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Climatic feedback of carbonaceous aerosols over the Mediterranean and North African regions , MeNA

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Carbon (black and organic) and sulfate aerosols from the anthropogenic and biogenic sources plays significant rules on climate change over the Mediterranean and North African regions. Both of the aerosol optical properties (extinction efficiency, single scattering albedo and asymmetry factor) and mixing ratio are controlling the calculation of radiative forcing. The framework of ICTP-Regional Climate Model (RegCM) contains both natural and anthropogenic aerosols including, dust, sea-salt, sulfate from DMS and sulfate from both anthropogenic and biogenic sulfur dioxide, black and organic carbon. In this work, we will study the climatic feedback of sulfate, black carbon and organic carbon aerosols over the Mediterranean and North African regions. The results indicate that the positive forcing (warming) by BC must substantially counterbalance cooling by anthropogenic reflective aerosols. Thus, especially if reflective aerosols such as sulfates are reduced, it is important to reduce BC to minimize the regional warming.