



Test models and reanalysis with dust ground-based observations over the Arabian Peninsula

Georgiy Stenchikov, Anatolii Anisimov, Suleiman Mostamandi, Alexander Ukhov, and Ilia Shevchenko
King Abdullah University of Science and Technology, Thuwal, Saudi Arabia (georgiy.stenchikov@kaust.edu.sa)

To improve the simulations of dust mass balance and dust radiative impact over the Arabian Peninsula we have conducted multiyear measurements of dust deposition using passive dust samplers, aerosol optical depth using CIMEL Robotic and hand-held sun-photometers, and aerosol vertical distribution using a micro-pulse lidar. These observations are employed to constrain the WRF-Chem simulations and to test the recent MERRA2 reanalysis. We find that despite both the WRF-Chem model and MERRA2 reanalysis calculate the aerosol optical depth quite well, they tend to overestimate the dust emission in the region predominantly because of inaccurate representation of the aerosol vertical distribution and deficiencies of the dust deposition parameterizations.