



Chemical Characterization of Atmospheric Aerosols in the Sarajevo Canton: Results of 2017-2018 Sarajevo Canton Winter Field Campaign (SAFICA)

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Abstract: The World Health Organization (WHO) identified air pollution as the world's largest single environmental health risk causing seven million deaths per year, one in eight deaths globally. Of particular concern are heavily polluted and understudied urban centres: while thousands of scientific papers have been published on air quality of the cities such as London, UK and Los Angeles, USA, only 41 papers exist on the top 10 globally most polluted cities. Sarajevo, the capital of Bosnia and Herzegovina (B&H), is one of urban centres which often experiences low air quality due to the extensive use of non-renewable energy sources and geographical location. For example, in Sarajevo during 2010, an annual average concentration of particulate matter (PM) with a diameter smaller than 10 μm (PM_{10}) was 50 $\mu\text{g}/\text{m}^3$, a value 2.5x higher than the recommended WHO guidelines value of 20 $\mu\text{g}/\text{m}^3$. Sarajevo Canton Winter Field Campaign 2017-2018 (SAFICA) took place in the Sarajevo Canton during the cold winter season of 2017 – 2018 (Dec 4, 2017 – Mar 15, 2018), the period historically characterized with the lowest air quality according to the available data. SAFICA project was lead by Federal hydrometeorological Institute of B&H, Institute of Public Health of the Sarajevo Canton, University of Sarajevo and University of Rijeka, and field measurements took place at three urban locations within the city of Sarajevo (Otoka, Pofalići i Bjelave) i one remote location (Ivan Sedlo mountain ridge). In this presentation, the basics of anthropogenic air pollution and its global influence on the air quality will be explained. Particular attention will be given to the atmospheric PM or aerosols, and aerosols formation mechanisms and the importance of their characteristics such as atmospheric concentration, size and chemical composition will be explained. Also, the reasons for the adverse effects of aerosols on human health and the correlation of atmospheric fine PM ($\text{PM}_{2.5}$) concentrations and human mortality will be explained. Finally, preliminary results of SAFICA measurements campaign will be presented and compared with those from other global urban centers.

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