



➤ Overview (1)

- A number of full mission aerosol / cloud datasets 10+ years are becoming available covering troposphere/stratosphere/mesosphere
- Products presented: aerosol optical depth and height, stratospheric extinction profiles, mineral dust optical depth and height, mesospheric particles, cloud cover, height, optical thickness, albedo
- Interesting opportunities for instrument synergies: e.g. aerosol over clouds (MODIS / OMI)
- All CCI round robin inter-comparisons (e.g. for IASI) are open for external participation



➤ Overview (2)

- Finokalia station / Crete + large-scale campaign Crete and Cyprus in April 2017, with sophisticated instrumentation (ground-based lidars, radars, sun photometers, airborne measurements), -> opportunity for validating aerosol and cloud CCI retrievals over Eastern Mediterranean (all aerosol and cloud types are present, including frequent Saharan and Arabian dust advection, smoke from forest fires and strong marine and anthropogenic contributions)



➤ Recommendations (1)

- Longer contracts for young scientists
- Sentinel-3 is not only an Ocean mission: the most important instruments also provide the highest quality European aerosol & cloud products - needs stronger focus on atmospheric variables (aerosol to continue the ENVISAT time series; take into account 2015/16 analysis in Aerosol_cci)
- Synergy of instruments / algorithms has high potential and needs more attention (e.g. for aerosol type)
- Stratospheric aerosol: synergies of occultation / limb technologies should be explored; understanding stratospheric aerosol is required for climate modelling; need new missions!
- Continuous development / improvement / validation of algorithms is needed to maintain competitiveness and achieve the high-quality product requirements (e.g. GCOS) -> highlighting need for CCI+ also for current variables



➤ Recommendations (2)

- Cloud / aerosol remote sensing algorithms needs to evolve further to better estimate anthropogenic / natural contributions to climate change
- Lv1b calibration: needs continued attention; reports / calibration data need to be available to expert teams
- CCI+ should consider additional exploitation of active instruments
- Methodologies for aerosol observations in dark / high latitudes should be developed
- Close collaboration with modellers is encouraged (as targeted already by AEROSAT network and CMUG in CCI) -> could be useful experience for other constituents as well
- Funding needs to continue involving independent validation experts and model users to assure feedback and involvement (as in CCI)
- Operational use of O2-A band (clouds, aerosols) should be considered



➤ Recommendations (3)

- growing horizontal resolution requires more attention on sub pixel analysis / 3D effects
- Joint utilization of variables from different CCI projects should be considered
- Gaps in altitude resolved aerosol and cloud measurements (UTLS, in particular mid / high latitudes, during nighttime and polar night) – important concerning radiative impact of UTLS aerosol and clouds
- Active remote sensing techniques highly beneficial for aerosol and cloud evaluation (e.g. higher level products such as AOD retrievals over deserts, stratospheric products, aerosol layer heights, pure-dust products)