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Burn wood influence on outdoor air quality in a small village: Foros de Arrão, Portugal

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Abstract

One Plus Sequential Air Sampler—Partisol was placed in a small village (Foros de Arrão) in central Portugal to collect PM₁₀ (particles with an aerodynamic diameter below 10 μm), during the winter period for 3 months (December 2009–March 2010). Particles masses were gravimetrically determined and the filters were analyzed by instrumental neutron activation analysis to assess their chemical composition. The water-soluble ion compositions of the collected particles were determined by Ion-exchange Chromatography. Principal component analysis was applied to the data set of chemical elements and soluble ions to assess the main sources of the air pollutants. The use of both analytical techniques provided information about elemental solubility, such as for potassium, which was important to differentiate sources.

Keywords

Wood burn – Air quality – Rural area – PM₁₀