Paris Observatory (OPAR) Data Center

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Abstract This report summarizes the OPAR Data Center activities in 2019–2020. Included is information about functions, architecture, status, future plans, and staff members of the OPAR Data Center.

1 General Information

The Paris Observatory (OPAR) has provided a Data Center for the International VLBI Service for Geodesy and Astrometry (IVS) since 1999. The OPAR (together with CDDIS and BKG) is one of the three IVS Primary Data Centers. Their activities are done in close collaboration for collecting files (data and analysis files) and making them available to the community as soon as they are submitted. The three Data Centers have a common protocol, and each of them:

- has the same directory structure (with the same control file),
- has the same script,
- is able to receive all IVS files (auxiliary, database, products, documents),
- mirrors the other ones every three hours, and
- gives free FTP access to the files.

This protocol gives the IVS community a transparent access to a Data Center through the same directories and continued access to files in case of a Data Center breakdown. The mirroring between OPAR and CDDIS is made with the new secured LFTP SSL since October 2020. The OPAR mirroring script will be replaced by the python scripts provided by IVS and CDDIS after being fully tested and configured by BKG.

The OPAR Data Center is located at Paris Observatory and is operated, since October 2020, on a PC Server with a Debian 10 Linux operating system. To make all IVS products available on-line, the disk storage capacity was significantly increased with a 500 GB disk. The OPAR server is accessible 24 hours per day, seven days per week through an Internet connection with a 2 Mbps rate. Users can get the IVS products by using the new secured FTP protocol (login: anonymous, password: your email). Access to this server is free for users.

To obtain information about the OPAR Data Center please contact: ivs.opa@obspm.fr.

2 Submission of Data and Product Files

To be able to put a file onto the Data Center, Operation and Analysis Centers have to be registered by the IVS Coordinating Center. The file names have to conform to the name conventions. A script checks the file and puts it into the right directory. The upload protocol to submit files to the ivsincoming directory of ivsopar assumes that cURL is set up on the client side. For Windows users, there exist dedicated cURL versions for Windows. You can, e.g., search for a version compatible with your version of Windows at `https://curl.haxx.se/download.html`.

The submission protocol in use since 2017 is as follows. The user is provided by us with a script; say it is named submitopar. To make the script active, the user

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has to replace the relevant two lines by the login and password that will be sent by us in a separate email.

For UNIX-type system users, the following command submits the files `opa2017a.eops` and `opa2017a.eops.txt` to the Data Center (actually it pushes them to ivsincoming):

```
submitopar -upload opa2017a.eops
                   opa2017a.eops.txt
```

To list the files that are currently present in the ivsincoming directory, type:

```
submitopar -display
```

For Windows users, the cURL command line is

```
curl.exe -k -u LOGIN:PASSWD
  -F "fichier=@"FILENAME
  -F "mode=upload"
  https://ivsopar.obspm.fr/upload/
```

where LOGIN and PASSWD are the login and password that will be sent in a separate email, and FILENAME is the name of the file you want to upload. Note that there is *no space* between @ and the double quotes sign (") before FILENAME.

One can also submit files directly via a web browser at the address `https://ivsopar.obspm.fr/upload/`. The script undergoes permanent improvement and takes into account the IVS components' requests.

The structure of the IVS Data Center is:

- `RECENT\` used for the new mirroring method,
- `ivscontrol\` provides the control files needed by the Data Center (e.g., session code, station code, solution code),
- `ivsdocuments\` provides documents about IVS products,
- `ivsdata\` provides files related to the observations,
- `ivsdata\aux\` provides auxiliary files (e.g., schedule, master, log),
- `ivsdata\db\` contains observation files in database CALC format,
- `ivsdata\ngs\` contains observation files in NGS format,
- `ivsdata\sinex\` contains observation files in SINEX format,
- `ivsproducts\` provides results from Analysis Centers,
- `ivsproducts\eopi\` provides Earth Orientation Parameter results from Intensive sessions,
- `ivsproducts\eops\` provides Earth Orientation Parameter results from 24-hour sessions,
- `ivsproducts\crf\` provides Celestial Reference Frame results,
- `ivsproducts\trf\` provides Terrestrial Reference Frame results,
- `ivsproducts\daily_sinex\` gives solutions in SINEX format of Earth orientation parameters and site positions, mainly designed for combination,
- `ivsproducts\int_sinex\` gives daily Intensive solutions in SINEX format, mainly designed for combination, and
- `ivsproducts\trop\` contains tropospheric time series (starting July 2003).