

# Assimilation of satellite retrievals for dust modeling applications

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Dust is one of the most important aerosols with multiple implications for radiative transfer, cloud processes and air quality. The initialization of dust emissions in atmospheric models is commonly performed in a warm-cycle mode, since the initial dust field is computed from the previous model forecasting cycle. This procedure can be improved with the assimilation of satellite observations for constraining the initial model fields. We present the development and application of relevant techniques for using satellite retrievals of dust emissions from MODIS and MSG-SEVIRI instruments to constrain dust modeling studies with RAMS-ICLAMS, NMME-DREAM and WRF-Chem models. Comparisons with AERONET photometers, lidars and satellite remote sensing indicate an improvement in the representation of dust aerosols in the atmosphere. This is an important step to allow more complex studies regarding the physiochemical interactions of dust in the atmosphere.

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