Deliverable 10.8: Second summary of the monitoring of access to ACTRIS data and user statistics

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Summary

This report focuses on the use of data during the first ACTRIS-2 period and gives an overview of the data accessed through the data centre over the period from 1st of January 2015 – 31th of December 2017. 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. A high priority is serving a wide user community, both external and internal to the consortium. Some data sets range back to the year 2000, achieved through ACTRIS precursor-projects (EARLINET, EUSAAR, CLOUDNET, ACTRIS-1 and others).

Currently, ACTRIS data includes about 110 different atmospheric variables, comprising: about 80 different trace gases, 12 different aerosol variables measured near the surface, 10 aerosol profile variables, 8 cloud profile variables. The measurements utilise almost 40 different methodologies with time resolution ranging from seconds to 1 week. Additionally, ACTRIS provides near real time data (NRT) from about 20 sites in this period. Additionally, ACTRIS provides near real time data (NRT) from about 20 sites in this period. ACTRIS near surface data has been provided in NRT from 24 instruments distributed over 14 sites, and practically all ACTRIS cloud profile sites have provided data in NRT during this period. 12 aerosol profile sites have set up automatic transfer of NRT data to ICARE/AERIS and groups involved in JRA 3; this is in progress.

The users of ACTRIS aerosol profiles and near surface data are distributed worldwide. There are 1341 different access IDs from 54 countries, each of them accessing the data bases from 1 to numerous times since start of ACTRIS-2. In total, 38 125 measurement years of data have been downloaded over the reporting period from all instruments[1]. For aerosol profile data sets, there are 420 different access IDs from 42 countries accessing, downloading 8199 yearly data sets. For ACTRIS near surface data, there are 874 different access IPs downloading data more than 29 798 years of data from 45 countries. From 2017, there is also user statics for cloud profile data available. Since January 2017, there are 47 different access IDs from 15 countries accessing, downloading 132 yearly data sets of cloud profile variables.

The metrics and information on the use of ACTRIS data should be interpreted in relation to the number of datasets provided, described in detail in the report "*D10.2 First summary of the ACTRIS data offered by the ACTRIS Data Centre*". Some data sets offered through the data centre range back to the year 2000, achieved through ACTRIS precursor-projects (EARLINET, EUSAAR, CLOUDNET ACTRIS-1 and others), and some are new time series. This is relevant e.g. for the total years of data that are available for download.

Section 1 introduces the ACTRIS Data Centre and includes central definitions and links to core documents for ACTRIS data centre activity. Section 2.2 to 2.4 summarise the details on the access to each of the various variables archived in the topical data bases. Section 2.5 provides information the about use of the portal.

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

[1] *22 317 yearly data sets since 1 January 2015*

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 December 2017, the ACTRIS data centre has been handling data from more than 90 sites and ~130 different atmospheric variables, of these ca 80 different trace gases, 12 different aerosol variables measured near the surface, 10 aerosol profile variables, and 8 cloud variables. The data result from ca. 40 different methodologies, both near surface and remote observations, with time resolution ranging from seconds to 1 week. All data are available from the ACTRIS portal: http://actris.nilu.no, except for 8 aerosol profile variables and 1 cloud profile variable which are available upon request.

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 has been 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 that new data added to the topical data bases are available through the portal by the following day at the latest. The structure is flexible, e.g. to add and change access to topic databases, implementation of various password and registrations procedures etc.

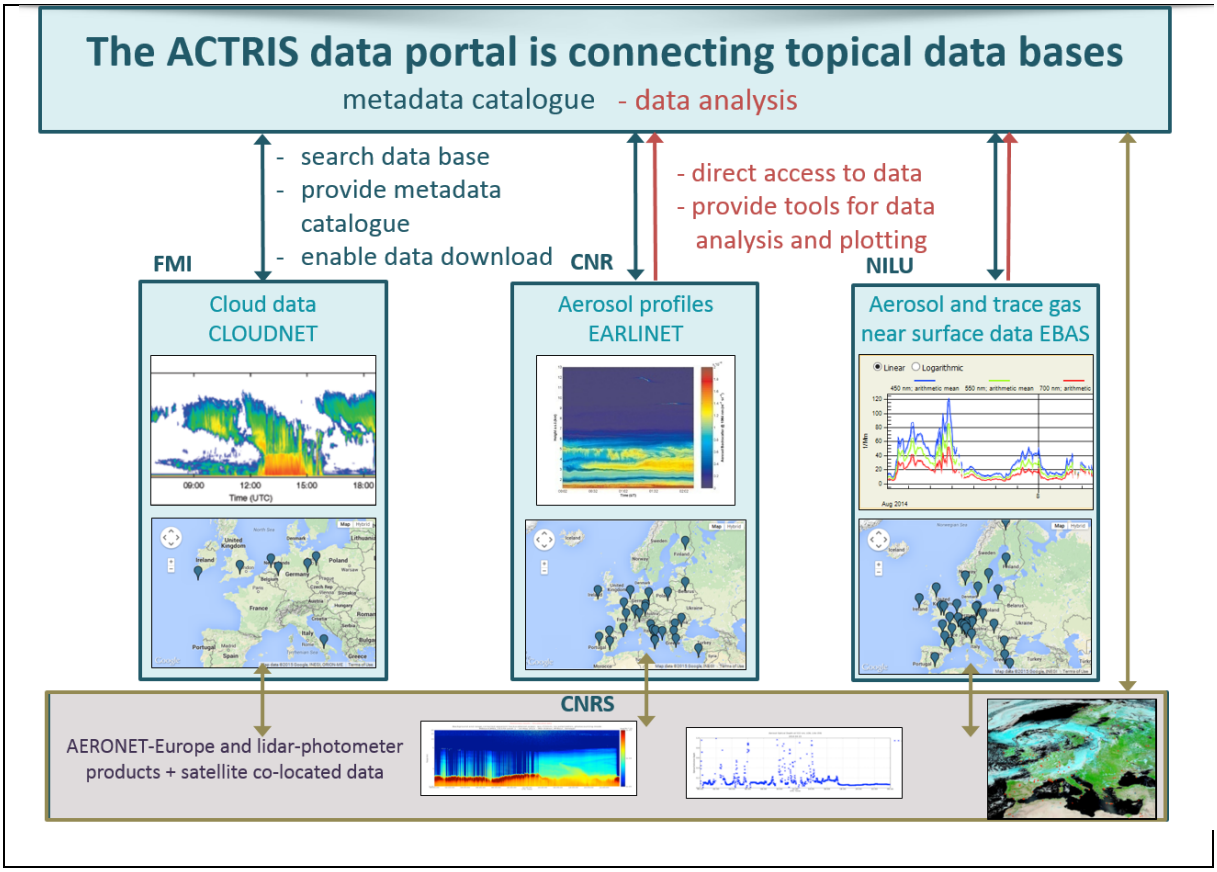

Figure 1: Overview of the core structure of the ACTRIS Data Centre.

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

- All cloud profile data are archived in the Cloudnet DB: http://cloudnet.fmi.fi/ under the responsibility of FMI.
- All aerosol profile data are archived in the 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 via the ACTRIS data portal: http://actris.nilu.no/, and the ACTRIS measurements are also 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 an additional year; secondary datasets are normally not updated over time.

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 their recommended measurement 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. A value of 1 is defined as accessing one full year of data. If a user only plots or downloads part of a year, this is a fraction of a year.

2 Monitoring of access to ACTRIS data

This chapter provides an overview of the access to the ACTRIS data sets offered to all users by the ACTRIS data centre after 1th January 2015 and until 31st December 2017.

The monitoring of access of ACTRIS data aims to answer questions such as:

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- What are the access and download numbers for the various ACTRIS data? How does this develop over time?
- What is the geographical distribution of users? And where is the most intensive use of ACTRIS data?
- Is the ACTRIS Data Portal used?

Only data sets accessed from the data bases, either through the ACTRIS Data Portal, or from the topical data bases, are monitored. The report includes an overview of the total access, and the access of the various variables. Both numbers of data sets accessed and downloaded are presented, in addition to the number of users, and their geographical distribution. Finally, user statistics and access to the ACTRIS Data Portal web site is included.

2.1 Overview of total access to ACTRIS data sets

Access to ACTRIS data through the databases EARLINET DB (aerosol profiles) and EBAS (aerosol and trace gas near surface data) have been monitored closely since the start of ACTRIS-2. The data sets available for access and download is described in detail in the report "*D10.7 Second summary of the ACTRIS data offered by the ACTRIS Data Centre*". Section 2.2, 2.3 and 2.4 summarise the details on the access to each of the various variables archived in the topical data bases.

The users of ACTRIS aerosol profiles, near surface data and column and profile cloud variables are distributed worldwide. In the period between 2015-2017, 1341 unique client IPs from 54 different countries, each of them accessing the data bases from one to numerous times. The geographical distribution of users are shown in the map in Figure 2.

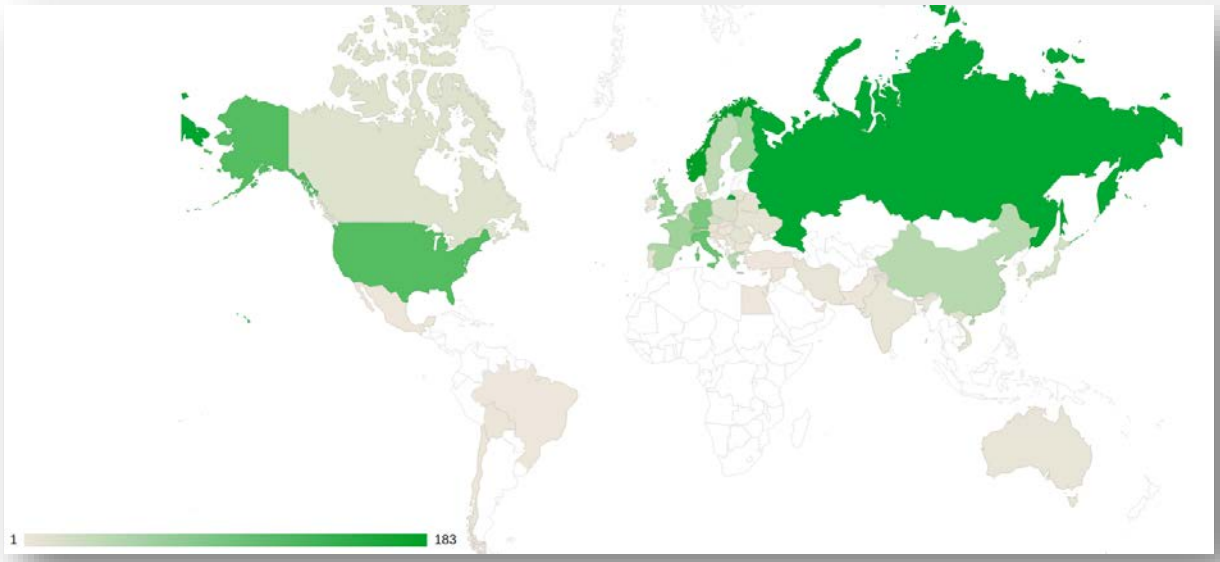

Figure 2: Geographical distribution of the 1314 unique client IPs downloading ACTRIS data in the period between 2015 and end of 2017.

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An interactive version of the map (at the bottom of the page) is available for further analysis here https://folk.nilu.no/~richard/actris-access-stat-by-user-country/overall-2015-2017.html.

The most intensive use of ACTRIS data; the countries where there has been the most data downloaded since the start of ACTRIS-2, is shown in the map in Figure 3. An interactive version of the map (top of the page) is also available for further analysis: https://folk.nilu.no/~richard/actris-access-stat-by-user-country/overall-2015-2017.html

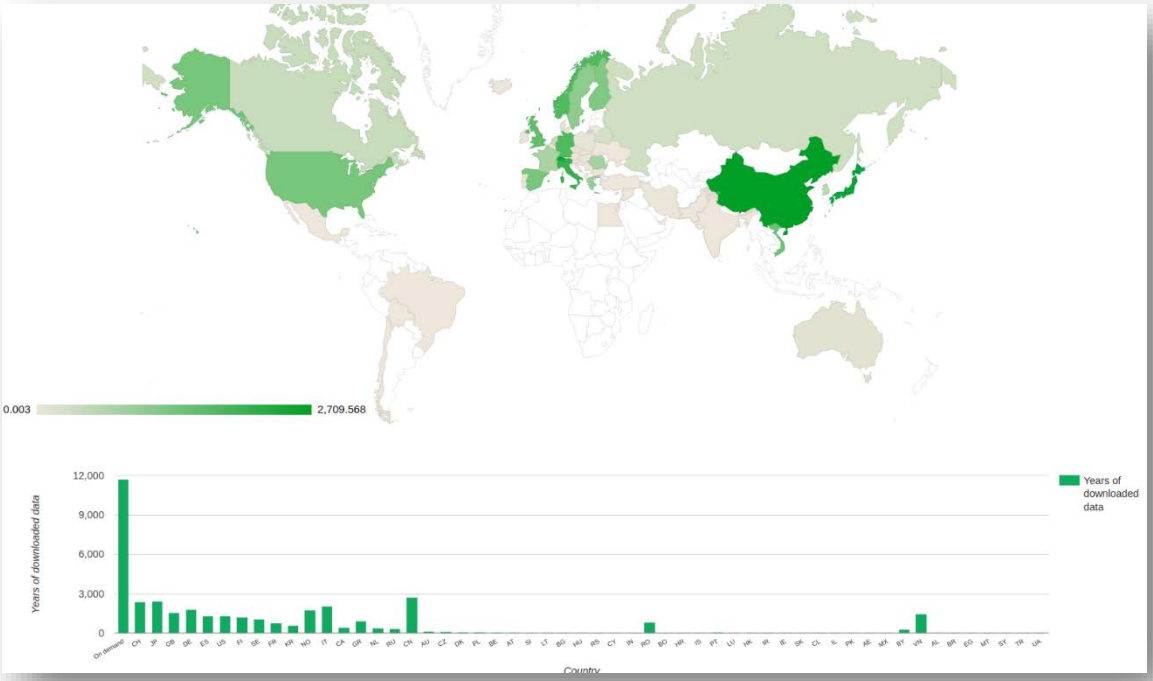

Figure 3: Geographical distribution of the countries with most intensive use, downloading most years of ACTRIS data in the period between 2015 and 2019. In total 38 125 full measurement years are downloaded.

Figure 4 and Figure 5 depict the monthly statistics of access to level 2 data archived in these data bases. These metrics should be interpreted in relation to the number of datasets provided, described in detail in the report "*D10.7 Second summary of the ACTRIS data offered by the ACTRIS Data Centre*". Note also that some variables range back to the year 2000, and some are new time series.

Figure 4 reports the total number of measurement years downloaded per month, in accordance with the required time resolution defined in the ACTRIS Data Management Plan (see section 1.1 for definitions). Note that the cloud profile data only has user metrics for this from 2017. An interactive version for deselecting/selecting categories of the plot is available here: https://folk.nilu.no/~richard/actris-access-stat-by-user-country/overall-data-downloaded.html

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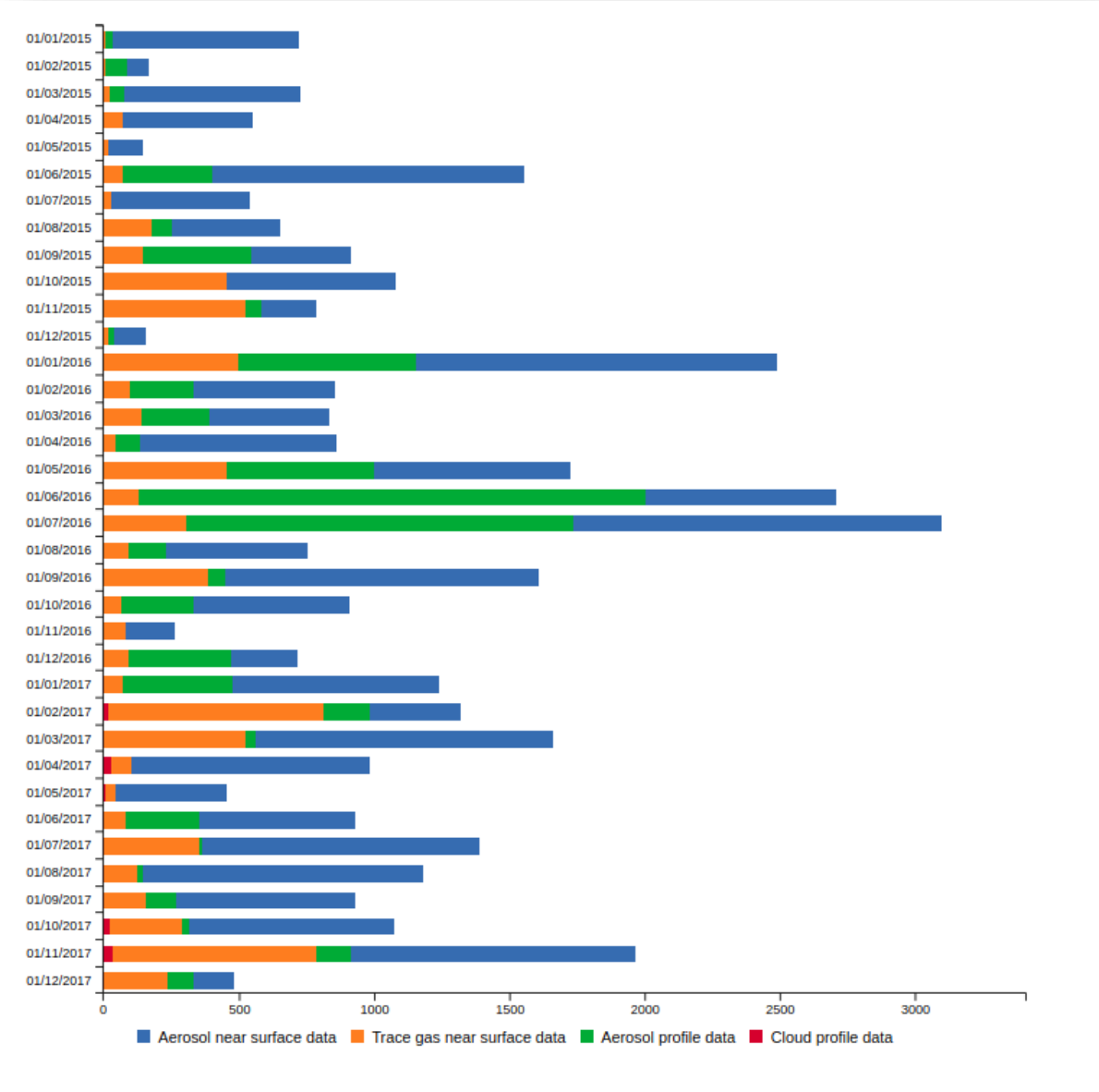

Figure 4: Number of years with level 2 data sets downloaded of ACTRIS aerosol profile data (green), aerosol near surface data (blue), trace gas near surface data (yellow) and cloud profile data (red)..

In total, 38 510 measurement years of data have been downloaded over the reporting period from all instruments/methodologies, in the period between 2015 and 2017 (note that the number may vary slightly from the total number displayed in the geographical distribution; this is due to some traffic not being mapped to a specific country). The average number of measurement years of data downloaded each month is 1070, but the variation is large, and the development is increasing over the period. Table 1 summarise the total access, and access to aerosol profile, and near surface data separately. The metrics "INSPECT" and "PLOT" are included to illustrate data analysis performed in the web interface. At this stage, this information is only available for ACTRIS in situ data archived in EBAS.

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Table 1: Summary of access to ACTRIS data through the ACTRIS data portal, measurement years by category. INSPECT gives the number of measurement years inspected in the web interface, DOWNLOAD gives the number of measurement years downloaded, and PLOT gives the number of measurement years plotted in the web interface.

	INSPECT	DOWNLOAD	PLOT
		All data	
	Cloud profile data (only statistics for 2017)		
Monthly average	Not available	11	Not available
Total	Not available	132	Not available
	Aerosol profile data		
Monthly average	Not available	230	Not available
Total	Not available	8281	Not available
	Aerosol and trace gas near surface data		
Monthly average	50	836	515
Total	1803	30098	18566
Time interval:	2015-01-01 - 2018-01-01		

Figure 5 depicts the monthly number of users downloading ACTRIS in situ aerosol and trace gas near surface data over the period and Table 2 summarise the number of users (different access IPs) of aerosol profile, and near surface data separately.

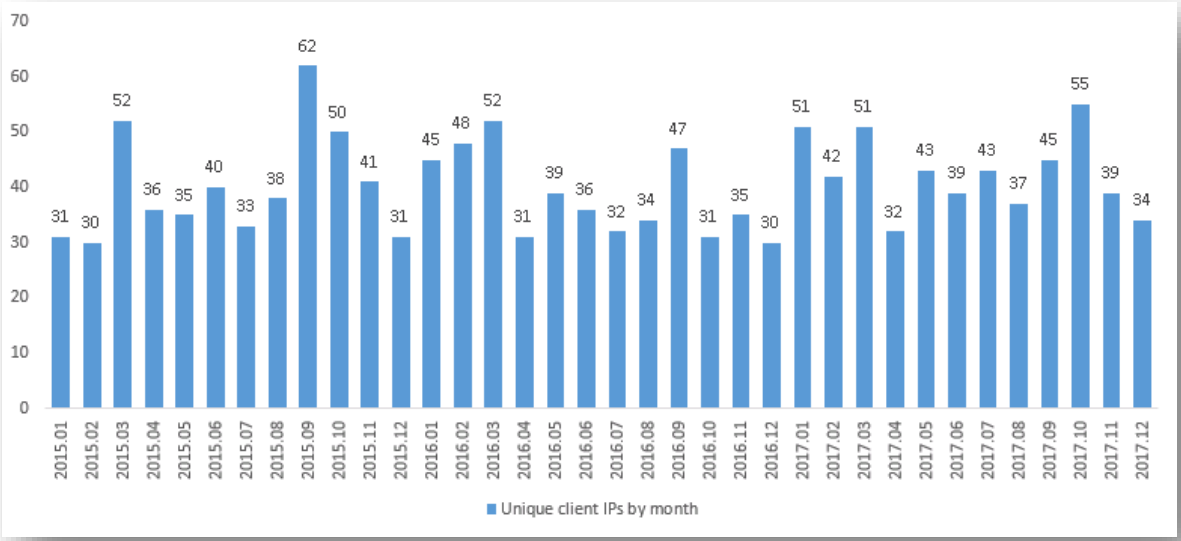

Figure 5: Monthly number of unique accesses (unique IP addresses) downloading ACTRIS aerosol and trace gas near surface data each month.

2.2 Monitoring of access to ACTRIS cloud profile data

Monitoring of access to the Cloudnet database. Due to technical issues, we only have user statistics from the Cloudnet database in the period after 2017-01-01. An interactive version of Cloudnet statistics (2017) is available here: https://folk.nilu.no/~richard/actris-access-stat-by-user-country/cloudnet-2017.html.
For cloud profile data sets, there are 47 different access IDs from 15 countries downloading 132 yearly data sets since start of 2017. The geographical distribution of the use and users of cloud profile data since start of ACTRIS-2 are shown in the maps in Figure 6.

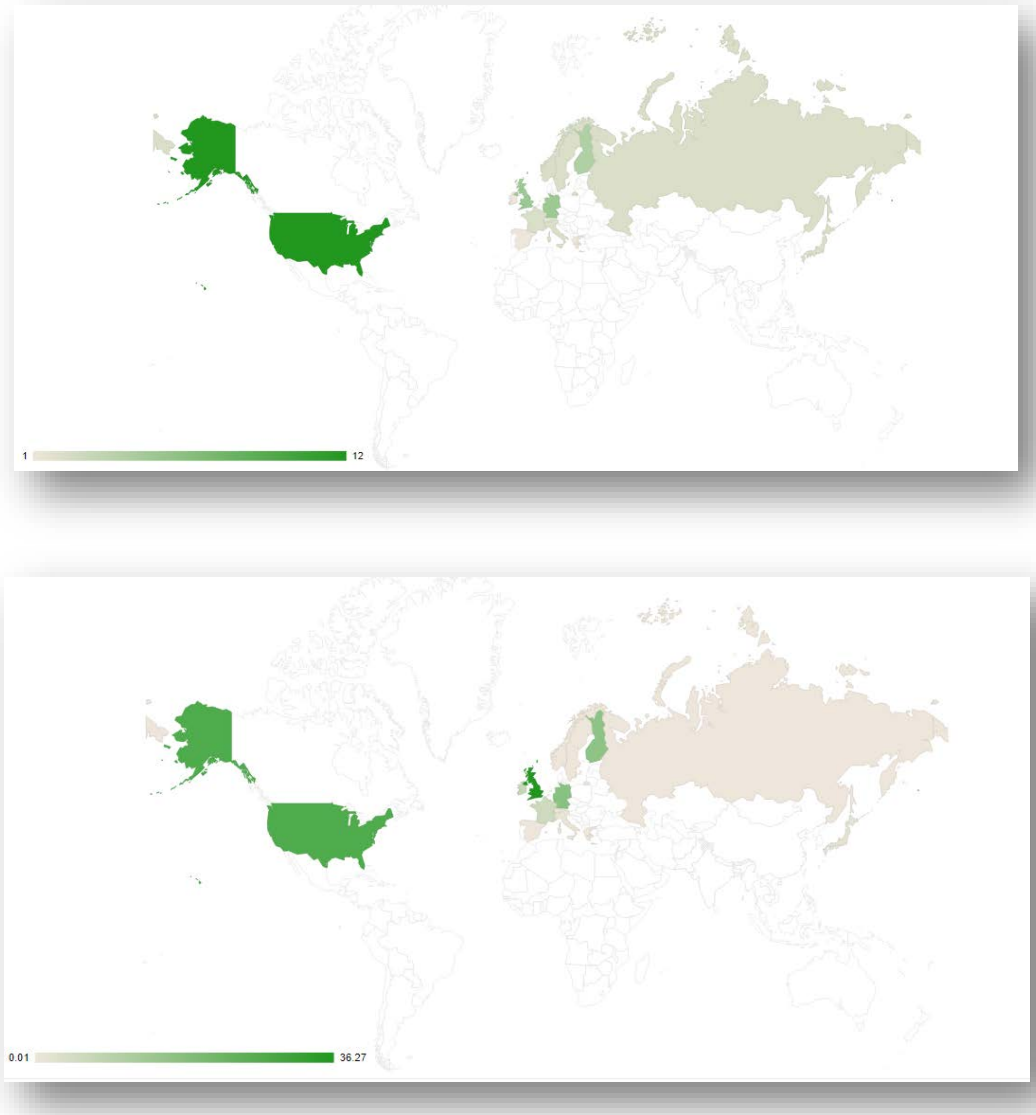

Figure 6: Upper panel: Geographical distribution of the 425 unique client IPs downloading cloud profile data over the period of 1th of January 2017 – end 2017. Lower panel: the countries with most intensive use, downloading most years of data, 132 years in total, from 15 countries in this period.

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Table 2: Summary of access to cloud product profiles. DOWNLOAD gives the numbers of measurement years of data downloaded. Note that values correspond to the period 2017-01-01 to 2018-01-01.

	INSPECT	DOWNLOAD	PLOT
Monthly average	Not available	Not available	Not available
Total	Not available	132	Not available
Time interval:		2017-01-01 - 2018-01-01	

Dynamic versions of the maps with more information are available from here:

- Use of data and users (the map on top): https://folk.nilu.no/~richard/actris-access-stat-by-user-country/cloudnet-2017.html

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2.3 Monitoring of access to ACTRIS aerosol profile data

For aerosol profile data sets, there are 420 different access IDs from 42 countries downloading 8199 yearly data sets since start of ACTRIS-2. The geographical distribution of the use and users of aerosol profile data since start of ACTRIS-2 are shown in the maps in Figure 6.

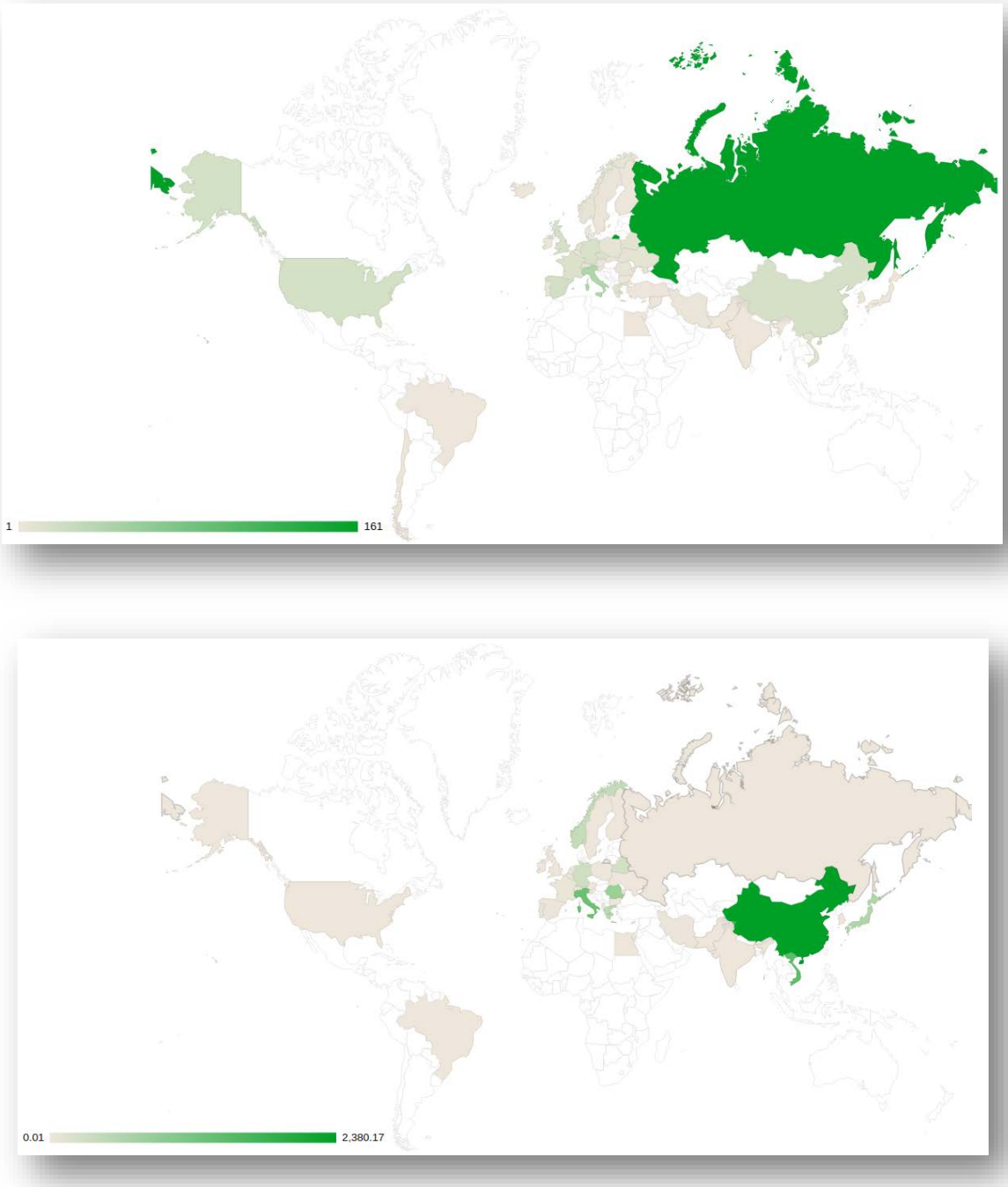

Figure 7: Upper panel: Geographical distribution of the 425 unique client IPs downloading aerosol profile data over the period of 1th of January 2015 – end 2017. Lower panel: the countries with most intensive use, downloading most years of data, 8199 years in total, from 42 countries in this period.

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Dynamic versions of the maps with more information are available from here:

- Use of data and users (the map on top): https://folk.nilu.no/~richard/actris-access-stat-by-user-country/aerosol-profile-data-2015-2017.html

The next sections describe the download of the various ACTRIS profile variables. These metrics should be interpreted in relation to the number of datasets provided, described in detail in the report "*D10.7 Second summary of the ACTRIS data offered by the ACTRIS Data Centre*". Note also that some variables range back ca the year 2000, and some are new time series.

2.3.1 Monitoring of access to aerosol backscatter coefficient profile

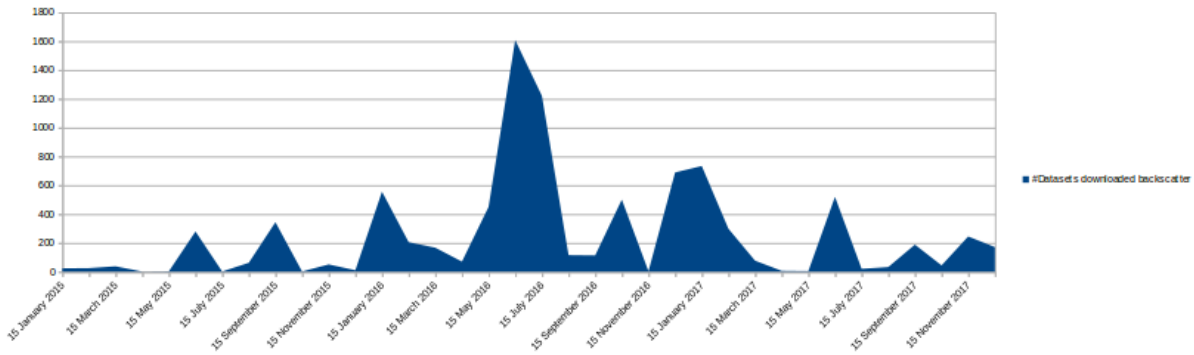

Figure 8: Number of years with level 2 data sets downloaded of Aerosol backscatter coefficient profiles in the period between 2015 end 2017.

Table 3: Summary of access to backscatter coefficient profiles. DOWNLOAD gives the numbers of measurement years of data downloaded.

Aerosol backscatter coefficient profile			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average		246	
Total years	Not available	8844	Not available
Time interval	**2015-01-01 - 2018-01-01**		

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2.3.2 Monitoring of access to aerosol extinction coefficient profile

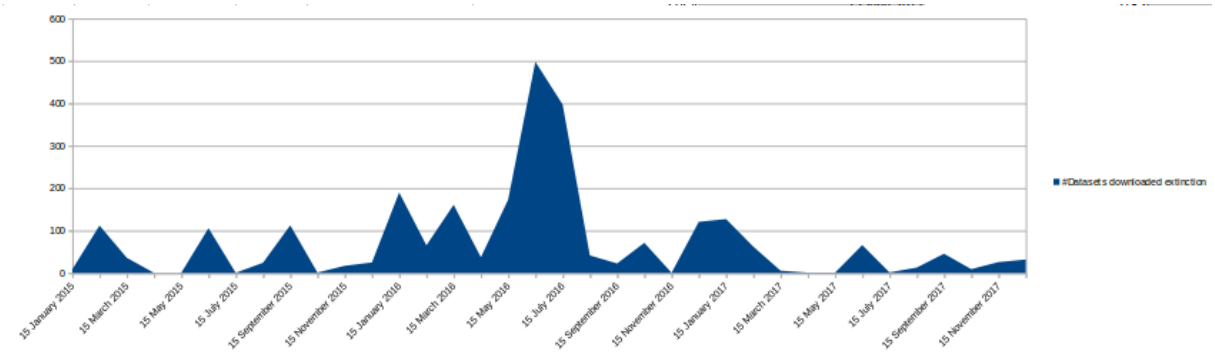

Figure 9: Number of years with level 2 data sets downloaded of Aerosol extinction coefficient profiles in the period between 2015 end 2017.

Table 4: Summary of access to aerosol extinction coefficient profiles. DOWNLOAD gives the numbers of measurement years of data downloaded.

Aerosol extinction coefficient profile			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average		72	
Total years	Not available	2597	Not available
Time interval	**2015-01-01 - 2018-01-01**		

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2.4 Monitoring of access to ACTRIS aerosol and trace gas near surface data

For ACTRIS aerosol and trace gas near surface data sets, there are 874 unique client IDs downloading 29 798 years of measurement data located in 45 countries in the period between 2015 and 2018. The geographical distribution of the use and users of near surface data since start of ACTRIS-2 are shown in the maps in Figure 9.

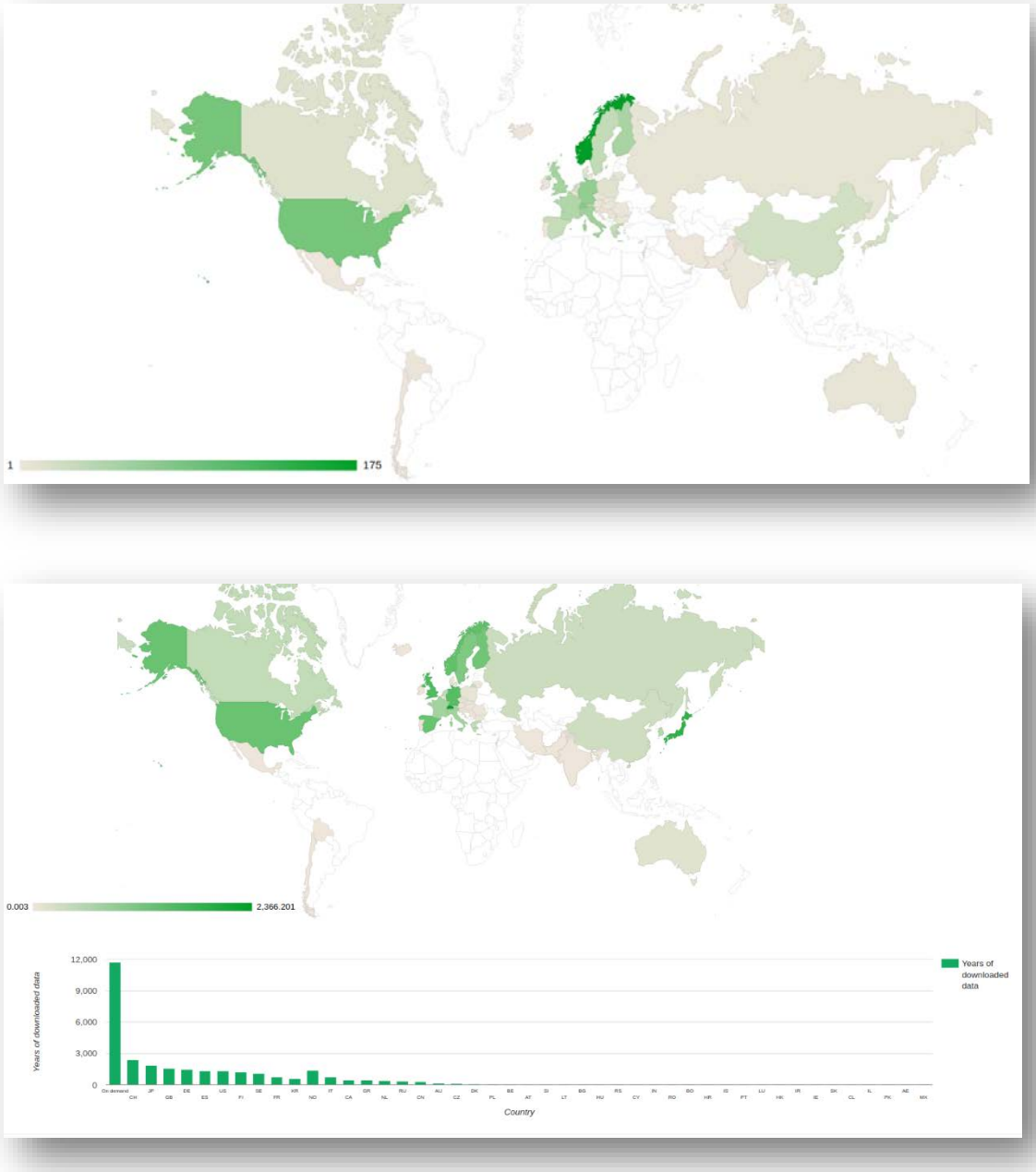

Figure 10: Upper panel: Geographical distribution of the 874 unique client IPs downloading aerosol and trace gas data over the period 1th of January 2015 – 31st of December 2017.. Lower panel: the countries with most intensive use, downloading most years of data, 29 798 years in total, from 45 countries.

An interactive version of the map with more information is available from here:

- Use of data and users: https://folk.nilu.no/~richard/actris-access-stat-by-user-country/overall-aerosol-and-tracegas-near-surface-data-2015-2017.html

The next sections describe the access and download of the various ACTRIS near surface variables. These metrics should be interpreted in relation to the number of datasets provided, described in detail in the report "*D10.7 Second summary of the ACTRIS data offered by the ACTRIS Data Centre*". Note also that some variables range back ca the year 2000, and some are new time series.

2.4.1 Monitoring of access to particle light scattering coefficient

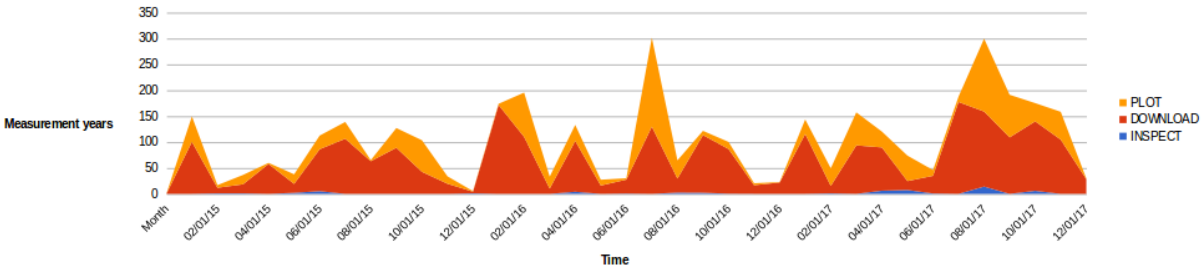

Figure 11: Number of years with particle light scattering coefficient level 2 data sets plotted (yellow), downloaded (red), and inspected (blue).

Table 5: Summary of access to particle light scattering coefficient. INSPECT means number of measurement years where the measurement data have been inspected in the web interface, DOWNLOAD gives the number of measurement years of data downloaded, and PLOT is the measurement years plotted in the web interface.

Particle light scattering coefficient			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	1.53	69.16	33.27
Total years	55.11	2490.91	1197.59
Time interval	**2015-01-01 - 2018-01-01**		

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2.4.2 Monitoring of access to particle light backscattering coefficient

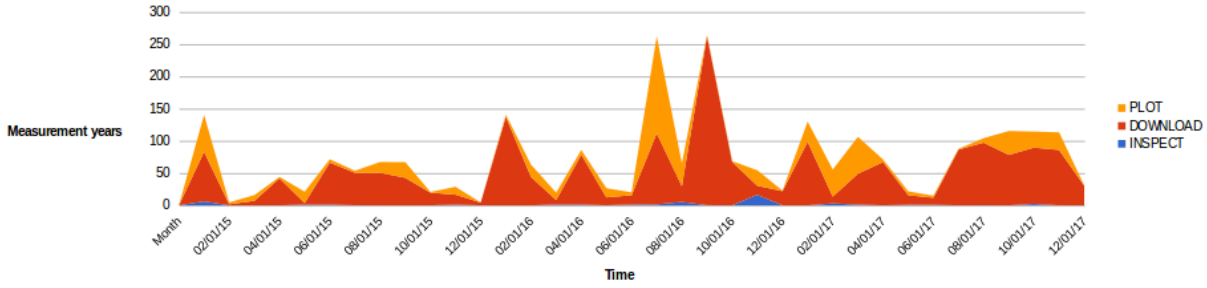

Figure 12: Number of years with particle light backscattering coefficient level 2 data sets plotted (yellow), downloaded (red), and inspected (blue).

Table 6: Summary of access to particle light backscattering coefficient. INSPECT means number of measurement years where the measurement data have been inspected in the web interface, DOWNLOAD gives the number of measurement years of data downloaded, and PLOT is the measurement years plotted in the web interface.

Particle light backscattering coefficient			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	1.18	52.40	18.50
Total years	42.58	1886.25	665.86
Time interval	**2015-01-01 - 2018-01-01**		

2.4.3 Monitoring of access to particle number size distribution

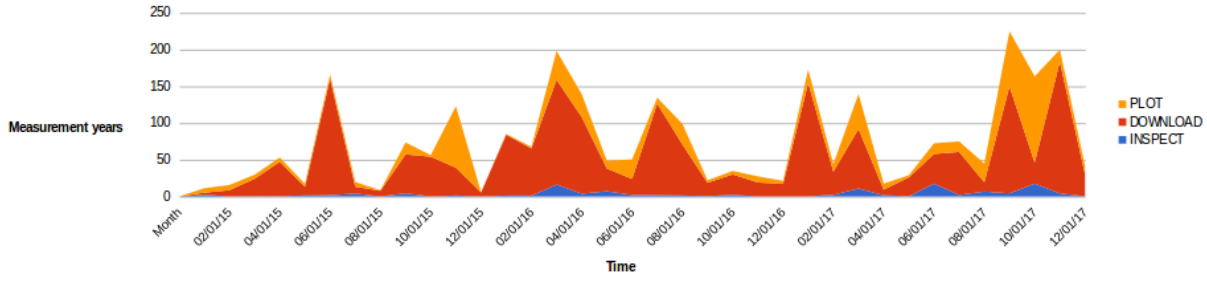

Figure 13: Number of years with particle number size distribution level 2 data sets plotted (yellow), downloaded (red), and inspected (blue).

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Table 7: Summary of access to particle number size distribution. INSPECT means number of measurement years where the measurement data have been inspected in the web interface, DOWNLOAD gives the number of measurement years of data downloaded, and PLOT is the measurement years plotted in the web interface.

Particle number size distribution			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	3.28	53.92	18.67
Total years accessed	118.17	1941.04	672.07
Time interval:	**2015-01-01 - 2018-01-01**		

2.4.4 Monitoring of access to particle light absorption coefficient

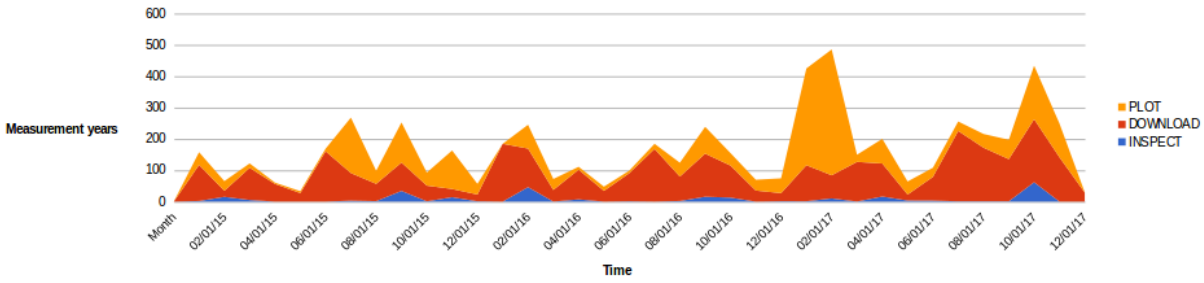

Figure 14: Number of years with particle light absorption coefficient level 2 data sets plotted (yellow), downloaded (red), and inspected (blue).

Table 8: Summary of access to particle light absorption coefficient. INSPECT means number of measurement years where the measurement data have been inspected in the web interface, DOWNLOAD gives the number of measurement years of data downloaded, and PLOT is the measurement years plotted in the web interface.

Particle light absorption coefficient			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	7.29	92.72	65.43
Total years	262.31	3337.83	2355.44
Time interval	**2015-01-01 - 2018-01-01**		

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2.4.5 Monitoring of access to particle number concentration

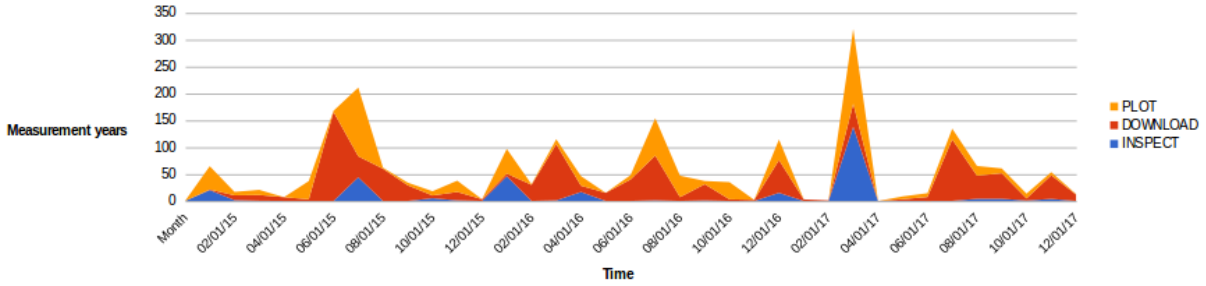

Figure 15: Number of years with particle number concentration level 2 data sets plotted (yellow), downloaded (red), and inspected (blue).

Table 9: Summary of access to particle number concentration. INSPECT means number of measurement years where the measurement data have been inspected in the web interface, DOWNLOAD gives the number of measurement years of data downloaded, and PLOT is the measurement years plotted in the web interface.

Particle number concentration			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	8.45	29.53	20.59
Total years	304.06	1063.10	741.07
Time interval	**2015-01-01 - 2018-01-01**		

2.4.6 Monitoring of access to cloud condensation nuclei number concentration

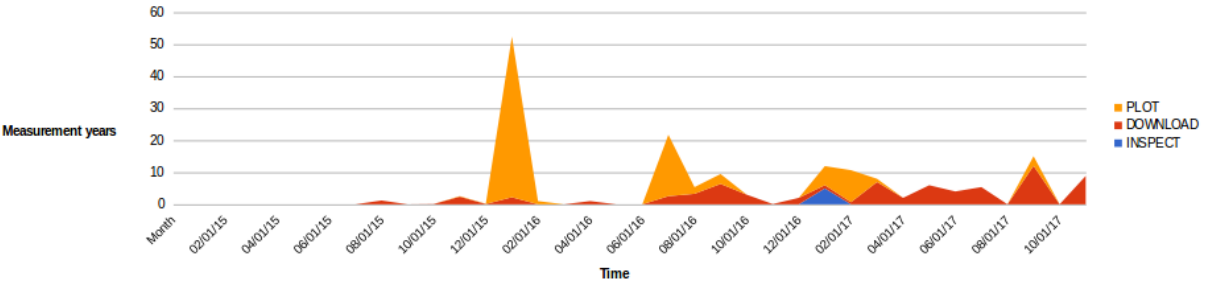

Figure 16: Number of years with cloud condensation nuclei number concentration level 2 data sets plotted (yellow), downloaded (red), and inspected (blue).

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Table 10: Summary of access to Cloud condensation nuclei number concentration. INSPECT means number of measurement years where the measurement data have been inspected in the web interface, DOWNLOAD gives the number of measurement years of data downloaded, and PLOT is the measurement years plotted in the web interface.

Cloud condensation nuclei number concentration			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	0.14	2.03	2.73
Total years	4.96	70.95	95.69
Time interval	**2015-01-01 - 2018-01-01**		

2.4.7 Monitoring of access to hygroscopic growth factor

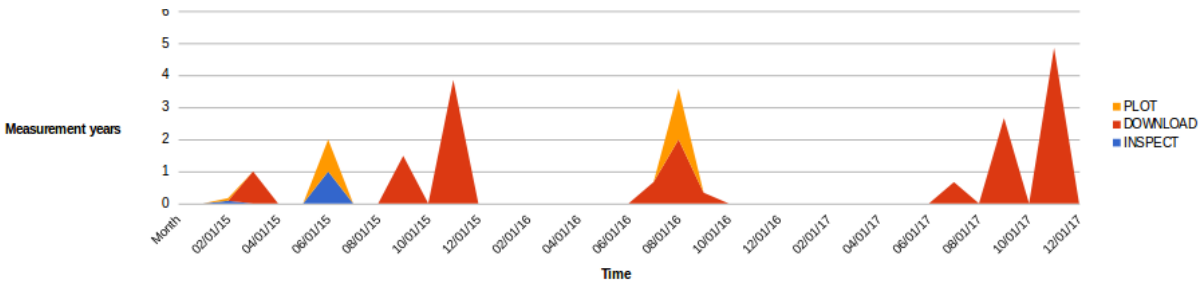

Figure 17: Number of years with hygroscopic growth factor level 2 data sets plotted (yellow), downloaded (red), and inspected (blue).

Table 11: Summary of access to hygroscopic growth factor. INSPECT means number of measurement years where the measurement data have been inspected in the web interface, DOWNLOAD gives the number of measurement years of data downloaded, and PLOT is the measurement years plotted in the web interface.

Hygroscopic growth factor			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	0.03	0.49	0.07
Total years	1.08	17.50	2.66
Time interval	**2015-01-01 - 2018-01-01**		

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2.4.8 Monitoring of access to particulate organic and elemental carbon mass concentrations

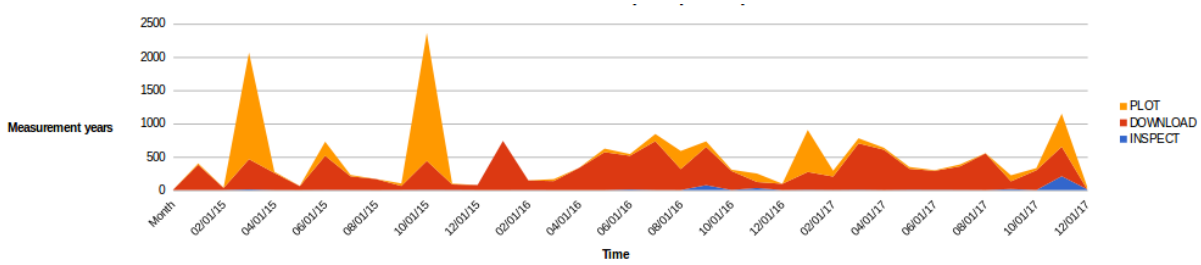

Figure 18: Number of years with particulate organic and elemental carbon mass concentrations (OC/EC) level 2 data sets plotted (yellow), downloaded (red), and inspected (blue).

Table 12: Summary of access to particulate organic and elemental carbon mass concentrations (OC/EC). INSPECT means number of measurement years where the measurement data have been inspected in the web interface, DOWNLOAD gives the number of measurement years of data downloaded, and PLOT is the measurement years plotted in the web interface.

Particulate organic and elemental carbon mass concentrations (OC/EC)			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	10.90	315.24	170.22
Total years	392.53	11348.64	6127.79
Time interval	**2015-01-01 - 2018-01-01**		

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2.4.9 Monitoring of access to particulate size-resolved chemical composition (organic & inorganic size-resolved mass speciation)

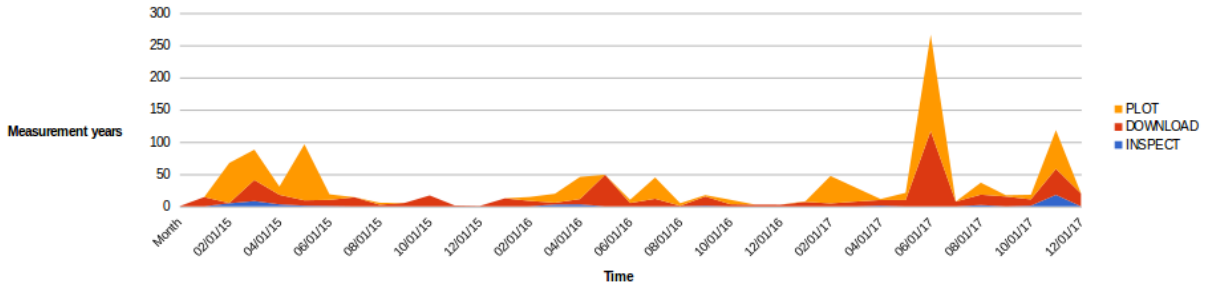

Figure 19: Number of years with particulate size-resolved chemical composition (organic & inorganic size-resolved mass speciation) level 2 data sets plotted (yellow), downloaded (red), and inspected (blue). Note that these data are password protected.

Table 13: Summary of access to particulate size-resolved chemical composition (organic & inorganic size-resolved mass speciation). INSPECT means number of measurement years where the measurement data have been inspected in the web interface, DOWNLOAD gives the number of measurement years of data downloaded, and PLOT is the measurement years plotted in the web interface.

Particulate size-resolved chemical composition (organic & inorganic size-resolved mass speciation)			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	1.29	14.04	17.81
Total years	46.45	505.45	641.22
Time interval	**2015-01-01 - 2018-01-01**		

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2.4.10 Monitoring of access to particulate levogluocsan mass concentration

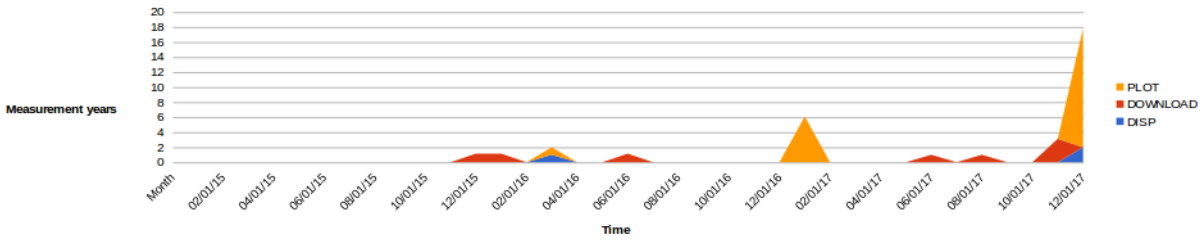

Figure 20: Number of years with particulate levogluocsan mass concentration level 2 data sets plotted (yellow), downloaded (red), and inspected (blue).

Table 14: Summary of access to particulate levogluocsan mass concentration. INSPECT means number of measurement years where the measurement data have been inspected in the web interface, DOWNLOAD gives the number of measurement years of data downloaded, and PLOT is the measurement years plotted in the web interface.

Particulate levogluocsan mass concentration			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	0.08	0.24	0.64
Total years	2.99	8.51	22.89
Time interval	**2015-01-01 - 2018-01-01**		

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2.4.11 Monitoring of access to Volatile Organic Compounds – VOC

VOC is a group of numerous compounds as described in the data management plan: http://www.actris.eu/Portals/46/Publications/DataCentre/ACTRIS_Data_Management_Plan.pdf . Mainly NMHCs (C2-C9 hydrocarbons), OVOCs (oxidised volatile organic compounds as aldehydes, ketones, alcohols). The metrics provided is a sum of all.

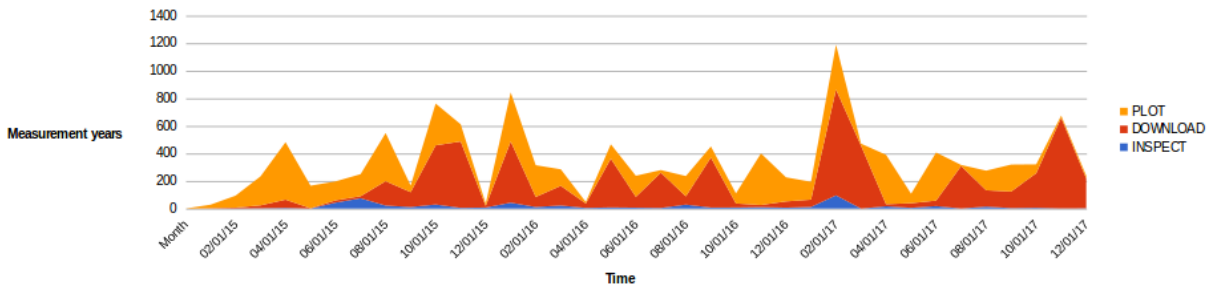

Figure 21: Number of years with Volatile Organic Compounds (VOC) level 2 data sets plotted (yellow), downloaded (red), and inspected (blue).

Table 15: Summary of access to Volatile Organic Compounds - VOC. INSPECT means number of measurement years where the measurement data have been inspected in the web interface, DOWNLOAD gives the number of measurement years of data downloaded, and PLOT is the measurement years plotted in the web interface.

Volatile Organic Compounds - VOC			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	14.57	173.99	154.92
Total years	524.62	6263.50	5577.08
Time interval	**2015-01-01 - 2018-01-01**		

ACTRIS (www.actris.eu) is supported by the European Commission under the Horizon 2020 – Research and Innovation Framework Programme, H2020-INFRAIA-2014-2015, Grant Agreement number: 654109

2.4.12 Monitoring of access to NOxy

NOxy is a group of many compounds as described in the data management plan: http://www.actris.eu/Portals/46/Publications/DataCentre/ACTRIS_Data_Management_Plan.pdf . Mainly NO, NO2, NOy (NO, NO2, NO3, N2O5, HNO2, HNO3, PAN, organic nitrates and aerosol nitrates sum of oxidized nitrogen species with an oxidation number >1, both organic and inorganic. The metrics provided is a sum of all.

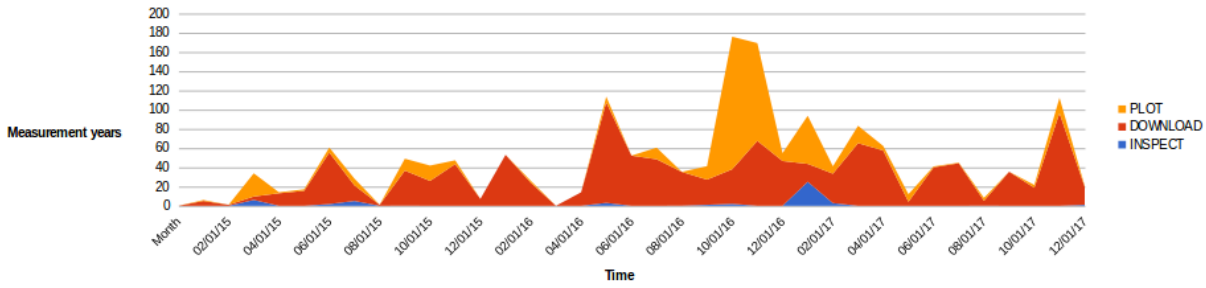

Figure 22: Number of years with NOxy level 2 data sets plotted (yellow), downloaded (red), and inspected (blue).

Table 16: Summary of access to NOxy. INSPECT means number of measurement years where the measurement data have been inspected in the web interface, DOWNLOAD gives the number of measurement years of data downloaded, and PLOT is the measurement years plotted in the web interface.

	NOxy		
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	1.33	32.33	12.99
Total years	47.79	1163.95	467.47
Time interval	**2015-01-01 - 2018-01-01**		

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2.4.13 Monitoring of access to Near Real Time (NRT) data archived in EBAS

4 near surface variables are available in NRT by end of August 2016. These are Light scattering coefficient Light backscattering coefficient, Number size distributions, and Absorption coefficient. The numbers of sites increased considerable over the period, since start of ACTIRS-2 (see Deliverable D10.2 for more details.)

The metrics provided is a sum of access to all ACTRIS NRT data archived in EBAS.

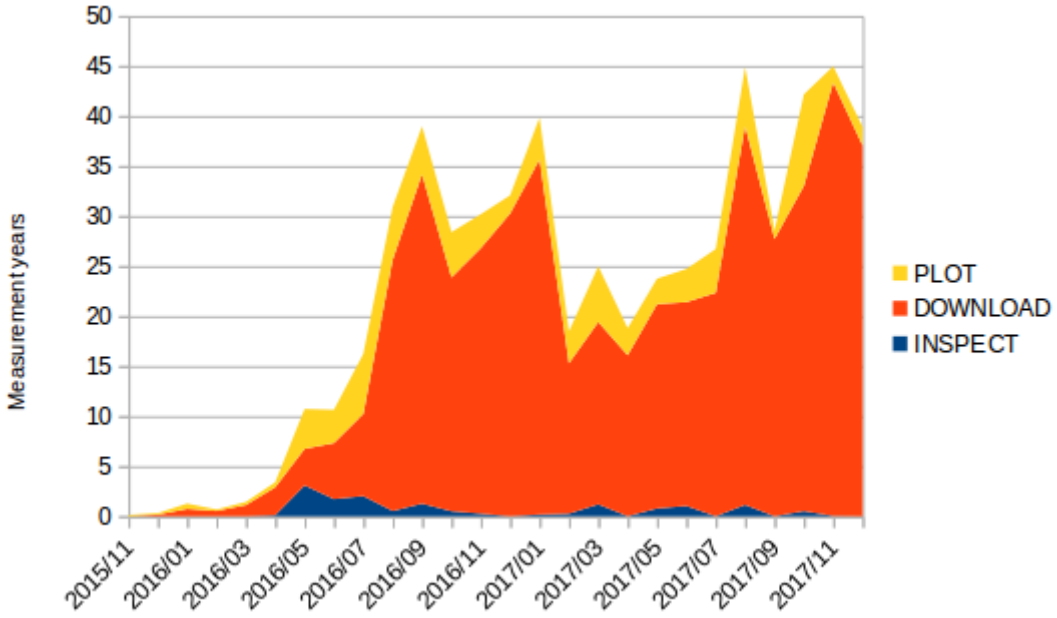

Figure 23: Number of years with all NRT level 1.5 data sets plotted (yellow), downloaded (red), and inspected (blue).

Table 17: Summary of access to NOxy. INSPECT gives number of time there has been inspection of measurement data values in the web interface, DOWNLOAD gives the numbers of measurement years of data downloaded, and PLOT is the number of times data are plotted in the web interface

NRT data archived in EBAS			
	INSPECT	**DOWNLOAD**	**PLOT**
Monthly average	0.55	18.74	3.08
Total years	14.45	487.21	80.20
Time interval	**2015-01-01 - 2018-01-01**		

There has been a significant increase in the number of accesses over the period, due to the increasing availability of these data. Most access last 3 months.

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2.5 Monitoring of access to ACTRIS Data Portal

There are around 300 unique visitors and approximately 500 visits on average each month. The ACTRIS Data Portal has had visitors from over 93 different countries, where The United States, Norway, France and Germany are among the most frequent visitors. In total there have been around 17 000 visits in the portal in the period between May 2015 until the end of 2017.

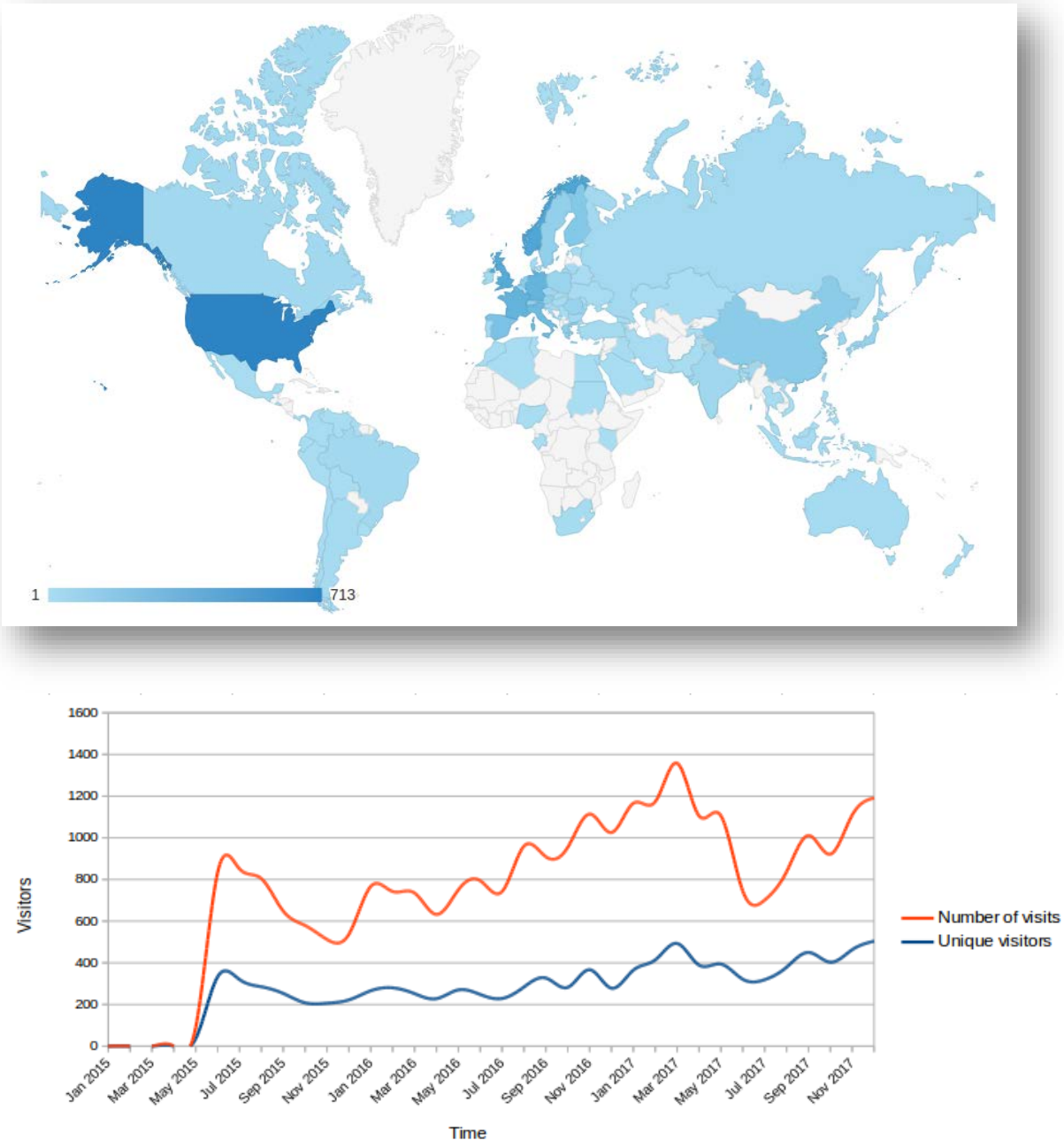

Figure 24: The map in the upper panel shows the percentage distribution of the users in the period between 2015 - 2018, and the monthly access evolution is shown in the lower panel, both total visits (orange) and unique users (blue). In total users from more than 50 countries visited the portal since ACTRIS started in May 2015.

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3 Web resources with user statistics of ACTRIS data - interactive maps and figures

Interactive versions of the maps and some of the diagrams presented in section 2 is available for further analysis and use.

The maps are produced February 2018, and covers the period start 2015- end 2017. An overview page of all is here: https://folk.nilu.no/~richard/actris-access-stat-by-user-country/

3.1 Web resource with overall statistic

The following interactive plots are made available combining use of aerosol remote situ, cloud remote sensing and aerosol and trace gas in situ.

Geographical distribution of the intensive use of ACTRIS data, the countries where there has been most years of data downloaded, in the period between 2015 and end of 2017 (upper panel):

- https://folk.nilu.no/~richard/actris-access-stat-by-user-country/overall-2015-2017.html

Geographical distribution of unique client IPs downloading ACTRIS data in the period between 2015 and end of 2017 (lower panel):

- https://folk.nilu.no/~richard/actris-access-stat-by-user-country/overall-2015-2017.html

Total number of measurement years downloaded per month, sum of all variables, click on the categories at the bottom for details

- https://folk.nilu.no/~richard/actris-access-stat-by-user-country/overall-data-downloaded.html

note that Cloud profile data started to monitor this in 2017

3.2 Web resource with statistics separated on category – in situ and remote sensing, aerosol, cloud and trace gases

Interactive version of cloud profile user statistics (2017)

- https://folk.nilu.no/~richard/actris-access-stat-by-user-country/cloudnet-2017.html

Interactive version of maps with aerosol profile user statistic

- https://folk.nilu.no/~richard/actris-access-stat-by-user-country/aerosol-profile-data-2015-2017.html

Interactive version of maps with aerosol and trace gas in situ data:

- https://folk.nilu.no/~richard/actris-access-stat-by-user-country/overall-aerosol-and-tracegas-near-surface-data-2015-2017.html

Interactive version of maps with aerosol situ data:

- https://folk.nilu.no/~richard/actris-access-stat-by-user-country/aerosols-2015-2017.html

Interactive version of maps with VOC data:

- https://folk.nilu.no/~richard/actris-access-stat-by-user-country/voc-2015-2017.html
-

Interactive version of maps with NOx data:

https://folk.nilu.no/~richard/actris-access-stat-by-user-country/noxy-2015-2017.html

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