



Modeling of heterogeneous chemical processes in CAMx air quality model

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The air quality problems related to increased PM concentrations is considered as very complicated because it involves anthropogenic and natural sources as well as complicated physicochemical processes. Particulate matter is generated at three different stages. The first stage of generation involves the direct emission from anthropogenic and natural sources. The second stage of generation involves the aqueous phase and gas-to-particle production processes, while the third one involves the generation of new types of particulate matter resulting from heterogeneous chemical mechanisms. Particles of natural origin are mainly soil dust and sea salt. The existing air quality models do not include all the above processes and particle generation. In this presentation new model development will be discussed. The new development is related to soil dust and sea salt production as well as the consideration of heterogeneous chemical processes leading to the formation of the third generation particulate matter. The air quality model used as basis for the development is the CAMx in combination with the SKIRON/Eta atmospheric modeling system with the dust production/transport/deposition scheme. Results from these simulations showed reasonable agreement with the available measurements. The integrated system developed is part of a larger effort related to the study of aerosol impacts on air quality and climate at different scales.