



Lessons learned and way forward from 6 years of Aerosol_cci

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Within the ESA Climate Change Initiative (CCI) Aerosol_cci (2010 - 2017) conducts intensive work to improve and qualify algorithms for the retrieval of aerosol information from European sensors. Meanwhile, several validated (multi-) decadal time series of different aerosol parameters from complementary sensors are available: Aerosol Optical Depth (AOD), stratospheric extinction profiles, a qualitative Absorbing Aerosol Index (AAI), fine mode AOD, mineral dust AOD; absorption information and aerosol layer height are in an evaluation phase and the multi-pixel GRASP algorithm for the POLDER instrument is used for selected regions.

Validation (vs. AERONET, MAN) and inter-comparison to other satellite datasets (MODIS, MISR, SeaWiFS) proved the high quality of the available datasets comparable to other satellite retrievals and revealed needs for algorithm improvement (for example for higher AOD values) which were taken into account in an iterative evolution cycle. The datasets contain pixel level uncertainty estimates which were also validated and improved in the reprocessing. The use of an ensemble method was tested, where several algorithms are applied to the same sensor.

The presentation will summarize and discuss the lessons learned from the 6 years of intensive collaboration and highlight major achievements (significantly improved AOD quality, fine mode AOD, dust AOD, pixel level uncertainties, ensemble approach); also limitations and remaining deficits shall be discussed. An outlook will discuss the way forward for the continuous algorithm improvement and re-processing together with opportunities for time series extension with successor instruments of the Sentinel family and the complementarity of the different satellite aerosol products.