

# Comparison of The Influence of Aerosols On the Impairment of Visibility In Taipei and Yunlin

Y.C. Cheng<sup>1</sup>, J.Y. Syu<sup>1</sup>, Y.Y. Chang<sup>1</sup>, S.J. Chen<sup>2</sup>, K.H. Chang<sup>3</sup>, Y.L. Yan<sup>4</sup> and W.Y. Lin<sup>1\*</sup>

<sup>1</sup> Institute of Environmental Engineering and Management, National Taipei University of Technology, Taipei City 10608, Taiwan

<sup>2</sup> Department of Environmental Science and Engineering, National Pingtung University of Science and Technology, Pingtung 912, Taiwan

<sup>3</sup> Department and Graduate School of Safety Health and Environmental Engineering, National Yunlin University of Science and Technology, Yunlin 640, Taiwan

<sup>4</sup> Department of Safety, Health and Environmental Engineering, National United University, Miaoli 360, Taiwan

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Presenting author email: wylin@ntut.edu.tw

Previous studies showed that visibility is markedly influenced by the size and physical properties of aerosols (Kim et al., 2001). This study focused mainly on the influence of physical characterization of aerosols on the impairment of visibility and extinction coefficient in urban Taipei city and rural Yunlin county.

Atmospheric aerosols were collected in Taipei and Yunlin areas, respectively. Both fine and coarse particles were sampled by Electrical Low-Pressure Impactor (ELPI) and Micro-Orifice Uniform Deposit Impactor (MOUDI).

The cumulative percentages of particle and extinction coefficient between the Taipei and Yunlin in various seasons are shown in Figure 1. It was found that the cumulative percentage of PM<sub>2.5</sub> number concentration was more than 99% in Taipei and Yunlin. The cumulative percentage of PM<sub>2.5</sub> volume concentration was 50% to 90% in Taipei and Yunlin. Nevertheless, the cumulative percentage of PM<sub>2.5</sub> volume concentration was only 37% in summer in Taipei. Besides, the cumulative percentage of PM<sub>2.5</sub> volume concentration was below 50% in winter in Yunlin. It was indicated that the rain would can take some small particles out. The particle size distribution would become close to coarse particle mode.

In addition, the cumulative percentage of PM<sub>2.5</sub> surface area concentration was 80% to 97% in Taipei and Yunlin. The cumulative percentage of extinction coefficient was 80% to 99% in Taipei and Yunlin. The result obtained show good agreement between the surface area concentration and extinction coefficient. The particle number concentration and surface area concentration were found to be the major contributors to the extinction coefficient. Accordingly, the measurement of the number concentration and size distribution be used as a visual indication.

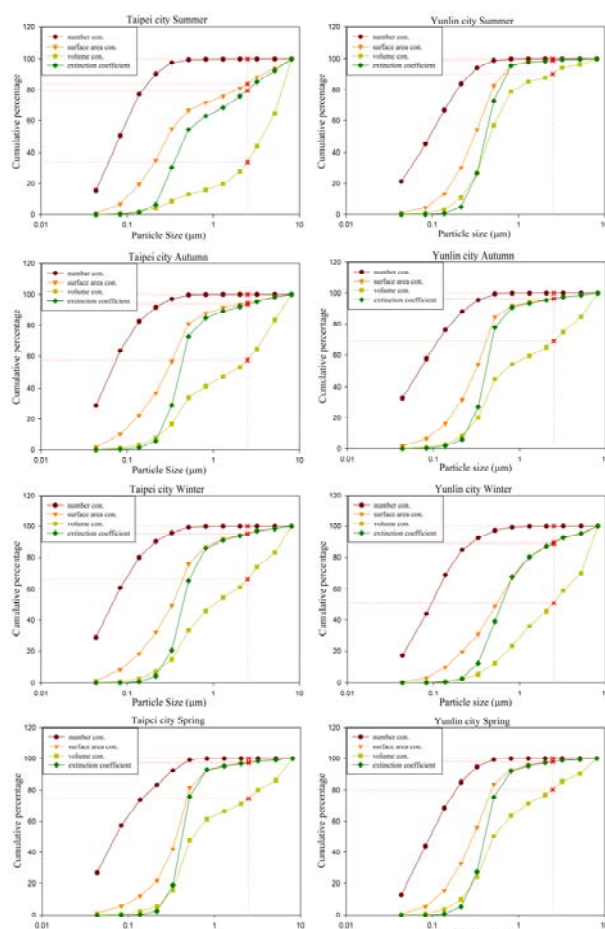


Figure 1. The cumulative percentage of particle and extinction coefficient

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