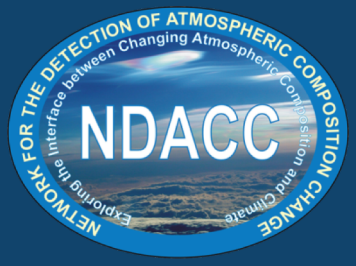


Network for the Detection of Atmospheric Composition Change

Exploring the Interface between Changing Atmospheric Composition and Climate change

Steering Committee Meeting 2018 Report to IRWG 2019

Thomas Blumenstock
Jim Hannigan
+
Jeannette Wild

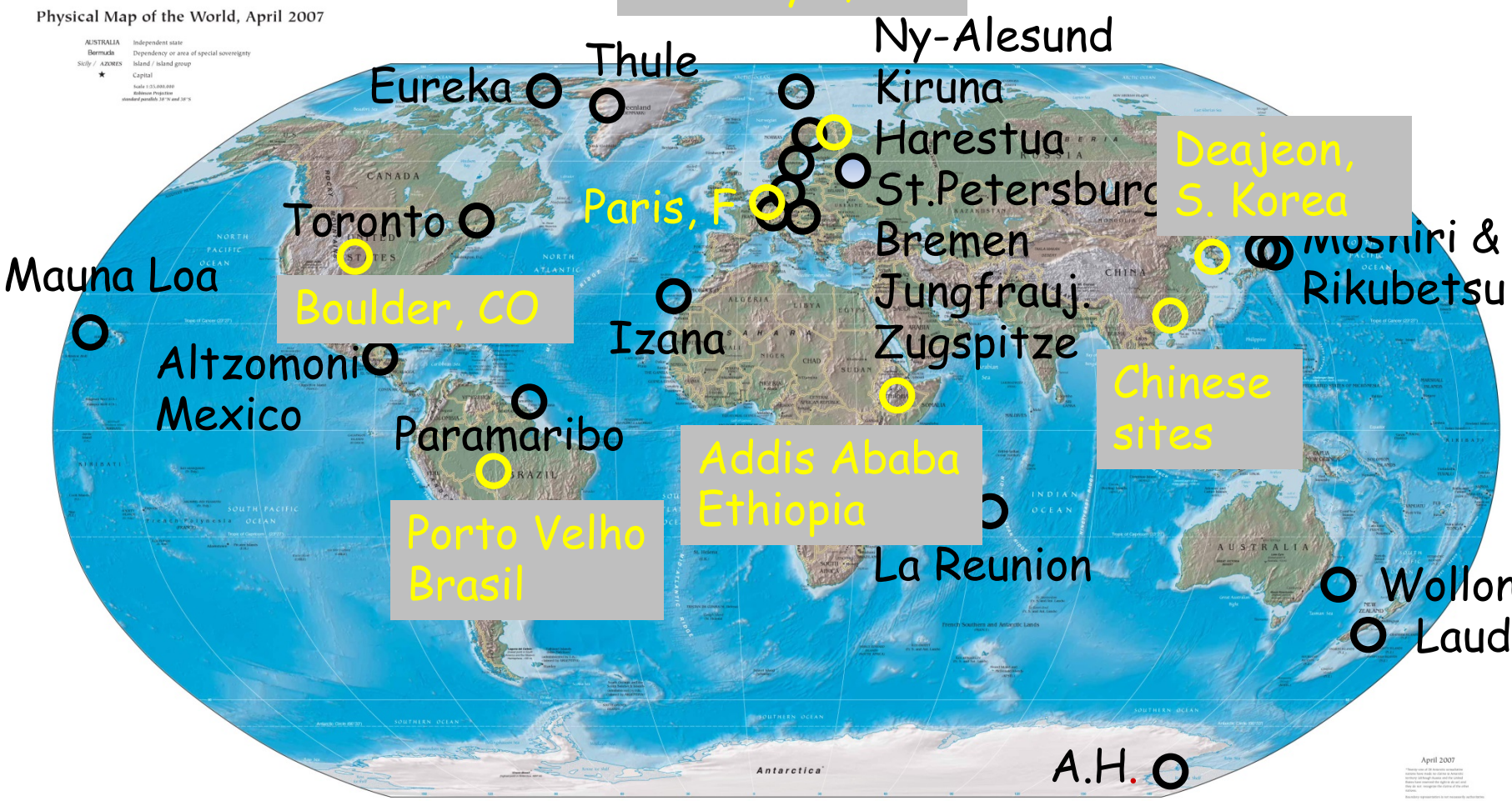
Outline

- Annual NDACC-SC Meeting
  - ✓ WG reports
  - ✓ Science talks
  - ✓ Discussions on harmonisation
  - ✓ Data archive, DOI & licences
- Status of data archive (Jeanette Wild)
  - ✓ Archiving status
  - ✓ NDACC web page
- Summary

Annual NDACC-SC Meeting

- Hosted by Geir Braathen, WMO
- WMO, Geneva, Sept. 2018
- Science talks, WG reports
- Discussions on data archive, harmonisation etc.
- Jim, Justus, Manu, Martine & Thomas attended

IRWG report: IRWG sites



NDACC site

Future NDACC site?

IRWG report: Technical Highlights

- G. Toon: Spectroscopy update:
  - this time mainly CO2
  - O3 also tested
  - In future tests of HITRAN 2016 for all 10 species
- Channeling test spectra (Blumenstock et al.)
- MIR (NDACC) versus NIR (TCCON) comparison:
  - N2O: Minqiang Zhou (BIRA)
- Retrieval of additional species: OCS, HCHO …

HIT2016 line list will be tested for mandatory species; groups/individuals to lead tests by species.

IRWG report: Science Highlights

- Trends of **N_2O**
  - Zhou et al., IRWG 2018
- Validation of the CrIS-**NH_3** Retrieval
  - Dammers et al., AMT 2017
- E. Lutsch et al.: **Wildfires**, IRWG 2018
  - 2017 American Wildfires
  - Influence of Wildfires on the Arctic
- Vigouroux et al.: **HCHO**
  - NDACC harmonized formaldehyde time-series, AMTD 2018
  - First formaldehyde TROPOMI validation, IRWG 2018
- Trends of **OCS**
  - Hannigan et al., IRWG 2018
- Trends of **CFCs**
  - Nakajima et al., IRWG 2018
- Tropospheric **ozone** trends
  - Gaudel et al., TOAR report, 2018

S. Strahan, Theory WG report 2018:

GMI-MERRA2 netcdf files for 1985-2017 on the NDACC ftp site

Lidar, Sonde, and Dobson Stations: O_3, NO_2, H_2O, T, P, and PV hourly profiles, 1 km resolution from 0-60 or 75 km. No changes in format or content in the past year.

- **New Dobson Stations/Output Available**: Macquarie Island, Melbourne, Darwin, Perth, and Brisbane
- **NOAA Dobson station output also available** (from me, not NDACC): Fairbanks (AK), Barrow (AK), Nashville (TN), Caribou (ME), Hanford (CA).

FTIR stations: Profiles and columns on 72 pressures, surface to 0.01 hPa

- **Daily**: O_3, N_2O, CH_4, CO, HCl, $ClONO_2$, NO, NO_2, HNO_3, CFC-11, CFC-12, MERRA2 T and PV tropopause pressure.
- **Monthly**: CCl_4, C_2H_6, CH_2O, and HCFC-22.
- **New field:** BrO available for Lauder and Arrival Heights – can be added to all other stations. These are monthly means…not necessarily useful for comparing to daily sunrise columns.

Please let me know if you use this output in a paper!

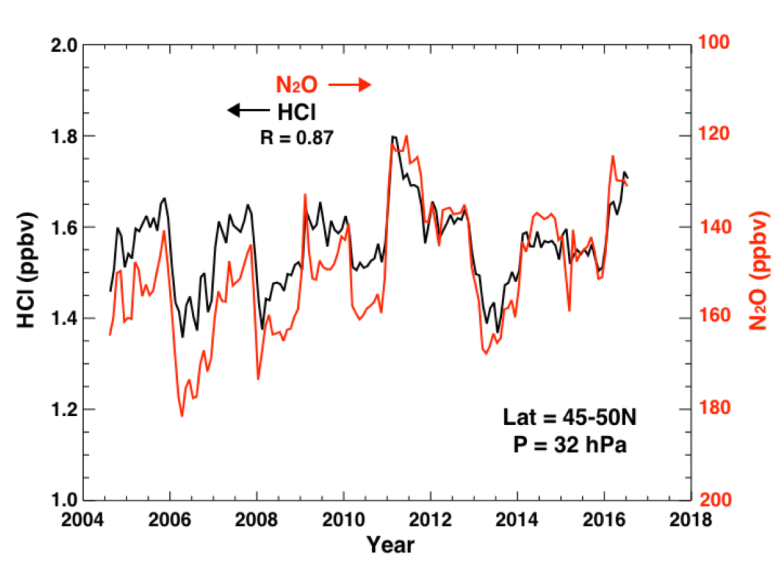
What do we expect for Cl_y in the Lower Stratosphere?

1) it should decline as CFCs decline
2) it should vary with mean age (i.e., dynamics)

N_2O and HCl co-vary:
Use N_2O to regress dynamical variability in the MLS HCl data

Here's how, from Stolarski et al. ACP 2018:

Deseasonalized MLS data



Standard MLR fitting of the MLS HCl time series 2004-2016 gives an increasing trend with large uncertainty.

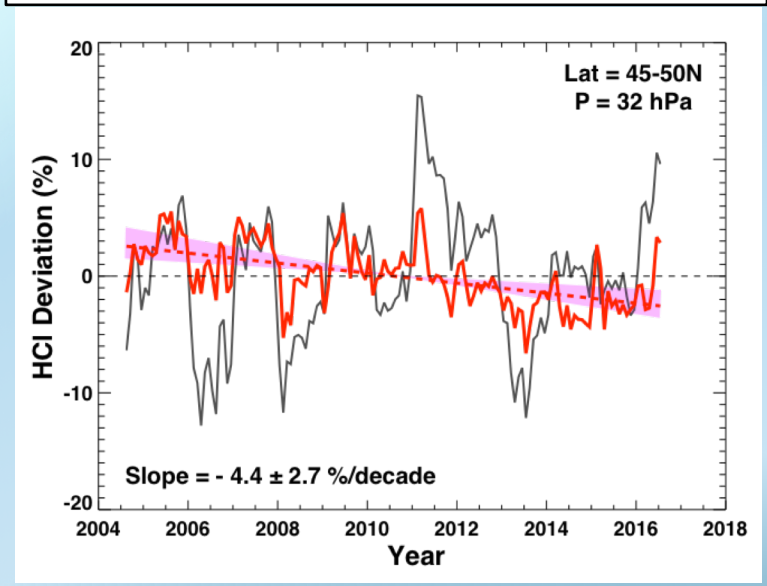
N_2O and HCl respond similarly to dynamical variations (note N_2O axis in red). Correlation = -0.87

S. Strahan: Theory WG report 2018

Stolarski, R. S., Douglass, A. R., and Strahan, S. E. (2018), Using satellite measurements of N_2O to remove dynamical variability from HCl measurements, Atmos. Chem. Phys., 18, 5691-5697.

A clear HCl trend emerges when dynamical variability is regressed with the N_2O time series

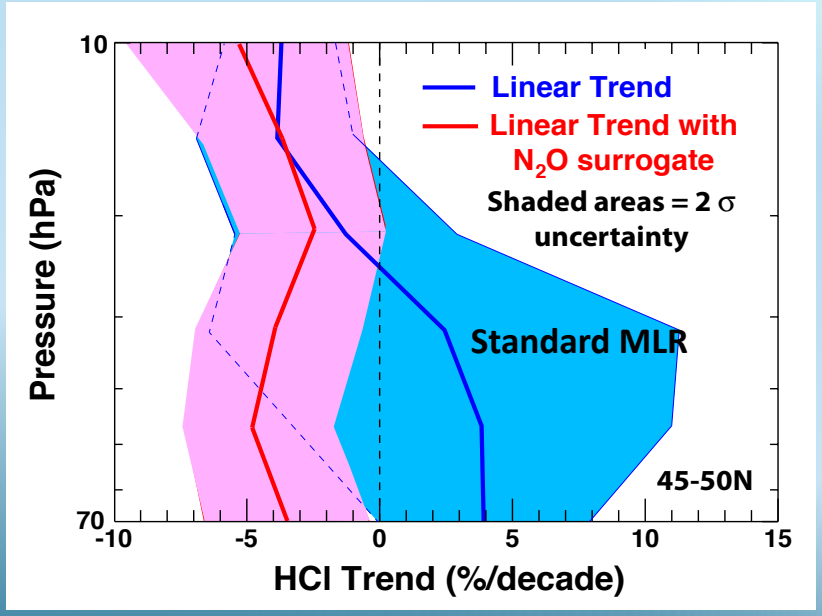
Black: original HCl time series
Red: HCl time series after regression with N_2O



This HCl trend is in line with expectations for the midlatitude LS.

S. Strahan: Theory WG report 2018

HCl was fit to N_2O from 70-10 hPa. It has a huge impact on the *HCl trend – now negative at all levels*. Uncertainty is reduced too.



EU Project GAIA-Clim

- A ~100 page Assessment available through GAIA-Clim page

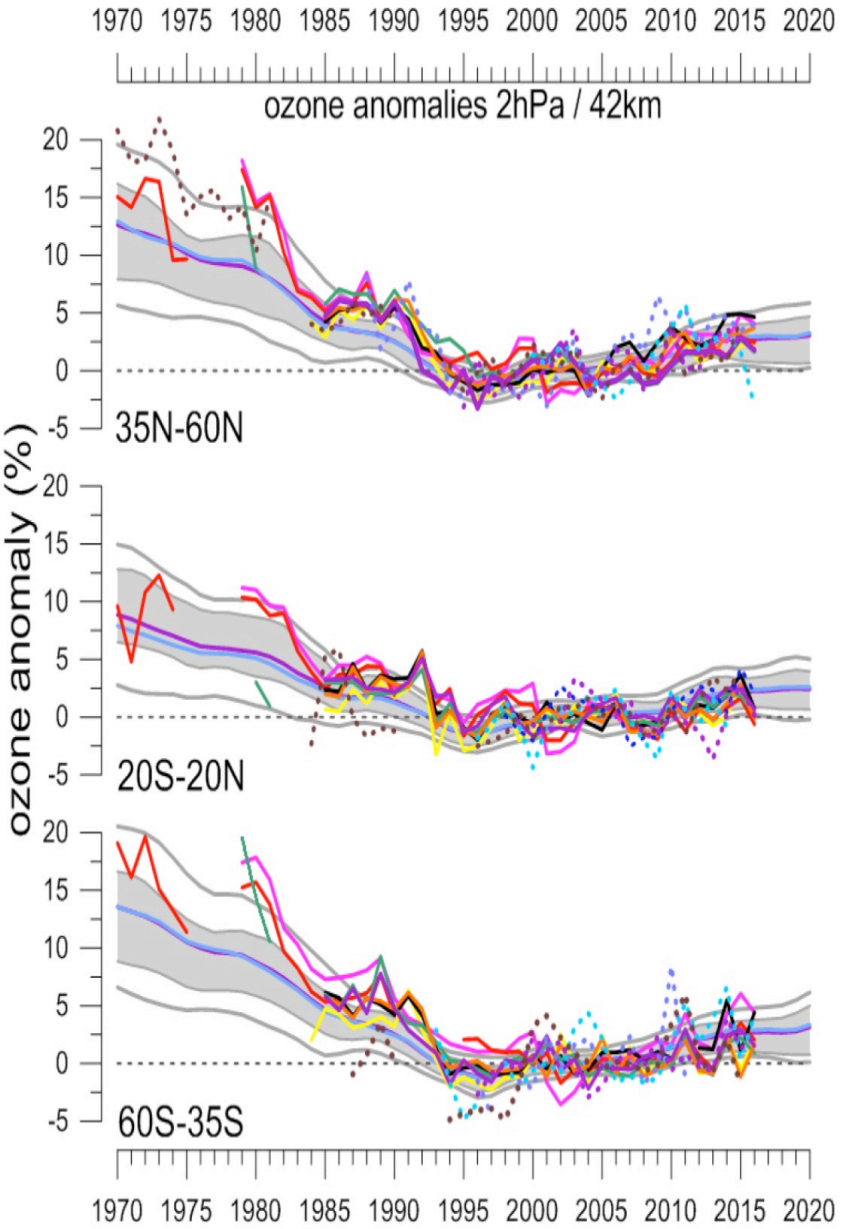
http://www.gaia-clim.eu/

Gap Analysis for Integrated Atmospheric ECV CLImate Monitoring:

Scientific Assessment of Gaps Based on Forward, Inverse and Data Assimilation Modelling

B.-M. Sinnhuber:
Theory WG report 2018

Consistency in records for ozone recovery in the upper stratosphere



LOTUS report, 2018

I. Petropavlovskikh: Long-term trends in stratospheric ozone, SC meeting 2018

IRWG report: Plans for the future: Next five to ten years

- Towards a better global coverage: Brasil, China, Korea ….
- Refining retrieval procedure, e.g. O3, improved spectr.
- New species: CFCs …
- Improving data quality: QCs of
  - Measurements
  - Retrievals and error characterisation
  - data files
- Further improvement of data archiving status
- Moving towards a more operational data deliv./network:

  CAMS, ACTRIS?
- Scientific objectives:

  Detecting and understanding of trends and variability of atmospheric composition (see network's name)

IRWG report: Plans for the future: Final remarks

- Looks like a ‚business as usual' scenario
- But building a (European) infrastructure will **change** the network substantially!
- Risks of operational network data provision:
  - Funding on a University level
  - Be able to attract scientists in the future
- Another risk/issue to be discussed:
  Several site PIs will retire in a couple of years!

  - Actual and future plan:
  - Interesting **science**!
  - 20 sites * 20 years * 20 species!
  - Really gives us the opportunity to do this!

Standard species:
O_3
HCl
HF
$ClONO_2$
HNO_3
N_2O
CH_4
CO
C_2H_6
HCN

H_2O
HDO
CCl_2F_2
CCl_3F
$CHClF_2$
COF_2
CF_4
ClO
NO
NO_2
C_2H_2
CO_2
OCS
HCHO
NH_3
N_2

Future plans of working groups

- Continue and extend long-term time series !
- Improve data processing (spectroscopy, uncertainties, harmonisation,
- Work towards 'reference' network (QA/QC, intercomparisons, traceability…)
- Expand number of species (IRWG)
- Extend to new instruments; innovation of instruments (UVVIS: MAXDOAS, Pandora, spectral UV, H2O DIAL lidar, …)
- Turning (partly) into operational network
- Central data processing – FRM data production (UVVIS, LIDAR, EUBREWNET, …) => clarify definition of FRM; how to deal with NDACC FRM and non-FRM data ?
- Serving users and applications (e.g., solar renewable energy)
- Data license and DOI; more transparant and consistent data versioning
- Deal with retirements…

Discussion!

M. DeMaziere: Strategy, SC meeting 2018

Licenses: Context - reminder

NDACC data are publicly accessible **at latest 1 year after acquisition**; this means that they are 'open data'.

'Open data' means that they are accessible,

But:

Still under discussion!

- it does not alter the ownership of the data
- It does not specify what can be done with the data once you access them: conditions for use of the data ? Sharing of the data ? Remixing of data ? Producing derivative data ? Commercial use of the data ? Etc.

⇒a data license will specify what are the conditions for use of the data.

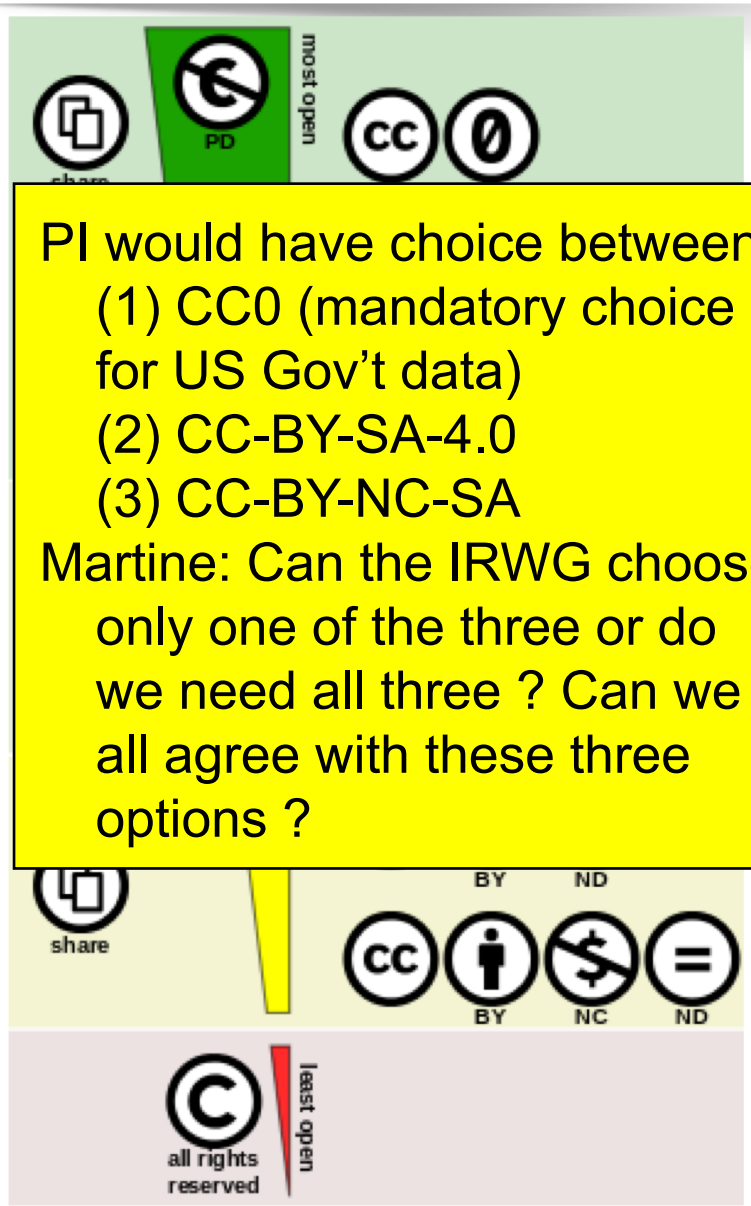
⇒ **Creative Commons (CC)** is a non-profit organisation proposing data and database licenses, i.e., legal and flexible solutions to give users the right to access, share, and use content and data.

⇒ CC licenses are commonly used to license research-type data

M. De Maziere: NDACC data policy, licenses and DOI, SC meeting 2018

CC licence spectrum

Still under discussion!



most open

PI would have choice between
(1) CC0 (mandatory choice for US Gov't data)
(2) CC-BY-SA-4.0
(3) CC-BY-NC-SA

Martine: Can the IRWG choose only one of the three or do we need all three ? Can we all agree with these three options ?

least open

- Commonly used are 7 CC licences (combination of conditions)
- Most open: **CC0** (public domain waiver)
- Least open: „all rights reserved" (copyright owner hold all rights for own use)
  - **CC-BY-NC-ND**: share only, credits required, non commercial use, no modification
  - **CC BY-NC**: credits required, allows to share and remix, non-commercial only
  - **CC BY-SA**: credits required, allows to share and remix, same legal conditions
  - **CC BY 4.0** (Attribution 4.0 International): latest version of CC licences, applicable to most jurisdictions: allows to
    - copy and redistribute the material in any medium or format,
    - Remix, transform, and build upon the material for any purpose, even commercially.

M. De Maziere: NDACC data policy, licenses and DOI, SC meeting 2018

How to force the data user to comply with the data license ?

- The few data licenses that NDACC adopts can be mentioned in the Data Use Agreement on the NDACC Webpage. And the particular data license attached to each [illegible] should be visible / pop up when a user goes to the NDACC data ftp site or downloads [illegible] with anonymous ftp).
- The Data Use Agreement shall tell how NDACC wants the user to give appropriate credit to the data creator/owner. This may be co-authorship, citation of the data DOI, acknowledgement,… or we may stick to the current text (http://www.ndaccdemo.org/data/use-agreement)

Still under discussion!

> « *Whenever NDACC data is used in a publication the authors agree to acknowledge both the NDACC data center and the data provider as follows:*
> *"The data used in this publication were obtained from institute or PI name as part of the Network for the Detection of Atmospheric Composition Change (NDACC) and are publicly available (see http://www.ndacc.org)."*
> *If substantial use is made of NDACC data in a publication an offer of co-authorship will be made through personal contact with the data providers or owners.*
> *Users of NDACC data are expected to consult the online documentation and reference articles to fully understand the scope and limitations of the instruments and resulting data and are encouraged to contact the appropriate NDACC PI (listed in the data documentation on the web page) to ensure the proper use of specific data sets.*
> *Those using NDACC data in a talk or paper are asked to to inform the Theory and Analysis Working Group PIs and **J. Wild** so that we may add the publication to our publications list."*

- When the date are redistributed elsewhere (if allowed by the license), e.g., on the C3S CDS, this must happen in compliance with the data license and a link to the data license must be provided. All constraints expressed by the data license must apply.

NDACC DOI Option: NASA

Connection to NDACC: **NASA Langley is the future host of the NDACC DHF**

License by: NASA contactor works with DataCite

DOI structure: Can have NDACC in the structure of the DOI.
DOI will start with 10.5067

Location of data/landing page: unknown

Still under discussion!

Formats: current NDACC formats should be ok, HDF for sure.

Granularity:

Historical or ongoing datasets: either

Required Metadata: paragraph for the landing page, a one page table of information to complete

Additional info:

M. De Maziere: NDACC data policy, licenses and DOI, SC meeting 2018

NDACC data delinquency protocol

M. De Maziere: NDACC data policy, licenses and DOI, SC meeting 2018

All NDACC PIs shall submit their certified NDACC data to the NDACC DHF, at latest **one year** after acquisition.

a) Working Group (IWG) Co-Chairs will communicate with the PI to remind the PI of the data submission

b) After 2 reminders by the IWG in a **6-months** period, without disaffiliation

In cases c and d, the NDACC Co-Chairs will write a disaffiliation letter to the PI (with cc to his Institute), and NDACC account privileges (i.e., rights to access the private NDACC database) will be removed.

c) If there is still no compliance with the NDACC data archiving protocol after **1 year**, and the PI (or PI's institute) does not commit to any near-future data provision, the DHF manager will inform the IWG co-chairs as well as the NDACC co-chairs, and the instrument will be declared as 'suspended data provision '**inactive**'!

d) No measuremts anymore, the station will be flagged as '**inactive**'!

NDACC Data Host Facility

- Data submission status
  - File updates
  - Required Species Status Check
- Rapid Delivery Data Status
- FTIR Documentation Status
- Data Retrieval Report
- A couple of Web updates

J. Wild, NOAA

FTIR Data Submission Status

In following two slides note:

- Data sets that have data submitted up to May 2018 (data up to date) shows the **line in green.**
- Data sets with submissions this year, but not up to date **are in blue.**
- Data sets submitted in last two years, but not in the last year shows the **line in black.**
- Data significantly out of date shows the **line in red.**

Data statistics reflect status as of May 1, 2019. Submissions on or after that date are not reflected in this presentation.

J. Wild, NOAA

FTIR Data Submission Status – Continuing Measurements

Site / PI	Ames	HDF	Instrument name (HDF)	Last archive date	Comments
Eureka / Strong		06 – 17	utoronto001	Aug 2018	
Ny Alesund / Notholt	92 – 09	92 – 18	awi001	Mar 2019	
Thule / Hannigan	99 – 07	99 – 18	ncar001	Apr 2019	
Kiruna / Blumenstock	96 – 07	96 – 18	kit001	Jan 2019	Was blue in 2018
Harestua / Mellqvist	94 – 16	NO HDF		May 2016	Was black in 2018
St Petersburg / Grutter/ Virolainen new PI?		09 – 18	spbu001	May 2019	
Bremen / Notholt	02 – 11	03 – 18	iup001	Mar 2019	
Zugspitze / Sussmann	95 – 05	95 – 19	ifu001	Apr 2019	
Jungfraujoch / Mahieu		92 – 18	ugl002	Feb 2019	
Toronto / Strong		02 – 17	utoronto002	Aug 2018	
Rikubetsu / Nagahama	95 – 04	95 – 18	unagoya001	Aug 2018	Instr. same as at Moshiri: GEOMS naming violation*

* Each instrument should have a unique name even if at different sites. These dates overlap, so I think these are 2 distinct instruments, but both are named unagoya001.

J. Wild, NOAA

FTIR Data Submission Status – Continuing Measurements

PI	Ames	HDF	Instrument name (HDF)	Last Archive Date	Comments
Izana / Schneider	99 – 07	99 – 19	kit002	Apr 2019	Was blue in 2018
Mauna Loa / Hannigan	95 – 07	95 – 18	ncar002	Apr 2019	
Altzomoni / Grutter		12 – 19	unam001	Apr 2019	overlapping dates in some files: CO Feb and Mar 2018
Paramaribo / Warneke		04 – 18	awi019 & awi028	Mar 2019	Was blue in 2018
Maido / De Maziere		13 – 17	iasb003	Feb 2018	Was green in 2018
Wollongong / Jones	95 – 08	96 – 19	uow001 &uow002	Apr 2019	
Lauder / Smale	90 – 09	90 – 18	niwa001 &niwa002	Jan 2019	
Arrival Heights / Smale	97 – 09	96 – 18	niwa003,4,5	Jan 2019	

FTIR Data Submission Status
Continuing Measurements – Summary

Status classification	Number of datasets (of 19 active)	
Up to date through at least 5/2017	15 (79 %)	+2 since 2018
Last submission within 1 year, but not up to date	3 (16 %)	-2 since 2018
Total Compliant Datasets (Green + Blue)	**18 (95 %)**	
Data submitted in last 2 years, but not in past year **(Black)**	0 (0 %)	**-1 since 2018**
No submissions since more than 2 years	**1 (5 %)**	**+1 since 2018**
Total Non-Compliant Datasets (Black + Red)	**1 (5 %)**	

- The Harestua data with no recent contributions also has not converted to HDF.
- **Is the Harestua dataset ACTIVE?**
- Otherwise all new submissions are HDF.

FTIR Data Submission Status – Inactive Sites

Site / PI	Ames	HDF	Comments
Eureka / Fast	96 – 06		
Jungfraujoch / DeMoulin		89 – 03	ugl001
Moshiri / Nagahama	96 – 04	96 – 07	Unagoya001 Instr. same as at Rikubetsu: GEOMS naming violation*
Mauna Loa / Murcray (Bomem)	91 – 95		
St Denis / De Maziere		02 – 13	iasb001 &iasb002 moved to Maido
Kitt Peak / Rinsland	78 – 05		

* Each instrument should have a unique name even if at different sites. These dates overlap, so I think these are 2 distinct instruments, but both are named unagoya001.

FTIR Data Submission Status – Campaign Sites

Site / PI	Ames	HDF	Extension
Ny Alesund / Woods	5/1995		.wof
Sondre Stromfjord / Mankin	94, 95		.mwf
Harestua / Woods	9/1994		.wof
Aberdeen / Woods	94 – 95		.wof
Jungfraujoch / Woods	10/1992		.wof
Mt Barcroft (etc) / Toon	85 – 16		.tof (last archive Sept 2017)
Polarstern / Notholt	96, 99, 00, 02, 03		.nof

Is there more campaign data?
All Campaign data is archived in Ames.

J. Wild, NOAA

FTIR Reported Species in HDF files

In following slide note:

- **Includes only continuing measurements/instruments**
- **Each of the 10 required species are displayed in GREEN**
- **Each Station / PI reporting all 10 required species is shown in GREEN**
- **Each Station / PI reporting with 8-9 required species is shown in BLUE**
- **Each Station / PI reporting 7 or less required species is shown in RED**

J. Wild, NOAA

FTIR Reported Species in HDF files

Site / PI	C2H6	CH4	ClONO2	CO	HCl	HCN	HF	HNO3	N2O	O3	Other	Improved?
Eureka / Strong	x	x	x	x	x	x	x	x	x	x	x	
Ny Alesund / Notholt	x	x	x	x	x	x	x	x	x	x	x	
Thule / Hannigan	x	x	x	x	x	x	x	x	x	x	X	Added Other
Kiruna/ Blumenstock	x	x	x	x	x	x	x	x	x	x	x	
St. Petersburg/ Makarova	x	x	X	x	x	x	x	x	x	x		Added 1 Required
Bremen / Notholt	x	x		x	x	x	x	x	x	x	X	Added Other
Zugspitze / Sussmann	x	x	x	x	x	x	x	x	x	x	X	Added Other
Jungfraujoch / Mahieu	x	x	x	x	x	x	x	x	x	x	x	
Toronto / Strong	x	x		x	x	x	x	x	x	x	x	
Rikubetsu / Nagahama	x	x	x	x	x	x	x	x	x	x		
Izana / Blumenstock	x	x	x	x	x	x	x	x	x	x	x	
Mauna Loa / Hannigan	x	x	x	x	x	x	x	x	x	x	X	Added Other
Altzomoni / Grutter	x	x		x	x		x	x	x	x	X	Added Other
Paramaribo / Notholt	x	x		x	x	x		x	x	x	x	
Reunion Maido / De Maziere	x	x		x	x	x	x	x	x	x	x	
Wollongong / Jones	x	x		x	x	x	X		x	x		Added 1 Required
Lauder / Smale	x	x	x	x	x	x	x	x	x	x		
Arrival Heights / Smale	x	x	x	x	x	x	x	x	x	x		

* Changes from 2018 in Blue X

J. Wild, NOAA

FTIR Reported Species in HDF files

Of the 18 Active datasets/instruments reporting in HDF:

- **13 (72%) report all 10 required species. This is an increase of 1 from last year.**
- **5 (28%) report 8 or 9 required species. This is the same as last year.**
- **There were no instruments reporting less than 8 of the 10 required species. This is a decrease of one from last year.**

No change in reporting for the Inactive sites (not shown).

ClONO2 is the least reported species (reported by 12).

C2H6, CH4, CO, HCl, N2O and O3 are reported by all active teams.

J. Wild, NOAA

Rapid Delivery Data Status

J. Wild, NOAA

Rapid Delivery (RD) Data Considerations

What is the intent of RD (Rapid Delivery)?

- **RD data is NOT NDACC data.**
- **RD data can come from non-NDACC affiliated instruments, or it can be NDACC affiliated data before it is fully Quality Controlled.**
- **RD data does not appear inside the NDACC database. It is held in a separate directory.**

When should I submit data with the RD flag?

- **Only use the RD flag if the data is not yet quality controlled, or if it is not at an NDACC affiliated site.**
- **Data submitted to the traditional NDACC catalog will still count for CAMS obligations, and will be subject to the additional screening if from a CAMS associated instrument.**

What should I do when I submit data to the NDACC database that overlaps in time to the RD datasets?

- **When you submit data to the NDACC catalog that overlaps in time with data in the RD directories, send and email to the DHF to have the RD data removed.**
- **Data versioning policies for NDACC are being revised. But for now RD data should be removed when NDACC data is submitted.**
- **Do not submit data to both NDACC catalog and to the RD directories at the same time.**

Submit data directly (and only) to the NDACC catalog with no RD flag if the data is final.

J. Wild, NOAA

Rapid Delivery (RD) Data Considerations

Datasets with data in RD directories before 2018:

Site/PI RD Species	NDACC Standard Data		RD Data		Timestamp overlap?	Comments
	Version #	Dates	Version #	Dates		
Ny Alesund Notholt CH4	004	No 2014 data in NDACC database for CH4. There is 2013 and 2016 data.	003	7-9/2014	No	Is there a reason why the 2014 CH4 data is not yet moved to NDACC?
Bremen Notholt CO	001, 004	Version 004 has a date overlap with the RD data.	003	7-11/2014	YES	Should RD version be removed?
Reunion Maido De Maziere HCl, HNO3, NO2	002 (HCl, NO2) 001, 003 (HNO3)	2013 (HCl, NO2) 2013 onward Multiple versions for a single time period.	001	2/2014 onward	YES for HNO3	Unclear whether RD should be removed.

- In some cases issues with multiple files for a time period have returned, in both RD vs Consolidated. Sometimes multiple versions of data in just the consolidated area.
- Please **notify NDACC DHF** when you replace RD files with consolidated so RD files can be removed from public view.
- The goal is to make it clear to a user which dataset to use. And easy to find the most current dataset.

J. Wild, NOAA

FTIR Documentation Status

J. Wild, NOAA

More About Documentation

Visibility: With redesign of NDACC Web Pages the dataset level Metadata Files AND M&A Directory entries are now easily discoverable by the user.

Each station has a page at www.ndacc.org

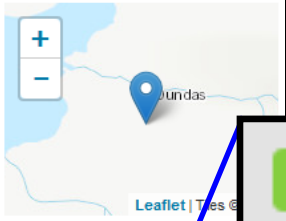
Thule, Greenland

Latitude: 76.53° N
Longitude: 68.74° W
Elevation: 30-220 msl

Status: Active

Website(s):
Station Page

Station Representative(s):
Dr. Niels Larsen
Danish Climate Center
Danish Meteorological Institute
Copenhagen, Denmark



Ames | Metadata | HDF | Summary

NDACC Measurements at the Thule, Greenland Station

Instrument	Status	Period	Parameter	Affiliations	Data link	Metadata link
FTIR Spectrometer Bruker	Active	1999–present	Column - multiple species, Profile - multiple species	NCAR	Ames, HDF	Metadata, Summary
Lidar	Inactive	1991–1996	Aerosol	U. Rome ENEA	Ames	Metadata, Summary

List of Instruments

J. Wild, NOAA

More About Documentation

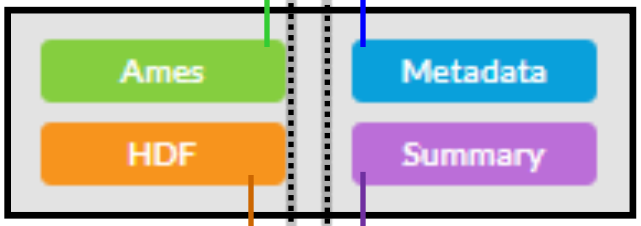
Tabs on left access Data

Index of /ndacc/station/thule/ames/ftir/

[parent directory]

Name	Size	Date Modified
thtc0002.cmf	5.4 kB	12/19/05, 7:00:00 PM
thtc0103.cmf	13.2 kB	12/19/05, 7:00:00 PM
thtc0202.cmf	15.3 kB	12/19/05, 7:00:00 PM

One click to data directories HDF Ames



Index of /ndacc/station/thule/hdf/ftir/

[parent directory]

Name	Size	Date Modified
groundbased_ftir.c2h6_ncar001_thule_19991010t142041z_19991012t140911z_003.hdf	197 kB	10/20/14, 8:00:00 PM
groundbased_ftir.c2h6_ncar001_thule_20000426t171351z_20000921t172709z_003.hdf	170 kB	10/20/14, 8:00:00 PM
groundbased_ftir.c2h6_ncar001_thule_20010309t152916z_20010903t185050z_003.hdf	1.0 MB	10/20/14, 8:00:00 PM
groundbased_ftir.c2h6_ncar001_thule_20020301t142736z_20021005t175314z_003.hdf	1.4 MB	10/20/14, 8:00:00 PM

Tabs on right access Documentation

One click to metadata file

```
File: jh_thule_20160901.txt

Data Set Description:
---- --- -----------
PI                        : James W. Hannigan
Instrument                : Bruker 125HR Fourier Transform Interferometer
Site(s)                   : South Mountain, Thule, Greenland 76.52N, 68.77W,
                            225masl
Measurement Quantities    : Column Density [molec/cm^2] N2O, O3, HCl, HF, HNO3,
                            CO, CLONO2, CH4, H2O, N2
                          : Volume mixing ratios [vmr] N2O, O3, HCl, HF, HNO3, CO,
                            CH4, H2O


Contact Information:
------- -----------

Name:    James W. Hannigan
Address: NCAR
         POBox 3000
         Boulder, CO USA 80303
Phone:   +01 303 497 1853
FAX:     +01 303 497 1492
Email:   jamesw@ucar.edu


Reference Articles:
--------- ---------

"Network for the Detection of Stratospheric Change Fourier transform infrared
intercomparison at Table Mountain Facility, November 1996", A. Goldman et.al.,
J. Geophys. Res., Vol. 104, No. D23, pp30481-30503, 20 Dec 1999
```

One click to M&A Directory entry

M. Coffey and J. Hannigan (NCAR) – Bruker 120M (0.004 cm 1 resolution) installed at South Mountain in 1999, operating under autonomous control. Also capable of lunar observations. Instrument moved to Building 1971 (1km from previous location at same altitude) in Summer 2011. In May 2015 a new Bruker 125HR FTIR operating with new software control and new solar tracker was installed.

Submit new metadata files and M&A Changes via email to DHF (Jeannette.Wild@noaa.gov).

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Metadata Status – Continuing Measurements

Site / PI	File Year at 2018 meeting	File Year at 2019 meeting
Eureka / Strong	16	18
Ny Alesund / Notholt	15	15
Thule / Hannigan	16	16
Kiruna/ Blumenstock	15	18
Harestua / Mellqvist		
St. Petersburg/ Makarova	17	17
Bremen / Notholt	15	15
Zugspitze / Sussmann	06	18
Jungfraujoch / Mahieu	17	17
Toronto / Strong	16	18
Rikubetsu / Nagahama	01	18
Izana / Blumenstock	15	18
Mauna Loa / Hannigan	16	16
Altzomoni / Grutter		18
Paramaribo / Warneke	18	18
Reunion Maido / De Maziere		18
Wollongong / Jones	99	18
Lauder / Smale	17	18
Arrival Heights / Smale	17	18

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FTIR Metadata File Status
Document, document, document

Comments:

- **1 of 19 is missing – Harestua.**
- **11 of 19 updated since the last WG meeting**
- **Oldest is now from 2015 for continuing measurements (Thank you!!).**

- **Current files are in ftp://ftp.cpc.ncep.noaa.gov/ndacc/meta/ftir/**

- **Email updates to Jeannette.Wild@noaa.gov**

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Data Retrieval
File Counts

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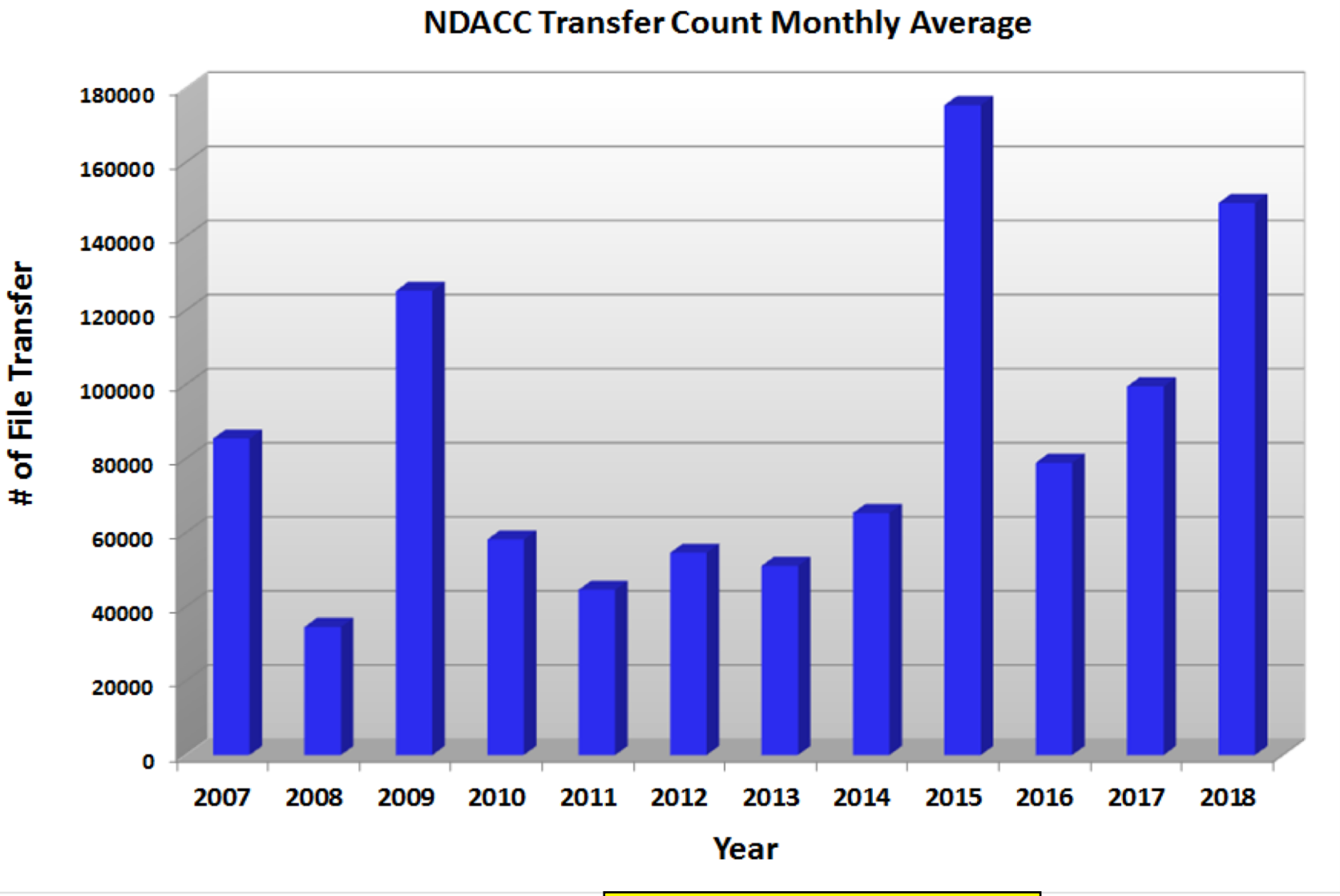
NDACC Transfer Count Monthly Average
# of File Transfer
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Year

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# files in database			# file transfers					
Instr.	# files		Web (Private)			Anon ftp		
	2017	2018	2016	2017	2018	2016	2017	2018
Bksnde	426	426	0	0	537	1749	651	2640
Brewer	2329	2463	7	1	2036	9568	4469	18403
Dobson	4875	5413	341	1	6933	21128	27895	50909
Dustsonde	375	375	0	1	720	1501	59	1822
FTIR	4584	5281	1194	143	6199	36341	55832	43857
Lidar	14774	15633	787	930	18884	73588	109861	106076
Mwave	24035	25413	11332	5454	41397	106352	197683	135123
O3sonde	40219	41254	1918	1180	38870	162408	140809	311013
Spt UV	3176	3301	7	0	3846	11458	3316	17145
UV Vis	32470	40221	18	288	5235	183595	343760	307776
WVsonde	949	1054		5	1959		3167	6409
Total	128212	140834	15604	8003	126616	607688	887502	1001173

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Top 2018 Data Users:

Rank	Count	Institution	Rank	Count	Institution
1	263667	BIRA, Belgium	11	11736	EVDC
2	257647	NASA, GSFC, Maryland, USA	12	11515	JPL, Table Mountain
3	123680	LATMOS	13	10015	Red Canaria Academica de Recursos de Informacion A, Las Palmas, Canarias, Spain
4	79689	NASA Kinston, NC	14	9393	OMA, Belgium
5	60036	NASA Langley/SAGE3	15	6860	Canadian Telecom
6	53484	ECMWF	16	6798	Qwest Telecom, Louisiana, USA
7	39931	Univ. Toronto, Canada	17	6336	Telecom, Netherlands
8	20485	Jussieu, France	18	5551	Rutherford Appleton Lab, UK
9	16336	Comcast Telecom, Colorado, USA	19	5355	Indian Institute of Technology, India
10	12163	Broadband, Netherlands	20	5216	University of Liege, Belgium

Top 2017 Data Users: Telecom, Netherlands (403659); Obs Midi-Pyrenees (35447)
Top 2016 Data Users: Univ. Leeds (120528); US EPA (111587)

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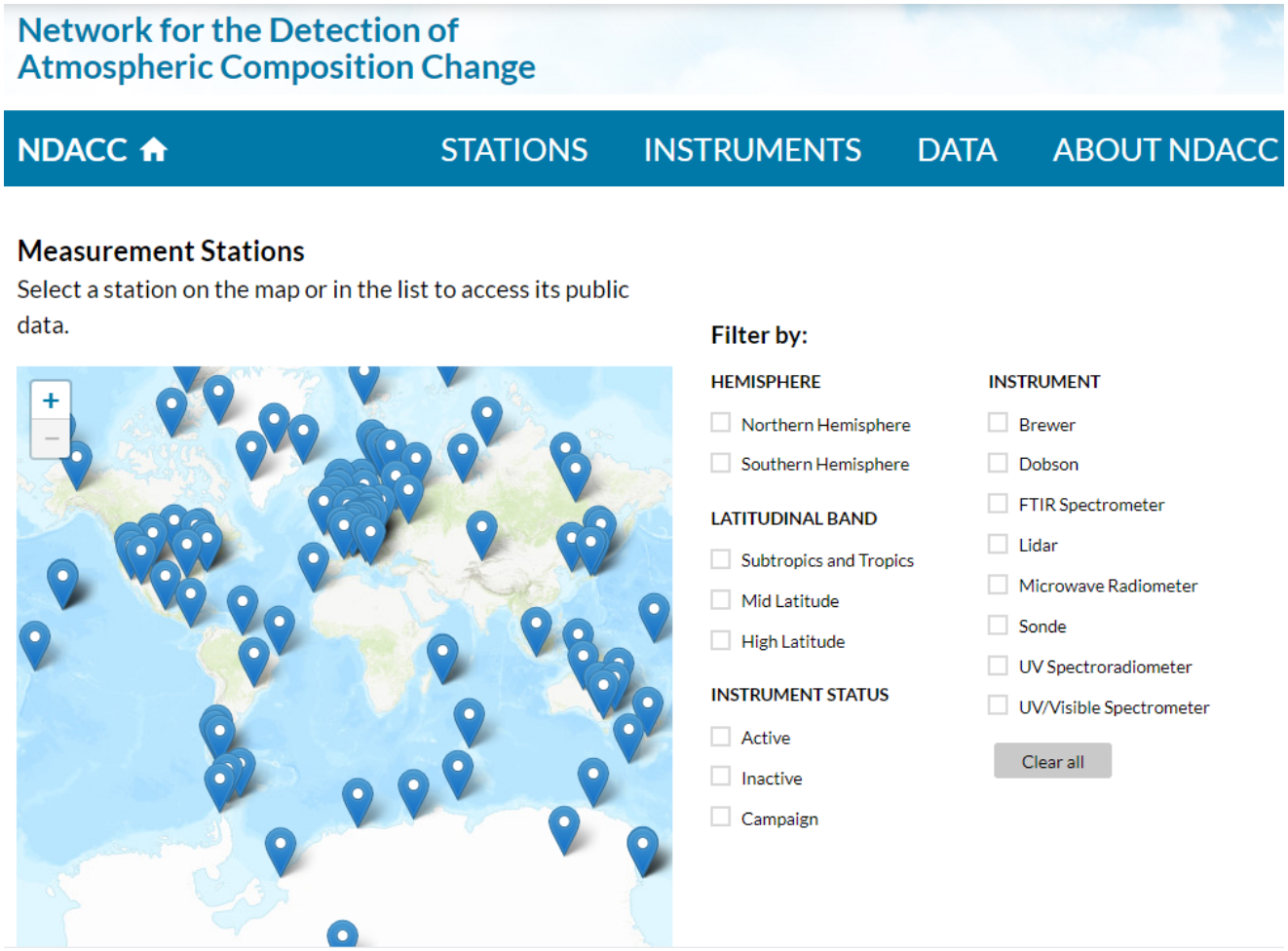
Web Updates
www.ndacc.org



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NDACC Web Pages

Station Photos:
Still need photos for (please email to jeannette.wild@noaa.gov):

Obs. Bordeaux, France Syowa Base, Antarctica

Observatoire de Bordeaux, France (44.83° N)

Moshiri, Japan (44.4° N)

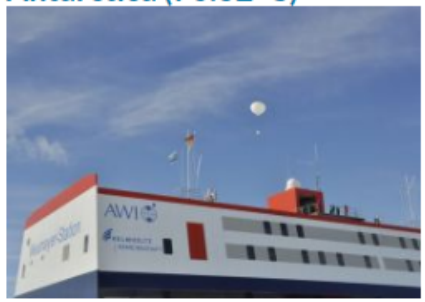
Observatoire de Haute Provence, France (43.94° N)

Toronto, Canada (43.66° N)

Rothera, Antarctica (67.57° S)

Syowa Base, Antarctica (69.01° S)

Neumayer Station, Antarctica (70.62° S)



Concordia Dome C, Antarctica (75.10° S)

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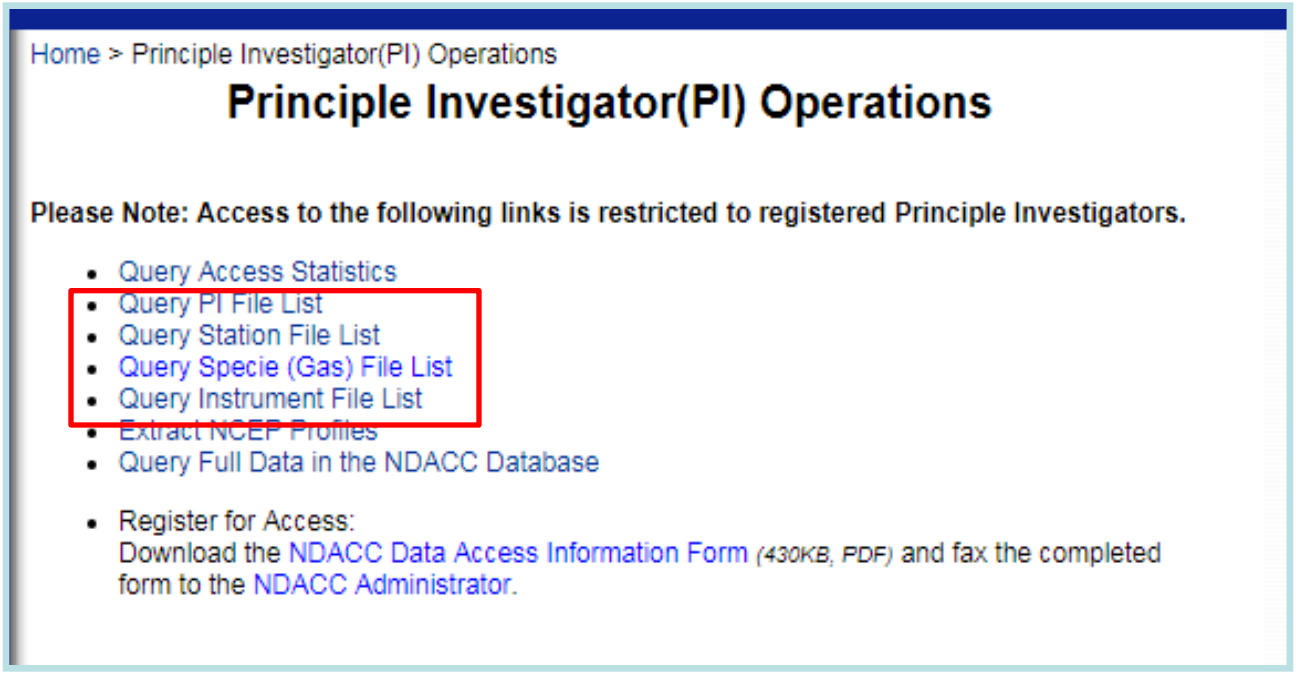
NDACC Web Pages

ndsc.ncep.noaa.gov/pi
All NDACC data providers have access to this controlled area. You must access the website from your NDACC registered IP.



New Tools:
Tools for NDACC PIs available to all NDACC PIs that have their IP registered with NDACC DHF (all data providers)

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NDACC Web Pages

New Tools:

Query all Files from a PI (data provider).

- Query Access Statistics
- Query PI File List
- Query Station File List
- Query Specie (Gas) File List
- Query Instrument File List
- Extract NCEP Profiles
- Query Full Data in the NDACC Database

PI File Listing

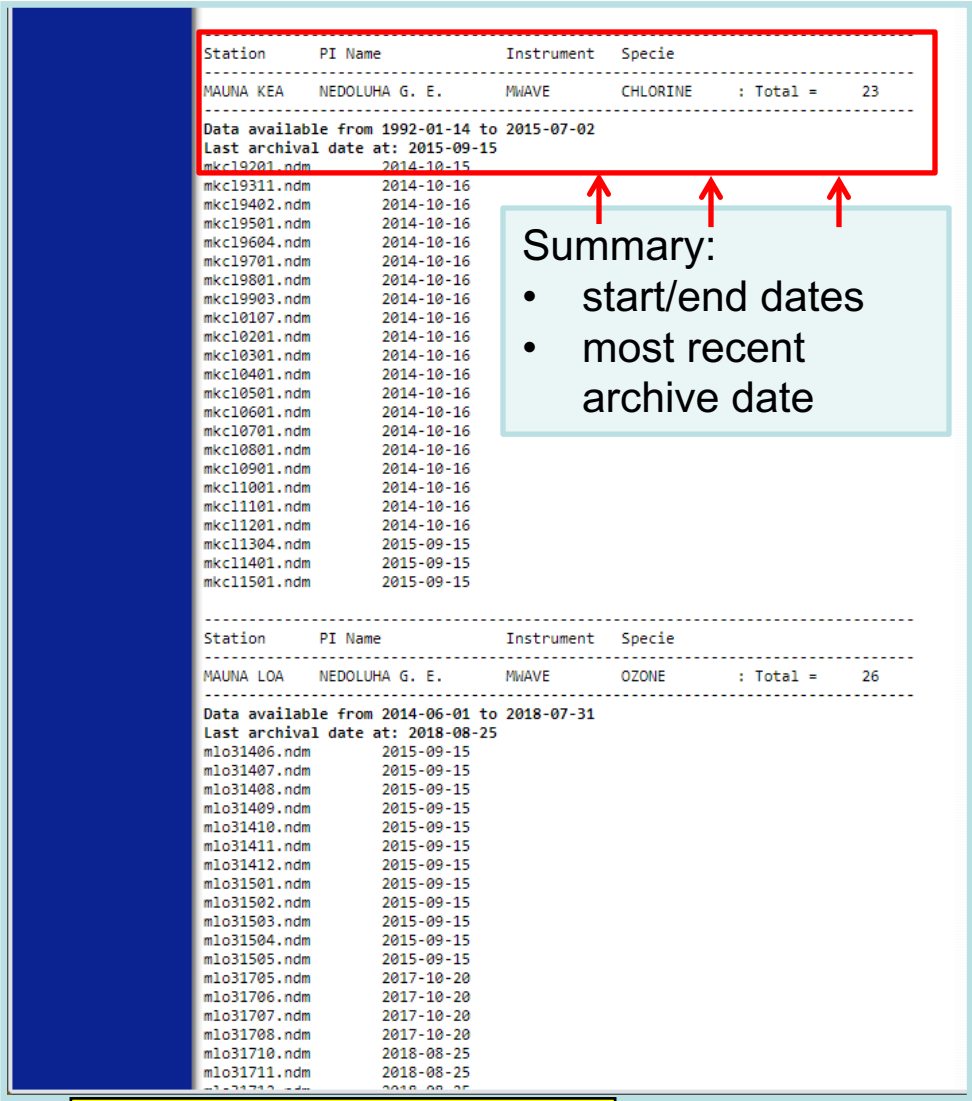
To view file available list, select a Principal Investigator(PI):

NOTE: The log will display in a new window.

NAGAI T.
NAKANE H.
NEDOLUHA G. E.
NEUBER R.
NEWCHURCH M.
NICHOL S. E.
NOTHOLT J.
OH J.
OLTMANS S.
PAL S.

Exit | Reset Form | List Available Files

Lists all files from a single PI sorted by Format, Station, Instrument, Species



```
Station      PI Name              Instrument   Specie
-------------------------------------------------------------------------------
MAUNA KEA    NEDOLUHA G. E.       MWAVE        CHLORINE     : Total =     23
-------------------------------------------------------------------------------
Data available from 1992-01-14 to 2015-07-02
Last archival date at: 2015-09-15
mkc19201.ndm         2014-10-15
mkc19311.ndm         2014-10-16
mkc19402.ndm         2014-10-16
mkc19501.ndm         2014-10-16
mkc19604.ndm         2014-10-16
mkc19701.ndm         2014-10-16
mkc19801.ndm         2014-10-16
mkc19903.ndm         2014-10-16
mkc10107.ndm         2014-10-16
mkc10201.ndm         2014-10-16
mkc10301.ndm         2014-10-16
mkc10401.ndm         2014-10-16
mkc10501.ndm         2014-10-16
mkc10601.ndm         2014-10-16
mkc10701.ndm         2014-10-16
mkc10801.ndm         2014-10-16
mkc10901.ndm         2014-10-16
mkc11001.ndm         2014-10-16
mkc11101.ndm         2014-10-16
mkc11201.ndm         2014-10-16
mkc11304.ndm         2015-09-15
mkc11401.ndm         2015-09-15
mkc11501.ndm         2015-09-15

-------------------------------------------------------------------------------
Station      PI Name              Instrument   Specie
-------------------------------------------------------------------------------
MAUNA LOA    NEDOLUHA G. E.       MWAVE        OZONE        : Total =     26
-------------------------------------------------------------------------------
Data available from 2014-06-01 to 2018-07-31
Last archival date at: 2018-08-25
mlo31406.ndm         2015-09-15
mlo31407.ndm         2015-09-15
mlo31408.ndm         2015-09-15
mlo31409.ndm         2015-09-15
mlo31410.ndm         2015-09-15
mlo31411.ndm         2015-09-15
mlo31412.ndm         2015-09-15
mlo31501.ndm         2015-09-15
mlo31502.ndm         2015-09-15
mlo31503.ndm         2015-09-15
mlo31504.ndm         2015-09-15
mlo31505.ndm         2015-09-15
mlo31705.ndm         2017-10-20
mlo31706.ndm         2017-10-20
mlo31707.ndm         2017-10-20
mlo31708.ndm         2017-10-20
mlo31710.ndm         2018-08-25
mlo31711.ndm         2018-08-25
```

Summary:
- start/end dates
- most recent archive date

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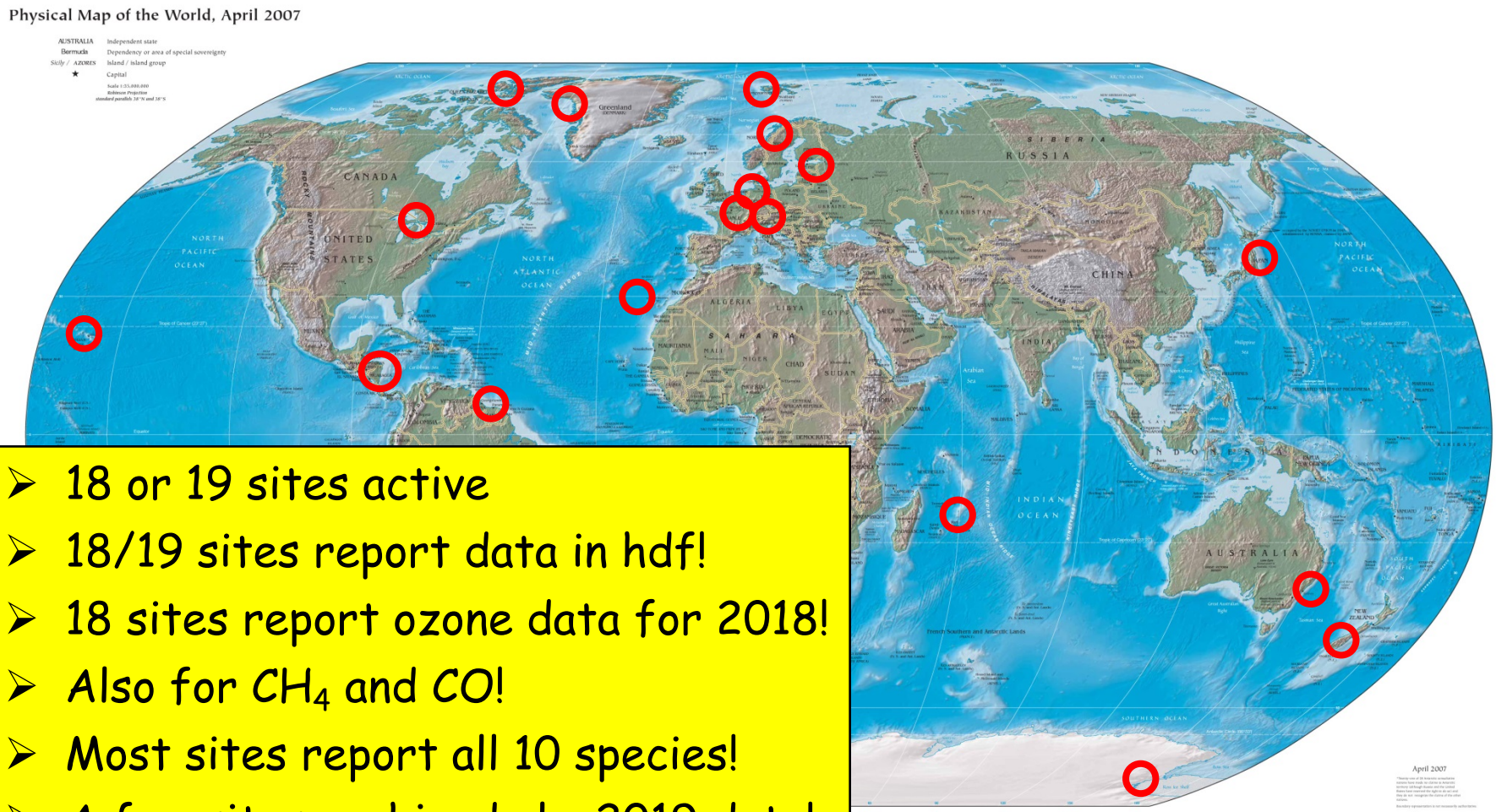
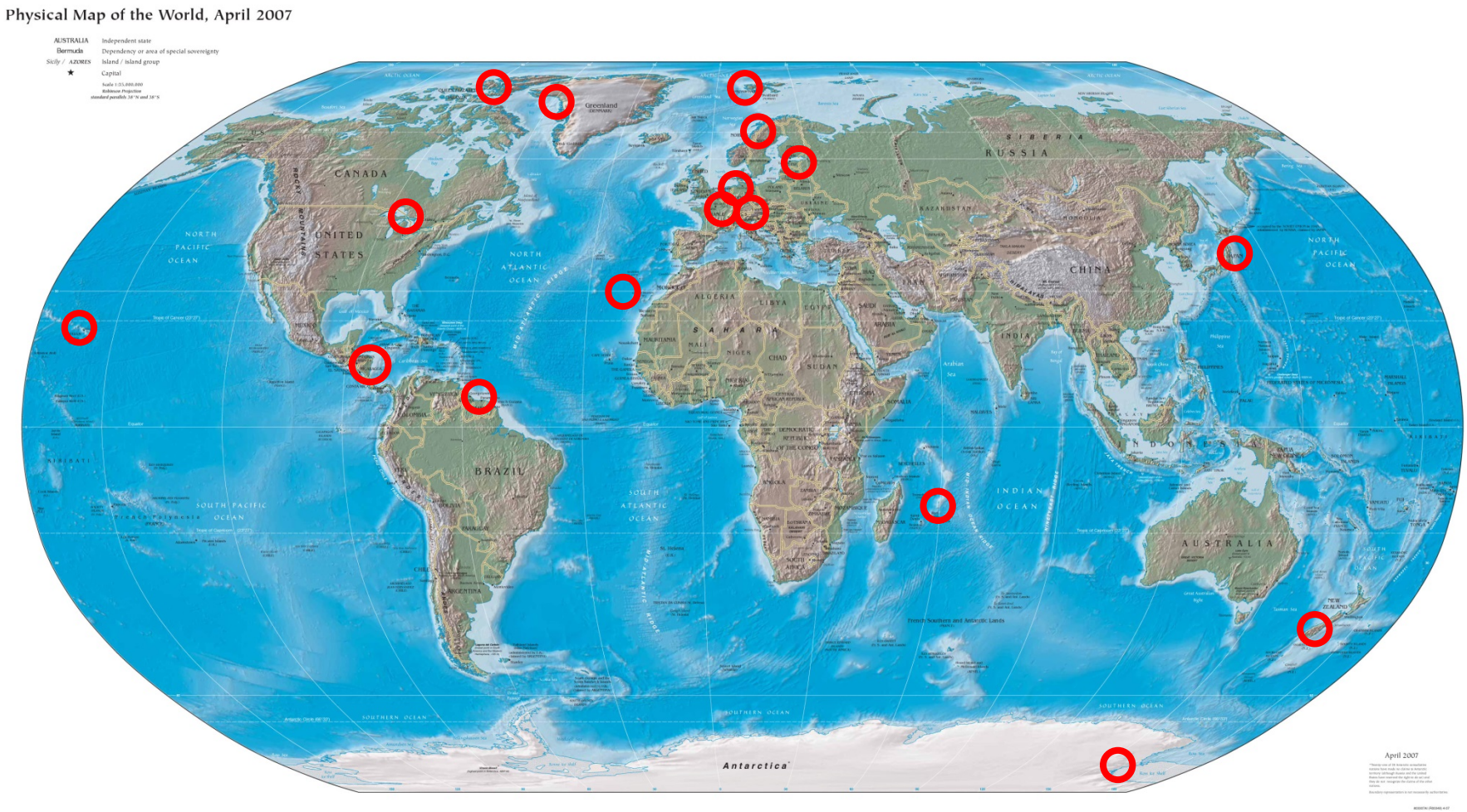
Summary archiving status: Ozone



- 18 or 19 sites active
- 18/19 sites report data in hdf!
- 18 sites report ozone data for 2018!
- Also for CH_4 and CO!
- Most sites report all 10 species!
- A few sites archived alr. 2019 data!
- Progress comp. to earlier years!
- Thank you very much!

O NDACC-IRWG site

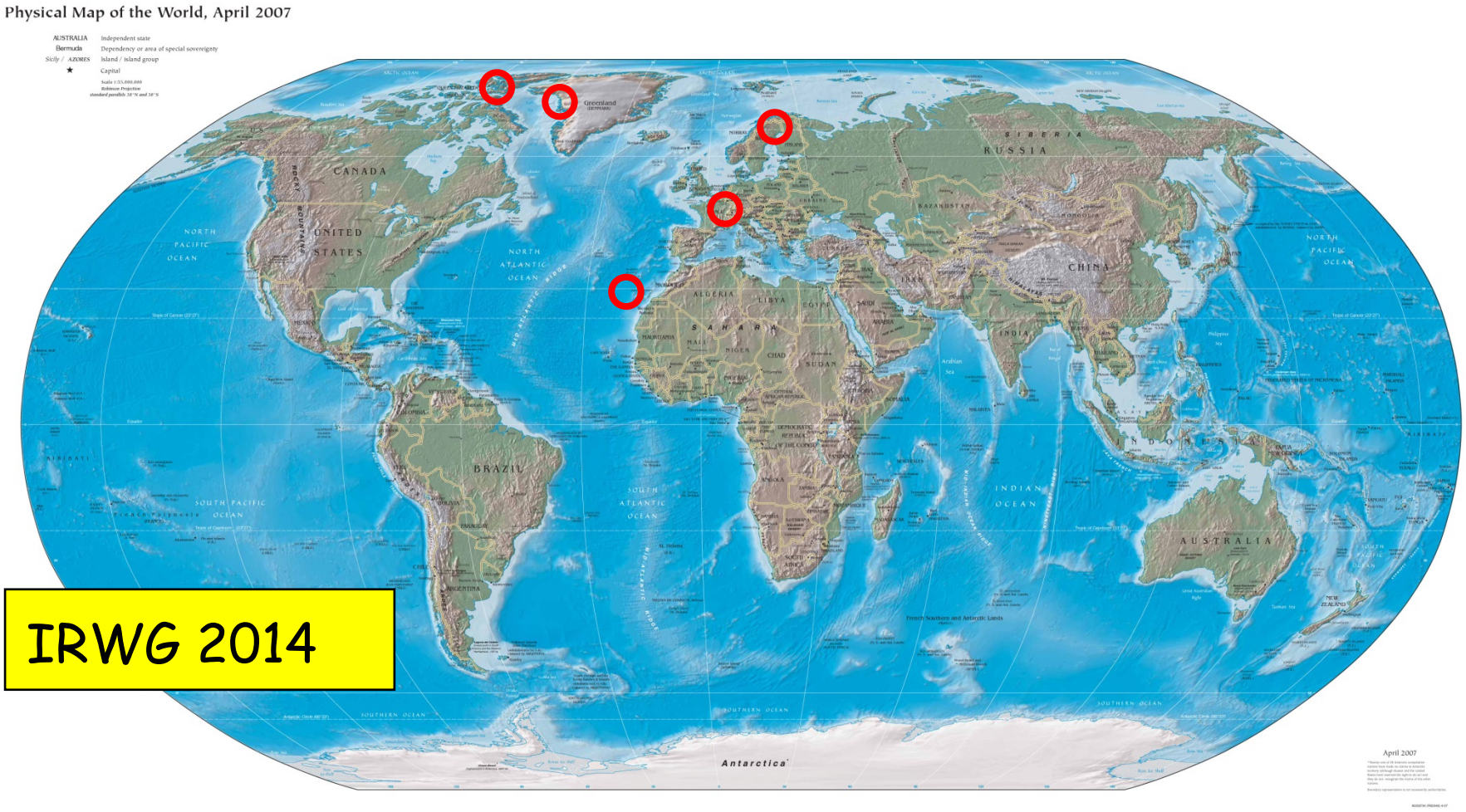
Summary archiving status: HCl



- 17/19 sites report **HCl** data for 2018!
- Also 17 sites report HF, N_2O & 16 sites C_2H_6 (2018)

HNO_3 profiles

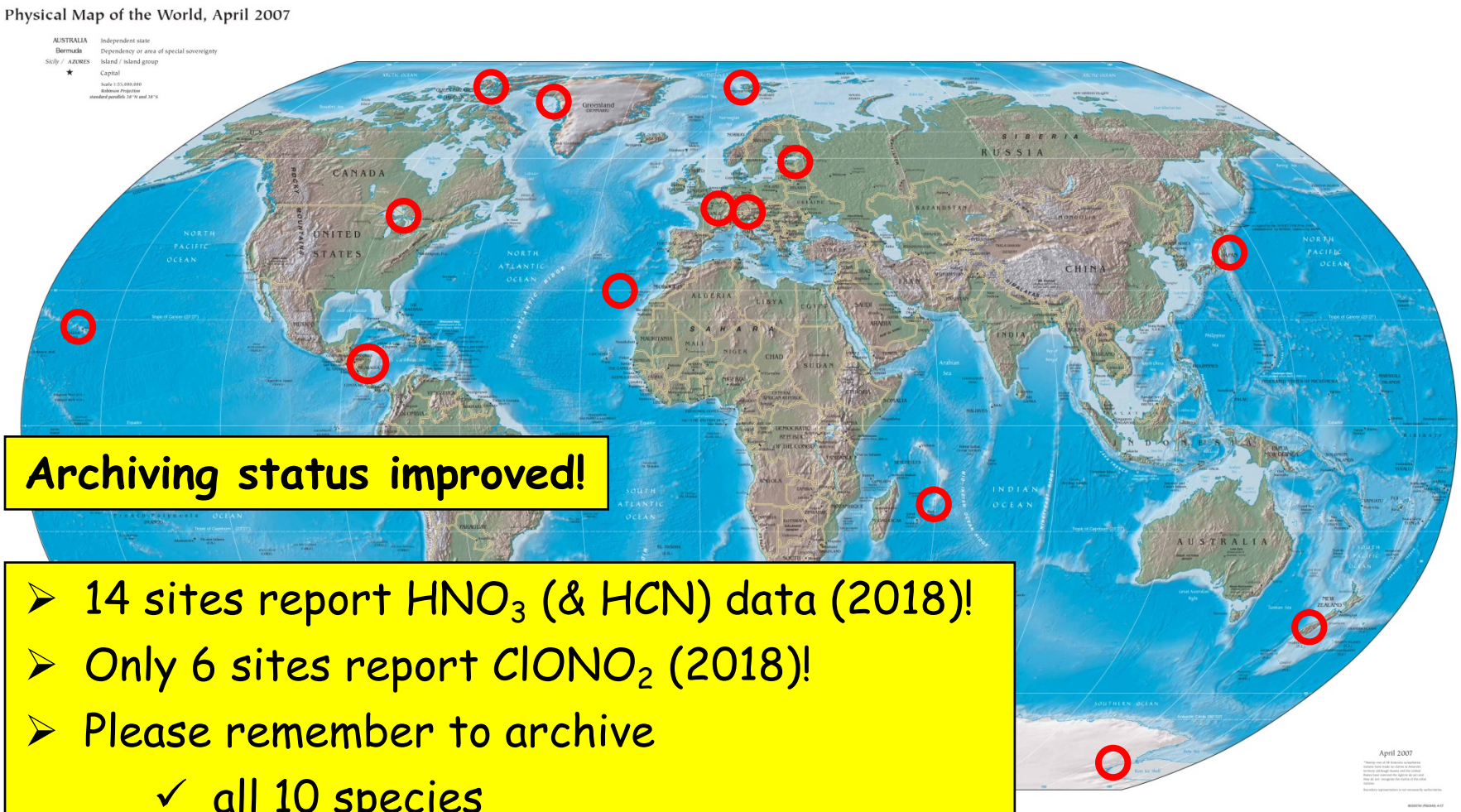
IRWG 2014



IRWG 2014

○ 2011 or 2012 data in hdf

Summary archiving status: HNO_3



Archiving status improved!

- 14 sites report HNO_3 (& HCN) data (2018)!
- Only 6 sites report $ClONO_2$ (2018)!
- Please remember to archive
  - ✓ all 10 species
  - ✓ within 1 year after observation!
- Thank you very much for archiving!

Site	# species 2017	# species 2018	Sum NDACC sp.	# species 2019
Thule	12	12	**24**	0
Eureka	9 (14)	15	**24**	3
Izana	9 (12)	13	**22**	9
Toronto	8 (12)	13	**21**	3
Arrival H.	10	10	**20**	3
Lauder	10	10	**20**	3
Zugspitze	9 (12)	11	**20**	6
MLO	9 (11)	11	**20**	0
St. Petersbg	10	9	**19**	3
La Reunion	10	9	**19**	3
Altzomoni	9	9	**18**	9
Jungfrauj.	9	9	**18**	3
Ny-Alesund	8	10	**18**	3
Rikubetsu	8	8	**16**	8
Kiruna	8 (11)	8 (11)	**16**	7
Bremen	8	8	**16**	3
Paramaribo	3	5	**8**	2
Wollongong	4	3	**7**	2
Harestua	0	0	**0**	0

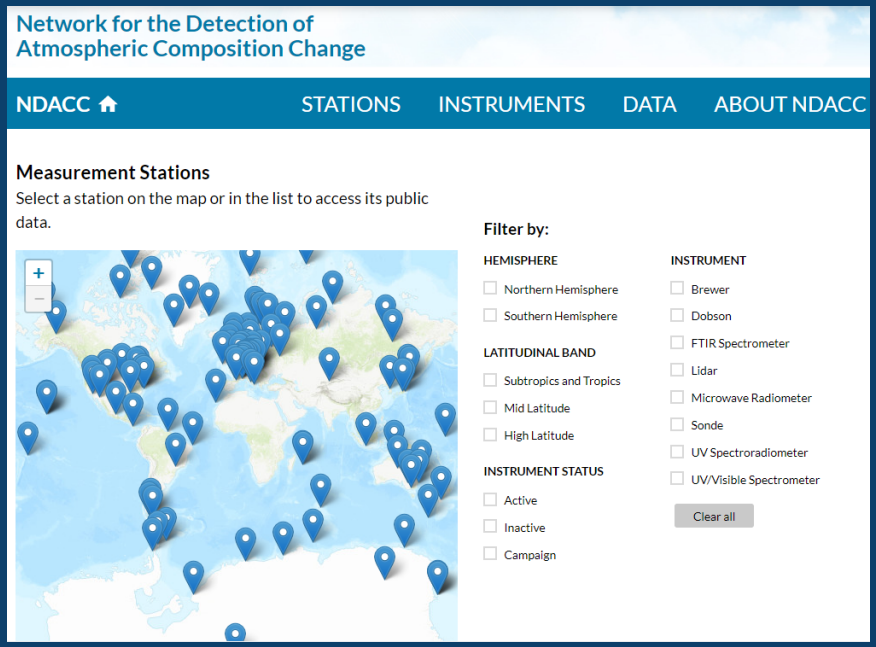
Status of data archive, May 14, 2019

Archiving status improved at most sites!

Thanks a lot!

Standard species:
O_3, HCl, HF, $ClONO_2$, HNO_3, N_2O, CH_4, CO, C_2H_6, HCN

www.ndacc.org



Thank you for your attention!