

ABSTRACT

Development of portable weather station for monitoring microparticles in Greater Bandung air basin is very important to measure meteorological conditions and to identify potential sources of polluted air. We used temperature and relative humidity sensors (DHT22), air pressure sensors (BMP180), light intensity sensors (BH1750), wind speed sensors (hall sensors), and wind direction sensors (HMC5883L). Particulate matters mass concentration were measured by Nanosampler and PM_{2.5} sensor. Field observation was carried out for 25 days (August 17 - September 11, 2018), on the roof of the Tokong Nanas building (~ 675 masl), Telkom University, Bandung (~ 675 masl; 6 ° 58'22.4 "S and 107 ° 37'47.1" E). Result of meteorological parameter show that temperatures in the range of 25°C - 30°C during the day and cooler in the night (18°C -20°C). Dry air mass were observed during day time (35% -60%) and it was different than night (>80%). The air pressure is stable at 930 hPa. Most of the air mass were coming from the Southwest to the Northwest, with averaged wind speed around 1 – 2 Km. This study found that most of local air pollution sources came from highways, industrial area, and residential-waste burning. It was identified by higher mass concentration of primary OC and Char-EC than secondary OC and Soot-EC. Meanwhile, the source of long-range transport of pollution air is sea-salt (NaCl) and ammonium sulfate ((NH₄)₂SO₄).

Keywords: *Bandung, sensor, air pollution, meteorology, ion*