

CHEMICAL, MINERALOGICAL AND MORPHOLOGICAL CHARACTERIZATION OF FINE AEROSOL PARTICLES (PM 2.5) IN A SOUTHERN ITALIAN SITE

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The current increasing interest in the study of fine aerosol particles (e.g., PM_{2.5}) is due to the identification of adverse effects on human health, environment and climate (IPCC, 2007; WHO, 2007). In particular, the increase in the aerosol particle levels is one of the major causes of atmospheric pollution in urban and industrial areas mainly due to the health dangerous effects they have on human health. These effects are related both to the concentration levels and the chemical-mineralogical composition of the aerosol particles which are influenced in their turn by emission sources and atmospheric transformation processes. In the light of this, studies directed towards the characterisation of aerosol particles can help the improvement of air quality control strategies as well as the prevention and mitigation of the negative effect on the human health and life quality. In this context PM_{2.5} in-situ measurements were performed at the Istituto di Metodologie per l'Analisi Ambientale of the National Research Council of Italy (IMAA- CNR, Tito Scalo - Southern Italy) from April to July 2010. The PM_{2.5} concentration, chemical composition, mineralogical and morphological features of the PM_{2.5} particles collected were analysed. Particular attention was paid to chemical elements (e.g., chromium, lead) and minerals (e.g., silica polymorphs, metal oxides) that may pose severe risks to health.

IPCC, 2007. In: Solomon S, Qin D, Manning M, Chen Z, Marquis M, Averyt KB, Tignor M, Miller HL, editors. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2007, 996 pp.

WHO, 2007. *Exposure of children to air pollution (particulate matter) in outdoor air*. Fact sheet no. 3.3, code: rpg3_air_ex2_pm, May 2007.

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