E-PROFILE Programme

E-PROFILE ADDING NEW INSTRUMENTS

Prepared by: **E-PROFILE – Technical Officer R&D**

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To: **Meteo-Swiss**

Summary: **E-PROFILE – ADDING NEW ALC INSTRUMENTS**

Action required: **For information and comment**

Distribution: **EUMETNET Members Only**

Reference	Date	Author(s)	Content
Version 1.0	27/01/2017	Myles Turp	First Draft
Version 1.1	30.01.2017	Maxime Hervo	
Version 1.2	31.01.2017	Myles Turp	Update to include additional information provided by Maxime Hervo.
Version 1.3	20.09.2017	Maxime Hervo	Add Wigos identifiers

1.0 Site and Instrument Information

The purpose of this document is to describe the information required to add new instruments into the E-PROFILE ALC Hub. This should be treated as a supplement to the E-PROFILE DATA PROCESSING REQUIREMENTS document.

To enable us to process any new instruments we need to record the following information in our database;

Site Information:

a) Site name
b) Location – lat & long and altitude
c) WMO number / Wigos Identifier (https://wiswiki.wmo.int/tiki-index.php?page=WIGOS-Identifiers&structure=WIGOS)
d) Organisation
e) Maintaining Department

Instrument Information:

a) Instrument type
b) Instrument serial number
c) Reporting interval between each message (e.g. 15 minutes, 1 hour)
d) Calibration file(s)

Note: It's possible to have multiple instruments at any given site provided the incoming filenames are unique.

For adding new instruments, please fill the tables 4 and 5 in template provided in Annex A in order to provide all the necessary information

2.0 Data format

2.1 File Name convention

A file naming convention for the incoming data is necessary to minimize the complexity of the file scheduling. This should ideally include the site WMO number and date, we can then perform a pattern match to link the incoming data to our sites database. The following naming convention should be respected for exchange of data in the E-PROFILE network:

NNNNN_IyyyymmddHHMM_'free format'.datatype

Where:
NNNNN = WMO Block and Station number or last 5 digits of the WIGOS identifier. If no WMO codes is available, a temporary code will be provided by the E-PROFILE network manager. E-PROFILE will help to contact the appropriate representative to get a corresponding Wigos Identifier
I = Instrument identifier. Should be A if there is only one instrument on the station. Additional instruments are identified with the letters B, C, D etc.
yyyymmddHHMM = The starting date of the observation[1]. Seconds are not included as 5 minutes files are required.

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[1] *The starting time is chosen as a convention as the file is created at the beginning of the observations. This convention is already in used for all Lufft instruments and most CL31 in the E-PROFILE network.*

'free format' = *This could be used for additional information such as site name or instrument number*
datatype = *string indicating whether it is a NetCDF or dat file etc.*

E.g. The following represents data from a Lufft CHM15k instrument located at Payerne, Switzerland (Wigos identifier 0-20000-0-06610):

06610_A201603110125_CHM15k.nc

For the collocated CL31 the file name is:

06610_B201603110125_CL31.dat

2.2   Test Data

Before a new instrument can be added to our network it's useful to have some test data and will be essential for adding new instrument types. Sample test messages should be provided and tested in our development environment before they can be included as part of our operational network. The process will be co-ordinated by MeteoSwiss (with test data uploaded to Meteoswiss ftp site)

    a) The test data should be in format suitable for use in raw2l1 – or suitable data reader should be made available if this is a new instrument type. Any new data readers should be written and made available in the latest release of the raw2l1 software.

Any additional information required for processing the raw instrument data should also be uploaded together with any further comments/considerations which may impact test results. .

3.0   Instrument Configuration

3.1   CHM15k

a. Instrument Set up

It is recommended to install ALC pointing northward and 3° off zenith. This set-up is not mandatory but it was suggested by the COST action ToPROF to minimize solar background and to avoid specular reflexion from ice clouds.

b. Recommended instrument settings

- Message type: native NetCDF File
- Integration time of 15 or 30 seconds

c. Firmware version

CHM15k Nimbus instruments are recommended. Firmware version posterior to 0.7 are recommended. Older firmware version (e.g. 0.5) introduce may lead to significant differences in the signal (e.g. no overlap correction).

d. Data format

Five minutes native NetCDF files are recommended.

e. Data transfer

Data can be directly transferred from the instrument using the AFD module. An example of AFD configuration is given in Table 1. Please make sure the correct user and password are used (in red). The password is provided by E-PROFILE network manager. The *exec* command is used to fulfil the E-PROFILE filename convention. As different AFD configurations can be used simultaneously, data can be sent directly to E-PROFILE and to the operators.

```
[directory]
/tmp/afd/netcdf/afd-src

 [files]
 *

 [destination]

  [recipient]
  ftp://user:password@151.170.240.50/deposit/lidar/

  [options]
  priority 9
  create target dir
  exec mv %s `echo '%s' | awk -F'_' '{print $2"_A"$1$4i"_CHM15k.nc"}'`
  time */5 * * * *
  lock DOT
```
Table 1: Example of AFD configuration for CHM15k instrument

3.2 CL31 and CL51

a. Instrument Set up

It is recommended to install ALC pointing northward and 3° off zenith. This set-up is not mandatory but it was suggested by the COST action ToPROF to minimize solar background and to avoid specular reflexion from ice clouds.

b. Recommended instrument settings

The following settings should be applied.

- set message profile noise_h2 on
- set message interval 30 (or less)
- set message type msg2_10x770 (or msg1_10x770 and msg2_10x1540 for CL51)

If these settings are not applied, it may lead to significant differences in the signal (cf ToPROF reports).

c. Firmware version

For old electronic board (CLE311) Vaisala recommends the firmware version >V1.72 and for recent boards (CLE321) >V2.03. Older firmware version introduces artefacts in the aerosol profiles.

d. Data format

To facilitate data processing, it is recommended to concatenate bulletin in 5 minutes files (10 minutes files are also accepted). Each single profile should be separated by a timestamp with the format[2] *–yyyy-mm-ss HH:MM:SS*. Please note that this timestamp refers to a single profile, it is different from the file timestamp. The profile timestamp corresponds to the end time of measurements.

```
-2015-07-01 00:00:07
CL020321
00 ///// ///// ///// 000000000080
 0 /// 0 /// 0 /// 0 /// 0 ///
00100 10 0770 098 +36 075 01 0004 L0016HN15 005
0017d0005800048000480000510004a000470004200044000[...]
a712

-2015-07-01 00:00:22
CL020321
00 ///// ///// ///// 000000000080
 0 /// 0 /// 0 /// 0 /// 0 ///
00100 10 0770 098 +36 075 01 0003 L0016HN15 005
000f800051000480004800051000510004b000470004200043000[...]
ee28
[...]
```

Table 2: Example of a CL31 file. The file name must respect the convention above.

Users of CLview software should try to avoid duplication of data transmission. CLview should be adapted to E-PROFILE needs in the future.

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[2] This time stamp format is required to be consistent with Vaisala software CLView

e. Data transfer

If you use a data logger to transfer cloud base height, you might experience troubles to transfer the profile (the profile is a 4000 characters string). The recommended solution is to install an industrial computer between the ceilometer and the logger (for example a Moxa box http://www.moxa.com/product/uc-8100.htm). The industrial computer transfer the cloud base height information to the data logger (msg2_base) and send the full message (msg2_10x770) to the E-PROFILE FTP server.
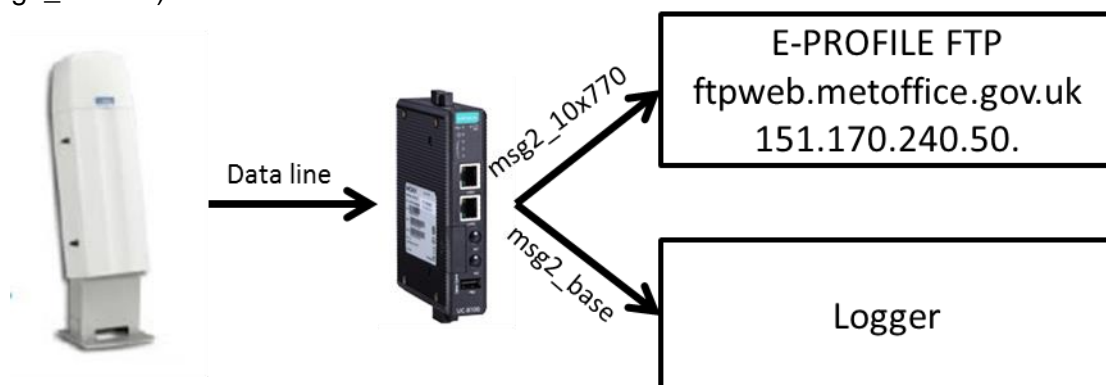

Figure 1: Diagram of data transfer recommended for CL31 and CL51

The main advantages of this configuration are:

- An already existing set-up is not modified.
- The hardware costs for this installation should be below 500€.

More information can be provided on request by the E-PROFILE Network Manager.

3.3 Other instruments

Other commercial or research Lidars shall be integrated in E-PROFILE as well:

- CS135
- Sigma MPL and Mini-MPL
- Sigma
- CIMEL CE-370
- Léosphère RMAN-510
- Raymetrics (LR111-D300)

- ...

Recommendations for those instruments are not yet mature and will be included in this document at a later stage.

ANNEX A – TEMPLATE FOR ADDING NEW INSTRUMENTS

Please add the following instrument to E-PROFILE Hub.

All Completed forms should be sent to E-PROFILE Network Manager.

Action: E-PROFILE Hub – Ensure the following instrument is associated with the following network

Network	Schema	Table
hermes_eprofile_alc	*hermes_core_config*	*hecc_networks.ccnw_name*

1) Organisation/Met Service Details

Are you currently sending ALC data to the E-PROFILE Hub? (A list of organisations with ftp accounts can be found at **Annex A1**)

a) No

   i)   Action E-PROFILE Hub: Request an ftp account for the new organisation.

   ii)   Operators will be supplied with account login details and the new organisation will be entered into Hermes database table below;

Organisation Name
ccor_name

Table 3: organisation name

E.g. Met Office (please provide shorted names or abbreviations for your organisation where appropriate)

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*Action E-PROFILE Hub: Add new organisation to schema/table **hermes_core_config.hecc_organisations***

b) Yes

    i)   proceed to step 2

2) New Site Details

If the site already exists then proceed to step 3.

If your site(s) is **not found** in **Annex A2** then please add the site details to table below;

SITE DETAILS

Site name	Fixed/mobile*	Latitude (decimal)	Longitude (decimal)	Station Height (m)	Wigos Identifier **	Country	Full site name***
ccsi_name	*ccsi_fixed_location*	*ccsi_lon*	*ccsi_lat*	*ccsi_alt*	*ccsi_attributes*	*ccsi_attributes*	*ccsi_attributes*

Table 4: New site details

Notes:

*Enter 'true' for fixed location – for mobile site enter 'false' and where possible provide additional information on site deployment.

*** If YOU DO NOT HAVE A WIGOS identifier for your site then this can be co-ordinated through your WMO representative a list of responsible members can be found here:*

http://www.wmo.int/pages/prog/www/CBS/Lists_WorkGroups/CBS/opag_ios/fp_vola

***If you have a more detailed site name then this should be entered here, if not leave blank and we will use the name provided in col 1.

*Action E-PROFILE Hub: Add any new sites to schema/table **hermes_core_config.hecc_sites***

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3) New Instruments Details

A list of the instrument types currently available can be found in **Annex A3** below;

If your **instrument type is not** in this list then you will need to contact E-PROFILE Network Manager

Please enter the following details for each new instrument;

Site	Instrument ID	Instrument Type	Message Frequency	Organisation	Maintaining Dept.
ccsi_name	ccin_asset_id	ccit_name	ccin_expected_reception_interval	ccor_name	ccin_metadata

Table 5: Instrument details

Annex A4 shows the list of all instruments and associated sites connected to the E-PROFILE Network

Notes:

a) **Instrument ID:** This should relate to the first characters of the incoming filename and should be unique for each new instrument.
   i.e. *NNNNN_I*
   Where:
   NNNNN = WMO Block and Station number or 5 last digist or the Wigos Identifier
   I = Instrument identifier (this could be used if multiple instruments exist at one site)
   See 2.2 Filename Convention for full details. – see Site notes for obtaining a suitable Wigos Identifier.

b) **Message Frequency:** This is the time interval expected between each message transmitted to the hub (E-PROFILE recommend 5 minutes)
c) **Instrument_type:** This should be one of the types listed in **Annex A3**.
d) Details of any new organisation site(s) should have already been provided in step 1 and 2.
e) **Maintaining Department:** We are unable to store names of responsible individuals, instead we ask for the department responsible for the ALC instrument within that organisation.

ADDITIONAL NOTES FOR CHM15k Instruments

In most cases the overlap file calculations will be applied to the incoming raw data as part of the instrument processing. Where this calculation is not supplied or the operator wishes the overlap calculations to be performed by the E-PROFILE Hub will require the following information;

Instrument Device Name: 'CHMnnnnnn' instrument number provided by the manufacturer.
Serial Number of LOM: 'TUBnnnnnn' instrument number provided by the manufacturer.

*The instrument device name and serial number of LOM are only required for some CHM15k instruments (where further overlap corrections need to be applied by the hub). We have introduced a new feature which can extract the overlap from a .cfg file so where applicable The configuration file `.cfg` should also be provided (the information contained in this file will be updated into our database and used to determine the overlap file corrections for that particular instrument).

This can be found in the raw NetCDF output e.g. for Payerne CHM15k instrument:
:device_name = "CHM120106";
:serlom = "TUB140016";

Where such instrument exists in the E-PROFILE ALC Network we will need to be informed of any changes to the LOM so we can continue to ensure that the correct overlap is applied.

4) **Instrument configuration check-list**

These following points are not mandatory but are recommended to ensure optimal performances of the instruments.

a. **CHM15k**

	Name	Description
☐	Recommended settings	• Default settings • 15 or 30 seconds time resolution
☐	Firmware version	>V0.7
☐	Data format	Native Netcdf file 5 minutes files
☐	Instrument installation	Pointing northward and 3° off zenith

b. **CL51 / CL31**

	Name	Description
☐	Recommended settings	• profile noise_h2 on • interval 30 (or less) • set message type
☐	Firmware version	>V2.03
☐	Data format	Compliant with CL view software
☐	Instrument installation	Pointing northward and 3° off zenith

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ANNEX A1 : DATA ROUTING (As at 31/1/2017)

Operators of the pilot hub are asked to ftp messages into DART - ftpweb.metoffice.gov.uk (151.170.240.50). The following accounts have been setup by Message Switching Section;

Organisation	Country	account_name	Download dir
RMI	Belgium	belgium-kmi	lidar
KNMI	Netherlands	netherland-kmni	lidar
DWD	Germany	dwd	lidar
MeteoSwiss?	Switzerland	meteoswiss	lidar
Met Norway	Norway	norway-nmi	lidar
NUIG	Ireland	nui-galway	lidar
SIRTA	France	sirta-france	lidar
ARPA	Italy	italy-arpa	lidar
Meteo France	France	meteofrance	lidar
AEMET	Spain	spain-aemet	lidar
OMSZ	Hungary	hungary-omsz	lidar
CNR-IMAA	Italy	italy-cnr-imaa	lidar
CNR-ISAC	Italy	italy-cnr-isac	lidar

Note: Separate accounts will need to be setup for each organisation contributing to the E-PROFILE ALCN Hub

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ANNEX A2: LIST OF CURRENT SITES (As at 31/1/2017)

Site Name	Lon	Lat	Height	Attributes - WMO Number, Country, full site name
ccsi_name	ccsi_lon	ccsi_lat	ccsi_alt	ccsi_attributes
ABERPORTH	-4.565	52.136	133.0	{"wmo_id": "03502", "country": "UK", "site_name_long": "Aberporth"}
ALDERGROVE	-6.217	54.65	81.0	{"wmo_id": "03917", "country": "UK", "site_name_long": "Aldergrove"}
ALICANTE	-0.505	38.358	43.0	{"wmo_id": "08360", "country": "Spain", "site_name_long": "Alicante"}
BENSON	-1.083	51.617	63.0	{"wmo_id": "03658", "country": "UK", "site_name_long": "RAF Benson"}
BOSCOMBE_DOWN	-1.75	51.167	124.0	{"wmo_id": "03746", "country": "UK", "site_name_long": "MOD Boscombe Down"}
BRIZE_NORTON	-1.583	51.75	87.0	{"wmo_id": "03649", "country": "UK", "site_name_long": "RAF Brize Norton"}
BUDAPEST	19.18	47.43	139.0	{"wmo_id": "12843", "country": "Hungary", "site_name_long": "Budapest"}
CABAUW	4.927	51.971	0.0	{"wmo_id": "06348", "country": "Netherlands", "site_name_long": "Cabauw"}
CACERES	-6.342	39.477	398.0	{"wmo_id": "08261", "country": "Spain", "site_name_long": "Caceres (University of Extremadura)"}
CAMBORNE	-5.321	50.214	87.0	{"wmo_id": "03808", "country": "UK", "site_name_long": "Camborne Met Office"}
CASEMENT	-6.439	53.306	91.0	{"wmo_id": "03967", "country": "Ireland", "site_name_long": "Casement Airport"}
CASTOR_BAY	-6.3428	54.502	9.0	{"wmo_id": "03918", "country": "UK", "site_name_long": "Castor Bay"}
CONINGSBY	-0.167	53.083	7.0	{"wmo_id": "03391", "country": "UK", "site_name_long": "RAF Coningsby"}
CORDOBA	-4.85	37.85	90.0	{"wmo_id": "08410", "country": "Spain", "site_name_long": "Cordoba)"}
CORK	-8.486	51.847	155.0	{"wmo_id": "03955", "country": "Ireland", "site_name_long": "Cork Airport"}
CRANWELL	-0.5	53.033	66.0	{"wmo_id": "03379", "country": "UK", "site_name_long": "RAF Cranwell"}
CULDROSE	-5.257	50.084	76.0	{"wmo_id": "03809", "country": "UK", "site_name_long": "RNAS Culdrose"}
DEBILT	5.17971	52.09883	2.0	{"wmo_id": "06260", "country": "Netherlands", "site_name_long": "DeBilt"}
DIEPENBEEK	5.27	50.55	37.0	{"wmo_id": "06477", "country": "Belgium", "site_name_long": "Diepenbeek"}

DISHFORTH	-1.417	54.133	35.0	{"wmo_id": "03261", "country": "UK", "site_name_long": "Dishforth Airfield"}
DUBLIN	-6.241	53.428	71.0	{"wmo_id": "03969", "country": "Ireland", "site_name_long": "Dublin Airport"}
ESKDALEMUIR	-3.2	55.317	242.0	{"wmo_id": "03162", "country": "UK", "site_name_long": "Eskdalemuir Observatory"}
EXETER	-3.475	50.728	27.0	{"wmo_id": "03838", "country": "UK", "site_name_long": "Exeter Met Office"}
FLESLAND	5.22	60.29	49.0	{"wmo_id": "01311", "country": "Norway", "site_name_long": "Flesland"}
GIBRALTAR	-5.348	36.153	0.0	{"wmo_id": "08495", "country": "UK", "site_name_long": "Gibraltar Met Office"}
HAMBURG	10.11	53.65	35.0	{"wmo_id": "10140", "country": "Germany", "site_name_long": "Hamburg"}
HAMELDON_HILL	-2.2892	53.7548	394.0	{"wmo_id": "03331", "country": "UK", "site_name_long": "Hameldon Hill"}
HOHENPEISSENBERG	11.01	47.8	977.0	{"wmo_id": "10962", "country": "Germany", "site_name_long": "Hohenpeissenberg"}
HUESCA	-0.33	42.083	89.0	{"wmo_id": "08094", "country": "Spain", "site_name_long": "Huesca (Monflorite)"}
HUMAINE	5.15	50.12	294.0	{"wmo_id": "06472", "country": "Belgium", "site_name_long": "Humaine"}
IBIZA	1.373	38.872	7.0	{"wmo_id": "08373", "country": "Spain", "site_name_long": "Ibiza (Balearic Islands)"}
KINLOSS	-3.567	57.65	7.0	{"wmo_id": "03066", "country": "UK", "site_name_long": "RAF Kinloss"}
KNOCK	-8.818	53.91	205.0	{"wmo_id": "03973", "country": "Ireland", "site_name_long": "Knock Airport"}
LARKHILL	-1.8	51.2	132.0	{"wmo_id": "03743", "country": "UK", "site_name_long": "Larkhill"}
LEEMING	-1.533	54.3	40.0	{"wmo_id": "03257", "country": "UK", "site_name_long": "RAF Leeming"}
LEON	-5.65	42.583	916.0	{"wmo_id": "08055", "country": "Spain", "site_name_long": "Leon (Virgen del Camino)"}
LERWICK	-1.183	60.133	82.0	{"wmo_id": "03005", "country": "UK", "site_name_long": "Lerwick Met Office"}
LEUCHARS	-2.867	56.383	12.0	{"wmo_id": "03171", "country": "UK", "site_name_long": "RAF Leuchars"}
LINDENBERG	14.12	52.21	123.0	{"wmo_id": "10393", "country": "Germany", "site_name_long": "Lindenberg"}
LINTON_ON_OUSE	-1.25	54.05	16.0	{"wmo_id": "03266", "country": "UK", "site_name_long": "RAF Linton on Ouse"}
LOSSIEMOUTH	-3.317	57.717	13.0	{"wmo_id": "03068", "country": "UK", "site_name_long": "RAF Lossiemouth"}
MACE_HEAD	-9.869	53.326	21.0	{"wmo_id": "03963", "country": "Ireland", "site_name_long": "Mace Head"}

MADRID	-3.76	40.7	1004.0	{"wmo_id": "08219", "country": "Spain", "site_name_long": "Madrid (Colmenar Viejo)"}
MARHAM	0.567	52.65	23.0	{"wmo_id": "03482", "country": "UK", "site_name_long": "RAF Marham"}
MENORCA	4.23	39.866	541.0	{"wmo_id": "08314", "country": "Spain", "site_name_long": "Menorca (Mahon)"}
MIDDLE_WALLOP	-1.567	51.15	91.0	{"wmo_id": "03749", "country": "UK", "site_name_long": "Middle Wallop Airfield"}
MURCIA	-0.8	37.78	5.0	{"wmo_id": "08433", "country": "Spain", "site_name_long": "Murcia (San Javier)"}
NORTHOLT	-0.417	51.55	38.0	{"wmo_id": "03672", "country": "UK", "site_name_long": "RAF Northolt"}
NOTTINGHAM	-1.25	53.0	117.0	{"wmo_id": "03354", "country": "UK", "site_name_long": "Nottingham MMS Enclosure"}
ODIHAM	-0.95	51.233	123.0	{"wmo_id": "03761", "country": "UK", "site_name_long": "RAF Odiham"}
OSLO	10.72	59.942	96.0	{"wmo_id": "01492", "country": "Norway", "site_name_long": "Oslo"}
PALAISEAU	2.2074	48.7181	156.0	{"wmo_id": "07151", "country": "France", "site_name_long": "Palaiseau"}
PAYERNE	6.942547	46.81369	490.0	{"wmo_id": "06610", "country": "Switzerland", "site_name_long": "Payerne Observatory"}
POTENZA	15.72	40.6	760.0	{"wmo_id": "16001", "country": "Italy", "site_name_long": "Potenza"}
ROME	12.63482	41.84201	100.0	{"wmo_id": "16002", "country": "Italy", "site_name_long": "Rome"}
SAINT-CHRISTOPHE_AOSTA	7.357	45.7422	560.0	{"wmo_id": "16054", "country": "Italy", "site_name_long": "St Christophe Aosta"}
SHANNON	-8.92	52.69	15.0	{"wmo_id": "03962", "country": "Ireland", "site_name_long": "Shannon Airport"}
SHAWBURY	-2.667	52.8	76.0	{"wmo_id": "03414", "country": "UK", "site_name_long": "RAF Shawbury"}
SOUTH_UIST	-7.375	57.353	4.0	{"wmo_id": "03023", "country": "UK", "site_name_long": "South Uist Range"}
STORNOWAY	-6.185	58.211	9.0	{"wmo_id": "03018", "country": "UK", "site_name_long": "Stornoway druim a'starraig"}
SZEGED	20.1	46.3	83.0	{"wmo_id": "12982", "country": "Hungary", "site_name_long": "Szeged"}
TENERIFE_NORTH	-16.342	28.483	632.0	{"wmo_id": "60015", "country": "Spain", "site_name_long": "Tenerife Norte (Tenerife, Canary Islands)"}
TENERIFE_SANTA_CRUZ	-16.282	28.472	52.0	{"wmo_id": "60022", "country": "Spain", "site_name_long": "Izana Headquarters (Sta. Cruz de Tenerife)"}
UCCLE	4.3582	50.7969	100.0	{"wmo_id": "06447", "country": "Belgium", "site_name_long": "Uccle"}
VALLEY	-4.533	53.25	11.0	{"wmo_id": "03302", "country": "UK", "site_name_long": "RAF Valley"}

VIGO	-8.63	42.233	264.0	{"wmo_id": "08045", "country": "Spain", "site_name_long": "Vigo (Pontevedra)"}
VLISSINGEN	3.59582	51.44134	8.0	{"wmo_id": "06310", "country": "Netherlands", "site_name_long": "Vlissingen"}
WADDINGTON	-0.517	53.167	70.0	{"wmo_id": "03377", "country": "UK", "site_name_long": "RAF Waddington"}
WATTISHAM	0.967	52.117	87.0	{"wmo_id": "03590", "country": "UK", "site_name_long": "Wattisham Airfield"}
WITTERING	-0.483	52.617	84.0	{"wmo_id": "03462", "country": "UK", "site_name_long": "RAF Wittering"}
YEOVILTON	-2.633	51.0	20.0	{"wmo_id": "03853", "country": "UK", "site_name_long": "RNAS Yeovilton"}
ZEEBRUGGE	3.12	51.21	7.0	{"wmo_id": "06418", "country": "Belgium", "site_name_long": "Zeebruge"}

ANNEX A3: LIST OF VALID INSTRUMENT TYPES (As at 31/1/2017)

Instrument type	Instrument Description	Comments
ccit_name	ccit_description	
chm15k or chm15kx (note for Hermes network management the term nimbus is used).	Jenoptik nimbus lidar (see comments on LHS)	All chm15k instruments are given the instrument type 'nimbus' . E-PROFILE strongly recommends firmware version 0.7 or later.
cl31	Vaisala cl31	E-PROFILE strongly recommends ToPROF firmware version (V2.03 or later).
cl51	Vaisala cl51	E-PROFILE strongly recommends ToPROF firmware version (V2.03 or later).
LR111-D300	Raymetrics LR111-D300 LIDAR	Pending Approval for release of LIDAR data
Mini-MPL	SigmaSpace Mini-MPL LIDAR	Reader now available for raw2l1 – needs further testing and implementation into Hermes E-PROFILE.
cs135	Campbell Scientic CS135	No suitable sites at present?

Instruments in 'grey' will be added during 2017 – there are plans to introduce further instrument types –
Priority will be for the addition of SigmaSpace MiniMPL Lidar and then Raymetrics LR111-D300 Lidar

ANNEX A4 :LIST OF CURRENT INSTRUMENTS (As at 31/1/2017)

site	instrument_id	instrument_type	WMO number	E-PROFILE ID	department	Organisation	Message Frequency
ccsi_name	ccin_asset_id	ccit_name	wmo	eprofile_id	department	ccor_name	ccin_expected_reception_interval
ABERPORTH	CHM110107	nimbus	03502		UK Engineering Services	Met Office	00:15:00
ABERPORTH	H	cl31	03502	B	UK Engineering Services	Met Office	01:00:00
ALDERGROVE	B	cl31	03917	B	UK Engineering Services	Met Office	01:00:00
ALDERGROVE	CHM110104	nimbus	03917		UK Engineering Services	Met Office	00:15:00
ALICANTE	08360_A	cl31	08360		Remote Sensing Group	AEMET	00:10:00
ALICANTE	08360_B	cl31	08360		Remote Sensing Group	AEMET	00:10:00
BENSON	W	cl31	03658		UK Engineering Services	Met Office	01:00:00
BOSCOMBE_DOWN	U	cl31	03746		UK Engineering Services	Met Office	01:00:00
BRIZE_NORTON	g	cl31	03649		UK Engineering Services	Met Office	01:00:00
BUDAPEST	12843_A	nimbus	12843		Remote Sensing Group	OMSZ	00:05:00
CABAUW	06348_A	nimbus	06348		Remote Sensing Group	KNMI	00:05:00
CACERES	08261_A	cl31	08261		Remote Sensing Group	AEMET	00:10:00
CAMBORNE	CHM110103	nimbus	03808		UK Engineering Services	Met Office	00:15:00
CAMBORNE	f	cl31	03808	B	UK Engineering Services	Met Office	01:00:00
CASEMENT	967_A	cl31	03967			Met Eireann	06:00:00
CONINGSBY	CHM120101	nimbus	03391		UK Engineering Services	Met Office	00:15:00
CONINGSBY	c	cl31	03391	B	UK Engineering Services	Met Office	01:00:00
CORDOBA	08410_A	cl31	08410		Remote Sensing Group	AEMET	00:10:00

CORK	955_A	cl31	03955			Met Eireann	06:00:00
CRANWELL	J	cl31	03379		UK Engineering Services	Met Office	01:00:00
CULDROSE	e	cl31	03809		UK Engineering Services	Met Office	01:00:00
DEBILT	06260_A	nimbus	06260		Remote Sensing Group	KNMI	00:05:00
DIEPENBEEK	06477_A	cl51	06477		Remote Sensing Group	RMI	01:00:00
DUBLIN	969_A	cl31	03969			Met Eireann	06:00:00
ESKDALEMUIR	CHM100109	nimbus	03162		UK Engineering Services	Met Office	00:15:00
ESKDALEMUIR	O	cl31	03162	B	UK Engineering Services	Met Office	01:00:00
EXETER	CHM110102	nimbus	03838		UK Engineering Services	Met Office	00:15:00
EXETER	l	cl31	03838	B	UK Engineering Services	Met Office	01:00:00
FLESLAND	01311_A	nimbus	01311		Remote Sensing Group	MET NORWAY	00:05:00
GIBRALTAR	h	cl31	08495		UK Engineering Services	Met Office	01:00:00
HAMBURG	10140_0	nimbus	10140		Remote Sensing Group	DWD	00:05:00
HOHENPEISSENBERG	10962_0	nimbus	10962		Remote Sensing Group	DWD	00:05:00
HUESCA	08094_A	cl31	08094		Remote Sensing Group	AEMET	00:10:00
HUMAINE	06472_A	cl51	06472		Remote Sensing Group	RMI	01:00:00
IBIZA	08373_A	cl31	08373		Remote Sensing Group	AEMET	00:10:00
IBIZA	08373_B	cl31	08373		Remote Sensing Group	AEMET	00:10:00
KINLOSS	K	cl31	03066		UK Engineering Services	Met Office	01:00:00
KNOCK	973_A	cl31	03973			Met Eireann	06:00:00
LARKHILL	X	cl31	03743		UK Engineering Services	Met Office	01:00:00
LEEMING	F	cl31	03257		UK Engineering Services	Met Office	01:00:00
LEON	08055_A	cl31	08055		Remote Sensing Group	AEMET	00:10:00

LERWICK	CHM110109	nimbus	03005		UK Engineering Services	Met Office	00:15:00
LERWICK	T	cl31	03005	B	UK Engineering Services	Met Office	01:00:00
LEUCHARS	E	cl31	03171		UK Engineering Services	Met Office	01:00:00
LINDENBERG	10393_0	nimbus	10393		Remote Sensing Group	DWD	00:05:00
LINTON_ON_OUSE	G	cl31	03266		UK Engineering Services	Met Office	01:00:00
LOSSIEMOUTH	L	cl31	03068		UK Engineering Services	Met Office	01:00:00
MACE_HEAD	03963_A	nimbus	03963		Remote Sensing Group	NUIG	00:15:00
MADRID	08219_A	cl31	08219		Remote Sensing Group	AEMET	00:10:00
MARHAM	P	cl31	03482		UK Engineering Services	Met Office	01:00:00
MENORCA	08314_A	cl31	08314		Remote Sensing Group	AEMET	00:10:00
MIDDLE_WALLOP	V	cl31	03749		UK Engineering Services	Met Office	01:00:00
MURCIA	08433_A	cl31	08433		Remote Sensing Group	AEMET	00:10:00
MURCIA	08433_B	cl31	08433		Remote Sensing Group	AEMET	00:10:00
NORTHOLT	R	cl31	03672		UK Engineering Services	Met Office	01:00:00
NOTTINGHAM	j	cl31	03354		UK Engineering Services	Met Office	01:00:00
ODIHAM	Y	cl31	03761		UK Engineering Services	Met Office	01:00:00
OSLO	01492_A	nimbus	01492		Remote Sensing Group	MET NORWAY	00:05:00
PALAISEAU	07151_A	cl31	07151		Remote Sensing Group	SIRTA	00:05:00
PALAISEAU	07151_B	nimbus	07151		Remote Sensing Group	SIRTA	00:05:00
PAYERNE	06610_A	nimbus	06610		Remote Sensing Group	METEOSWISS	00:05:00
POTENZA	16001_A	nimbus	16001		Remote Sensing Group	CNR-IMAA	00:05:00
ROME	16002_A	nimbus	16002		Remote Sensing Group	CNR-ISAC	00:05:00
SAINT-CHRISTOPHE_AOSTA	16054_0	nimbus	16054		Remote Sensing Group	ARPA	00:05:00

SHANNON	962_A	cl31	03962			Met Eireann	06:00:00
SHANNON	962_B	ct25	03962			Met Eireann	06:00:00
SHAWBURY	C	cl31	03414		UK Engineering Services	Met Office	01:00:00
SOUTH_UIST	CHM110101	nimbus	03023		UK Engineering Services	Met Office	00:15:00
STORNOWAY	CHM110105	nimbus	03018		UK Engineering Services	Met Office	00:15:00
SZEGED	12982_A	nimbus	12982		Remote Sensing Group	OMSZ	00:05:00
TENERIFE_NORTH	60015_A	cl31	60015		Remote Sensing Group	AEMET	00:10:00
TENERIFE_NORTH	60015_B	cl31	60015		Remote Sensing Group	AEMET	00:10:00
TENERIFE_SANTA_CRUZ	60022_A	cl51	60022		Remote Sensing Group	AEMET	00:10:00
UCCLE	06447_A	cl51	06447		Remote Sensing Group	RMI	01:00:00
VALLEY	i	cl31	03302		UK Engineering Services	Met Office	01:00:00
VIGO	08045_A	cl31	08045		Remote Sensing Group	AEMET	00:10:00
VLISSINGEN	06310_A	nimbus	06310		Remote Sensing Group	KNMI	00:05:00
WADDINGTON	b	cl31	03377		UK Engineering Services	Met Office	01:00:00
WATTISHAM	CHM100101	nimbus	03590		UK Engineering Services	Met Office	00:15:00
WATTISHAM	Q	cl31	03590	B	UK Engineering Services	Met Office	01:00:00
WITTERING	a	cl31	03462		UK Engineering Services	Met Office	01:00:00
YEOVILTON	d	cl31	03853		UK Engineering Services	Met Office	01:00:00
ZEEBRUGGE	06418_A	cl51	06418		Remote Sensing Group	RMI	01:00:00

Note: for UK/Irish instruments the incoming file ID is converted to use WMO number then a default 'A' – where multiple instruments exist at a site an additional metadata field is used 'eprofile_id' this is to enable the instruments to be processed as part of the UK Operational Ceilometer Network.