

**MODEL-LIDAR COMPARISON OF DUST VERTICAL DISTRIBUTIONS OVER ROME (ITALY)
DURING 2001-2003**

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Mineral dust particles loaded into the atmosphere from the Sahara desert represent one major factor affecting the Earth's radiative budget. In order to determine the dust radiative effect in climate models, in spite of the gaps in observations of dust vertical profiles, averaged 3D-fields of dust, obtained by the regular dust forecasts, can be used. To better understand the capabilities of the Tel Aviv University (TAU) dust prediction system in this respect, a comparison of model results against lidar observations was carried out. The lidar remote soundings over Rome, Italy (41.80N, 12.60E) were taken in the 3-year period 2001 – 2003 for the high dust activity season from March to June. The lidar-derived dust vertical profiles were used for obtaining statistically significant reference parameters of dust layers over Rome, and for model-lidar dust comparing. The Barnaba and Gobbi (J. Geophys. Res., 2001) approach was used in the current study to derive height-resolved dust volumes from lidar measurements. Close inspection of the juxtaposed vertical profiles, obtained from lidar and model data near Rome, suggests that the majority (70%) of the cases under investigation can be classified as good or acceptable forecasts of dust vertical distribution. Furthermore, it was found that the model predictions are commonly better for heavy dust events than for weak ones. The model, however, tends to underestimate the lidar-derived dust volume profiles even for some severe dust events. Possible reasons for the model underestimation are analyzed.