

## **Usage of High-Resolution Satellite Products in Atmospheric modeling**

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Aerosol optical depth (AOD) is one of the most important aerosol products retrieved from satellite measurements, and represent the attenuation of solar radiation caused by aerosols. The direct radiative effect due to aerosol–radiation interactions is the change in radiative flux caused by the combined scattering and absorption of radiation by anthropogenic and natural aerosols. Due to their short lifetime and the large variability in space and time atmospheric aerosols are considered one of the major uncertainties in climate forcing and atmospheric processes [1]. The relationship between AOD (integration of the aerosol extinction coefficient from the Earth’s surface to the top of the atmosphere) and surface aerosol concentrations depends on various factors: aerosol type and its chemical composition, vertical distribution, spatial and temporal variability. In this study the potential of Level 2 AOD data at 0.55  $\mu\text{m}$  based on measurements by Moderate Resolution Imaging Spectroradiometer (MODIS) aboard Terra (MOD04) and Aqua (MYD04) platforms for PM modeling will be discussed [2]. In addition, recently launched ESA Aeolus mission products intended for assimilation in Numerical Weather Prediction (NWP) models in Near-Real-Time together with its optical products will be introduced.

### **References**

- [1] IPCC (2007), IPCC Fourth Assessment Report Climate Change 2007 - The Physical Science Basis Contribution of Working Group I to the Fourth Assessment Report of the IPCC
- [2] Fu, D., Xia, X., Wang, J. et al. Synergy of AERONET and MODIS AOD products in the estimation of PM<sub>2.5</sub> concentrations in Beijing. *Sci Rep* 8, 10174 (2018).