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Centro Nacional de Supercomputación

EIONET Up-to-date AQ retriever

(Internal presentation)

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Barcelona, 25 January 2016
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1. PURPOSE

Air Quality monitoring stations & regional networks
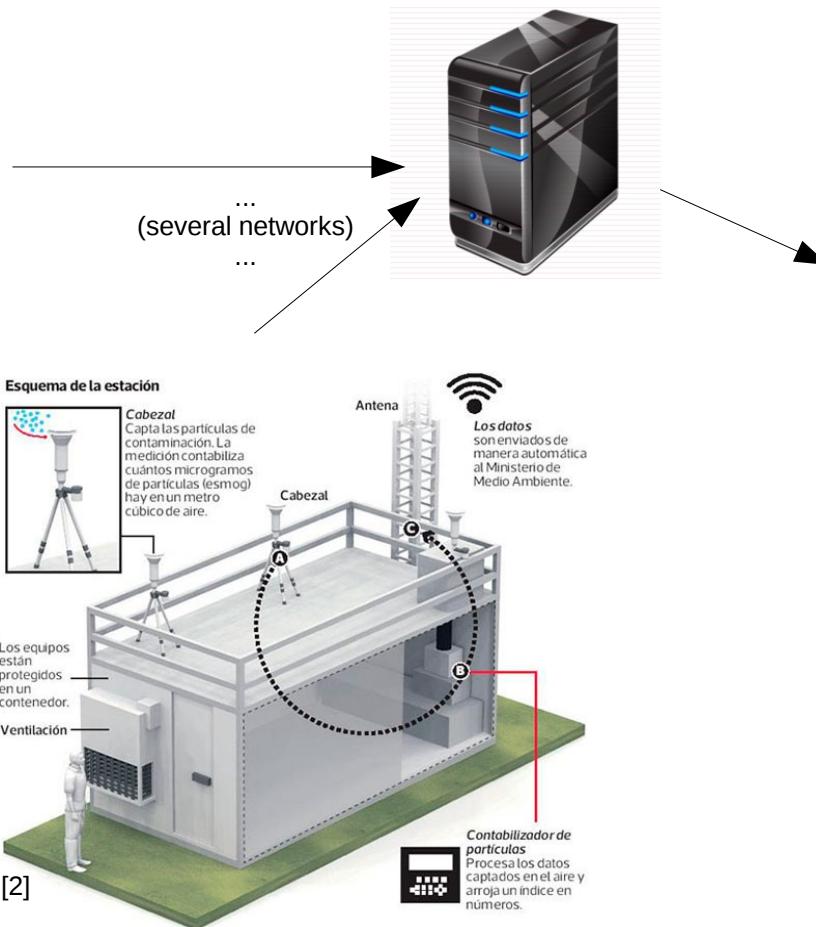
[1]

...
(several networks)
...

[2]

Evaluación del Pronóstico

Actualmente se reciben datos de las siguientes instituciones:

- European Environement Agency
- Generalitat de Catalunya
- Gobierno de Cantabria
- Junta de Andalucia
- Gobierno de Canarias
- Comunidad de Madrid
- Ayuntamiento de Madrid
- Govern de les Illes Balears
- Xunta de Galicia
- Gobierno de La Rioja
- Gobierno Extremadura
- Junta de Castilla y León
- Junta de Castilla-La Mancha
- Govern d'Andorra
- Gobierno del Principado de Asturias
- Gobierno de Navarra

Los datos de calidad del aire utilizados en esta página son preliminares ya que no han sido validados y podrían cambiar tras su revisión (véanse los anteriores sitios web para obtener más información).

Los iconos verdes representan la existencia de datos de observación para uno o más contaminantes(O3, NO2, SO2, PM10, PM2.5), mientras que el color amarillo indica que actualmente no se disponen de datos de observación.

20 scripts for AQ observations download as of Jan 2016
(17 CCAA, 1 City Council (Madrid), 1 Andorra, 1 some EU (EIONET but few stations))

Why a new retriever for Air Quality observations?

‹‹ Further improve the gathering of air quality observations across Europe by using the EEA/EIONET (European Environment Information and Observation Network) LIVE Air Quality Data service.

‹‹ Provide a **single, common tool** to gather air quality observations from stations, thus phasing out the several scripts used to date (one for each Comunidad Autónoma, Ayuntamiento) for the CALIOPE NRT forecast evaluation.

‹‹ More stations, more evenly distributed across Europe.

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2. AVAILABLE DATA

《 Decision 2011/850/EU of 12 December 2011, **Article 10:**

- Up-to-date information asap: Primary up-to-date assessment data - measurements (E2a)

- *COMMISSION IMPLEMENTING DECISION of 12 December 2011, laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality (notified under document C(2011) 9068) (2011/850/EU)*

《 Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe, Article 26:

- "The information shall* be made available free of charge by means of any easily accessible media including the Internet"
  * "shall" is a direction but does not mean mandatory

Article 10

Primary validated assessment data and primary up-to-date assessment data

1. In accordance with the procedure referred to in Article 5 of this Decision, Member States shall make available the information set out in Part E of Annex II on primary validated assessment data for all sampling points where measurement data is collected for the purpose of the assessment as indicated by Member States according to Article 9 for the pollutants listed in Parts B and C of Annex I.

Where in a particular zone or agglomeration modelling techniques are applied, Member States shall make available the information set out in Part E of Annex II at the highest time resolution available.

2. The primary validated assessment data shall be made available to the Commission for a full calendar year as complete time series no later than 9 months after the end of each calendar year.

3. Member States shall, where they make use of the possibility provided for in Articles 20(2) and 21(3) of Directive 2008/50/EC, make available information on the quantification of the contribution from natural sources pursuant to Article 20(1) of Directive 2008/50/EC or from the winter-sanding or -salting of roads pursuant to Article 21(1) and (2) of Directive 2008/50/EC.

CHAPTER V
INFORMATION AND REPORTING

Article 26
Public information

1. Member States shall ensure that the public as well as appropriate organisations such as environmental organisations, consumer organisations, organisations representing the interests of sensitive populations, other relevant health-care bodies and the relevant industrial federations are informed, adequately and in good time, of the following:

(a) ambient air quality in accordance with Annex XVI;

(b) any postponement decisions pursuant to Article 22(1);

(c) any exemptions pursuant to Article 22(2);

(d) air quality plans as provided for in Article 22(1) and Article 23 and programmes referred to in Article 17(2).

The information shall be made available free of charge by means of any easily accessible media including the Internet or any other appropriate means of telecommunication, and shall take into account the provisions laid down in Directive 2007/2/EC.

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What is the current status?

《 OLD: AQ Portal (ArcGIS) → NEW: Data Monitor

http://maps.eea.europa.eu/hub/AirQuality/

《 Modernised Near real Time data exchange to new UTD XML: to allow new products

❰❰ Status by the end of November 2015:

http://www.eionet.europa.eu/aqportal/pmeet/AQDpil14/Day2.1.IPR14%20Progress%20and%20data%20products.pdf
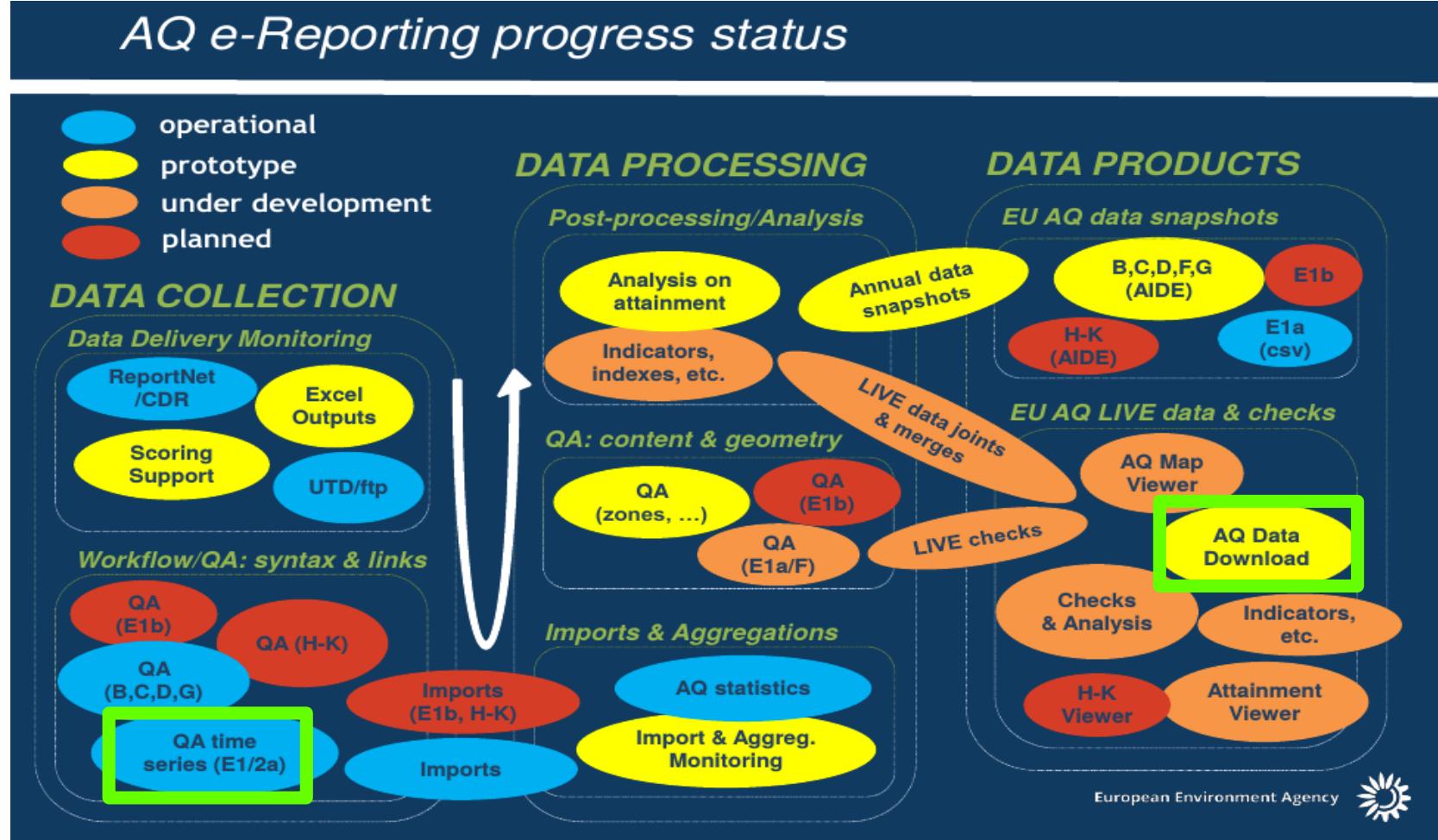
❝ "The UTD dataflow is voluntary and the list currently counts 20 countries, additional countries are expected to join in 2016."

❝ "The download service is monitored by EEA in normal office hours, following the EEA calendar." 07/jan/16 (http://discomap.eea.europa.eu/map/fme/doc/UTDAirQualityDownloadGuide.pdf)

❝ Personal communication: AQ data download operational except France and Lithuania (expected February 2016) but we've seen some service shortages. No news about Italy.

https://tableau.discomap.eea.europa.eu/t/Aironline/views/Airquality_E2a_monitoring/DashboardE2a?%3Aembed=y&%3AshowShareOptions=tr
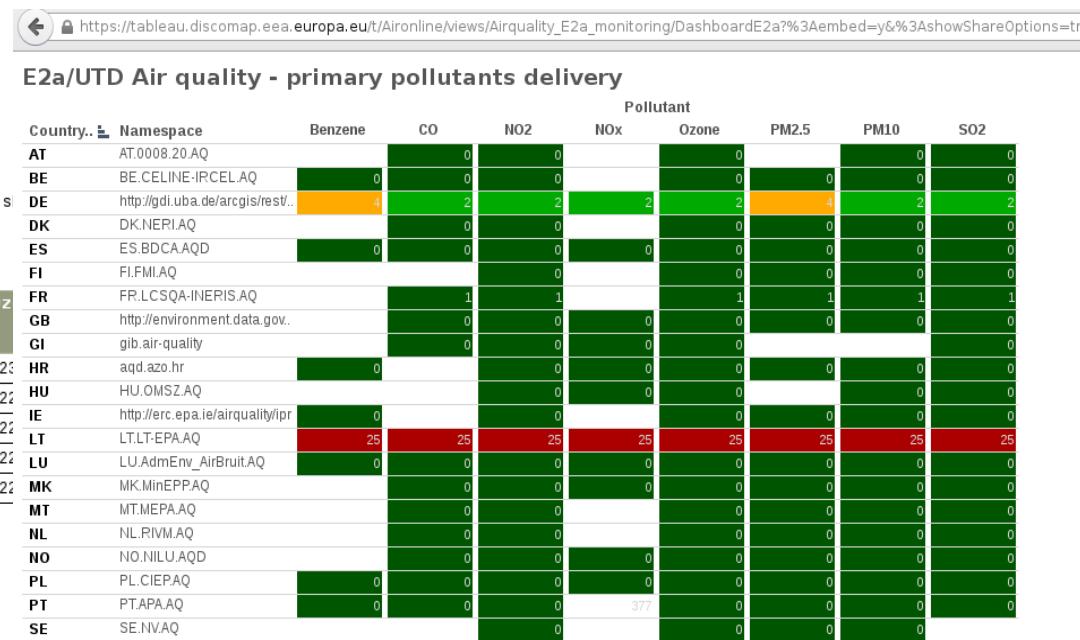
e-Reporting on air quality - Current status - E2a

Note: The old report has been replaced with this one due to poor performance and lack of update. This report is simpler, but more stabile and hopefully more usefull than the old.

Hours since last delivery

Countrycode	Benzene (air)		Carbon monoxide (air)		Nitrogen dioxide (air)		Nitrogen oxides (air)		Oz
AT			230	●	230	●			23
BE	224	●	223	●	223	●			22
DE	227	●	227	●	227	●	227	●	22
DK			223	●	223	●			22
ES	223	●	223	●	223	●	223	●	22

E2a/UTD Air quality - primary pollutants delivery

Country..	Namespace	Benzene	CO	NO2	NOx	Ozone	PM2.5	PM10	SO2
AT	AT.0008.20.AQ		0	0		0		0	0
BE	BE.CELINE-IRCEL.AQ	0	0	0		0	0	0	0
DE	http://gdi.uba.de/arcgis/rest/..	4	2	2	2	2	4	2	2
DK	DK.NERI.AQ		0	0		0	0	0	0
ES	ES.BDCA.AQD	0	0	0	0	0	0	0	0
FI	FI.FMI.AQ			0		0	0	0	0
FR	FR.LCSQA-INERIS.AQ		1	1		1	1	1	0
GB	http://environment.data.gov..		0	0	0	0	0	0	0
GI	gib.air-quality		0	0	0	0			0
HR	aqd.azo.hr	0		0	0	0	0	0	0
HU	HU.OMSZ.AQ			0	0	0	0	0	0
IE	http://erc.epa.ie/airquality/ipr	0		0			0	0	0
LT	LT.LT-EPA.AQ	25	25	25	25	25	25	25	25
LU	LU.AdmEnv_AirBruit.AQ	0	0	0	0	0	0	0	0
MK	MK.MinEPP.AQ		0	0	0	0	0	0	0
MT	MT.MEPA.AQ		0	0		0	0	0	0
NL	NL.RIVM.AQ		0	0		0	0	0	0
NO	NO.NILU.AQD		0	0	0	0	0	0	0
PL	PL.CIEP.AQ	0	0	0	0	0	0	0	0
PT	PT.APA.AQ	0	0	0	377	0	0	0	0
SE	SE.NV.AQ			0		0	0	0	

The UTD delivery board is updated every 2 hours and based on the last delivered value per specific country and pollutant.
Note: If a pollutant has not been delivered for more than 100 days, no color is applied.

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491 pollutants listed in the Vocabulary: AQD - Air Quality Pollutants
http://dd.eionet.europa.eu/vocabulary/aq/pollutant/view

8 pollutants available at the Up-to-date AQ data download service. 22 member states + Gibraltar delivering data:

ISO 3166-1 alpha-2 codes, not EU Comission's UK (for GB) and EL (for GR)

E2a/UTD Air quality - primary pollutants delivery

Countryco..	Namespace	Benzene	CO	NO2	NOx	Ozone	PM2.5	PM10	SO2
AD	AD.GovernAndorra.AQ		1	1	1	0		1	1
AT	AT.0008.20.AQ		0	0		0		0	0
BE	BE.CELINE-IRCEL.AQ	0	0	0		0	0	0	0
DE	http://gdi.uba.de/arcgis/rest/..	0	0	0	0	0	0	0	0
DK	DK.NERI.AQ		0	0		0	0	0	0
ES	ES.BDCA.AQD	0	0	0	0	0	0	0	0
FI	FI.FMI.AQ			0		0	0	0	0
FR	FR.LCSQA-INERIS.AQ		0	0		0	0	0	0
GB	http://environment.data.gov..		0	0	0	0	0	0	0
GI	gib.air-quality		0	0		0		0	0
HR	aqd.azo.hr	0		0	0	0	0	0	0
HU	HU.OMSZ.AQ		0	0	0	0		0	0
IE	http://erc.epa.ie/airquality/ipr	0		0		0	0	0	0
LT	LT.LT-EPA.AQ	0	0	0	0	0	0	0	0
LU	LU.AdmEnv_AirBruit.AQ	0	0	0	0	0	0	0	0
MK	MK.MinEPP.AQ		0	0	0	0	0	0	0
MT	MT.MEPA.AQ		0	0		0	0	0	0
NL	NL.RIVM.AQ		0	0		0	0	0	0
NO	NO.NILU.AQD			0	0	0	0	0	0
PL	PL.CIEP.AQ	0	0	0	0	0	0	0	0
PT	PT.APA.AQ	0	0	0	406	0	0	0	0
SE	SE.NV.AQ			0		0	0	0	
SI	SI.ARSO.AQ	0	0	0	0	0			0

https://tableau.discomap.eea.europa.eu/t/Aironline/views/Airquality_E2a_monitoring/Dashboard E2a?:embed=y&:showShareOptions=true&:display_count=no
UPDATED 09/FEB/16

Primary results

**❰❰** Over 300k observations only for Spain, (NO_2, SO_2, O_3, PM2.5, PM10) in about two weeks time – not all stations reporting regularly

❰❰ At current rate (just a few more stations to be added) 2,2 Million observations per month/pollutant

❰❰ **1749 new stations** so far, 201 new for Spain:

	id	code	code_obs	name	lat	lon	height	area	env	city
1176	1309	ES1845A	<null>	PZA. DEL CASTILLO	36.9968	-1.89535	5	<null>	<null>	<null>
1177	1310	ES1253A	<null>	BAILÉN	38.0929	-3.78392	368	<null>	<null>	<null>
1178	1311	ES1897A	<null>	CAMPANILLAS CIFA	36.7279	-4.56095	55	<null>	<null>	<null>
1179	1312	ES1898A	<null>	CAMPILLOS	36.9623	-4.84483	359	<null>	<null>	<null>
1180	1313	ES1718A	<null>	VILLANUEVA DEL ARZOBISPO	38.1694	-3.01022	692	<null>	<null>	<null>
1181	1314	ES1653A	<null>	DOS HERMANAS	37.2845	-5.91384	49	<null>	<null>	<null>
1182	1315	ES0624A	<null>	RODALQUILAR	36.8475	-2.03819	50	<null>	<null>	<null>
1183	1316	ES1786A	<null>	EL BOTICARIO	36.8649	-2.3905	55	<null>	<null>	<null>
1184	1317	ES1620A	<null>	CARTUJA	36.6609	-6.11449	49	<null>	<null>	<null>
1185	1318	ES1648A	<null>	E2: ALCORNOCALES	36.2339	-5.6635	189	<null>	<null>	<null>
1186	1319	ES0712A	<null>	LOS BARRIOS	36.1754	-5.48083	45	<null>	<null>	<null>
1187	1320	ES1792A	<null>	MAZAGON						
1188	1321	ES1750A	<null>	CARRANQUE						
1189	1322	ES1996A	<null>	BÉDAR						
1190	1323	ES1821A	<null>	ARCOS						
1191	1324	ES0817A	<null>	LA RANILLA						
1192	1325	ES1425A	<null>	PRINCIPES						
1193	1326	ES1479A	<null>	AVDA. MARCONI						
1194	1327	ES1664A	<null>	ALGECIRAS EPS						
1195	1328	ES0890A	<null>	TORNEO						
1196	1329	ES1924A	<null>	PALACIO CONGRESOS						
1197	1330	ES1560A	<null>	GRANADA - NORTE						
1198	1331	ES1256A	<null>	LOS ROSALES						
1199	1332	ES2030A	<null>	MARBELLA ARCO						
1200	1333	ES1393A	<null>	MEDITERRÁNEO						
1201	1334	ES2047A	<null>	AVDA. AL-NASIR						
1202	1335	ES1610A	<null>	FONERS						
1203	1336	ES1990A	<null>	EL MAILLO						
1204	1337	ES1095A	<null>	POZOS						
1205	1338	ES1094A	<null>	SAN LUIS						
1206	1339	ES1247A	<null>	DALT VILA						
1207	1340	ES1246A	<null>	CAN MISSES						
1208	1341	ES1995A	<null>	SANT JOAN DE DÉU						
1209	1342	ES2055A	<null>	TORRENT-EL VEDAT						
1210	1343	ES1340A	<null>	POZO DULCE						
1211	1344	ES2031A	<null>	AVENIDA JUAN XXIII						
1212	1345	ES2068A	<null>	LEITZA						
1213	1346	ES2063A	<null>	LOPE DE VEGA						
1214	1347	ES2061A	<null>	CAMPOLONGO						
1215	1348	ES1248A	<null>	AO-SORT						
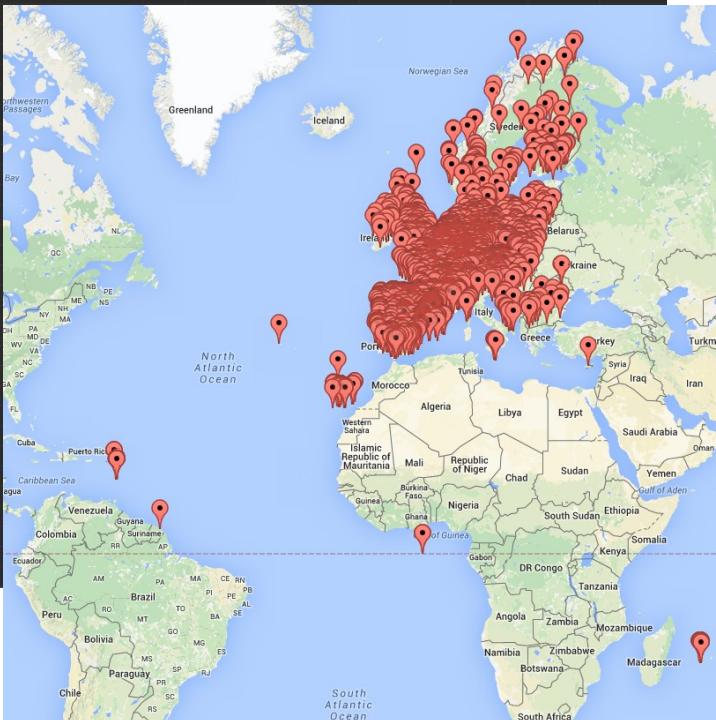
Until 20/01/16 09h	COUNT
Austria	171
Belgium	86
Germany	433
Denmark	12
Spain	466
Finland	64
France	615
United Kingdom	146
Slovenia	
Croatia	16
Hungary	13
Ireland	16
Lithuania	20
Luxembourg	5
Macedonia	13
Malta	5
Netherlands	47
Norway	55
Poland	144
Portugal	52
Sweden	28

❰❰ Ongoing Europe-wide test: still auto-creating new stations!!

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« No info for IT, GR (still better than now)
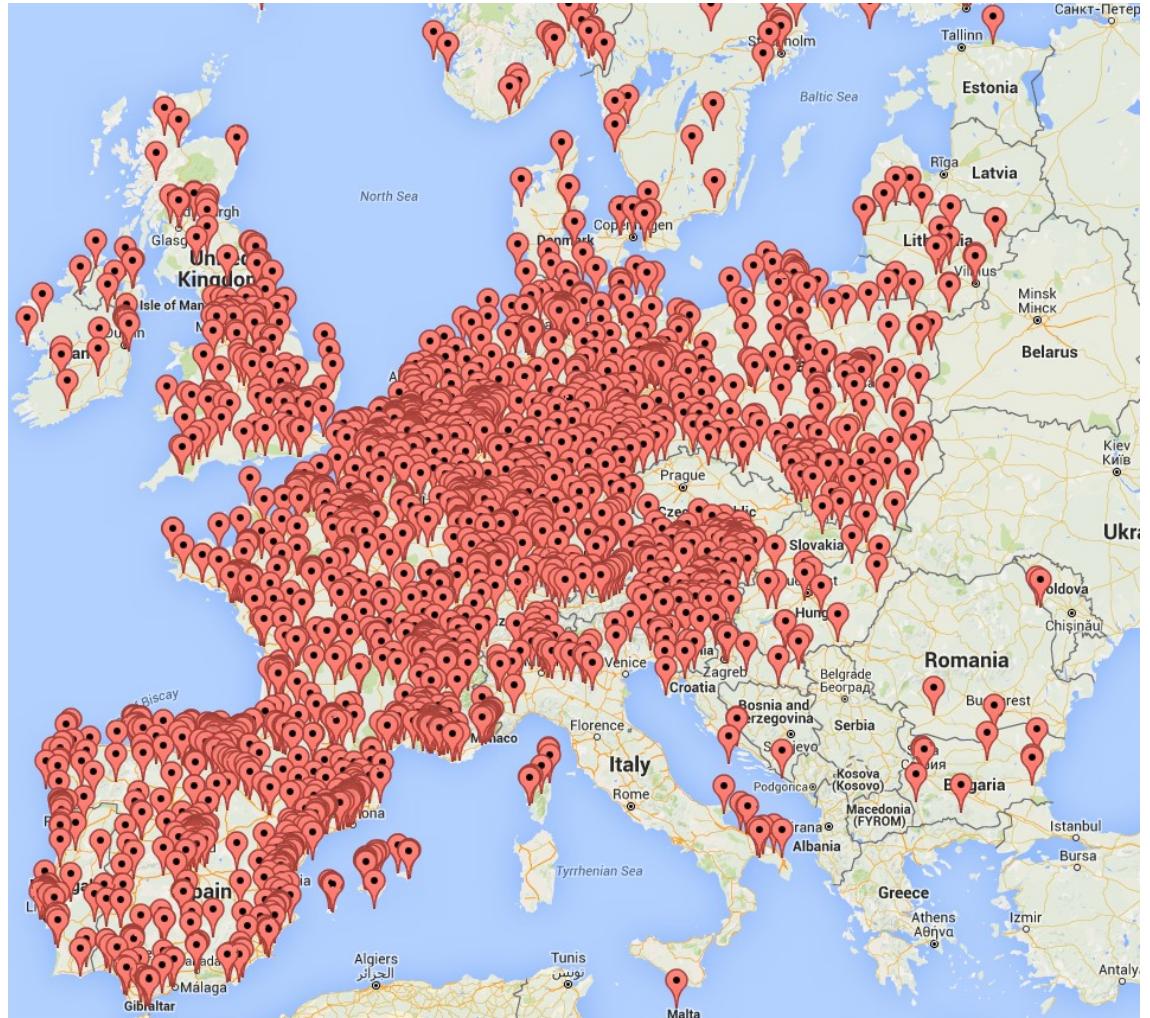
Plotted with: http://www.darrinward.com/lat-long/

Primary results: "not verified" data

《 All observations retrieved so far have validity=1 and verification=3 or 2 (bottom table)

Notation	Label	URI
-1	Not valid	http://dd.eionet.europa.eu/vocabulary/aq/observationvalidity/-1
-99	Not valid due to station maintenance or calibration	http://dd.eionet.europa.eu/vocabulary/aq/observationvalidity/-99
1	Valid	http://dd.eionet.europa.eu/vocabulary/aq/observationvalidity/1
2	Valid, but below detection limit measurement value given	http://dd.eionet.europa.eu/vocabulary/aq/observationvalidity/2
3	Valid, but below detection limit and number replaced by 0.5*detection limit	http://dd.eionet.europa.eu/vocabulary/aq/observationvalidity/3

Notation	Label	URI
1	Verified	http://dd.eionet.europa.eu/vocabulary/aq/observationverification/1
2	Preliminary verified	http://dd.eionet.europa.eu/vocabulary/aq/observationverification/2
3	Not verified	http://dd.eionet.europa.eu/vocabulary/aq/observationverification/3

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Flags applied to data (suspicious values)

❰❰ In-house filtering also implemented, same as old system:

- Flag **IR** is applied if observation is not in range for its pollutant.

date (yyyy-MM-d... ▲ 1	valu... ⬍	vali... ⬍
2015-11-11 17:00:00	241	\<null\>
2015-11-11 18:00:00	301	IR
2015-11-11 19:00:00	424	IR
2015-11-11 20:00:00	404	IR
2015-11-11 21:00:00	223	\<null\>

- Flag **DS** is applied if observation is constant for the past five hours (-5h..-1h range) and above a value of 10 for its pollutant.

date (yyyy-MM-d... ▲ 1	valu... ⬍	vali... ⬍
2016-01-19 23:00:00	239	\<null\>
2016-01-20 00:00:00	239	\<null\>
2016-01-20 01:00:00	239	\<null\>
2016-01-20 02:00:00	239	\<null\>
2016-01-20 03:00:00	239	\<null\>
2016-01-20 04:00:00	239	DS
2016-01-20 05:00:00	239	DS
2016-01-20 06:00:00	239	DS

- Flag **MP** is applied if previous observation (past hour) is an outlier (has absolute maximum slide change) for its pollutant.

date (yyyy-MM-dd ... ⬍	valu... ⬍	vali... ⬍
2015-12-25 14:00:00	384	\<null\>
2015-12-25 15:00:00	554	MP
2015-12-25 16:00:00	340	MP
2015-12-25 17:00:00	467	MP
2015-12-25 18:00:00	192	\<null\>

date (yyyy-MM-dd ... ⬍	valu... ⬍	vali... ⬍
2015-12-28 22:00:00	22	\<null\>
2015-12-28 23:00:00	12	\<null\>
2015-12-29 00:00:00	180	MP
2015-12-29 01:00:00	20	\<null\>
2015-12-29 02:00:00	17	\<null\>

PM10   NO2

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"Future" observations detected (also see log example Future AQ observations DK-FI log example 2016-01-11.txt):

- **Solution considers limits set in place by EIONET (download restricted to max 50k observations per request) so filters must always be used**

- **Some data providers uploading data once a day (e.g.: Canarias)**

- **Performance, summary of raw info from logs:** /home/Earth/jcuadrad/Documents/EIONET Data portal/EIONET data retrieval evaluation.ods

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3. HOW TO USE IT

Cron (time-based job scheduler) usage

❰❰ Normal, automated usage: bscct08.bsc.es (production) bsces145.int.bsc.es (test)

❰❰ Configuration file (one .conf for every group of countries):

```
1   [aqdownload]
2   # Time frame of past Days of observations (since today) to be downloaded
3   # Recommended value=8, recommended min value=3, recommended max value=14
4   days_of_obs = 10
5   # list of member states (separated by comma; i.e.: es,de,pt) of which we want to download observations from their stations
6   # ISO 3166-1 alpha-2 must be used
7   countrycodes = es
8
9   [pollutants]
10  # pollutants to be downloaded (observations of those pollutants)
11  # to add another pollutant to be downloaded add a line with the CALIOPE acronym as key and EIONET notation as value
12  # acronym in CALIOPE DB / notation EIONET for request
13  O3 = O3
14  NO2 = NO2
15  SO2 = SO2
16  PM2.5T = PM2%2E5
17  PM10T = PM10
18  # Note EIONET notation PM2.5 must be URI safe
```

❰❰ Please see groups of countries in following slide. Groups are based on number of stations and proximity

❰❰ Proposed schema to balance Europe-wide data download:

ISO c.c.	Country	Total	ISO c.c.	Country	Total
FR	Francia	616	FR	Reunión	15
ES	España	467	CH	Suiza	13
DE	Alemania	435	MK	Macedonia	13
AT	Austria	174	SI	Eslovenia	13
GB	Reino Unido	145	DK	Dinamarca	12
PL	Polonia	145	BG	Bulgaria	10
BE	Bélgica	85	FR	Martinica	9
FI	Finlandia	64	SK	Eslovaquia	8
PT	Portugal	60	LU	Luxemburgo	6
NO	Noruega	55	MT	Malta	4
IT	Italia	48	FR	Guadalupe	3
NL	Países Bajos	47	GI	Gibraltar	3
SE	Suecia	28	RO	Rumanía	3
HU	Hungría	24	AD	Andorra	2
LT	Lituania	20	CY	Chipre	1
HR	Croacia	16	EE	Estonia	1
IE	Irlanda	16	FR	Guayana Francesa	1

2534 Stations in total. Updated 11/feb/2016 13h

Execution every 6h (4 times per day):

- 1. EIONET-ES (ES)
- 2. EIONET-GER (DE-AT-PL)
- 3. EIONET-FRIT (FR-IT)

Execution every 8h (3 times per day):

- 4. EIONET-BENEPT (PT-BE-NL)
- 5. EIONET-UKSCANDINAVIA (GB-NO-SE-FI)

Execution every 12h (2 times per day):

- 6. EIONET-SMALL (DK-IE-GI-LT-MT-LU-HU-MK-HR)
- 7. EIONET-POLLUTANT-CO (all countries reporting CO: ad,at,be,de,dk,es,fr,gb,lt,lu,mk,mt,nl,no,pl,pt,si)

- Times script execution starts:
- 1. 00:44, 06:44, 12:44, 18:44.
- 2. 01:44, 07:44, 13:44, 19:44.
- 3. 02:44, 08:44, 14:44, 20:44.
- 4. 03:24, 11:24, 19:24.
- 5. 04:24, 12:24, 20:24.
- 6. 05:14, 17:14.
- 7. 06:14, 18:14.

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Every .conf file has all five pollutants, except ES and CO-POLLUTANT:

BENEPT.conf
pt,be,nl

CO-POLLUTANT.conf
ad,at,be,de,dk,es,fr,gb,lt,lu,mk,mt,nl,no,pl,pt,si

ES.conf
es (+ NO pollutant)

FRIT.conf
fr,it

GER.conf
de,at,pl

SMALL.conf
dk,ie,ad,lu,hu,hr,lt,si,mt,mk,gi

UKSCANDINAVIA.conf
gb,no,se,fi

COUNTRIES REPORTING DATA:
UPDATED 09/FEB/16:
AD
AT
BE
DE
DK
ES
FI
FR
GB
GI
HR
HU
IE
LT
LU
MK
MT
NL
NO
PL
PT
SE
SI

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Manual usage

**((Manual usage intended for one-time test purposes

**((This tool does not replace the Visor BD CALIOPE web interface

**((Documentation:
https://earth.bsc.es/wiki/doku.php?id=tools:eionet-utdretriever

**((HTML Sphinx-generated technical documentation (in /docs):
https://earth.bsc.es/gitlab/jcuadrad/EIONET.git

FromDate
(today at 00:00-days_of_obs)

ToDate (now)

InsertedSinceDate
(last_exec_inserted)

UpdatedSinceDate
(last_exec_updated)

* If last_download (Inserted or Updated) < from_date → from_data=last_download

**((Web interface for one-time raw data (XML and CSV outputs):

http://discomap.eea.europa.eu/map/fme/AirQualityUTDExport.htm

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Manual usage - CLI

download: Normal operation, automated data download data uses the UpdatedSince and CreatedSince filters. In this mode, the retriever will keep track of the dates of last successful download for each pollutant and country, storing it in the DOWNLOAD_DATE table in the database.

download_no_filters: Manual operation, intended to troubleshoot missing data in the DB. Since the filters are not used in this mode all observations from the time window specified will be downloaded (be aware of reaching the 50k observations limit has set in place). The retriever will not keep track of the last successful downloads in this mode.

download_sliding_no_filters: Same as "download_no_filters" mode but it can be used with relative dates (to today). Please see example below.

In the "download_no_filters" mode the usage is as follows:

```
python3 EIONETretriever.py download_no_filters GER --fromDate 2016-01-01 --toDate 2016-01-03 > logs/GER/GER-20160101-20160102.log
```

In this example, all observations of the countries (de,at,pl) and pollutants defined in the "GER.conf" file from 01/jan/2016 to 03/jan/2016 (not included) will be downloaded and stored in the database.

Example for "download_sliding_no_filters":

If today is 2016-01-27 and we want to download the observations of days 2016-01-12 and 2016-01-13 we can get them in two ways:

```
python3 EIONETretriever.py download_no_filters ES --fromDate 2016-01-12 --toDate 2016-01-14 > logs/ES/ES-20160112-20160113.log
python3 EIONETretriever.py download_sliding_no_filters ES --fromDaysAgo 15 --toDaysAgo 13 > logs/ES/ES-20160112-20160113.log
```

Please note that in this mode, if the option –toDaysAgo is not provided the download will be until To date (now).

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 Presenter to audience (AC group)

 Audience to presenter

Changes introduced in meeting 2016-01-25

❰❰ Up-to-date data download of five pollutants: NO_2, SO_2, O_3, PM2.5, PM10
+ (as requested by Jaime Benavides): CO (EU) + NO (only for Spain)

Label	Notation EIONET	URI	acronym in CALIOPE DB / notation EIONET
Benzene (air)	C6H6	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/20	
Carbon monoxide (air)	**CO**	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/10	
Nitrogen dioxide (air)	**NO2**	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/8	**NO2 = NO2**
Nitrogen oxides (air)	NOX as NO2	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/9	However, **NO** notation (id 38) returns also data
Ozone (air)	**O3**	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/7	**O3 = O3**
Particulate matter < 10 μm (aerosol)	**PM10**	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/5	**PM10T = PM10**
Particulate matter < 2.5 μm (aerosol)	**PM2.5**	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/6001	**PM2.5T = PM2%2E5**
Sulphur dioxide (air)	**SO2**	http://dd.eionet.europa.eu/vocabulary/aq/pollutant/1	**SO2 = SO2**

OLD (before January 2016): In CALIOPE implementation guide:
7.2.2. Datos de observaciones: "...para los contaminantes: O3, NO, NO2, SO2, PM10 y PM2.5, Benceno y Tolueno."

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《 Old stations (station codes not normalized)? → **REMOVED!**

	id	code	code_obs	name	lat ▲ 1	lon	height	area	env	city	province	country	active
1	1236	ES1929A	\<null\>	IS-EL PRAT (JARDINS DE LA PAU)	41.3215	2.09773	5	\<null\>	\<null\>	\<null\>	\<null\>	\<null\>	0
2	1113	IS	8169008	El Prat de Llobregat (jardins de la pau)	41.3215	2.09773	3	SUB	T	El Prat…	Cataluña	ESPAÑA	1
3	1235	ES1983A	\<null\>	EL PRAT DE LLOBREGAT (CEM SAGNIER)	41.3218	2.08214	7	\<null\>	\<null\>	\<null\>	\<null\>	\<null\>	0
4	1112	G5	8169009	El Prat de Llobregat (CEM Sagnier)	41.3218	2.08214	3	SUB	T	El Prat…	Cataluña	ESPAÑA	1
5	397	IB	8169006	El Prat de Llobregat	41.3309	2.09197	9	URB	F	El Prat…	Cataluña	ESPAÑA	0

《 3.- ...and their observations? → **Fresh start (DELETE)!** (1.400 Million rows of data!)

《 4.-Should an extended quality control/review of new stations be performed?
(Intended: automated script will fill City/Province/Country info form Gmaps)
→ **NO, but a review of the inverse geolocation has been performed**

	id	code	code_obs	name	lat ▲ 1	lon	height	area	env	city	province	country	active
1	1296	ES1854A	\<null\>	R4-VANDELLÓS I L'HOSPITALET(ELS DEDALTS)	41.0082	0.831085	737	\<null\>	\<null\>	\<null\>	\<null\>	\<null\>	0
2	1180	ES0692A	\<null\>	I3-L'HOSPITALET DE LLOBREGAT	41.3705	2.11497	29	\<null\>	\<null\>	\<null\>	\<null\>	\<null\>	0
3	144	I3	8101001	L'Hospitalet de Llobregat	41.3719	2.11583	20	URB	T	\<null\>	Cataluña	ESPAÑA	1

FR03048	AIX PLATANES
FR08026	MEZE TRAFIC
FR08020	Lunel
FR08252	GARNOR03
ES0316A	MONAGREGA
ES1881A	PUIGMORENO
ES0324A	ESTANCA
ES1130A	ESCATRÓN

code	name
SE0050A	Stockholm Norrlandsg
SE0071A	Sollentuna E4 Häggvik
FI00080	"Rautionkylä"
FI00027	"Nokela"
FI00208	"Luukki"
FI00363	"Kasarmipuisto"
FI00301	"Pyykösjärvi"

《 Manual name curation for new stations:
(Unnecessary quotation marks;
Correct names in all caps?) → **DONE**

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((5.- Is an extra verification of the association of new stations to **Domains** needed? (because of auto filling city/country from google maps) → **NO**

((6.- Collapse EEA's **area**? (Maintain the actual or use EEA's shown in the table) Waiting for EEA's updated list of **Classification** [Background/Industrial/Traffic] and **Area** (see table)

http://dd.eionet.europa.eu/vocabulary/aq/areaclassification

→ MAINTAIN **BOTH** (A NEW COLUMN IN DB has been created)

Area (CALIOPE)	EIONET:
RUR	rural
SUB	suburban
URB	urban
	rural-nearcity
	rural-regional
	rural-remote

((Filling data for new stations: Latest info available for Classification (type) and Area is from 2013.

7.- What to do with stations that cannot be classified? → **MERGED FROM AVAILABLE OFFICIAL SOURCES:**

http://aide.apps.eea.europa.eu/?source={%22query%22:{%22match_all%22:{}},%22sort%22:[{%22Namespace%22:{%22order%22:%22asc%22}},{%22ReportingYear%22:{%22order%22:%22asc%22}}]}

http://www.eea.europa.eu/data-and-maps/data/aqereporting#tab-european-data

http://www.eea.europa.eu/data-and-maps/data/airbase-the-european-air-quality-database-8 (deprecated)

http://cdr.eionet.europa.eu/es/eu/aqd/d/envvemqaq/ES_D_Metainfo.xml y
http://cdr.eionet.europa.eu/es/eu/aqd/d/envvojdda/ES_D_Metainfo.xml

http://www.umweltbundesamt.at/fileadmin/site/publikationen/REP0522.pdf

http://uk-air.defra.gov.uk/networks/find-sites

❝ 8.- Datetimes are UTC, showing a reminder in the web data interface (
Visor BD CALIOPE) would be needed?
(Show the reminder effective from the date when EIONET becomes the only
source of observations) → **Implemented in CALIOPE-MANAGER (VISOR) by
Miguel**

❝ 9.- Warning about no data (pollutant per country) since XX days?
Mail not necessary: Show a new view with the last succesful data download
(per pollutant and country – pretty much like the matrix in Slide 12) → **NOT
NECESSARY**

POLLUT...	last_exec_updated...	last_exec_inserted...	country
1	2016-01-22 15:44:39	2016-01-22 12:47:19	es
2	2016-01-22 15:44:23	2016-01-22 12:47:11	es
4	2016-01-22 15:46:40	2016-01-22 09:50:51	es
24	2016-01-22 15:44:01	2016-01-22 09:50:33	es
25	2016-01-22 15:45:29	2016-01-22 09:50:40	es
1	2016-01-22 16:15:06	2016-01-22 16:18:00	pt
2	2016-01-22 16:14:20	2016-01-22 16:17:28	pt
4	2016-01-22 16:14:50	2016-01-22 16:17:50	pt
24	2016-01-22 16:14:01	2016-01-22 16:17:10	pt
25	2016-01-22 16:14:36	2016-01-22 16:17:39	pt
1	2016-01-22 17:15:39	2016-01-22 17:16:34	at
2	2016-01-22 17:15:36	2016-01-22 17:16:30	at
4	2016-01-22 17:15:28	2016-01-22 17:16:02	at
24	2016-01-22 17:15:33	2016-01-22 17:16:08	at
25	2016-01-06 00:45:58	2016-01-05 16:09:00	at

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Thank you for your attention!

For further information don't hesitate to contact

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Acronyms glossary

- **((** AC: Atmospheric Composition
- **((** AQ: Air Quality
- **((** CLI: Command-line interface
- **((** EEA: European Environment Agency
- **((** EIONET: European Environment Information and Observation Network
- **((** KF: Kalman Filter
- **((** NRT: Near Real Time
- **((** UTD: Up-to-date (previously NRT in EEA/EIONET documents)