Deliverable 10.2: First summary of the ACTRIS data offered by the ACTRIS Data Centre

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Content

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Summary

This report focuses on the ACTRIS-2 period and gives an overview of the data offered through the data centre from 1 January 2015 – August 2016. The activities within the ACTRIS Data Centre and provision of measurement data from the research infrastructure is on behalf of all the data originators (instrument principle investigators) and for the whole ACTRIS consortium. It is a high priority to have continuation of long time series with harmonised methodologies, and consistent data throughout the research infrastructure. Some data sets range back to the year 2000, achieved through ACTRIS precursor-projects (EARLINET, EUSAAR, CLOUDNET ACTRIS-1 and others).

Currently, ACTRIS include about 110 different atmospheric variables, comprising: about 80 different trace gases, 10 different aerosol variables measured near the surface, 10 aerosol profile variables, 8 cloud profile variables. The data result from more than 30 different methodologies, both near surface and remote observations, with time resolution ranging from seconds to 1 week. Additionally, ACTRIS provides near real time data (NRT) from about 20 sites in this period. NRT of ACTRIS near surface data is provided from 24 instruments distributed over 14 sites. Almost all ACTRIS cloud profile sites have provided data in NRT during this period.

Moreover, the ACTRIS Data Centre offers secondary data. Secondary datasets are derived from primary datasets, by e.g. averaging, filtering of events, and interpolation of data. Secondary datasets are usually the result of analysis for a targeted article, special studies or processed for model experiments. Currently 7 comprehensive secondary data sets are offered.

Section 1 introduces the ACTRIS Data Centre and includes central definitions and links to core documents for ACTRIS Data Centre activity. Section 2 provides an overview of primary measurement data sets offered, while section 3 provides information on secondary data.

1 Introduction and definitions

ACTRIS measurement data are available through the ACTRIS Data Portal http://actris.nilu.no. The data are handled in 3 highly specialised topic data repositories. By the start of ACTRIS-2, measurement data from about 60 sites and ~130 different atmospheric variables were included in the ACTRIS data centre (including instrument variables). The data curation is closely linked to the networking activities and to the calibration centres to facilitate and ensure standardized and comparable procedures throughout the infrastructure. By 31 August 2016, the ACTRIS data centre has been handling data from about 75 sites and ~130 different atmospheric variables, of these ca 80 different trace gases, 10 different aerosol variables measured near the surface, 10 aerosol profile variables, and 8 cloud variables. The data are resulting from ca. 30 different methodologies, both near surface and remote observations, with time resolution ranging from seconds to 1 week.

The ACTRIS data portal is a metadata catalogue. Development, management and maintenance of the data flow to the ACTRIS data portal is a centralised task performed by NILU, and the portal is up and running close to 100% of the time, 24/7. Figure 1 shows the main structure of the portal. The metadata catalogues are updated regularly, every night through various procedures, so potentially new data added to the topical data bases are available through the portal latest the following day. The structure is flexible, e.g. to add and change access to topic databases, implementation of various password and registrations procedures etc.

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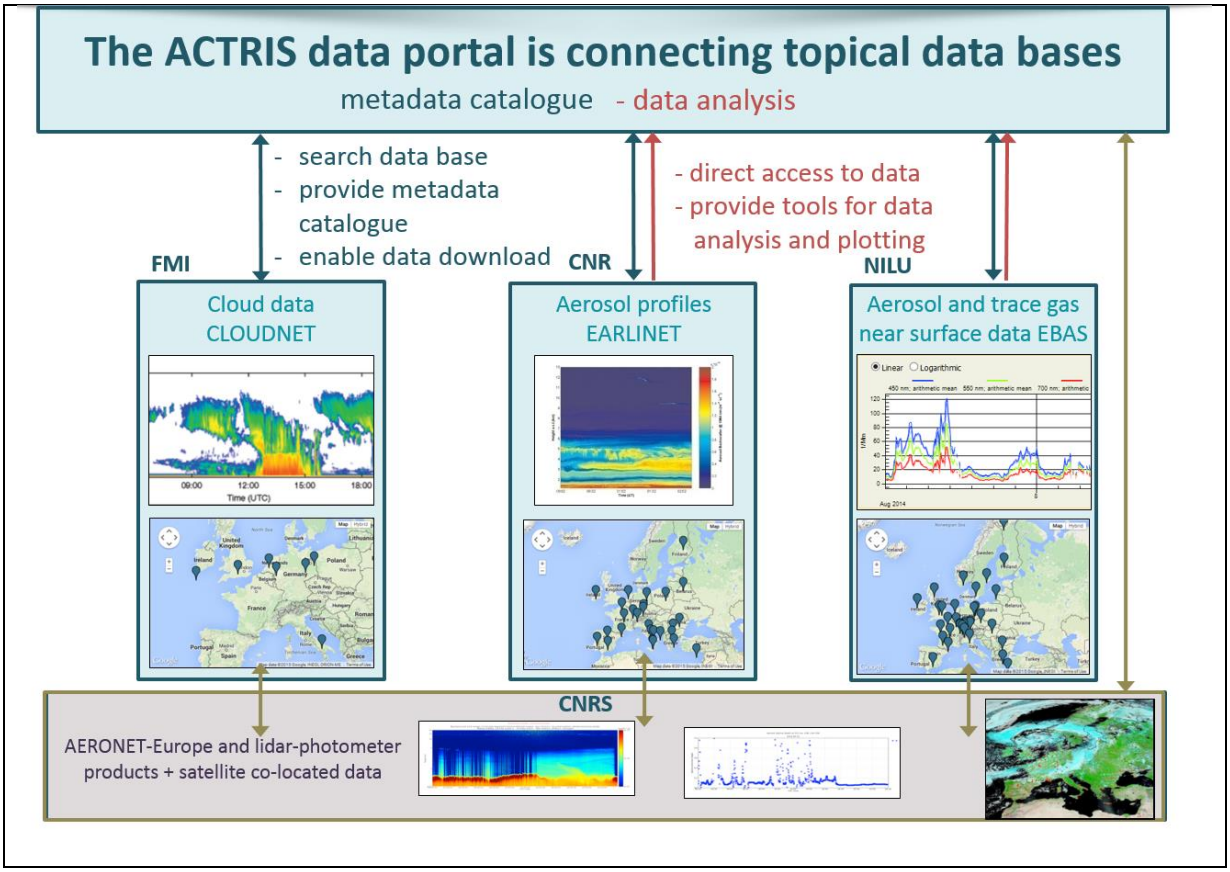

Figure 1: Overview of the core structure of the ACTRIS Data Centre.

The data curation of the ACTRIS primary measurements data is organised in the 3 specialised data repositories:

- All cloud profile data are archived in Cloudnet DB: http://cloudnet.fmi.fi/ under the responsibility of FMI.
- All aerosol profile data are archived in EARLINET data base: http://access.earlinet.org/ under the responsibility of CNR
- All aerosol and trace gas near surface data are archived in EBAS: http://ebas.nilu.no/, under the responsibility of NILU

In addition, AERIS-ICARE is the forth topic database and offers satellite data support to facilitate products combining with ACTRIS ground data with Earth observation data.

All data repositories are linked in the ACTRIS data portal: http://actris.nilu.no/, and the ACTRIS measurements data are accessible also through the portal. Additionally, the portal provide access to secondary data. Secondary datasets are derived from primary measurement data by e.g. averaging, filtering of events, interpolation of data etc. Secondary datasets are usually the result of analysis for a targeted article, special studies or processed for model experiments. Primary datasets are regularly updated mainly due to extension of new years, secondary datasets are normally not updated over time.

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1.1 Definitions and terms

The ACTRIS data management plan describes requirements and recommendations for ACTRIS data sets, the data flow, how the data is made available, and the data repositories. The data management plan includes a list with all ACTRIS atmospheric variables together with recommended methodology. The ACTRIS data policy and data management plan are available through the ACTRIS data portal. Additionally, a document with central definitions has been produced to define ACTRIS data sets together with harmonised vocabulary and metrics across the ACTRIS Data Centre. This document is available at ACTRIS-2 Intranet (login is required).The following definitions will be used in this report:

- **One ACTRIS data set:** is one variable per year of measurement data with time resolution as defined in appendix 1 in the ACTRIS data management plan. The instrument has to comply with the recommendations and provide data for at least 75% if the total time defined there, over 1 year.
- **ACTRIS near real time data (NRT),** means preliminary data available within less than 3 h from the ACTRIS data Centre for near surface data, and for Cloud profile data, this is relaxed to be within one day.
- **Access and use of 1 data set**: The access of one data set: follow the definition of the data set above. Access of full year of data is 1. If a user only plots or downloads part of a year, this is a fraction of a year.

2 Primary ACTRIS data offered by the ACTRIS Data Centre

This chapter provides an overview of the quality assured ACTRIS data sets offered to all users by the ACTRIS data centre after 1 January 2015. Data set volume from 2014 is included for comparison, based on ACTRIS-FP7 activity. Most sites have time series starting much earlier, this is indicated in the detailed overview on section 3. The period selected is from 1 January 2015 – 31 August 2016 to reflect the continuous data flow and overlap with ACTRIS-FP7, and covers the first ACTRIS reporting period. Only quality assured data are included in the overview, hence some data might have been submitted to the data centre by the data originators, but is still in the progress of final quality assurance and control, before they are inserted in the data bases and accessible for users.

Figure 1Figure 2 gives a broad overview of the active sites providing data to ACTRIS data centre, and accessible from the ACTRIS Data portal. The upper row shows all sites, while the second row shows distribution of site for the various domains: aerosol profile sites, aerosol near surface sites, trace gas near surface and sites providing cloud profile data. Only sites active within ACTRIS after 2010 is included.

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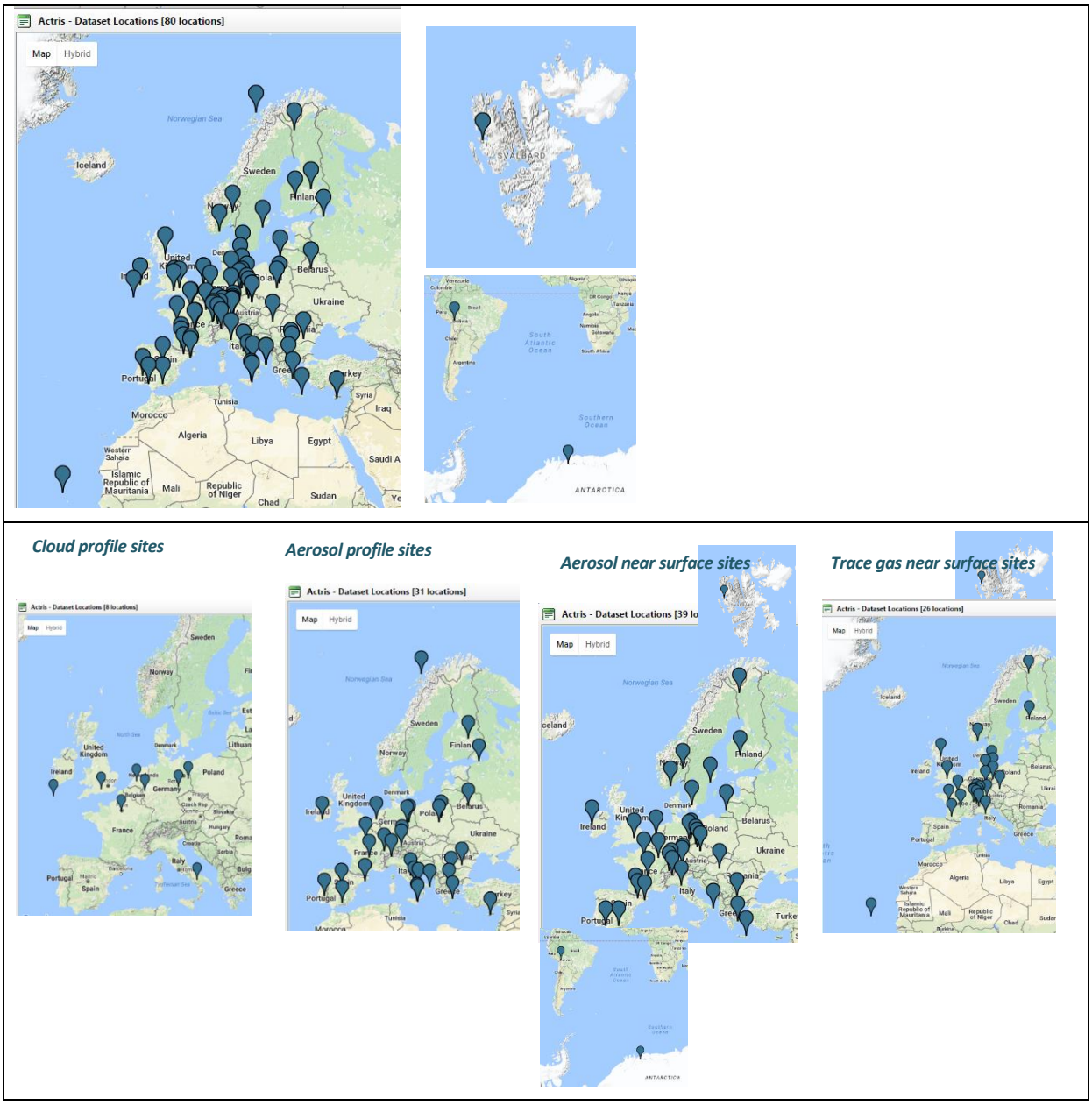

Figure 2: Map with overview of the active sites offering ACTRIS data accessible though the ACTRIS Data portal. The upper row show all 80 sites in one map , while the second row shows a distribution of sites for the various domains: 31 aerosol profile sites, 39 aerosol near surface sites, 26 trace gas near surface sites and 8 sites providing cloud profile data by August 2016. Near surface data are also available from Arctic, Antarctic and one south-American alpine site, illustrated in the small panels inserted.

Within ACTRIS there is a clear ambition of providing full year with quality assured measurement data as defined in section 1. The next figure gives an overview the number of sites offering full year of quality assured data through the data centre for each of the ACTRIS variables listed in the ACTRIS Data Management plan. The data offered for both2014 and 2015 are included. The statistics are calculated from the data available in the data base by 31 August 2016. Lower numbers for 2015 are because data are still in progress with QA and QC within the data centre. More details are included in Table 1 on page 10.

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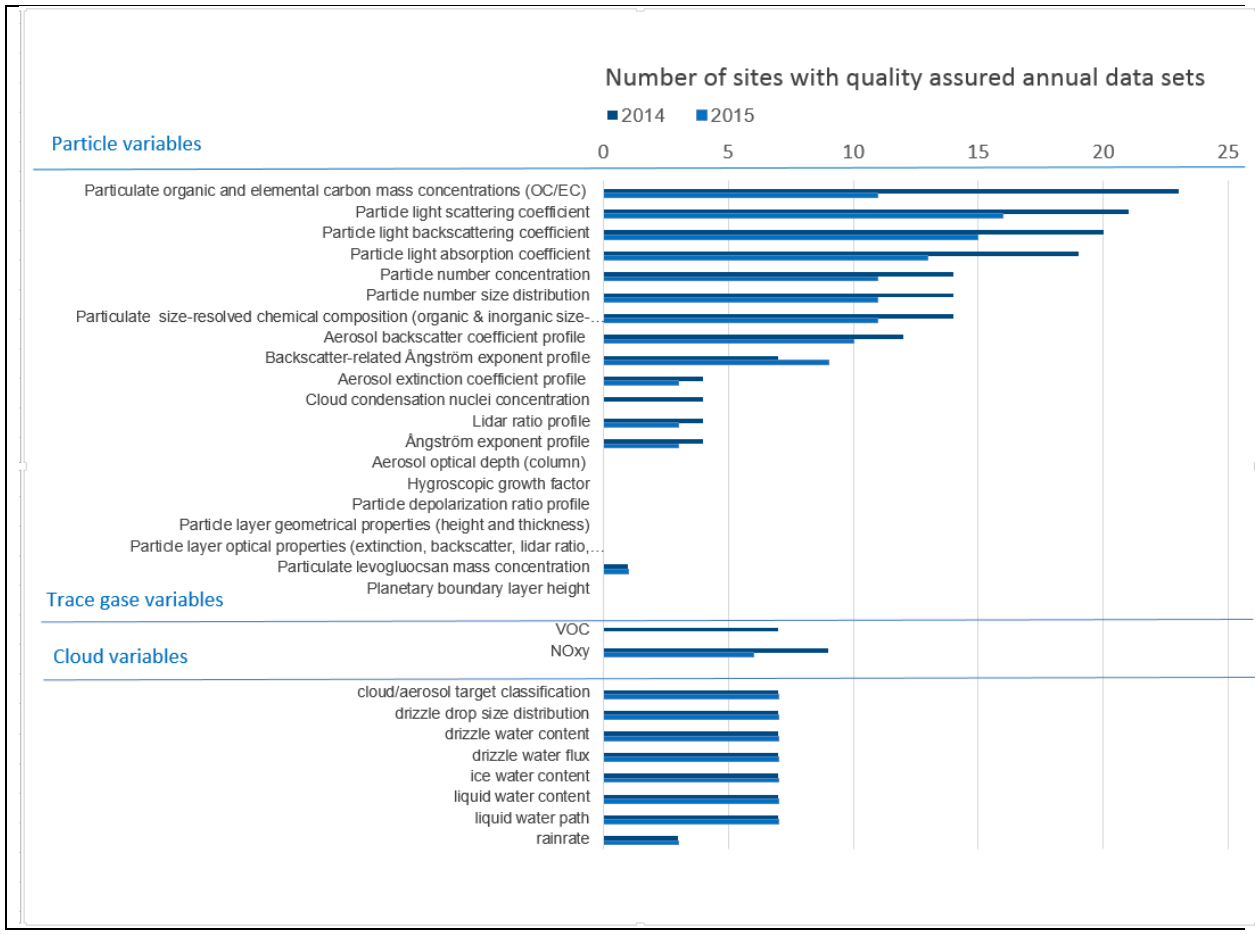

Figure 3: Overview of the ACTRIS variables and the number of sites providing quality assured annual data sets (measurements more than 75% of the defined time). lower panel the number of sites where the data centre is offering near real time data.

Layer and columnar parameters listed in Figure 3 are planned to be delivered to the ACTRIS Data Centre by the end of 2017 as result of the redesign of the ACTRIS aerosol profile database, and therefore no data have been delivered until now. Very few depolarization data were reported until August 2016 to the database because of the absence of a standard protocol for its calibration. Over the next months particle depolarization ratio data sets will be inserted into the database as result of the new release of the Single Calculus Chain (SCC) (November 2016). SSC is the centralized data processing chain developed within EARLINET. This is the outcome of the strong request from the lidar scientific community for a robust calibration of this quantity. Within EARLINET community this problem has been addressed *and* set-up by the community and integrated into the SCC.

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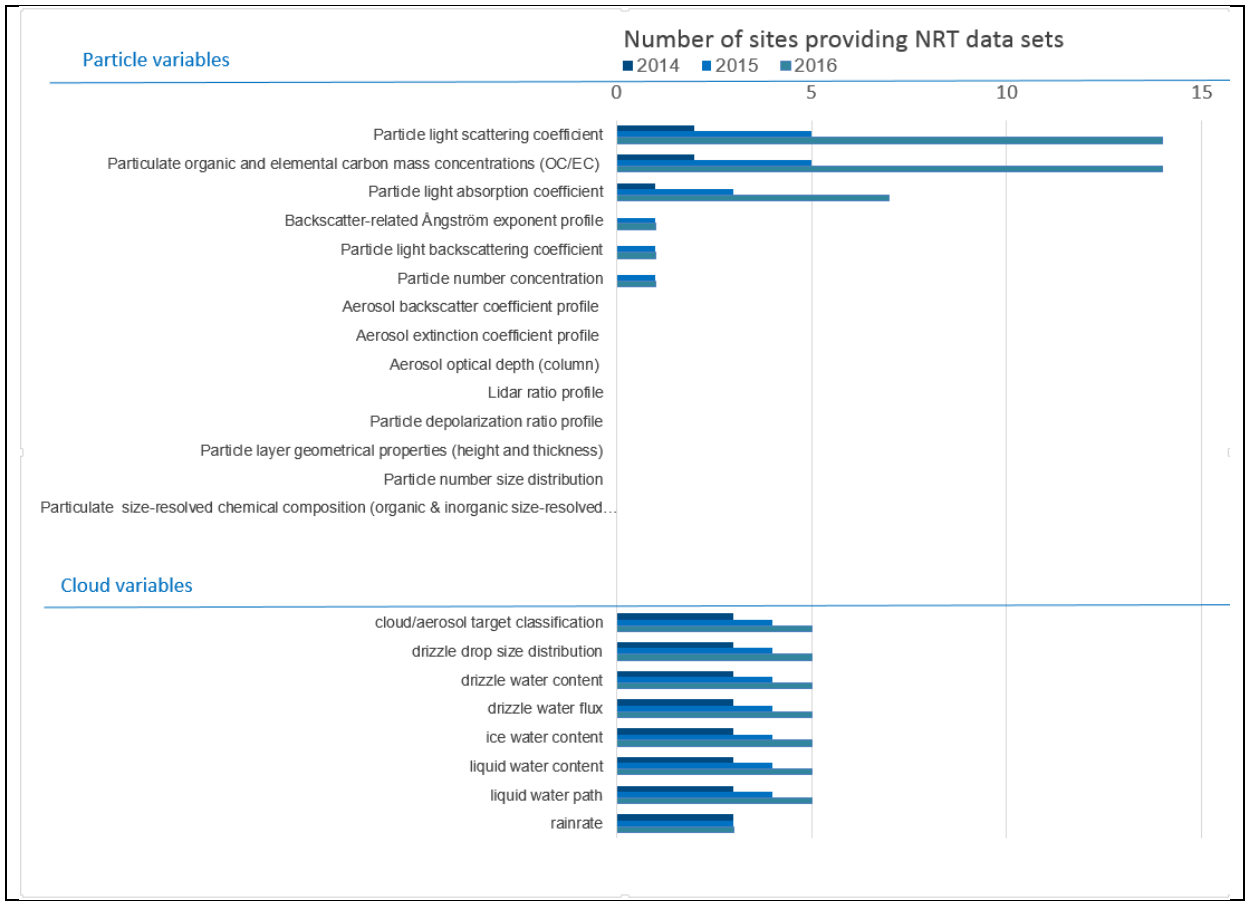

Figure 4: Overview of ACTRIS NRT variables, and the number of sites where the data centre is offering near real time data - August 2016.

Provision of EARLINET-ACTRIS NRT data in standardized way is planned for the year 2017. About 10 stations are expected to provide profile NRT data in 2017 after the reshape of the EARLINET database. The expected profile (and near surface) NRT variables for 2017 are included in the list in Figure 4.

The following Table 1 includes the numbers for 2014-2015 and also the status of data available from 2016. Additionally, information of the sites providing data for shorter period than full year is included. This can be either intensive campaign data, or sites with lower data capture due of instrument problems, or funding challenges. Very few sites have delivered data in 2016 at the time of this report (December 2016). As for near surface data the reporting deadline is 31 July 2017 for 2016 data, and for aerosol profile data, the data submission to the data centre is expected within 3 months from the measurement time. However, increasing number of NRT data, both with respect to number of variables and number of sites, is included for 2016. More details about the distribution sites for the various variable is available in the ACTRIS Data portal, and also shown in section 2

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*Table 1: Overview of quality assured and near real time data sets offered by ACTRIS Data Centre by end of August 2016, measured in 2014 and onwards. Annual data sets are data sets with measurements more than 75% of the time with the required time resolution as described in ACTRIS Data Management Plan. Additionally, the number of sites providing data for shorter period than full year is included. NRT data are data sets made available for users through the data centre less than 3 hours after measurements are done. Variables marked with * in light grey denotes data sets that are not offered directly by the data centre, but which can be retrieved combining the provided data. These variables are listed to underline the availability of simultaneous datasets for aerosol typing. These data sets will be available directly from the data centre as Level 2 Multi-wavelength optical property profiles, expected to be delivered in 2018.*

Data provision	2014 Number of sites with:			2015 Number of sites with:			May 2015-AUG 2016 Number of sites with:		
	Annual data sets	NRT	Measurements 1 M or more	Annual data sets	NRT	Measurements 1 M or more	Annual data sets	NRT Aug.2016	Measurements 1 M or more
Variable name									
Profile and column cloud variables (remote observations from ground) archived in CloudnetDB									
Cloud/aerosol target classification	7	3		7	4		7	5	
Drizzle drop size distribution	7	3		7	4		7	5	
Drizzle water content	7	3		7	4		7	5	
Drizzle water flux	7	3		7	4		7	5	
Ice water content	7	3		7	4		7	5	
Liquid water content	7	3		7	4		7	5	
Liquid water path	7	3		7	4		7	5	
Rainrate	3	3		3	3		3	3	
Column and profile aerosol particle variables (remote observations from ground)									
Aerosol backscatter coefficient profile	12		15	10		9	11		17
Aerosol extinction coefficient profile	4		6	3		6	3		9
Lidar ratio profile*	4		6	3		6	3		9
Ångström exponent profile*	4		5	3		6	3		9
Backscatter-related Ångström exponent profile*	7		11	9		9	9		13
Particle depolarization ratio profile									

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Data provision	2014 Number of sites with:			2015 Number of sites with:			May 2015-AUG 2016 Number of sites with:		
	Annual data sets	NRT	Measurements 1 M or more	Annual data sets	NRT	Measurements 1 M or more	Annual data sets	NRT Aug.2016	Measurements 1 M or more
Particle layer geometrical properties (height and thickness)									
Particle layer optical properties (extinction, backscatter, lidar ratio, Ångström exponent, depolarization ratio, optical depth)									
Aerosol optical depth (column)									
Planetary boundary layer height	1		2	3		2	2		4
Near surface aerosol particle variables									
Particle light scattering coefficient	21	2	3	16	5	1		14	15
Particle light backscattering coefficient	20	2	3	15	5	1		14	14
Particle number size distribution	14		4	11	1	1	2	1	12
Particle light absorption coefficient	19	1	1	13	3	1		7	13
Particle number concentration	14		4	11	1	1	2	1	12
Cloud condensation nuclei concentration	4								
Hygroscopic growth factor									
Particulate organic and elemental carbon mass concentrations (OC/EC)	23		9	11		3			11
Particulate size-resolved chemical composition (organic & inorganic size-resolved mass speciation)	14		4	11	1	1	2	1	12
Particulate levogluocsan mass concentration	1			1					
Near Surface Trace gas variables									
VOC	7					1			
NOxy	9		1	6					6

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2.1 Provision of ACTRIS cloud data

The data curation of cloud profile data is performed at FMI in dialogue with each site, with all ACTRIS cloud profile data archived and accessible through the Cloudnet DB. During the first period of ACTRIS-2, 8 sites each providing 8 variables were available through the data centre by 31 August 2016. These datasets were effectively provided as NRT data streams, while in accordance with the ACTRIS Data Management Plan. The next reporting period will include two streams, a NRT stream, and a fully-curated final stream, together with campaign sites that already produce (NRT) data, but are not yet qualified as ACTRIS data.

Table 2: ACTRIS cloud profile data archived in the topic data base Cloudnet DB. All data are accessible from the ACTRIS portal http://actris.nilu.no.

Distribution of sites November 2016	Access to QA data sets offered for download and more metadata.	Compared to start of ACTRIS-2	NRT data
Cloud profiles: Methodology: Cloudnet scheme using cloud radar, ceilometer, microwave radiometer and (optional) rain gauge			
	Use http://actris.nilu.no and select ACTRIS-Cloudnet in networks, or download data from here http://www.cloud-net.org/data/index.html No password needed.	**May 2015:** 3 sites **November 2016:** 5 sites	Improvement in NRT capability from 3 to 5 sites, August 2016.

2.2 Provision ACTRIS aerosol data

2.2.1 The available aerosol profile data

CNR performs the data curation of profile data, and all ACTRIS aerosol profile data are archived and accessible through EARLINET DB. During the first period of ACTRIS-2, 17 sites and 6 variables were sent to the data centre by 31 August 2016, either as yearly data sets (11 sites) or shorter campaign periods. Provision of NRT data (part of aerosol profile Level 1,5 data accordingly to DMP) in standardized way is planned for the next year. However, the capability of NRT data stream is considerably improved since the start of ACTRIS-2 throughout the EARLINET network and will further increase thanks to the upgrade of some systems reported in NA2. The effective provision of NRT data is expected for the next reporting period.

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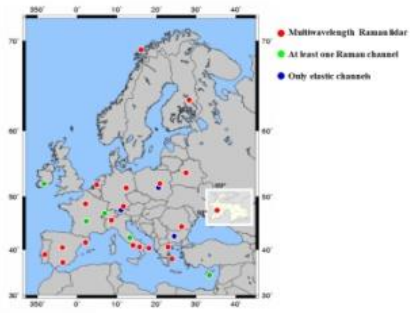
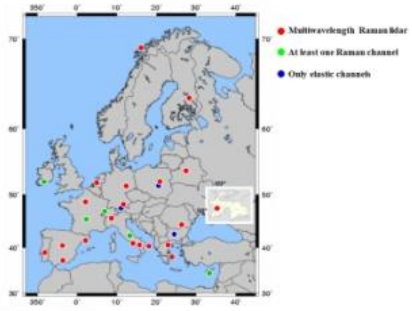
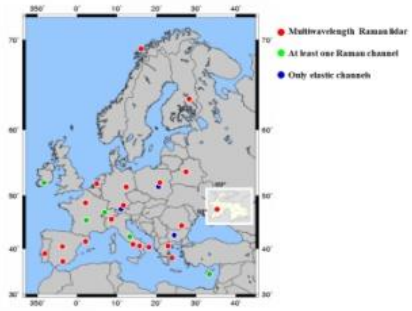
*Table 3: ACTRIS aerosol profile data archived in the topic data base EARLINET DB. All data marked with * are also accessible from the ACTRIS portal http://actris.nilu.no.*

Distribution of sites November 2016	Access to QA data sets offered for download and more metadata	Compared to start of ACTRIS-2	NRT data
Aerosol Extinction coefficient profile* - Methodology: Raman lidar/HSRL			
	Use http://actris.nilu.no and select ACTRIS-EARLINET in networks, or download data from here http://www.earlinet.org/index.php?id=125 Password needed.	16 sites provided public data during ACTRIS per May 2015 19 sites provide public data per December 2016. First data: Hamburg 12 January 1998	Not available
Aerosol Backscatter coefficient profile* - Methodology: Backscatter/Raman lidar/HSRL			
	Use http://actris.nilu.no and select ACTRIS-EARLINET in networks, or download data from here http://www.earlinet.org/index.php?id=125 Password needed.	28 sites provided public data during ACTRIS. 31 sites provide public data per December 2016. First data: Hamburg 1 December 1997	Not available
Planetary Boundary Layer Height - Methodology: Backscatter/Raman lidar/HSRL			
	Use http://actris.nilu.no and select ACTRIS-EARLINET in networks, or download data from here http://www.earlinet.org/index.php?id=125 Password needed. Planetary Boundary layer Height is an information available as Attribute (under the name DustLayerHeight) in the EARLINET netCDF files	26 sites provided public data during ACTRIS. 28 sites provide public data per December 2016. First data: Aberystwyth 03 May 2000	Not available

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2.2.2 The available aerosol near surface data

The data curation of ACTRIS near surface aerosol measurements are performed by NILU, and the data are archived in EBAS. By 31 August 2016, 52 sites have submitted in total 154 variables (including instrument parameters) of aerosol near surface data to EBAS complying with the ACTRIS recommendations as described in the management plan. In addition, the number of sites providing NRT data has increased remarkably since start of ACTRIS-2. Table 4 provides full overview of the aerosol near surface data offered, and show the distribution of sites for the various aerosol near surface variables, include direct link to the QA and NRT data and compare the status to start of ACTRIS-2.

Table 4: ACTRIS aerosol near surface data offered by the data centre. The links are direct to the data archived in EBAS data repository, and all data are also accessible from the ACTRIS portal http://actris.nilu.no. All NRT data are visualised here: http://actris.nilu.no/content/nrt-data

Distribution of sites November 2016	Link to the QA data sets offered for download and more metadata.	Compared to start of ACTRIS-2	Status of NRT data
Light scattering coefficient - Methodology: Neph			
	http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS&InstrumentTypes=nephelometer&components=aerosol_light_scattering_coefficient&fromDate=1970-01-01&toDate=2016-12-31 No password needed.	22 sites May 2015 29 November 2016 First measurements: Jungfraujoch, 1995.	3 sites May 2015 12 sites November 2016 http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS_NRT&InstrumentTypes=nephelometer&components=aerosol_light_scattering_coefficient&fromDate=1970-01-01&toDate=2016-12-31
Light backscattering coefficient - Methodology: Neph			
	http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS&InstrumentTypes=nephelometer&components=aerosol_light_backscattering_coefficient&fromDate=1970-01-01&toDate=2015-12-31 No password needed.	22 sites May 2015 29 November 2016 First measurements: Jungfraujoch, 1995.	3 sites in May 2015 12 sites in November 2016 http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS_NRT&InstrumentTypes=nephelometer&components=aerosol_light_backscattering_coefficient&fromDate=1970-01-01&toDate=2016-12-31
Number size distributions - Methodology: D/SMPS			
	http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS&InstrumentTypes=dmps,smps&fromDate=1970-01-01&toDate=2016-12-31 No password needed.	14 sites May 2015 22 sites in November 2016 First measurements: Hyytiälä: 1996	2 sites May 2015 3 sites November 2016 http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS_NRT&InstrumentTypes=dmps&fromDate=1970-01-01&toDate=2016-12-31

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Distribution of sites November 2016	Link to the QA data sets offered for download and more metadata.	Compared to start of ACTRIS-2	Status of NRT data
Absorption coefficient - Methodology: filter absorption photometer (PSAP/MAAP/Aeth.			
	http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS&InstrumentTypes=filter_absorption_photometer&fromDate=1970-01-01&toDate=2016-12-31 No password needed.	24 sites May 2015 30 sites November 2016 First measurements: Jungfraujoch, 2001	3 sites May 2015 7 sites November 2016 http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS_NRT&InstrumentTypes=filter_absorption_photometer&fromDate=1970-01-01&toDate=2016-12-31
Number concentration - Methodology: CPC			
	http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS&InstrumentTypes=cpc&fromDate=1970-01-01&toDate=2016-12-31 No password needed.	7 sites May 2015 8 sites November 2016 First measurements: Jungfraujoch, 1995	Not available
Cloud Condensation Nucleus - Methodology: CCNC			
	http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS&InstrumentTypes=CCNC&fromDate=1970-01-01&toDate=2016-12-31 No password needed.	1 site in May 2015 3 sites in November 2016 First measurements: Vavihill 2006	Not available

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Chemical characterization of EC/OC - Methodology: EC/OC filter			
	http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS&components=elemental_carbon,organic_carbon&fromDate=1970-01-01&toDate=2016-12-31 No password needed.	7 sites May 2015 11 sites in November 2016 First measurements: Puy de Dôme 2006	Not available
Chemical characterization (size and organic and inorganic speciation and mass) - Methodology: AMS			
	http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS_preliminary&InstrumentTypes=aerosol_mass_spectrometer&fromDate=1970-01-01&toDate=2016-12-31 Password needed.	Data from JRA, password protected. Started within ACTRIS-FP7 12 sites May 2015 13 sites November 2016 First measurements: Zürich-Kaserne, 2011	Not available
Chemical characterization Levogluocsan - Methodology: Filter			
	1 site May 2015 http://ebas.nilu.no/DataSets.aspx?components=levoglucosan&fromDate=1970-01-01&toDate=2016-12-31 Password needed.	1 site May 2015 1 site November 2016 First measurements: Birkenes 2008 Data from JRA, password protected.	Not available

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2.3 Provision of ACTRIS trace gas data

The data curation of all ACTRIS near surface aerosol and trace gas measurements are performed by NILU, and the data are archived in EBAS. By 31 August 2016, 26 sites have submitted in total 84 trace gases described in the data management plan and complying with the ACTRIS data management plan to the data centre. In addition, the number of sites providing near real time (NRT) near surface data has increased remarkably since start of ACTRIS-2.

Table 5: ACTRIS trace gas near surface data offered by the data centre. The links are direct to the data archived in EBAS data repository, and all data are also accessible from the ACTRIS portal http://actris.nilu.no.

Distribution of sites November 2016	Link to the QA data sets offered for download and more metadata.	Compared to start of ACTRIS-2	Status of NRT data
NMHCs (C2-C9 hydrocarbons) Methodology: on-line (GC-FID, GC-MS, GS-FID/MS, GC-Medusa, PTR-MS), **OVOCs** (oxidised VOCs as aldehydes, ketones, alcohols) **Terpenoides** (biogenic hydrocarbons with a terpene-structure) Methodology: on-line (GC-FID, GC-MS, GS-FID/MS, GC-Medusa, PTR-MS) off-line traps (ads-tubes, DNPH-cartridge-HPLC) **All VOC, OVOC, HC**			
	http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS&InstrumentTypes=ads_tube,online_gc,online_ptr&matrices=air&fromDate=1970-01-01&toDate=2016-12-31 No password needed.	**May 2015:** 9 sites, 60 VOC, OVOC, HC trace gases in May 2015 **November 2016:** 18 sites 79 VOC, OVOC, HC trace gases First measurements: Rigi 2001	Not available
NO, NO2 - NOy (NO, NO2, NO3, N2O5, HNO2, HNO3, PAN, organic nitrates and aerosol nitrates (sum of oxidized nitrogen species with oxidation number >1) Methodology: NO-O3 chemiluminescence, CRDS, laser induced fluorescence (LIF), Cavity Attenuated Phase Shift Spectroscopy (CAPS), indirect: NO-O3 chemiluminescence coupled to photolytic converter (Xenon lamp (PLC) or diode (BLC)) and NO-O3 chemiluminescence coupled to gold converter			
	http://ebas.nilu.no/DataSets.aspx?projects=ACTRIS&InstrumentTypes=chemiluminesc,chemiluminescence_photometer&matrices=air&fromDate=1970-01-01&toDate=2016-12-31 No password needed.	**May 2015:** 13 sites, 5 trace gases **November 2016:** 14 sites 5 trace gases	Not available

3 Secondary data sets offered by the ACTRIS Data Centre

ACTRIS secondary datasets are derived from primary measurement data by e.g. averaging, filtering of events, interpolation of data etc. The primary measurement data can consist only of ACTRIS data sets, or include other data as well. Secondary datasets are usually the result of analysis for a targeted article, special studies or processed for model experiments. Primary datasets are regularly updated mainly due to extension of new years, secondary datasets are normally not updated over time.

3.1 Secondary data sets offered through ACTRIS data portal

Secondary data set are available from here http://actris.nilu.no/Content/products. Currently the following comprehensive data sets are offered:

I. ***Collocated observations of cloud condensation nuclei, particle size distributions, and chemical composition*,** Submitted to Scientific Data September 2016, [pertaining data] [data policy]
II. ***Warming-induced increase in aerosol number concentration likely to moderate climate change*,** Nature Geoscience, DOI:10.1038/NGEO1800. [article] [pertaining data] [data policy]
III. ***Number size distributions and seasonality of submicron particles in Europe 2008–2009***, Atmospheric Chemistry and Physics, DOI:10.5194/acp-11-5505-2011. [article]
IV. ***Aerosol decadal trends - Part 1: In-situ optical measurements at GAW and IMPROVE stations,*** Atmospheric Chemistry and Physics, DOI:10.5194/acp-13-869-2013. [article][pertaining data] [data policy]
V. ***Aerosol decadal trends - Part 2: In-situ aerosol particle number concentrations at GAW and ACTRIS stations*** Atmospheric Chemistry and Physics, DOI:10.5194/acp-13-895-2013. [article] [pertaining data] [data policy]

These data sets are archived at NILU in a long term sustainable archive, and with the possibility of having digital object identifier (DOI) for each data set in the future (implemented option December 2016).

3.1.1 Secondary aerosol profile datasets measured during particular events or campaigns

The portal also provides links to special aerosol profile datasets measured during particular events or campaigns, archived in EARLINET DB as Aerosol Profile Datasets. These are:

- **EARLINET 72h operational exercise dataset,** Dataset of the lidar products automatically generated by the SCC (Single Calculus Chain) for the intensive operating period: 9 July 2012 at 06:00 UT - 12 July at 06:00 UT, as EARLINET controlled exercise of feasibility to demonstrate its potential to perform operational, coordinated measurements and deliver products in near-real time. See Atmospheric Measurements and Techniques, doi:10.5194/amt-8-4587-2015. [article] [data policy]

- **Eyjafjallajökull 2010 – EARLINET 4D volcanic particles distribution**, A dataset reporting the four-dimensional (4-D) distribution of the Eyjafjallajökull volcanic cloud in the troposphere over Europe as observed by EARLINET during the entire volcanic event (15 April–26 May 2010), Atmospheric Chemistry and Physics, doi:10.5194/acp-13-4429-2013. [article] [data policy]

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