

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 | 3c19* |
|--------------------|-------|

- 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 | | 7260485 | 293855 | 479 | show | 1 | | AveragingPipeline |
| 2 | | 7260483 | 293855 | 477 | show | 1 | | AveragingPipeline |
| 3 | | 7260488 | 293855 | 482 | show | 1 | back to observation | AveragingPipeline |
| 4 | | 7260489 | 293855 | 483 | show | 1 | | AveragingPipeline |
| 5 | | 7260492 | 293855 | 486 | show | 1 | | AveragingPipeline |
| 6 | | 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 | | 7260487 | 293855 | 481 | show | 1 | To pipeline | AveragingPipeline |
| 10 | | 7260482 | 293855 | 476 | show | 1 | | AveragingPipeline |
| 11 | | 7260491 | 293855 | 485 | show | 1 | | AveragingPipeline |
| 12 | | 7260484 | 293855 | 478 | show | 1 | | AveragingPipeline |
| 13 | | 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 Filter |
|----|-------------------------------------|----------------|----------------|----------------|----------------|
| 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](#)

| nr Of SubArray | Start Time | Duration | Nr Stations | Nr Stations |
|----------------|------------|----------|-------------|-------------|
|----------------|------------|----------|-------------|-------------|

- 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) -

db-view | stop | edit

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

Imaging Pipeline (total 0) -

db-view | stop | edit

UnspecifiedProcess 1 to 100 (showing 100 of total 125) -

db-view | stop | edit

| # | Process Name | Process Version | Process Identifier | Observation ID | Start Time | Duration (s) | Number Of Unspecified DataProducts |
|----|--------------------|-----------------|--------------------|----------------|---------------------|--------------|------------------------------------|
| 1 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 2 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 3 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 4 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 5 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 6 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 7 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 8 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 9 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 10 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 11 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 12 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 13 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 14 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 15 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 16 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 17 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 18 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 19 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 20 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 21 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 22 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 23 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 24 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 25 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 26 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 27 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 28 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 29 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 2010-01-01 00:00:00 | 0.0 | 0 |
| 30 | UnspecifiedProcess | 1.0.0 | 123456 | 123456 | 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 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 interface to the LTA catalogue: you will need the same credentials as for the web interface.

After installing the LTA client, add the following to the file `.awe/Environment.cfg` in your home directory

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

then create the variable `awetarget` and set it to `awlofar`. In a bash shell, you can do so by adding the following to your `.profile` file:

```
export AWETARGET=awlofar
```

Finally, 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>
```

If you do not know your hostname, just type `hostname` in a shell and you will get it as an output.

Now, you can use the following script as a test. It may still give you some warnings, but if it prints out a list of pointings, then you are ready to go. You may need to kill the script, because it will print out all the observations in a certain patch of the sky archived in the LTA.

```
# 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)

```

If you get errors and do not manage to retrieve the list of pointings, there may be the need to open some port on the firewall at your institution. Specifically, port 1521 should be open. In case of trouble, get in contact with Science Support.

Once you have tested that your connection to the catalogue is working, you are ready to browse the archive and stage the data you need. Here we will list a few examples of python scripts that can be used to access the LTA. All of them will need to import some modules:

```

from datetime import datetime
from awlofar.database.Context import context
from awlofar.main.aweimports import CorrelatedDataProduct, \
    FileObject, \
    Observation
from awlofar.toolbox.LtaStager import LtaStager, LtaStagerError

```

The lines above must be added to each of the scripts below for these to work.

This simple script will allow you to find and stage all data within a single project LCX_YYY.

```

do_stage = True
project = 'LCX_YYY'
cls = CorrelatedDataProduct
if not context.set_project(project) :
    raise Exception("You are not member of project %s" % project)

query_observations = Observation.select_all().project_only()
uris = set() # All URIS to stage
for observation in query_observations :
    print("Querying ObservationID %s" % observation.observationId)
    # Instead of querying on the Observations of the DataProduct, all
    DataProducts could have been queried
    dataproduct_query = cls.observations.contains(observation)
    # isValid = 1 means there should be an associated URI
    dataproduct_query &= cls.isValid == 1

```

```

for dataproduct in dataproduct_query :
    # This DataProduct should have an associated URL
    fileobject = ((FileObject.data_object == dataproduct) &
(FileObject.isValid > 0)).max('creation_date')
    if fileobject :
        print("URI found %s" % fileobject.URI)
        uris.add(fileobject.URI)
    else :
        print("No URI found for %s with dataProductIdentifier %d" %
(dataproduct.__class__.__name__, dataproduct.dataProductIdentifier))

print("Total URI's found %d" % len(uris))

if do_stage :
    stager = LtaStager()
    stager.stage_uris(uris)

```

The following will find and stage subbands 301 and 302 for all targets within two different projects. Pay attention to the difference between the keys subband and stationSubband; the former is a sequential number assigned to each subband in an observation, while the latter is linked to the frequency at which the observations was performed. Example: an observation was set up covering the range 30-77.3 MHz with two simultaneous beams using 244 subbands each. In this case, the key subband will go from 0 to 487, while stationSubband will go from 153 to 396.

```

do_stage = False
project1 = 'LCX_YYY'
project2 = 'LCZ_VVV'
subband1 = 301
subband2 = 302
cls = CorrelatedDataProduct

# All URIS to stage
uris = {
    project1: set(),
    project2: set(),
}

for project in (project1, project2) :
    print("Using project %s" % project)
    if not context.set_project(project) :
        raise Exception("You are not member of project %s" % project)
    query_observations = Observation.select_all().project_only()
    for observation in query_observations :
        print("Querying ObservationID %s" % observation.observationId)
        dataproduct_query = cls.observations.contains(observation)
        # isValid = 1 means there should be an associated URI
        dataproduct_query &= cls.isValid == 1
        dataproduct_query &= ((cls.subband == subband1) | (cls.subband ==
subband2))
        # Or for stationSubband do :
        #dataproduct_query &= ((cls.stationSubband == subband1) |

```

```

(cls.stationSubband == subband2))
    for dataproduct in dataproduct_query :
        # This DataProduct should have an associated URL
        fileobject = ((FileObject.data_object == dataproduct) &
(FileObject.isValid > 0)).max('creation_date')
        if fileobject :
            print("URI found %s" % fileobject.URI)
            uris[project].add(fileobject.URI)
        else :
            print("No URI found for %s with dataProductIdentifier %d" %
(dataproduct.__class__.__name__, dataproduct.dataProductIdentifier))

for project in (project1, project2) :
    print("Total URI's found for project %s: %d" % (project,
len(uris[project])))

stager = LtaStager()
for project in (project1, project2) :
    if do_stage :
        stager.stage_uris(uris[project])

```

Here, we find and stage data between freq1 and freq2 taken within one project between day1 and day2

```

do_stage = True
project = 'LCX_YYY'
freq1 = 172.0
freq2 = 178.0
day1 = datetime(2016,1,20) # this could include time; ie hours, minutes,
seconds
day2 = datetime(2016,1,31) # idem
# DataProduct class to query; CorrelatedDataProduct, SkyImageDataProduct,
etc ...
cls = CorrelatedDataProduct

if not context.set_project(project) :
    raise Exception("You are not member of project %s" % project)

query_observations = ((Observation.startTime >= day1) &
(Observation.endTime < day2)).project_only()

uris = set()
for observation in query_observations :
    print("Querying ObservationID %s" % observation.observationId)
    dataproduct_query = cls.observations.contains(observation)
    # isValid = 1 means there should be an associated URI
    dataproduct_query &= cls.isValid == 1
    dataproduct_query &= cls.minimumFrequency >= freq1
    dataproduct_query &= cls.maximumFrequency < freq2
    for dataproduct in dataproduct_query :
        # This DataProduct should have an associated URL
        fileobject = ((FileObject.data_object == dataproduct) &

```

```
(FileObject.isValid > 0)).max('creation_date')
    if fileobject :
        print("URI found %s" % fileobject.URI)
        uris.add(fileobject.URI)
    else :
        print("No URI found for %s with dataProductIdentifier %d" %
(dataproduct.__class__.__name__, dataproduct.dataProductIdentifier))

print("Total URI's found %d" % len(uris))

if do_stage :
    stager = LtaStager()
    stager.stage_uris(uris)
```

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