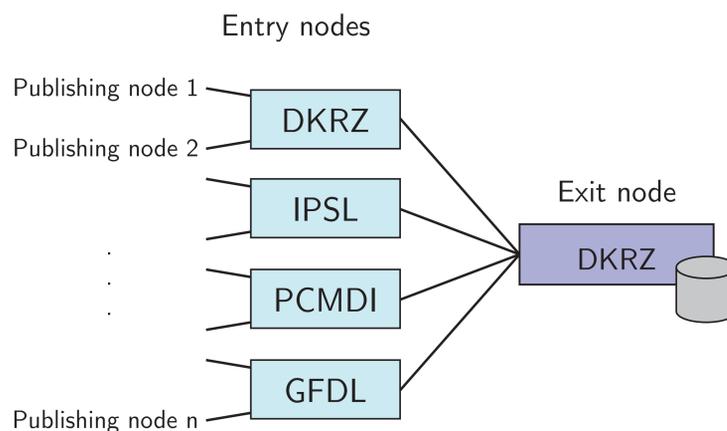


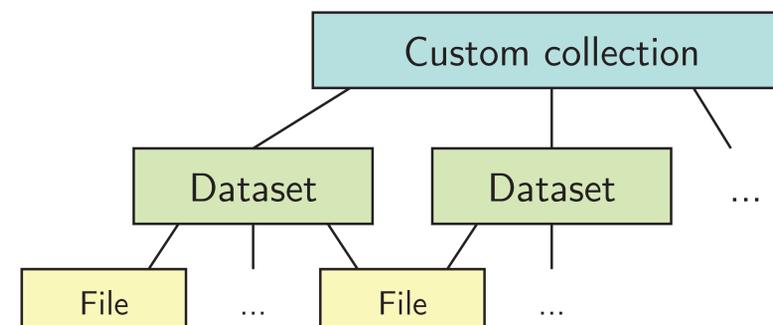
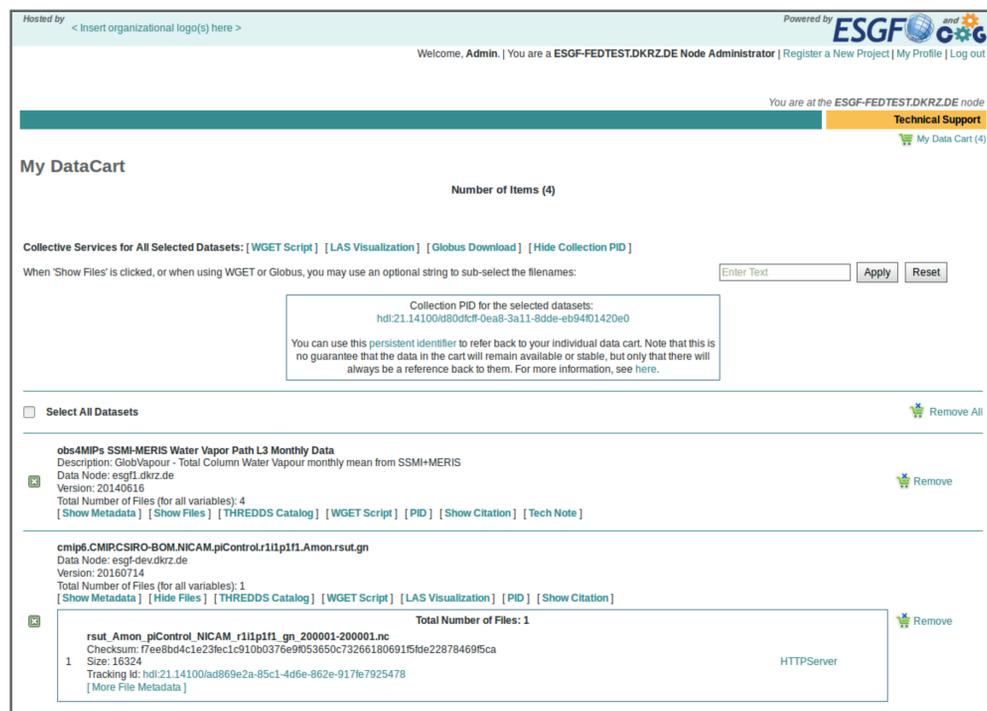
Every data provider for CMIP6 will issue Handle generation requests for CMIP6 files and datasets. These are submitted to a distributed queueing system with currently 3 entry nodes and 1 exit node that also hosts the Handle servers.

The success of this setup depends on adequate operational organization:

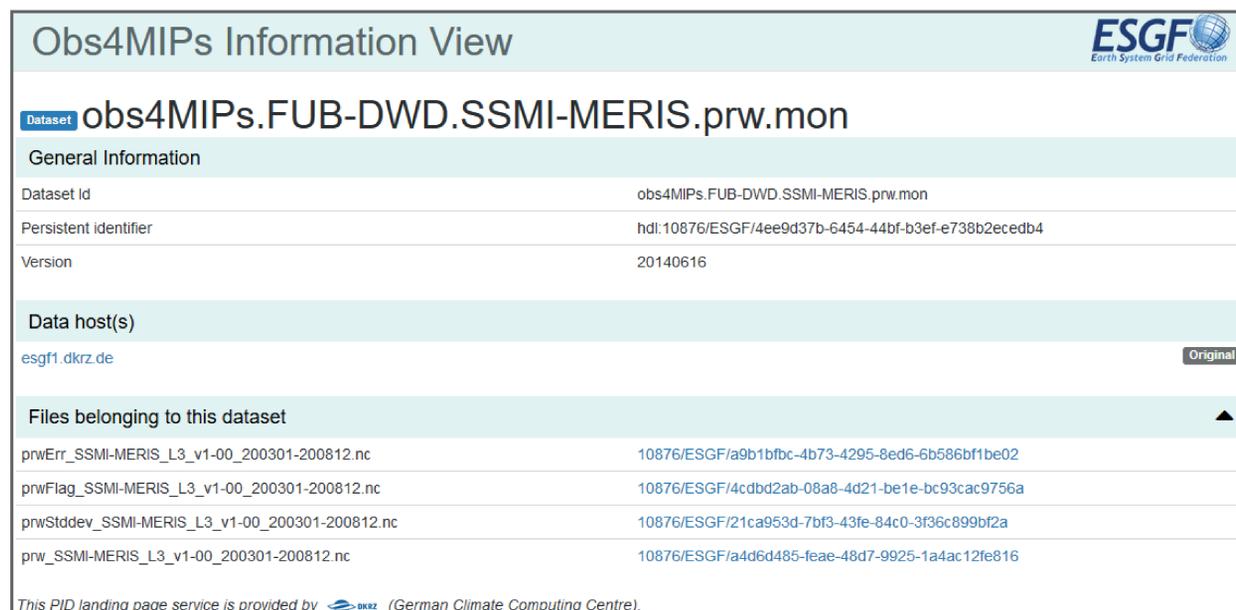
1. Proper use of the ESGF publisher to ensure correct versioning. No unmonitored exchange of files.
2. Load/availability monitoring of entry and exit nodes and adjustment as required over the course of CMIP6. SLAs are not required at this point due to redundancies already built in.
3. Operational oversight by CDNOT, distribution of access codes and enforcement of these policies.



ESGF CMIP6 PID services assign PIDs to files and datasets, carrying additional metadata. Users can create custom collections, based on data carts. Future implementation options include to assign more collection hierarchy levels, particularly to support replication.

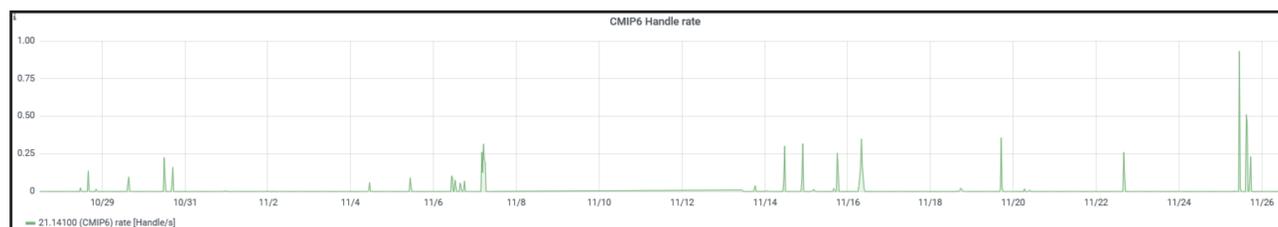



The screenshot shows the 'My DataCart' interface. It displays a list of datasets with details such as 'obs4MIPs SSMI-MERIS Water Vapor Path L3 Monthly Data' and 'cmip6.CMIPCSIRO-BOM.NICAM.piControl.r11p1f1.Amon.rsut.gn'. Each dataset entry includes its description, data node, version, and total number of files. There are also buttons for 'Show Metadata', 'Show Files', and 'Remove'.



The screenshot shows the 'Obs4MIPs Information View' for the dataset 'obs4MIPs.FUB-DWD.SSMI-MERIS.prw.mon'. It provides general information including Dataset Id, Persistent identifier, and Version. It also lists the data host(s) and a table of files belonging to this dataset with their corresponding PIDs.

File Name	PID
prwErr_SSMI-MERIS_L3_v1-00_200301-200812.nc	10876/ESGF/a9b1bffc-4b73-4295-8ed6-6b586bf1be02
prwFlag_SSMI-MERIS_L3_v1-00_200301-200812.nc	10876/ESGF/4c9bd2ab-08a8-4d21-be1e-bc93cac9756a
prwStddev_SSMI-MERIS_L3_v1-00_200301-200812.nc	10876/ESGF/21ca953d-7bf3-43fe-84c0-3f36c899bf2a
prw_SSMI-MERIS_L3_v1-00_200301-200812.nc	10876/ESGF/a4d6d485-feae-48d7-9925-1a4ac12fe816



Current maximum activity April 28: 150 H/s, none on hold

In 2018, monitoring was put in place for availability of queues and federation links, but also to measure the activity using Grafana. The Handle rate (H/s) is measured specifically. No bottlenecks have been encountered yet.

The total number of CMIP6 file and dataset Handles is at 100k now, increasing steadily. Very recently, GFDL joined the RabbitMQ federation, pending further testing. This enables better fallback options if an entry node is offline for any reason.

The setup of the PID services is designed to ensure no PIDs are lost, i.e., no files get published for CMIP6 whose PIDs remain unregistered. This has worked well so far, with less than 0.5% of PIDs missing (few hundred PIDs out of 100k).