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Assessment of the influence of aerosol climatology on the forecast of the air temperature.

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Our report provides an examination of aerosol climatologies and their impact on the weather forecast accuracy. We used non-hydrostatic mesoscale COSMO-Ru model with Tanre (Tanre et al., 1984), Tegen (Tegen et al., 1997), MACv2 (Kinne S, 2019) and CAMS (Flemming, et al., 2017) aerosol climatologies for the central months of the season for the territory of Eurasia in 2017. We estimated the forecast accuracy for the surface air temperature, the temperature at 850 hPa and 500 hPa. It is found that the change in the calculation of surface air temperature over land can reach one degree when using Tegen and MACv2 compared to Tanre. Changes don't exceed 0.4 degrees at altitudes of 850 and 500 hPa. Also, we presented the comparison results for total radiation with measurements on the Meteorological Observatory of Moscow State University and Tiksi (Russia), Eilat (Israel) and Lindenberg (Germany) Observatories. It is shown that when using aerosol climatology, the deviation of calculations from the measurement data does not exceed 25 W/m² (Poliukhov et al., 2019).

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