



## Measurement of Aerosol Optical Property in Hong Kong Rural Area

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Atmospheric aerosols play an important role in climate change and visibility impairment. The evidence of the role in climate change is required for monitoring the extinction, absorption, scattering coefficient and single scattering albedo in different sites around world. In the southern China public attention are focusing on severe regional visibility problem and its connection to regional air pollution. Black carbon (BC) is a form of atmospheric aerosol and can reduce visibility through absorption of solar radiation and it is an important primary aerosol cause global warming.

Here, we presented the 2-year measurements (2011-2013) of aerosol optical properties, using aethalometer and nephelometer to measure scattering (Bsp), absorption coefficient (Bab), single scattering albedo (SSA) and scattering angstrom exponent ( $\alpha_s$ ) in Hong Kong rural area (Hok Tsui) and determine the Hong Kong regional pollution status.

The mean Bsp, Bab,  $\alpha_s$  and SSA during the sampling period is  $110.84 \pm 89.19$ ,  $15.09 \pm 9.85$  Mm<sup>-1</sup>,  $1.0 \pm 0.42$  and  $0.84 \pm 0.11$ , respectively. Scattering coefficient and absorption coefficient are both  $\sim 22\%$  higher than the median. The significant seasonal variation of absorption and scattering coefficient is observed, which was lower in spring ( $12.87 \pm 7.5$  and  $91.30 \pm 73.3$ ) and summer ( $10.84 \pm 10.1$  and  $65.24 \pm 75.2$ ) seasons but has higher value in autumn ( $16.79 \pm 8.9$  and  $124.23 \pm 82.4$ ) and winter ( $18.74 \pm 10.3$  and  $157.27 \pm 98.8$ ) seasons. Similar as scattering and absorption value, in spring and summer, the SSA is lower than the value measured in autumn and winter seasons, indicates that absorption coefficient play an important role in spring and summer seasons than in autumn and winter seasons. Compared to scattering and absorption coefficient data reported by [1] in HT, 14 years ago, the annual scattering coefficient is increased about  $\sim 106\%$  and absorption coefficient decreased  $\sim 11\%$ . The main reason for absorption coefficient decreasing relies on BC concentration significantly decreased. In addition, the value of SSA is 0.8 in 2011 compared with 0.7 in 2001 and it could estimate that secondary pollution increasing greatly.