Data of the Perdigão campaign

Data produced in Perdigão is being collected by the DTU, UPORTO and UCAR.

1. Introduction

The current status was assembled (today) from the information available at Perdigão Data Management Web pages at EOL.

Products, reports, mission, etc. not included yet in this document.

The UPORTO Data Archive (UDA) may be accessed using the THREDDS Data Server (TDS) by providing the same credentials as in the UCAR ftp site (perdigao / B*****!).

WindsP App users may explore the UPORTO Data Archive (UDA) but, when they request access to data or metadata that is in the Data Archive, they have to provide the TDS credentials (at least during the embargoed period of 12 months).

2. Data Categories

For each **Data category** (level 1 of UDA) a table with a line for each **Dataset name** (level 2 of UDA) displays the status of the 3 archives for Perdigão (DTU, UP, UCAR).

The structure with these two levels can be seen in the (new) UPORTO Data Archive proposal, using the THREDDS Data Server (TDS) or using WindsP.

Table explanation:

✔ — available at the (MASTER) archive (uploaded/maintained by producer)

✔ — available at the (SLAVE) archive (mirrored from MASTER)

✘ — NOT available at the archive yet

Ancillary

Dataset name	Institution	Responsible	DTU	UP	UCAR
Cornell High Frequency Seismometer	Cornell		✘	✘	✘
DLR Acoustic Measurement	DLR	A. Schady	✘	✘	✘
ENERCON Wind Turbine SCADA	ENERCON		✘	✘	✘

Flux

Dataset name	Institution	Responsible	DTU	UP	UCAR
ARL Scintillometer	ALR	R. Krishnamurthy	✔	✔	✔
DTU Tower	DTU	J. Mann	✔	✔	✘

ENERCON Tower	ENERCON		✘	✘	✘
NCAR/EOL Preliminary 5 minute ISFS, geographic coordinate	NCAR/EOL		✔	✔	✔
NCAR/EOL Preliminary 5 minute ISFS, instrument coordinates	NCAR/EOL		✘	✘	✔
NCAR/EOL Preliminary High Rate ISFS, geographic coordinate	NCAR/EOL		✔	✔	✔

Land Based

Dataset name	Institution	Responsible	DTU	UP	UCAR
ARL Scintillometer	ALR	R. Krishnamurthy	✔	✔	✔
DLR HATPRO Surface Meteorological	DLR	M. Hagen	✔	✔	✘
GTS LDM Surface Hourly Observations (Global, GEMPAK)	NCAR/EOL		✘	✘	✔
GTS LDM Surface Synoptic Observations (Global, GEMPAK)	NCAR/EOL		✘	✘	✔
IPMA Portugal Surface Meteorological	IPMA		✘	✘	✘
LDM Surface METAR Data (METAR format)	NCAR/EOL		✘	✘	✔
NCAR/EOL ISS Preliminary Surface Meteorology (Sodar-RASS Site)	NCAR/EOL		✘	✘	✔
NCAR/EOL ISS Preliminary Surface Meteorology (Sounding Site at the upper orange grove)	NCAR/EOL		✘	✘	✔
NCAR/EOL ISS Preliminary Surface Meteorology (West Profiler Site)	NCAR/EOL		✘	✘	✔
NOAA/ESRL/GSD MADIS GTS METAR (netCDF format)	NOAA/ESRL		✘	✘	✔

Land Characterization

Dataset name	Institution	Responsible	DTU	UP	UCAR
Lidar Aerial Survey	UPORTO	J. Carlos Matos	✔	✔	✘

Lightning

Dataset name	Institution	Responsible	DTU	UP	UCAR
Portugal Lightning Detection Network (LDN)	IPMA	S. Correia & V. Prior	✘	✘	✔

Photography

Dataset name	Institution	Responsible	DTU	UP	UCAR
NCAR/EOL ISS Webcam Imagery (Sounding Site at the upper orange grove)	NCAR/EOL		✘	✘	✔
NCAR/EOL NCAR/EOL ISS Webcam Imagery (West Profiler Site)	NCAR/EOL		✘	✘	✔

Radar

Dataset name	Institution	Responsible	DTU	UP	UCAR
IPMA Radar	IPMA		✘	✘	✘

Satellite

Dataset name	Institution	Responsible	DTU	UP	UCAR
Meteosat Satellite	IPMA		✘	✘	✘

Upper Air: Lidar

Dataset name	Institution	Responsible	DTU	UP	UCAR
ARL Scanning Doppler Lidar at the George Site	ALR	R. Krishnamurthy	✔	✔	✔
ARL Scanning Doppler Lidar at the Lionstail Site	ALR	R. Krishnamurthy	✔	✔	✔
CLAMPS Scanning Doppler Lidar	OU	P. Klein	✔	✔	✔
Cornell Profiling Lidar	Cornell	R. Barthelmie	✘	✘	✘
Cornell Scanning Lidar	Cornell	R. Barthelmie	✘	✘	✘
CU Profiling Lidar	CU	J. Lundquist	✔	✔	✔
DLR Scanning Lidar	DLR	N. Wildmann	✔	✔	✘
DTU Scanning Lidar	DTU	J. Mann	✔	✔	✘
ENERCON Profiling Lidar	ENERCON	J. Carlos Matos	✔	✔	✘
Leosphere Windcube Profiling Lidar	ZWS	J. Carlos Matos	✔	✔	✘
Lidar Aerial Survey	UPORTO	J. Carlos Matos	✔	✔	✘
NCAR/EOL Water Vapor DIAL	NCAR/EOL		✘	✘	✔
UND Ceilometer	UND	L. Leo	✔	✔	✔
UND Scanning Doppler Lidar at the Lionshead Site	UND	R. Krishnamurthy	✔	✔	✔

UND Scanning Doppler Lidar at the MI6 Site	UND	R. Krishnamurthy	✔	✔	✔
UND Scanning Doppler Lidar at the Orange Site	UND	R. Krishnamurthy	✔	✔	✔
WindForS Scanning Lidar	ZWS		✔	✔	✘

Upper Air: Profiler

Dataset name	Institution	Responsible	DTU	UP	UCAR
NCAR/EOL ISS Preliminary 1290MHz Wind Profiler Winds and RASS (West Profiler Site)	NCAR/EOL		✘	✘	✔
NCAS/AMF Preliminary 1290MHz Wind Profiler (Alvaiade)	NCAS	E. Norton	✔	✔	✔

Upper Air: Radiometer

Dataset name	Institution	Responsible	DTU	UP	UCAR
DLR HATPRO Microwave Radiometer Level 1 Brightness Temperature	DLR	M. Hagen	✔	✔	✘
DLR HATPRO Microwave Radiometer Level 2 Temperature and Humidity Profile	DLR	M. Hagen	✔	✔	✘
NSSL/OU CLAMPS AERIoe	UO	P. Klein	✔	✔	✔
NSSL/OU CLAMPS Microwave Radiometer	UO	P. Klein	✔	✔	✔
UND Microwave Radiometer	UND	L. Leo	✘	✘	✘

Upper Air: Radiosonde

Dataset name	Institution	Responsible	DTU	UP	UCAR
GTS LDM Sounding Observations (Global, GEMPAK)	NCAR/EOL		✘	✘	✔
NCAR/EOL ISS Preliminary Radiosonde	NCAR/EOL		✘	✘	✔
Portugal Mandatory/Significant Level Radiosonde	NCAR/EOL		✘	✘	✔
Spain High Resolution Radiosonde	NCAR/EOL		✘	✘	✔
UND Radiosonde	UND		✔	✔	✔

Upper Air: SODAR

Dataset name	Institution	Responsible	DTU	UP	UCAR
NCAR/EOL ISS Preliminary Sodar-RASS (Sodar-RASS Site)	NCAR/EOL		✘	✘	✔
UND Sodar RASS	UND	L. Leo	✔	✔	✔

Upper Air: Tethersonde

Dataset name	Institution	Responsible	DTU	UP	UCAR
ARL Tethered Lifting System (TLS)	ARL	E. Creegen	✘	✘	✘
CU Tethered Lifting System (TLS)	CU	J. Lundquist	✘	✘	✘

3. UDA contents

How to upload data to UDA or get data out of UDA for mirroring.

3.1 Using rsync

UPORTO data archive for Perdigão available exports:

```
nejoco@VIND-pNEWA04:~> rsync -rdt rsync://windsptds.fe.up.pt
test            RSYNC test
archive         RSYNC UDA FILES (read only)
ucar            RSYNC UCAR FILES
dtu             RSYNC DTU FILES
inegi           RSYNC INEGI FILES
dlr             RSYNC DLR FILES
windfors        RSYNC WindForS FILES
```

3.2 Uploading data to UDA

Upload DTU data

UPORTO (as nejoco@login.neweuropeanwindatlas.eu) uses the UDA export `dtu@windsptds.fe.up.pt::dtu` to sync data collected by DTU.

First a complete mirror was in place, by automatically syncing every 4 hours the DTU data directory using a cron job: `/usr/bin/rsync -az -delete /newa/WP2/PERDIGAO/ dtu@windsptds.fe.up.pt::dtu.`

Later the `-delete` option was removed and some directories excluded to achieve the Perdigão Data Archive at UDA.

```
$ crontab -l
```

```
# DTU data sync to UDA, At minute 31 past every 4th hour
31 */4 * * * /usr/bin/rsync -az --exclude-from 'sync-exclude-list'
/newa/WP2/PERDIGAO/ dtu@windsptds.fe.up.pt::dtu > /dev/null 2>&1
```

```
$ cat ~nejoco/sync-exclude-list
archive/
data/DLR_WindScanner/
```

Upload UCAR data

UCAR uses the UDA export `ucar@windsptds.fe.up.pt::ucar` to copy NCAR/EOL ISFS data.

Upload DLR data

DLR uses the UDA export `dlr@windsptds.fe.up.pt::dlr` to maintain the DLR data.

Upload INEGI data

INEGI uses the UDA export `inegi@windsptds.fe.up.pt::inegi` to maintain the ENERCON data and “Lidar Aerial Survey Data”.

Upload WindsForS data

WindsForS uses the UDA export `windfors@windsptds.fe.up.pt::windfors` to maintain the WindForS data.

Upload ARL data (from UCAR)

ARL data is mirrored from UCAR ftp site using wget when new data is available.

```
#! /bin/sh
dir=arl
source=ftp://ftp.eol.ucar.edu/pub/data/incoming/perdigao/uda/$dir
destination=/data/perdigao/ucar
wget -m -nH --cut-dirs=5 -P $destination $source
```

Upload EOL data (from UCAR)

EOL data is mirrored from the UCAR ftp site using wget when new data is available.

Upload NCAS data (from UCAR)

NCAS data is mirrored from the UCAR ftp site using wget when new data is available.

Upload ND data (from UCAR)

Notre Dame data is mirrored from the UCAR ftp site using wget when new data is available.

Upload OU data (from UCAR)

Oklahoma U. data is mirrored from the UCAR ftp site using wget when new data is available.

3.2 Mirror UDA to DTU

The UPORTO Data Archive (UDA) is automatically synced to the DTU, every 24 hours, from the UDA read only export: `uda@windsptds.fe.up.pt::archive/`, using a cron job.

```
$ crontab -l
```

```
# UDA archive to DTU, At midnight every day
0 0 * * * /home/nejoco/sync-uda.sh >| sync-uda_last.log 2>&1
```

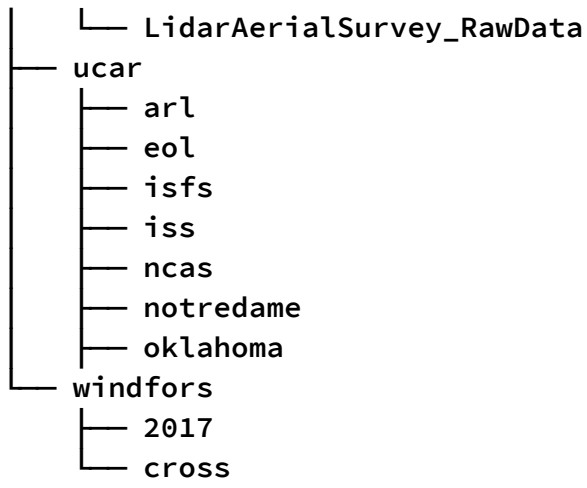
```
$ cat sync-uda.sh
```

```
#! /bin/sh
# the Perdigao root at NEWA storage
perdigao=/newa/WP2/PERDIGAO
```

```
# the archive root
archive=$perdigao/archive
# the actual size of the archive
echo "Total du of $archive:"
du -ks $archive
# the UDA readonly password
export RSYNC_PASSWORD=-password-
# catalogues to sync
CATALOGS="dlr inegi ucar windfors"
for c in $CATALOGS; do
    # mirror catalog from the version at UDA (UPORTO)
    echo; echo "$(tr [a-z] [A-Z] <<< "$c"):"
    #cmd="rsync -avz uda@windsptds.fe.up.pt::archive/$c/ $archive/$c/"
    cmd="rsync -avz --delete uda@windsptds.fe.up.pt::archive/$c/
$archive/$c/"
    echo "$cmd..."
    # do it
    $cmd
done
# catalog structure
echo
tree -L 2 $archive
# total space usage for each archive
echo
du -khs $archive/*
# the final size of the archive
echo
echo "Total du of $archive:"
du -ks $archive
# the end
```

The DTU NEWA directory `/newa/WP2/PERDIGAO/archive/` contains an exact copy of UDA, except for the DTU data that are links to existing NEWA directories (in order to avoid using a duplication 1.8 TiB of storage).

```
/newa/WP2/PERDIGAO/archive
├── dlr
│   ├── HATPRO_level-1
│   ├── HATPRO_level-2
│   ├── HATPRO_surface-met
│   ├── mcs_data
│   ├── netcdf_lidar
│   └── raw_data
├── dtu
│   ├── DTU_Leica_Scanning ->
│   ├── DTU_Mast_Data ->
│   └── DTU_WindScanner ->
├── inegi
│   ├── EnerconWindTurbine
│   ├── LeosphereWindcube
```


└── LidarAerialSurvey_RawData
├── ucar
├── arl
├── eol
├── isfs
├── iss
├── ncas
├── notredame
├── oklahoma
└── windfors
├── 2017
└── cross