For all of the plots in this document I will use measurements of $PM_{1.0}$, which exclude ultrafine particles of diameter <.3 micrometers that the PurpleAir sensor is unable to measure.

The sensor has two channels, A and B. Each channel collects the mass concentration (micrograms/cubic meter) of varying size ranges of particulate matter. The raw data the sensor collects is particle counts, which are converted to mass concentration by a proprietary algorithm on the part of the manufacturer of the laser counter, PlanTower (https://www2.purpleair.com/community/faq#!hc-using-the-sensor-list). To make this conversion, a number for the average particle density is used. Using average **indoor** particle density yields the CF_ATM, or just ATM, values in the data sheet. Using average **outdoor** particle density yields the CF_1 values in the data sheet. Given the nature of our project I am using the CF_1 values.

Below are the plotted measurements from channel A (blue), B (orange), and an average of both channels (green) for Oct 10th:
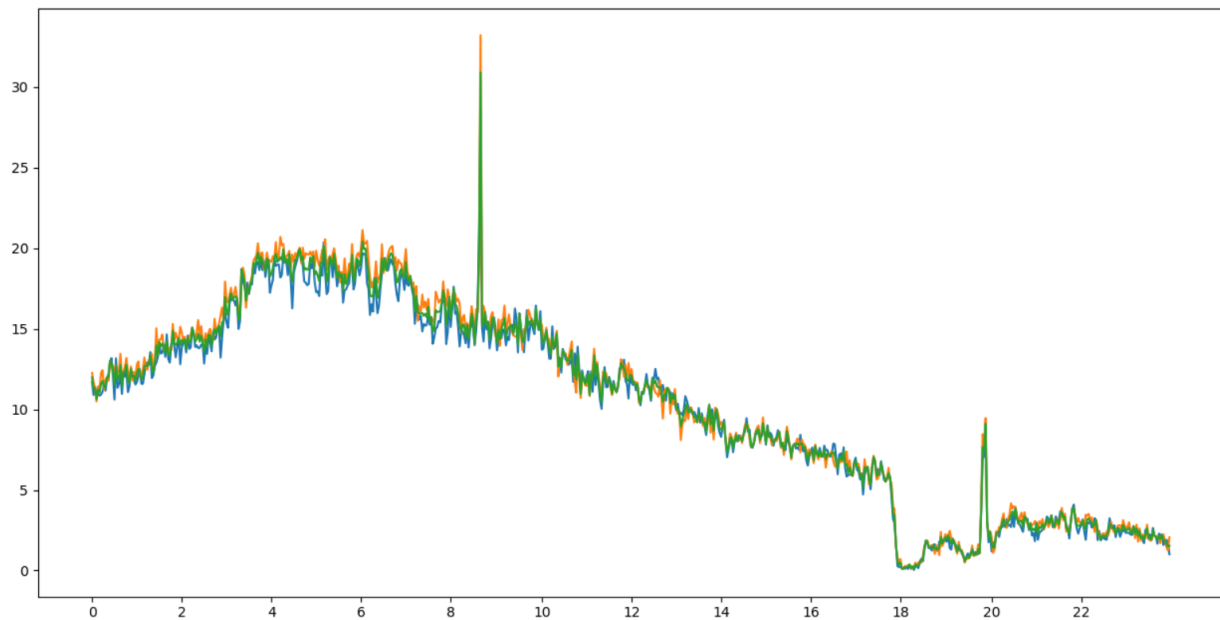

In general, the channel A and B measurements do not differ radically. For subsequent plots I will use the average of the channels, although we could consider using the minimum of the two channels to air on the side of under-estimation.
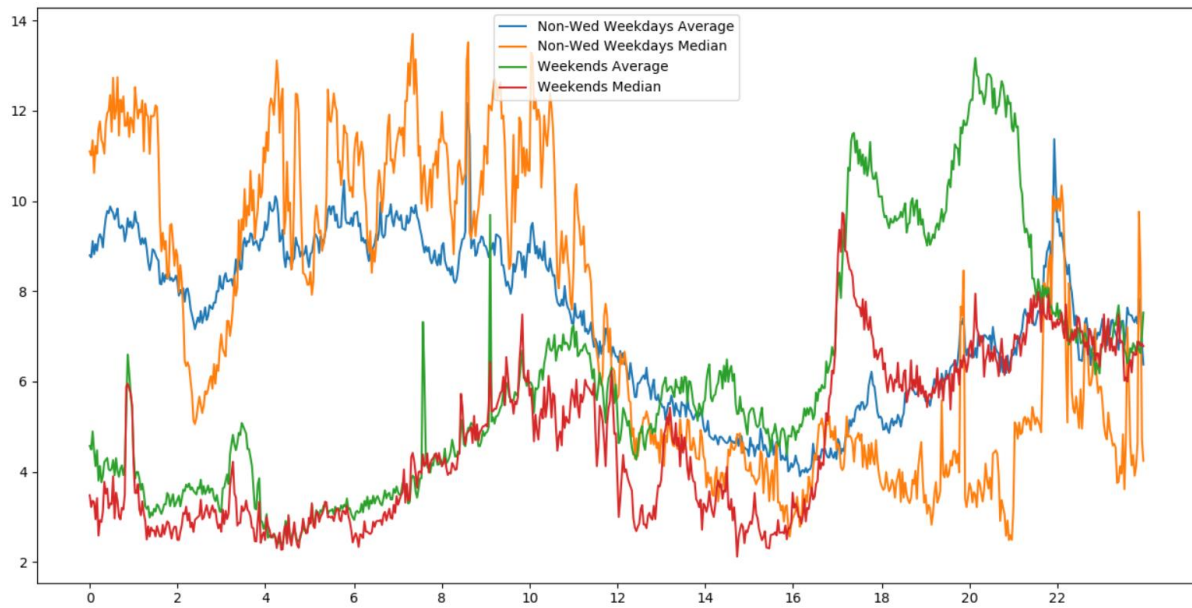
Below are the $PM_{1.0}$ measurements from Oct 10th through Oct 21st:
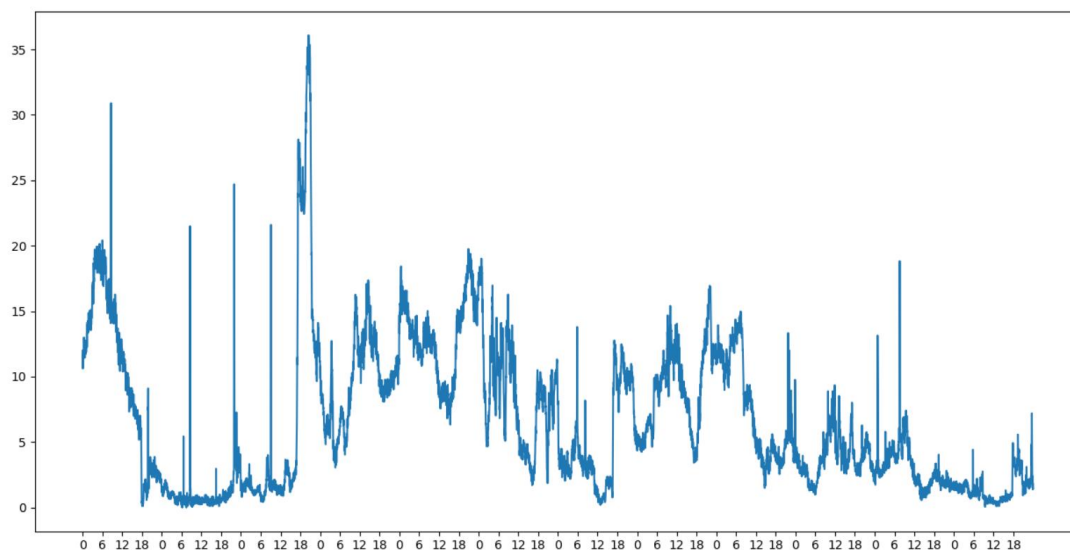
And here's what it looks like if the 24-hour periods are overlaid on top of one another:
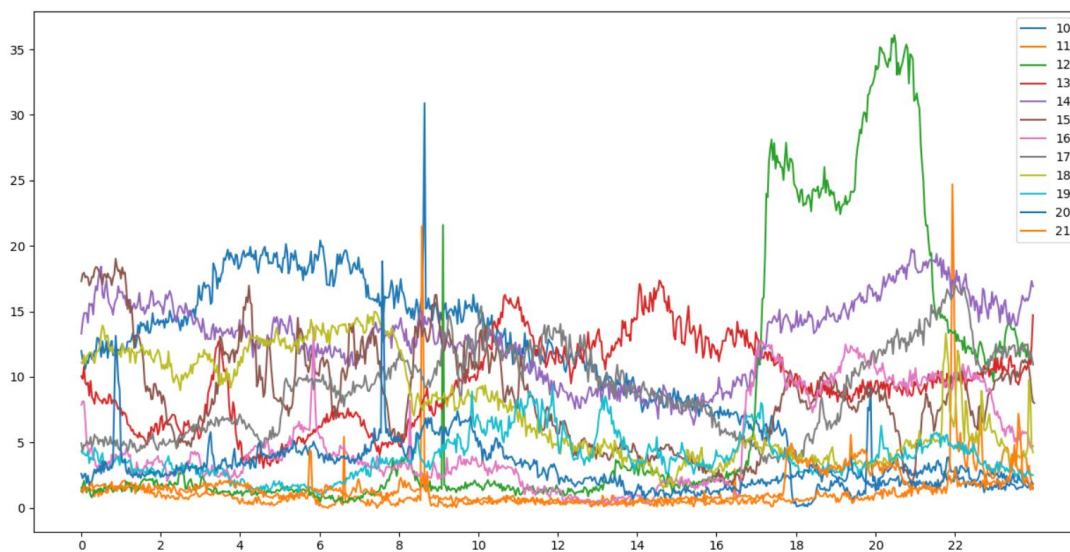
To try to find patterns, I tried both averaging and taking the median of the concurrent values from (non-Wednesday) weekdays and weekends:

Although it's still not clear if there any straight-forward conclusions we can draw from this.