

# Advanced ways to find and retrieve data in the LTA

There are some useful ways to find and retrieve your data in the LTA that might not be immediately obvious. This page explains some of the more advanced options you have.

## Queries

- You can use colons in numeric queries, to select ranges. This will for example give all observations and pipelines that have a SAS/Observation ID in the range from 432000 to 432190:

Observation Id	432000:432190
Observing or Pipeline Run Date	From 0000-00-00 00:00:00 To 0000-00-00 00:00:00
Project	any
Maximum Number of Rows	

In textual entries, wildcards can be used.

Target Name	3:19*
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- You can put a list of SAS/Observation IDs in the query:

Observation Id	146112,147775,151778
Observing Date	From 0000-00-00 00:00:00 To 0000-00-00 00:00:00

## Viewing data

When you are looking at the results of a query you might see something like this:

Number Of Correlated DataProducts
0 / 488

This means that the observation is known in the LTA, it knows what data was produced, the produced data was not archived, but further processing happened on the raw data and the results of some of those pipelines were archived. If you click on the zero, you will see something like this:

#	<input type="checkbox"/>	DataProduct Identifier	SubArray Pointing Identifier	Subband	Stations	Observations	Pipeline	Derived DataProducts
1	<input type="checkbox"/>	7260485	293855	479	show	1		AveragingPipeline
2	<input type="checkbox"/>	7260483	293855	477	show	1		AveragingPipeline
3	<input type="checkbox"/>	7260488	293855	482	show	1	back to observation	AveragingPipeline
4	<input type="checkbox"/>	7260489	293855	483	show	1		AveragingPipeline
5	<input type="checkbox"/>	7260492	293855	486	show	1		AveragingPipeline
6	<input type="checkbox"/>	7260490	293855	484	show	1		AveragingPipeline
7	Can not be downloaded	7260493	293855	487	show	1		AveragingPipeline
8		7260486	293855	480	show	1		AveragingPipeline
9	<input type="checkbox"/>	7260487	293855	481	show	1	To pipeline	AveragingPipeline
10	<input type="checkbox"/>	7260482	293855	476	show	1		AveragingPipeline
11	<input type="checkbox"/>	7260491	293855	485	show	1		AveragingPipeline
12	<input type="checkbox"/>	7260484	293855	478	show	1		AveragingPipeline
13	<input type="checkbox"/>	7260436	293854	430	show	1		AveragingPipeline

This allows you to navigate from a pipeline back to the original observation, or from the observation to any pipelines that have run on the raw data.

## Retrieving data

- You can retrieve data on the Observation and Pipeline level, you don't have to select all files individually.

#	<input type="checkbox"/>	Observation Id	Observing Mode	Antenna Set	Instrun Filt
1	<input checked="" type="checkbox"/>	146448	Interferometer	HBA Dual Inner	110-190
2	<input type="checkbox"/>	146447	Interferometer	HBA Dual Inner	110-190
3	<input checked="" type="checkbox"/>	146446	Interferometer	HBA Dual Inner	110-190
4	<input type="checkbox"/>	146445	Interferometer	HBA Dual Inner	110-190
5	<input checked="" type="checkbox"/>	146444	Interferometer	HBA Dual Inner	110-190
6	<input checked="" type="checkbox"/>	146443	Interferometer	HBA Dual Inner	110-190
7	<input type="checkbox"/>	146442	Interferometer	HBA Dual Inner	110-190
8	<input checked="" type="checkbox"/>	146441	Interferometer	HBA Dual Inner	110-190
9	<input checked="" type="checkbox"/>	146456	Interferometer	HBA Dual Inner	110-190
10	<input checked="" type="checkbox"/>	146455	Interferometer	HBA Dual Inner	110-190
11	<input type="checkbox"/>	146454	Interferometer	HBA Dual Inner	110-190
12	<input type="checkbox"/>	146453	Interferometer	HBA Dual Inner	110-190
13	<input type="checkbox"/>	146452	Interferometer	HBA Dual Inner	110-190

- If you have a query with more than 1000 results, you can open the multiple pages each in a separate tab/window.

Observation 1001 to 1100 (showing 100 of total 1156) ▾

edit columns | stage selected

first | previous | ... | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | next | last

r Of SubArray	Start Time	Duration	Nr Stations	Nr Stations
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- With the small triangle next to a list, you can fold or unfold the list to get a better overview.

### Folded entries

**Observation 1 to 100 (showing 100 of total 1156)** ▲

**Averaging Pipeline 1 to 100 (showing 100 of total 4060)** ▲

**Calibration Pipeline (total 30)** ▲

**Imaging Pipeline (total 0)** ▲

**UnspecifiedProcess 1 to 100 (showing 100 of total 125)** ▲

Unfolded entries

Calibration Pipeline (total 30) -

all entries | top entries

#	Process Name	Process Version	Process Identifier	Observation ID	Start Time	Duration (s)	End Time	Strategy Name	Strategy Description	Preprocessor Integration Step	Time Integration Step	Flag Auto Correlation	Stimulus Database	Sampling	Number Of Instruments	Number Of Correlated DataProducts	Source DataProduct
1	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
2	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
3	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
4	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
5	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
6	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
7	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
8	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
9	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
10	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
11	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
12	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
13	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
14	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
15	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
16	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
17	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
18	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
19	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
20	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
21	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
22	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
23	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
24	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
25	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
26	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
27	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
28	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
29	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no
30	PMB_AveragingPipeline	1.0.0	407000	123456	2010-01-01 00:00:00	0.0	2010-01-01 00:00:00	Programme Pipeline (no device)	Programme Pipeline (no device)	no	0	0	0	0	0	0	no

Imaging Pipeline (total 0) -

all entries | top entries

Top | previous | 1 | 2 | 3 | next | last

#	Observation ID	Observation Name	Process Description	Start Time	Duration (s)	Number Of Unspecified DataProducts
1	123456	123456	Unspecified process, information generated by target	2010-01-01 00:00:00	0.0	0
2	123456	123456	Unspecified process, information generated by target	2010-01-01 00:00:00	0.0	0
3	123456	123456	Unspecified process, information generated by target	2010-01-01 00:00:00	0.0	0
4	123456	123456	Unspecified process, information generated by target	2010-01-01 00:00:00	0.0	0
5	123456	123456	Unspecified process, information generated by target	2010-01-01 00:00:00	0.0	0
6	123456	123456	Unspecified process, information generated by target	2010-01-01 00:00:00	0.0	0
7	123456	123456	Unspecified process, information generated by target	2010-01-01 00:00:00	0.0	0
8	123456	123456	Unspecified process, information generated by target	2010-01-01 00:00:00	0.0	0
9	123456	123456	Unspecified process, information generated by target	2010-01-01 00:00:00	0.0	0
10	123456	123456	Unspecified process, information generated by target	2010-01-01 00:00:00	0.0	0

## DBView

There is a server that gives the option to run your own queries on the database

<http://lofar-dbview.target.rug.nl/>

A useful query might be this one, that gives you all files for a certain Obs Id (SAS VIC tree ID).

```
SELECT fo.URI, dp."dataProductType", dp."dataProductIdentifier",
       dp."processIdentifier"
FROM AWOPER."DataProduct+" dp,
       AWOPER.FileObject fo,
       AWOPER."Process+" pr
WHERE dp."processIdentifier" = pr."processIdentifier"
      AND pr."observationId" = '123456'
      AND fo.data_object = dp."object_id"
```

```
AND dp."isValid" > 0
```

In this '123456' should be replaced with the Obs Id of an Observation/Pipeline you're looking for.

## AstroWise Python Interface

There is also a python interface to the LTA. With this, you can also script some advanced queries. To have this working, you first need to install the [LTA client](#) in your machine. Once you have installed the client, set up your user name and password. These are the same as for MoM. Remember that this is just a different user interface to the LTA catalog: you will need the same credentials as for the web interface.

In your home directory, add the following to the file .awe/Environment.cfg

```
database_user : <your username>
database_password : <your password>
```

Finally, if you are using your own laptop, your hostname may cause an error, if it does not contain a full domain. In this case, check your /etc/hosts file. You should find a line that looks like this

```
127.0.0.1 localhost
```

Change that line into

```
127.0.0.1 localhost <your_host_name>
```

Now, you may still see some warnings, but the following script will print out all observations on a certain patch of the sky:

```
# python code
from pprint import pprint
from common.database.Context import context
from awlofar.main.aweimports import Observation, Pointing, SubArrayPointing
result = {}
for project in sorted(context.get_projects()) :
    print "Project %(project)s" % vars()
    ok = context.set_project(project)
    # do your query
    obs_ids = set()
    query = (Pointing.rightAscension > 95) & \
            (Pointing.rightAscension < 105) & \
            (Pointing.declination > 20) & \
            (Pointing.declination < 30)
    print "Total Pointings %d" % len(query)
    for pointing in query :
        print "Pointing found RA %f DEC %f" % (pointing.rightAscension,
        pointing.declination)
        query_subarr = SubArrayPointing.pointing == pointing
        for subarr in query_subarr:
```

```
        query_obs = Observation.subArrayPointings.contains(subarr)
        for obs in query_obs :
            obs_ids.add(obs.observationId)
    result[project] = sorted(list(obs_ids))
    print result[project]

pprint(result)
```

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