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Variability of fine and coarse aerosol over the Western Mediterranean Basin during the Minerva 2015 research cruise campaign

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The Mediterranean Basin, due to its semi-enclosed configuration, is heavily affected by air pollution and it is becoming, in the last years, a region of particular interest of study for its implications regarding both health effects and environmental impacts. The area is surrounded by a densely populated as well as industrialized coast, and even affected by natural sources. So, it is important to know how the various sources contributes to increase air pollution levels and discriminate among them. With special regard to aerosol pollution, natural sources, like Saharan dust, volcanoes, and fires, as well as anthropogenic sources, such as industry, road and marine traffic, and fuel combustion from heating, can equally increase the values of this dangerous pollutant. While on the land we can find numerous monitoring sites, there are not continuous measurements on the sea. For this reason, since 2000 the Institute of Atmospheric Pollution of the National Research Council (CNR-IIA) is conducting regular oceanographic campaigns of measurements in the Mediterranean Sea. In this context, here we report the results obtained during the last cruise campaign, which took place in the Western Mediterranean sector and was conducted on-board the Italian research vessel Minerva during summer 2015 (from June 27th to July 13th). Fine (PM2.5) and Coarse (PM2.5-10) particulate size fractions were collected on PTFE membrane filters (Advantec MFS) and their mass concentrations determined gravimetrically. Successively, all the filters were digested with a mixture of HNO_3/H_2O_2 in an microwaves digestion system and then analyzed by ICP-MS for the determination of the major and trace elements. Outcomes regarding the particulate mass concentration, the content and the distribution of the analyzed elements over both PM size fractions will be discussed taking into account potential contributing sources as well as different meteorological conditions.