

GloBAM Data Management Plan

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2019-04-16

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1 Intro

Welcome to the GloBAM Data Management Plan.

2 European radar data

This page describes European radar data (`pvol`) and derived data products (`vp` and `vpts`).

2.1 License agreement

European radar data exchange is coordinated by the *European Operational Program for Exchange of Weather Radar Information (EUMETNET/OPERA)*. GloBAM has access to these data via the *EIG EUMETNET license agreement for Research use of OPERA data*. This license agreement grants a specific list of people (involved in ENRAM and GloBAM) access to radar data from selected countries under the following conditions (excerpt):

The OPERA Members Data will be provided for use within the ENRAM Project for the purpose of extracting animal migration information for scientific research. The Grant of this License does not permit use of the OPERA Members Data licensed to be used for commercial purposes or exploitation for profit.

2.2 Radars

OPERA manages a list of radar metadata (232 radars). This **OPERA database** is available as:

- interactive map
- json file: source file for the map. This file is also archived on GitHub every time we update the DMP, so we can track changes.

The license agreement allows access to data from 19 countries.

##	country	iso_code	radars	operational
##	Austria	AT	5	5
##	Belgium	BE	3	3
##	Croatia	HR	5	2
##	Czechia	CZ	2	2
##	Denmark	DK	5	5
##	Estonia	EE	2	2
##	Finland	FI	10	10
##	France	FR	31	25
##	Germany	DE	20	20
##	Netherlands	NL	3	2
##	Norway	NO	11	11
##	Poland	PL	8	8
##	Portugal	PT	4	3
##	Slovakia	SK	4	4
##	Slovenia	SI	2	2
##	Spain	ES	15	15
##	Sweden	SE	12	12
##	Switzerland	CH	5	5
##	United Kingdom	GB	16	16
##	Total	-	163	152

2.3 Historical archive

GloBAM needs a **2-3 year archive** of European **pvol** and derived **vp** data to tackle its research questions. By starting from a **pvol** archive, the generation of **vp** data can be reproduced if need be, e.g. to make sure adequate **vol2bird** settings/versions are used.

2.3.1 Source and access

- **pvol**: BALTRAD (2.4.2.1) is likely to be the best source. **Restricted access**
- **vp**: ENRAM data repository (2.6.1). **Open data**
- **vpts**: ENRAM data repository (2.6.1). **Open data**

2.3.2 Coverage

The BALTRAD archive needs to be assessed for coverage and quality before we can define the subset of the archive we want to use. Tasks for this are listed here and include:

1. Get a file listing for **pvol** archive
2. Select subsets: first 2 days of data per radar/month for 2016, 2017, 2018 (72 days): either **pvol** or pre-merged scans
3. Transfer subsets to accessible FTP server
4. Merge to **pvol** (test 1)
5. Process with **vol2bird** to **vp** (test 2)
6. Store output **vp** files
7. Visual control of **vp** (test 3)

2.4 PVOL

pvol data are polar volume data. These are generated by weather radars and the source for vertical profiles (**vp**) of biological targets.

2.4.1 Format

- Format: `hdf5` in the OPERA ODIM_h5 format.
- Granularity: a `pvol` file is typically generated every 15 minutes and contains scan data at about 20 altitudes.
- Read in bioRad with: `read_pvolfile`.

2.4.2 Source

2.4.2.1 BALTRAD

The best source for consolidated `pvol` data is **BALTRAD**, managed by SMHI (contact person: Günther Haase). `pvol` data are archived there, but access to that server is restricted to SMHI. For data to be available in BALTRAD, several conditions need to be met (source):

1. A country should send both reflectivity and radial velocity data to the OPERA data centre, which is called ODYSSEY. While many countries are sending reflectivity data, radial velocities are still unavailable for many countries.
2. ODYSSEY should forward these data to the BALTRAD datahub. It is standard policy to do so, but in practice data is not yet forwarded correctly for some radars/countries.
3. Currently BALTRAD and ODYSSEY store data at a 15 minute interval, higher resolution data is not yet available.

2.4.2.2 Research labs

Some research labs (e.g. UvA) also have archived `pvol` data for a subset of radars/years.

2.4.2.3 National weather services

More or more precise `pvol` data can be available at the national weather services as well.

2.4.3 Access

Restricted access: access and use of `pvol` data is subject to the license agreement (2.1). These data cannot be shared further without approval from OPERA. Transferring these data to a (private) cloud platform is also sensitive.

2.4.4 Coverage

Coverage of the `pvol` archive at BALTRAD is currently unknown. Availability and coverage are being gathered in this spreadsheet.

2.4.5 Up-to-dateness

`pvol` data at BALTRAD are normally up to date to within a day.

2.5 PVOL \rightarrow VP

...

2.6 VP

vp data are vertical profiles of biological targets and the main data to be used by GloBAM.

2.6.1 Source

vp data generated at BALTRAD are transferred daily to the ENRAM data repository.

2.6.2 Access

Open data: Data in ENRAM data repository are available under a Creative Commons Zero waiver.

2.6.3 Format

- Format: `hdf5` in the ODIM bird profile format specification.
- Granularity: a `vp` file is generated for each originating `pvol` file.
- Read in bioRad with: `read_vpfiles`.

2.6.4 Coverage

The coverage of the ENRAM data repository is recorded daily in `coverage.csv` and summarized here:

##	radar	2016	2017	2018	2019	Total
##	bejab	21	NA	194	104	319
##	bewid	19	12	205	105	341
##	bezav	21	NA	NA	NA	21
##	bgvar	21	NA	NA	NA	21
##	ctcdv	21	NA	NA	NA	21
##	ctpda	21	NA	NA	NA	21
##	czbrd	21	NA	286	104	411
##	czska	21	NA	286	105	412
##	deasb	NA	NA	221	93	314
##	deboo	31	17	305	93	446
##	dedrs	31	21	304	93	449
##	deeis	31	21	304	93	449
##	deemd	NA	20	49	NA	69
##	deess	31	21	304	93	449
##	defbg	31	NA	NA	NA	31
##	defld	31	21	303	92	447
##	deflg	NA	21	49	NA	70
##	dehnr	31	21	304	93	449
##	deisn	31	NA	NA	NA	31
##	demem	31	21	301	93	446
##	deneu	31	21	301	93	446
##	denhb	31	21	300	90	442
##	deoft	31	21	304	93	449
##	depro	31	21	302	93	447
##	deros	25	21	294	93	433
##	desna	NA	21	303	93	417
##	detur	29	21	303	93	446
##	deumd	31	21	304	93	449
##	dkbor	NA	34	85	105	224

##	dkrom	NA	38	85	105	228
##	dksin	NA	38	85	105	228
##	dkste	NA	38	85	105	228
##	dkvir	NA	27	85	105	217
##	eehar	NA	20	35	1	56
##	eesur	NA	20	35	NA	55
##	esalm	NA	38	287	105	430
##	esbad	NA	38	302	105	445
##	esbar	NA	38	303	105	446
##	escor	NA	38	287	105	430
##	eslid	NA	38	303	105	446
##	eslpa	NA	NA	14	NA	14
##	esmad	NA	38	301	105	444
##	esmal	NA	38	303	105	446
##	esmur	NA	38	302	105	445
##	espma	NA	38	303	105	446
##	essan	NA	38	302	105	445
##	essev	NA	36	300	105	441
##	essse	NA	38	303	105	446
##	esval	NA	38	294	105	437
##	eszar	NA	38	303	102	443
##	fianj	22	154	38	NA	214
##	fiika	22	153	39	NA	214
##	fikes	22	151	38	NA	211
##	fikor	22	146	38	NA	206
##	fikuo	22	156	38	NA	216
##	filuo	22	153	38	NA	213
##	fipet	22	99	NA	NA	121
##	fiuta	22	157	38	NA	217
##	fivan	22	157	39	NA	218
##	fivim	22	132	34	NA	188
##	frabb	21	38	320	95	474
##	frale	21	26	321	105	473
##	frave	21	NA	283	105	409
##	frbla	21	38	321	104	484
##	frbol	21	38	279	99	437
##	frbor	21	36	321	105	483
##	frbou	21	38	173	102	334
##	frcae	21	38	320	105	484
##	frche	21	38	317	105	481
##	frcol	21	38	312	104	475
##	frgre	21	38	320	105	484
##	frlep	21	38	320	100	479
##	frmcl	21	38	304	105	468
##	frmom	21	38	320	105	484
##	frmtc	21	35	302	105	463
##	frnan	21	38	317	105	481
##	frnim	21	38	320	105	484
##	frniz	21	NA	281	105	407
##	fropo	21	38	241	59	359
##	frpla	21	38	315	105	479
##	frtou	21	37	305	105	468
##	frtra	21	38	320	105	484
##	frtre	6	38	316	105	465

##	frtro	21	NA	282	104	407
##	hrbil	NA	38	35	NA	73
##	hrosi	NA	38	35	NA	73
##	nldbl	22	4	NA	NA	26
##	nldhl	21	125	295	105	546
##	nlhrw	NA	21	294	105	420
##	plbrz	21	3	261	105	390
##	plgda	21	3	261	105	390
##	plleg	21	3	259	105	388
##	plpas	NA	3	259	105	367
##	plpoz	21	3	260	105	389
##	plram	21	3	260	105	389
##	plrze	21	3	222	105	351
##	plswi	21	3	260	105	389
##	ptfar	119	NA	NA	4	123
##	ptlis	NA	NA	NA	1	1
##	ptliz	122	NA	NA	NA	122
##	ptprt	113	NA	NA	NA	113
##	seang	21	137	310	94	562
##	searl	21	153	318	103	595
##	sease	21	16	NA	NA	37
##	sehem	NA	43	314	95	452
##	sehud	21	NA	NA	NA	21
##	sehuv	NA	36	295	97	428
##	sekir	21	144	318	105	588
##	sekkrr	21	157	171	NA	349
##	selek	21	118	208	97	444
##	selul	21	148	183	NA	352
##	seoer	NA	36	307	97	440
##	seosd	NA	142	311	95	548
##	seosu	13	NA	NA	NA	13
##	seovi	21	59	NA	NA	80
##	sevar	21	NA	NA	NA	21
##	sevox	NA	133	312	97	542
##	sevil	21	153	318	29	521
##	silis	21	35	304	99	459
##	sipas	21	35	311	69	436
##	skjav	NA	38	301	105	444
##	skkoj	NA	38	301	98	437
##	skkub	NA	NA	280	105	385
##	sklaz	NA	NA	280	105	385

2.6.5 Up-to-dateness

The ENRAM data repository is updated daily.

2.7 VPTS

vpts data are time series of vertical profiles and a more convenient way of reading vp data without any data loss.

2.7.1 Format

To be defined: <https://github.com/enram/globam-dmp/issues/16>

2.7.2 Source

These files are not yet generated, but will be stored in the ENRAM data repository.

2.7.3 Access

Open access

2.7.4 Coverage

Not yet defined.

2.7.5 Up-to-dateness

Not yet defined.