Parts | $28 |
| Light-Scattering $PM_{2.5}$ Sensor | Plantower | PMS5003 | $15 |
| Solar Alignment Sensor | Solar MEMS | NANO-ISS5 | $45 |
| Electrical Box | Polycase | Custom Part | $55 |
| 3D Printed Fixtures | GoProto | Custom Part | $67 |
| Cyclone and Inlet | Synergy Core | Custom Part | $74 |
| Battery Pack | Dakota LithiumBatteries | 12V 10AH LiFePO4 | $63 |
| Auxiliary Battery Pack | Battery Space | LFH4S4R1WR-C5 | $68 |
| Zenith Stepper Motor | Stepper Online | 17HS10-0704S-C2 | $7 |
| Azimuth Stepper Motor | Stepper Online | 17HS19-1684S-C6 | $8 |
| Misc. Housing Components | N/A | N/A | $25 |
| Assembly Labor | N/A | N/A | $240 |
| Total Costs | | | $1175 |