Objective: Respond to GCOS-154 and Aerosol_cci2 URD user requirements
- AOD (4 \( \lambda \)), absorption, layer height, extinction profile
- Fine / coarse AOD, Dust AOD, Ångström, size / aerosol index (= AOD * Ångström)

C3S: Operational tasks (if funded / selected by C3S-ITTs)
- Extend existing Aerosol ECV time series into future with current algorithm
- Reprocess full Aerosol ECV time series with new algorithm versions from CCI+

CCI+: improvement towards requirements (if CCI+ approved and in scope)
- Aerosol ECVs in C3S
  - Improve algorithms to better meet requirements
  - Adapt algorithms to similar but different Sentinel capabilities
  - Extend algorithms to utilize new Sentinel capabilities
- Additional required Aerosol ECVs
  - First full time series processing + evaluation based on prior round robins
  - Round robin exercises for new required variables / specifications
- Integration of several ECVs for climate applications
  - Consistency, joint histograms, precursors, Earth system cycles
As expected end of 2017

- Based on mature (independently) well-qualified algorithms + ECV time series dataset
- No NRT orientation
- Maturity matrix level 3-4

- **AOD (4λ), FM-AOD** / 3 algorithms from ATSR-2 / AATSR / SLSTR
  - Datasets available 1995 – 2012 + 2016 SLSTR extension demonstrated
  - Assess consistency of SLSTR with AATSR (similar but different specifications)

- **Stratospheric extinction profile + PSCs** from GOMOS
  - Dataset available 2002 - 2012
  - No successor sensor / temporal extension

- **Dust AOD** / 4 algorithms from IASI
  - Datasets available 2006 – 2015 (“Greater Sahara”)
  - Extension to full globe and further into the future

- **AOD, SSA, non-spherical AOD** from POLDER
  - Dataset available 2006-2013 (4 selected regions)
  - On-demand processing of further regions / global extension (if feasible)
Based on prototypes / earlier round robins

Maturity matrix level 1-2

Improve mature ECV datasets / algorithms
- AOD ATSR/SLSTR: better accuracy and coverage, new SLSTR channels, ensemble, …
- Extinction GOMOS: improve size, PSCs; integrate with OSIRIS, OMPS, SAGE-III, …
- Dust IASI: for better consistency improve treatment of size / mineralogy, nighttime validation, ensemble, …
- AOD, SSA, non-spherical AOD POLDER: improve processing throughput, prepare for 3MI

Additional required variables based on prior round robins
- Absorption (AAI, component mixing, glint): first full processing + evaluation
- Layer height (IASI, spectrometer O2A-band): first full processing + evaluation

New round robins / demonstrations for additional required variables / specifications
- Aerosol type from instrument synergies
- AOD extended coverage with MERIS / OLCI
- AOD daily cycle from MSG + METEOSAT
- Vertical profiles (troposphere, stratosphere) from SCIAMACHY limb
- Extended AOD coverage: high latitudes, back to 1980s (AVHRR), AOD over clouds

Integration of several ECVs
- Aerosol cloud: consistency, joint histograms
- Aerosol and trace gases: precursors, anthropogenic aerosols
- Stratospheric aerosol and trace gases: ozone and precursors
- Surface radiation budget (direct, diffuse) with aerosols, clouds, surface ECVs
- Carbon and nitrogen cycles with other ECVs
- Aerosols and SST: consistency