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# Origin of fine carbonaceous particulate matter in the Western Mediterranean Basin: fossil versus modern sources

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The present work was carried out in the frame of the international field campaign DAURE (Determination of the sources of atmospheric Aerosols in Urban and Rural Environments in the western Mediterranean). The objective of this campaign is to study the aerosol pollution episodes occurring at regional scale during winter and summer in the Western Mediterranean Basin. As part of this campaign, this work focuses on identifying the origin of fine carbonaceous aerosols. To this end, fine particulate matter (PM1) samples were collected during two different seasons (February-March and July 2009) at two sites: an urban site (Barcelona, NE Spain) and a rural European Supersite for Atmospheric Aerosol Research (Montseny, NE Spain). Subsequently, 14C analyses were carried out on these samples, both in the elemental carbon (EC) fraction and the organic carbon (OC) fraction, in order to distinguish between modern carbonaceous sources (biogenic emissions and biomass burning emissions) and fossil carbonaceous sources (mainly road traffic). Preliminary results from the winter period show that 40% of the OC at Barcelona has a fossil origin whereas at Montseny this percentage is 30%. These values can be considered as unexpected given the nature of the sites. Nevertheless, the absolute concentrations of fossil OC at Barcelona and Montseny differ by a factor of 2 (the first being higher), since the total OC at Montseny is lower than at Barcelona. Further evaluation of results and comparison with other measurements carried out during the campaign are required to better evaluate the origin of the fine carbonaceous matter in the Western Mediterranean Basin.

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