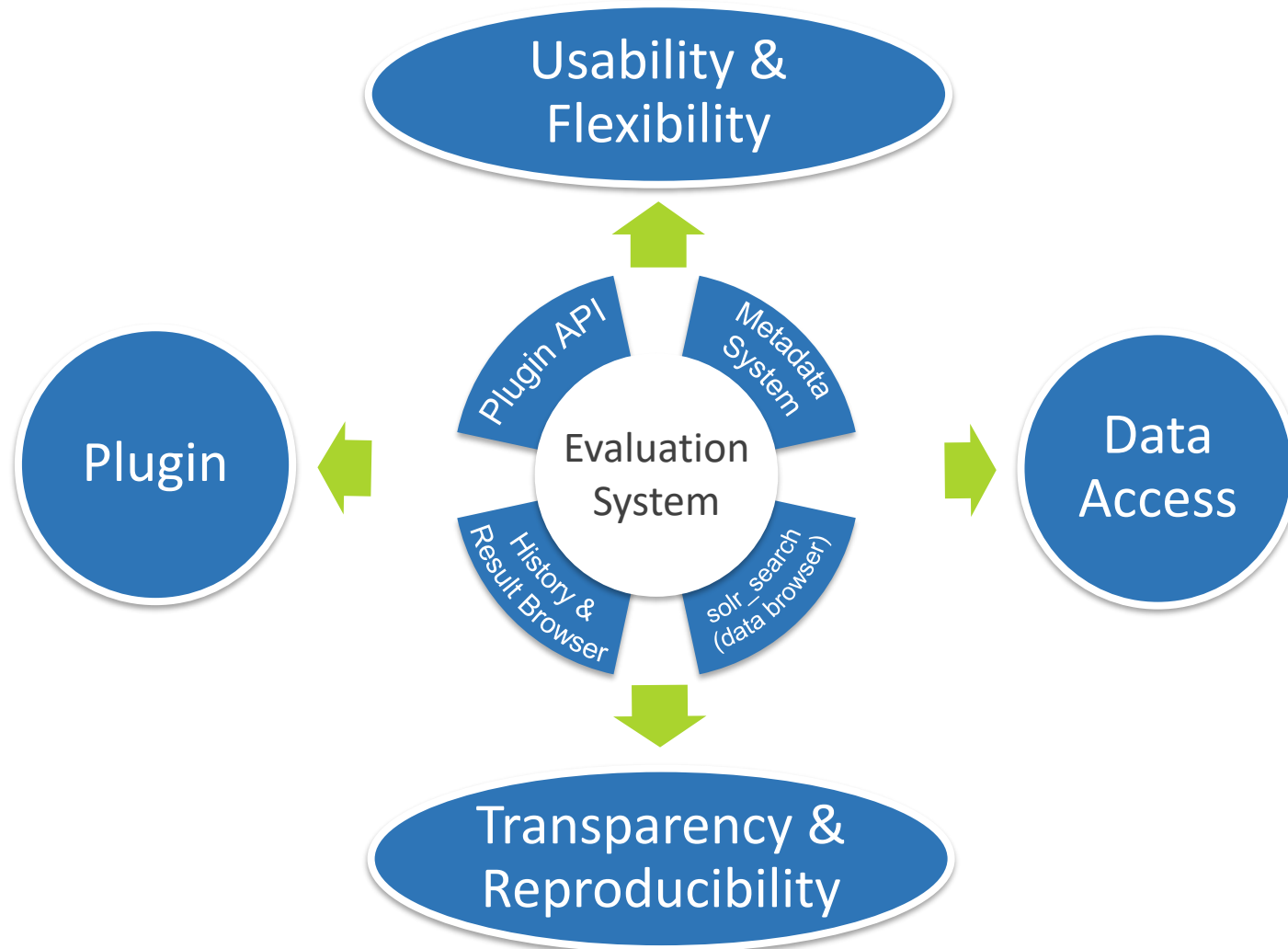


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New Features and Development

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M. Ramadoss, S. Illing, O. Kunst, T. Schartner, J.
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Rust, P. Sommer, U. Cubasch, U. Ulbrich, H.
Thiemann, T. Ludwig

HPC running at the German Climate Computing Centre with access to **ESGF**
more than **12 million** datafiles



Usability &
Flexibility

HPC running at the German Climate Computing Centre with access to ESGF

The image shows a terminal window on the left and a web browser on the right. The terminal window displays the prompt `[k204229@miklip3 ~]` and a cursor. The web browser shows the **CLIMX TREME** History - Evaluation System interface. The header includes the **CLIMX TREME** logo with the tagline "Climate Change and Extreme Events" and the **FONA** logo with the tagline "Research for sustainability". A sidebar on the left lists navigation options: Plugins, History, Result-Browser, Data-Browser, Wiki, Chat, Help, and a logout link for user k204229. The main content area is titled "History" and features a search bar, a "Show 10 entries" dropdown, and a table with columns: Id, User, Plugin, Caption, Timestamp, Status, and Info. A "Results" button is located at the bottom right of the table.

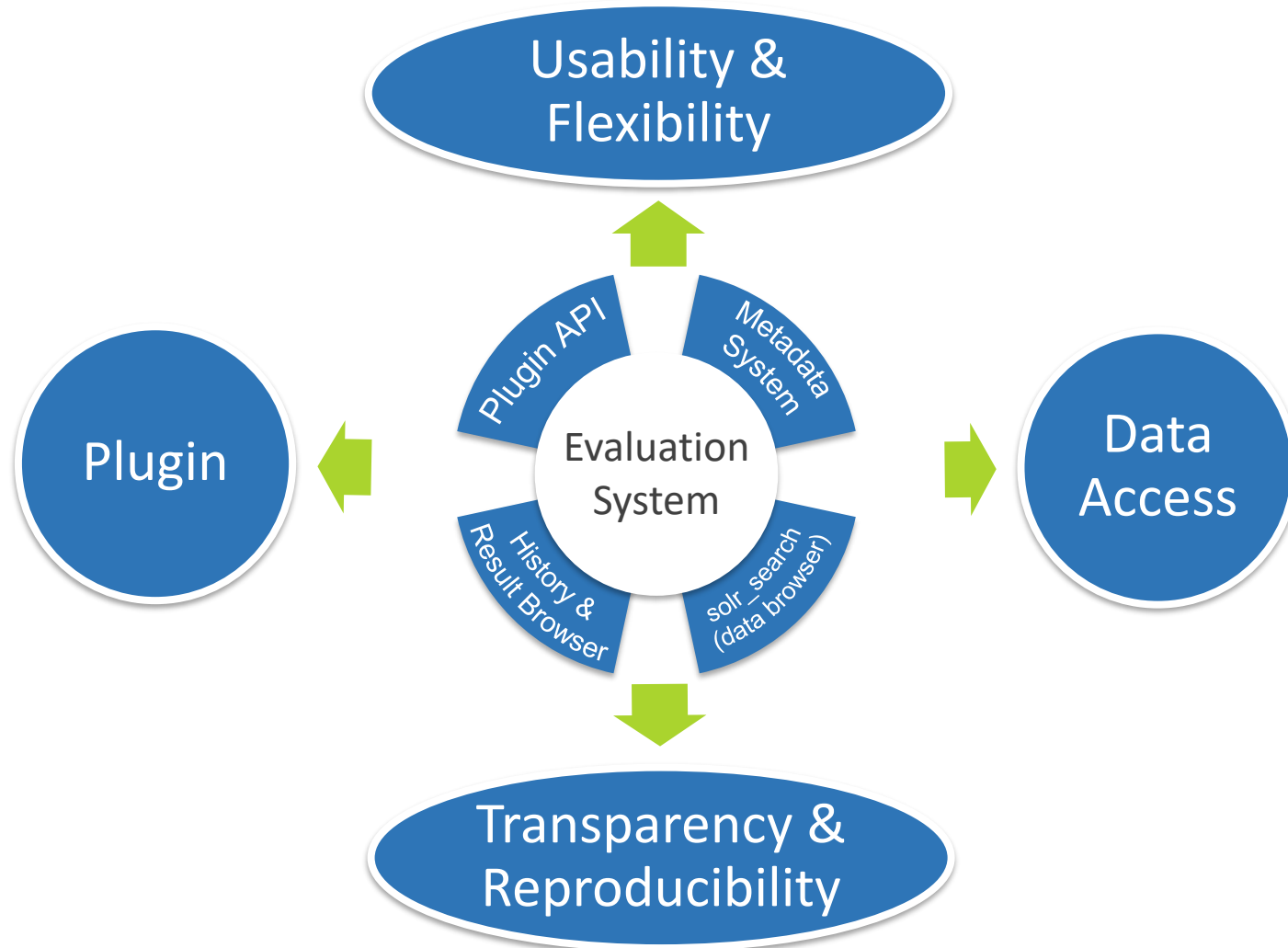
Usability &
Flexibility

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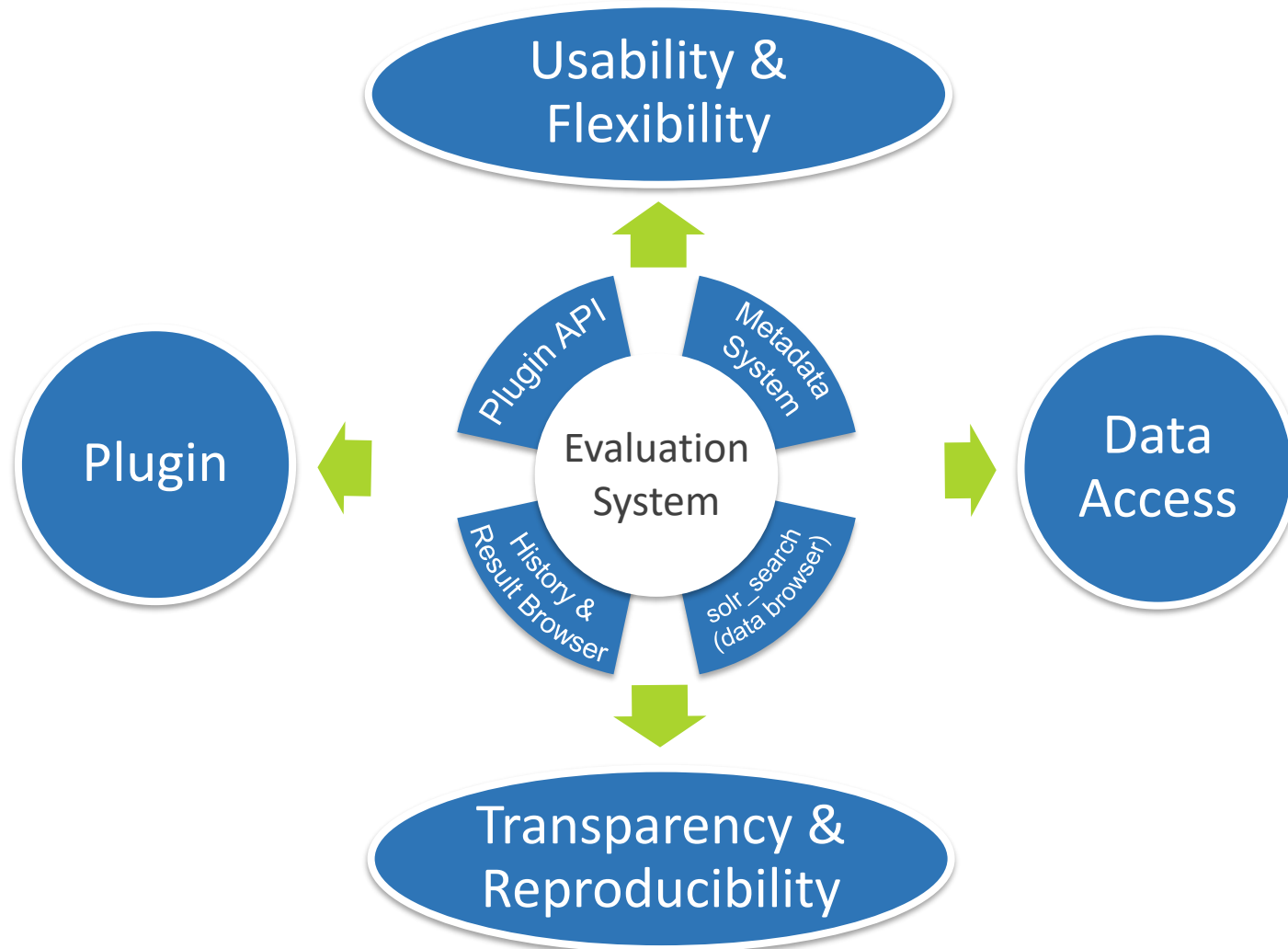
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Freva uses **CMOR** & access to several ESGF standards



CLIMX
TREME

Climate Change and Extreme Events

FONA

Research for sustainability

Home

+

Σ

Plugins

History

Result-Browser

Data-Browser

Wiki

Chat

Help

Data-Browser

project (27)

b305022 [200]

b324049 [21360]

b364064 [1441]

cmip5 [2687130]

flexfordec [3799]

prototype [432687]

vady [8659]

b309096 [147]

b324061 [10186]

b380072 [198]

cordex [86671]

m300029 [126]

reanalysis [55178]

vady-dlr [2588]

domain (7)

realm (9)

data_type (10)

modulec_project (5)

institute (51)

cmor_table (24)

Freva uses **CMOR** & access to several ESGF standards

SOLR Apache:

- Indexes the different standards



CLIMX
TREME
Climate Change and Extreme Events

FONA
Research for sustainability

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Plugins

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project (27)

b305022 [200]	b309096 [147]
b324040 [21360]	b324061 [10186]
b364064 [1441]	b380072 [198]
cmip5 [2687130]	cordex [86671]
flexfordex [8799]	m888829 [126]
prototype [432687]	reanalysis [55178]
vady [8659]	vady-dlr [2588]

domain (7)

realm (9)

data_type (10)

modulec_project (5)

institute (51)

cmor_table (24)

Freva uses **CMOR** & access to several ESGF standards

SOLR Apache:

- Indexes the different standards



- Hosts a **search tool** via CMOR facets

CLIMX TREME

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Plugins

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product (92)

variable (684)

Temperature

cttiscpp [1]

hfevapds [1830]

ta [165841]

ta500 [3284]

ta850 [3284]

ta975 [1124]

tasanom [1581]

tasmin [35120]

thetao [35848]

tntc [1882]

tos [42120]

tosstderr [2]

tsl [12340]

tso [5977]

edt [1676]

hfrunoffds [2028]

ta300 [1416]

ta700 [3734]

ta925 [180]

tas [Near-Surface Air Temperature]

tasmax [35141]

tasstderr [2]

tnt [1892]

tntr [1912]

tosnobs [1]

tsadjust [312]

tsn [1240]

time_frequency (10)

Freva uses **CMOR** & access to several ESGF standards

SOLR Apache:

- Indexes the different standards



- Hosts a **search tool** via CMOR facets
- Supports **developers** processing this data

The screenshot shows the CLIMX TREME FONA Data-Browser interface. At the top, there are logos for CLIMX TREME (Climate Change and Extreme Events) and FONA (Research for sustainability). Below the logos is a navigation bar with links: Plugins, History, Result-Browser, Data-Browser, Wiki, Chat, and Help. The main section is titled "Data-Browser". It contains several facets: "Decadals" with a search bar containing "? decadaals" and a description "Specify the experiments you want to use. I.e. 1960,1965,1970,...,1995. Or you can write 1"; "Variable" with a dropdown menu "Select a variable" showing a list of variables including "abs550aer" (highlighted), "ageice", "agessc", "albiscpp", "arag", and "areacella"; "Institute1" with a dropdown menu "Select a institute" showing a list of institutes including "tosstderr [2]", "tsl [12340]", "tso [5977]", "tsadjust [312]", and "tsn [1240]"; and "time_frequency (10)".

Freva uses **CMOR** & access
to several ESGF standards

```
ckadow@kiowa: ~$ freva --databrowser
```

processing this data

tsi [12040]

tsi [1240]

tso [5977]

time_frequency (10)

Freva uses **CMOR** & access
to several ESGF standards

```
ckadow@kiowa: ~  
ckadow@kiowa:~$ freva --databrowser
```

processing this data

tsi [12040]

tsi [1240]

tso [5977]

time_frequency (10)

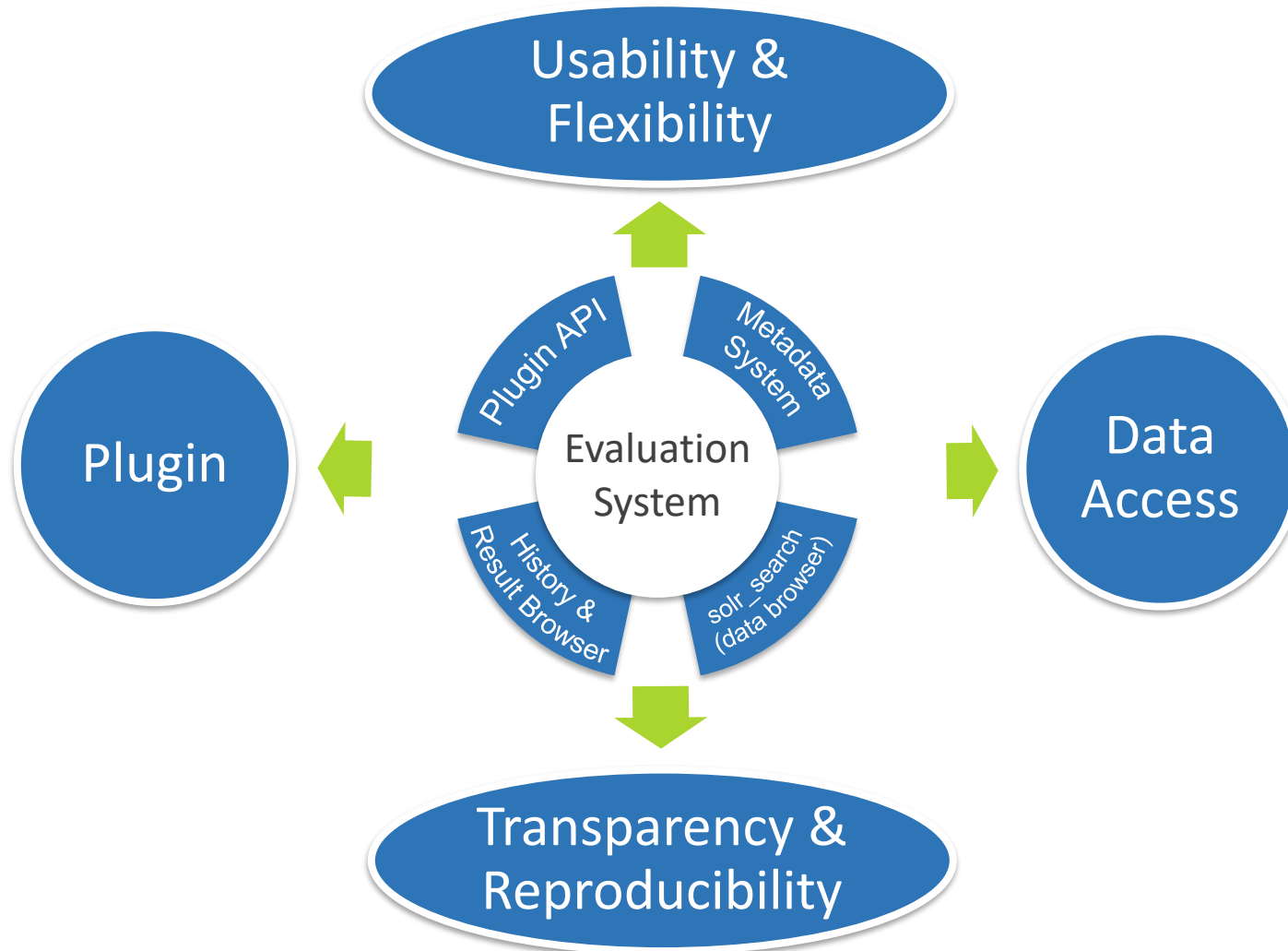


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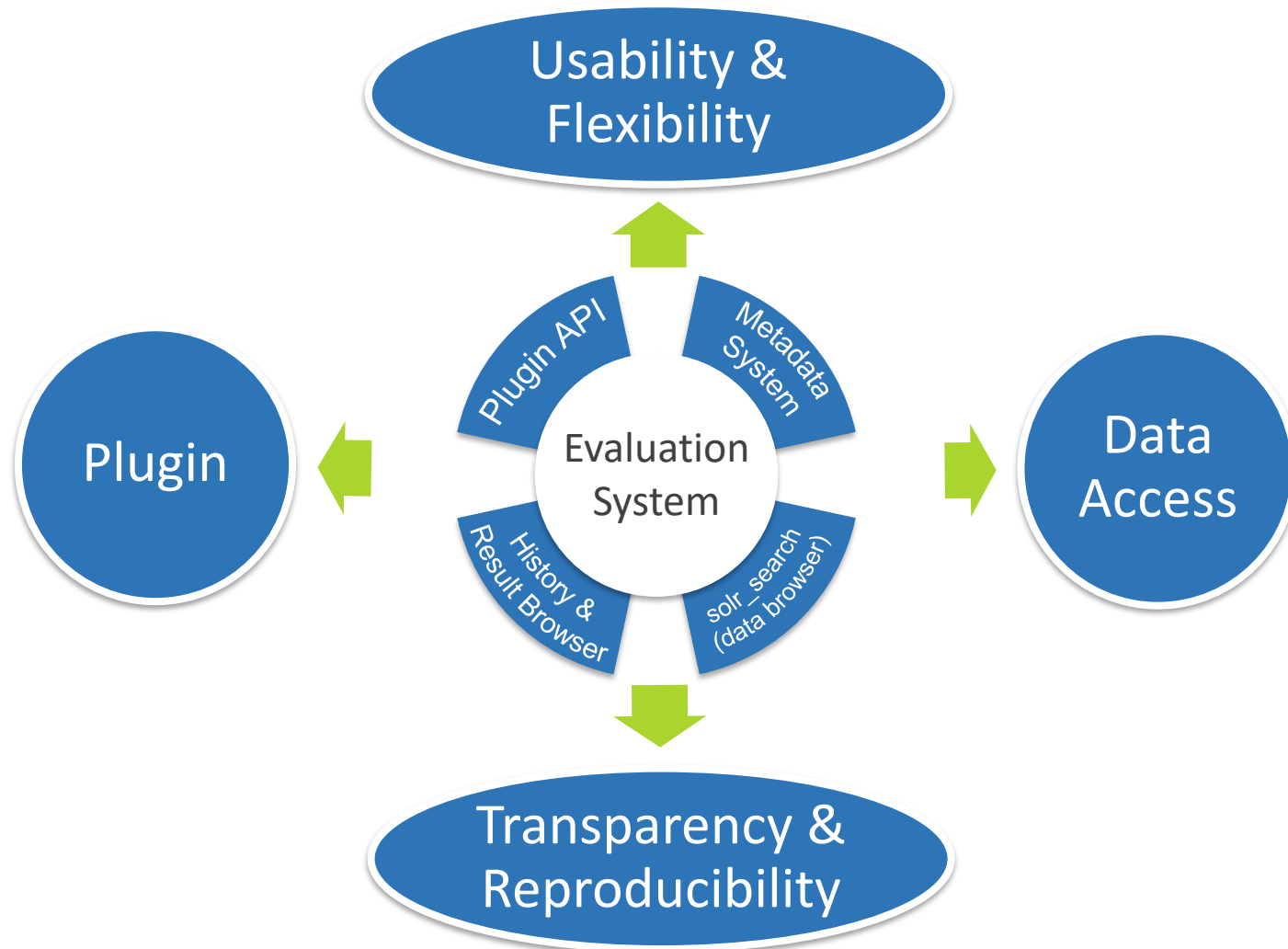
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Thiemann, T. Ludwig

Transparency & Reproducibility

MySQL Database:

- Every analysis is saved and can be rerun
- It can be searched similarly to datasets
- It can also be shared among scientists

Resultbrowser

plugin (72)	Results [2727]
wtrack	Timestamp ▾
wtrack [2727]	
project (122)	13.01.2021
product (1329)	13.01.2021
	11.01.2021
	11.01.2021
institute (93)	07.01.2021

[Plugins](#)
[History](#)
[Result-Browser](#)
[Data-Browser](#)
[Wiki](#)
[Chat](#)
[Help](#)

MOVIEPLOTTER

Analysis from 29.03.21 19:59:33 done by k204229

[Edit configuration](#)
[Share Results](#)
[Set Caption](#)
[Unfollow](#)
[Contact developer](#)

Configuration

Program's output

Notes (0)

Results

1990-1995) (... b324061

ACK) b324061

Send email to ClimXtreme users

Select user to mail to

etor

Lucio Eceiza, Etor (k204229)

Look at this awesome result!

☒ Send me a copy
 ☒ One mail to all
 [Send](#)

Transparency & Reproducibility

GIT Versioning:

- Every tool and system version is saved with the run configuration!

MOVIEPLOTTER

Analysis from 29.03.21 19:59:33 done by k204229

[Edit configuration](#)[Share Results](#)[Set Caption](#)[Unfollow](#)[Contact developer](#)

Configuration

Tool configuration

Additional Information

Analyze command: `fрева --plugin movieplotter range_list='auto' collage='False' earthball='False' cdo_options='-seldate,1997-1-1,1998-12-31' ntasks='35' loops='0' animate='True' outputdir='/work/bmx825/miklip-work/k204229/evaluation_system/output/movieplotter/20200728_070647' secperpic='1.0' title='HadSST. El Nino 1997-1998' input='u/work/bmx825/data4miklip/projectdata/user-b381187/observations/MOHC-CRU/MOHC-CRU/HadSST3/mon/ocean/tos/r1i1p1/tos_Amon_MOHC-CRU_HadSST3_r1i1p1_185001-201912.nc' colortable='ncl_default' reverse='False' level='0' work='/work/bmx825/miklip-work/k204229/evaluation_system/cache/movieplotter' fillmode='AreaFill' seldate='None' cacheclear='True' resolution='800'`

Tool repository: `git@gitlab.dkrz.de:tools4xces/movieplotter.git`

Tool internal version: `dc49db929913202dccc0c0a215ce76db51c9545`

System repository: `git@gitlab.met.fu-berlin.de:freva/evaluation_system.git`

System internal version: `805fd71977310b232c2c74b97fc9dd193cacbb60`

[Additional information](#)[Copy analyze command](#)

Featured Recommendations



Inspired by your browsing history

Transparency & Reproducibility

Saving CPU time, I/O and disk space!

Output plots

/usr/test_scratch/b324057/evaluation_system/plots/murcss

Output directory of produced plots

Metrics

ensemble_spread

Here you can specify which metric
"ensemble_spread": CRPSS, ESS

Output type

basic

Basic only the basic plots like cor
basic and additional plots will be p

Decadals

? decadals

Specify the experiments you want

Variable

Select a variable

The name of the variable you want

Project1

Select a project

BASELINE0, BASELINE1, CMIP5 or PROJECTDATA

Product1

Enter password

To schedule the analysis you have to re-enter your password

.....

This analysis has already be done by other users. Here you can view their results.

Result #9010 by b324057

Result #9005 by b324057

Result #9002 by b324057

Result #3988 by b324057

Result #3978 by b324057

Cancel

Submit analysis

Similar results:

murcss result #9010 by b324057

murcss result #9005 by b324057

murcss result #9002 by b324057

murcss result #3988 by b324057

Transparency &
Reproducibility

The Admin Panel

Django administration Welcome, **Christopher**. [View site](#) / [Documentation](#) / [Log](#)

[Home](#) > [History](#) > [Historys](#)

Select history to change

[Add history](#)

Search

[2013](#) [2014](#) [2015](#) [2016](#)

Action: 0 of 100 selected

☐	ID	Timestamp	Tool	Uid o	Link to model	Status name	Started from website
☐	104387	May 6, 2016, 2:16 p.m.	problems	b324	Show Results	broken	✓
☐	104386	May 6, 2016, 1:22 p.m.	relgrid	b324	Show Results	finished	✓
☐	104385	May 6, 2016, 1:14 p.m.	relgrid	b324	Show Results	finished	✓
☐	104384	May 6, 2016, 1:08 p.m.	relgrid	b324	Show Results	finished	✓
☐	104383	May 6, 2016, 1:06 p.m.	relgrid	b324	Show Results	broken	✓



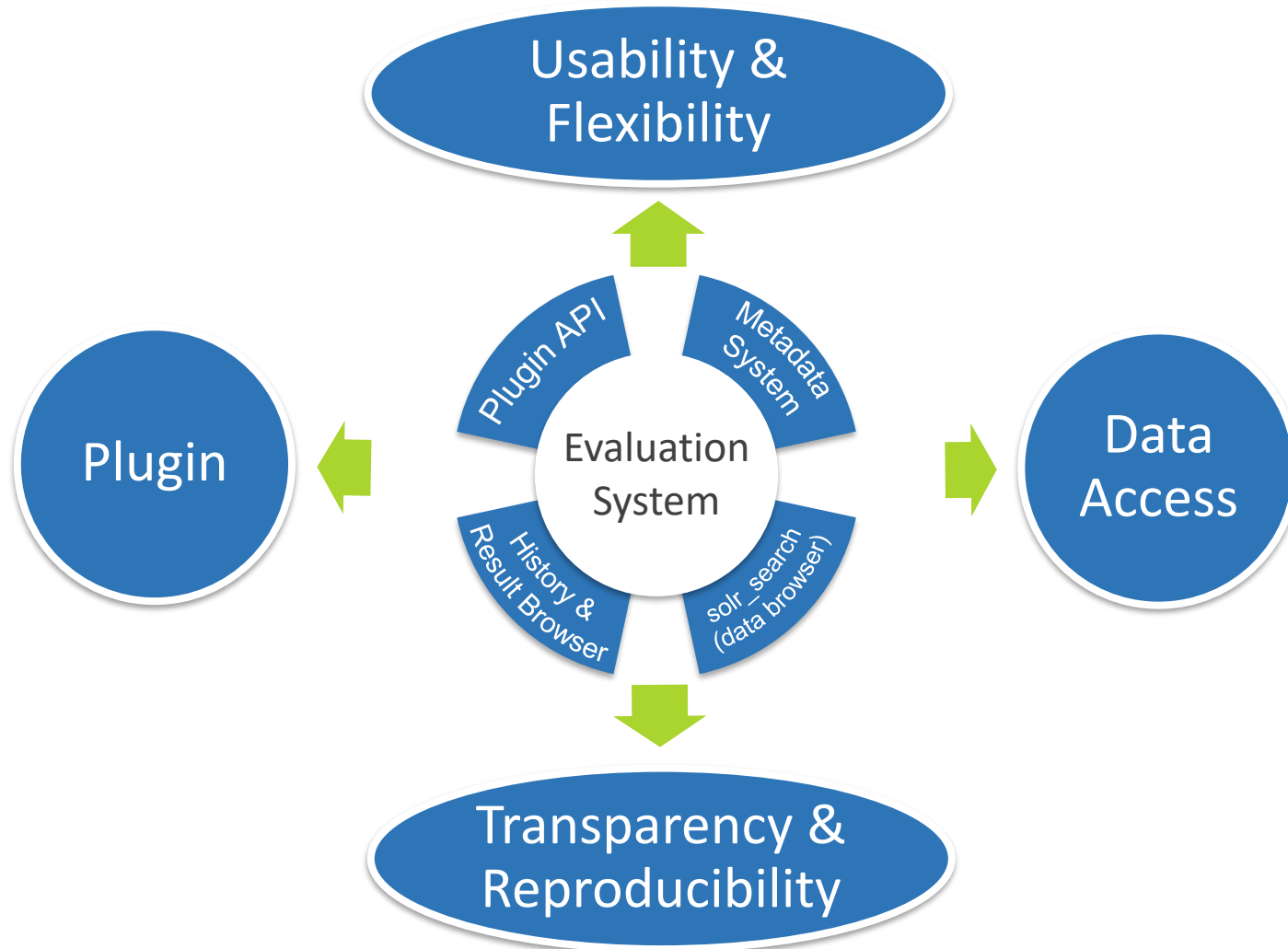
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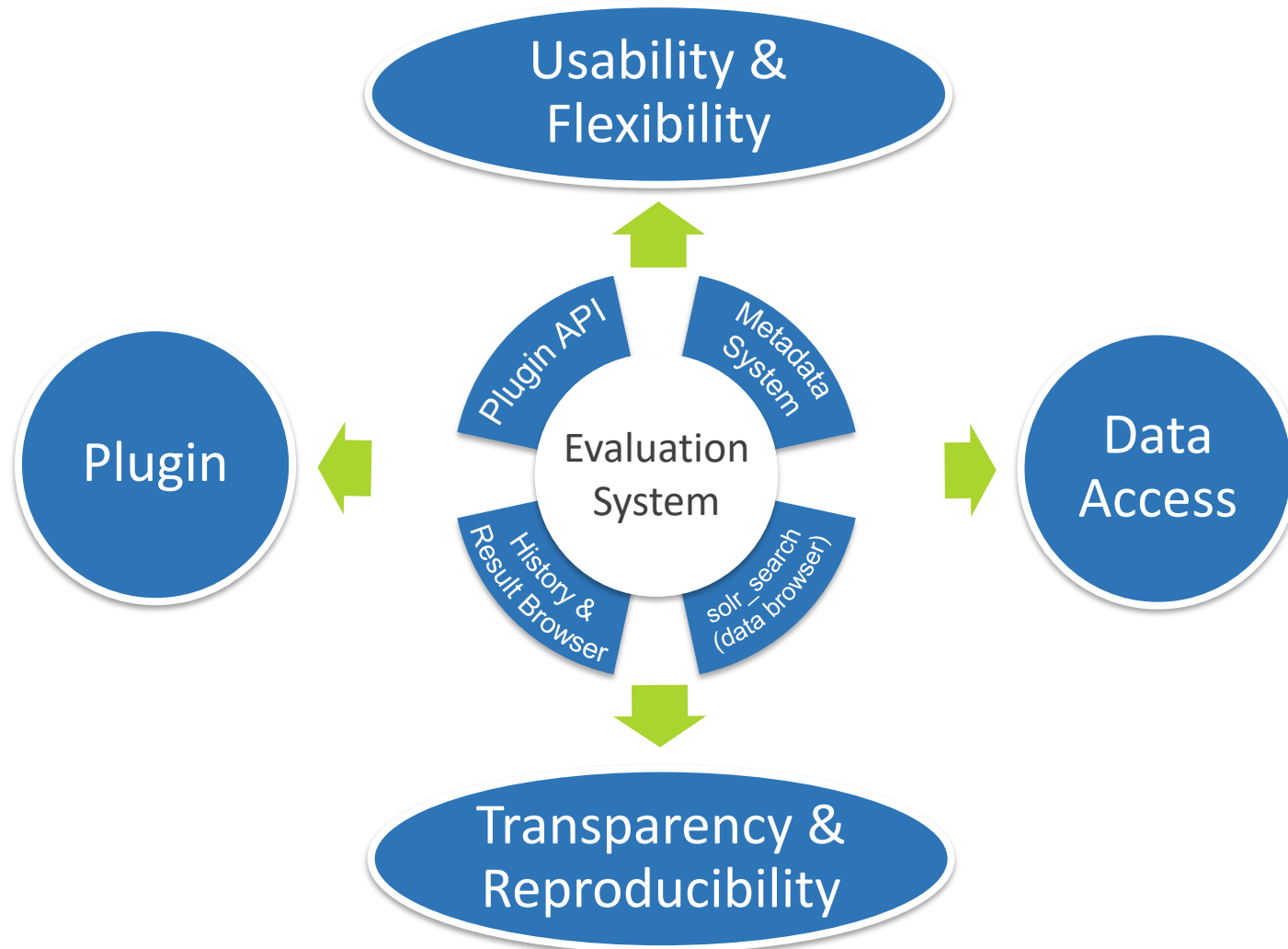
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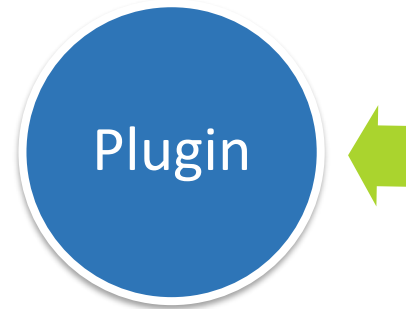
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Some example tools are set up to show:

- to Developers: **how2plugin** via different scripts
- to Users: **how2use** the evaluation system



Some example tools are set up to show:

- to Developers: **how2plugin** via different scripts
- to Users: **how2use** the evaluation system

```
freva --plugin MoviePlotter input=/path/2/tas_Amon_MPI-ESM-LR_decadal2000_r1i1p1_2003.nc outputdir=./
```

```
from evaluation_system.api import plugin
```

```
class MoviePlotter(plugin.PluginAbstract):  
    __short_description__ = "Plots 2D lon/lat movies in GIF format"  
    __version__ = (0,0,1)  
    __config_metadict__ = plugin.metadict(compact_creation=True,  
        input=(None, dict(type=str, mandatory=True, help=' File to be plotted')),  
        outputdir=(None, dict(type=str, mandatory=True, help='default output dir')))  
  
    def runTool(self, config_dict=None):  
        input = config_dict['input']  
        outputdir=config_dict['outputdir']  
  
    result= self.call('%s/movie_plotter.sh %s %s' % (self.getClassBaseDir(),input,outputdir))
```

```
./movie_plotter.sh /path/2/INPUT /path/2/OUTPUT
```

Plugin API (Wrapper): in python

Plugin

Main program: any language

Some example tools are set up to show:

- to Developers: **how2plugin** via different scripts
- to Users: **how2use** the evaluation system

```
frevra --plugin MoviePlotter input=/path/2/tas_Amon_MPI-ESM-LR_decadal2000_r1i1p1_2003.nc outputdir=.
```

```
from evaluation_system.api import plugin
```

MoviePlotter

```
class MoviePlotter(Plugin):
```

```
    __short_c
```

```
    __version
```

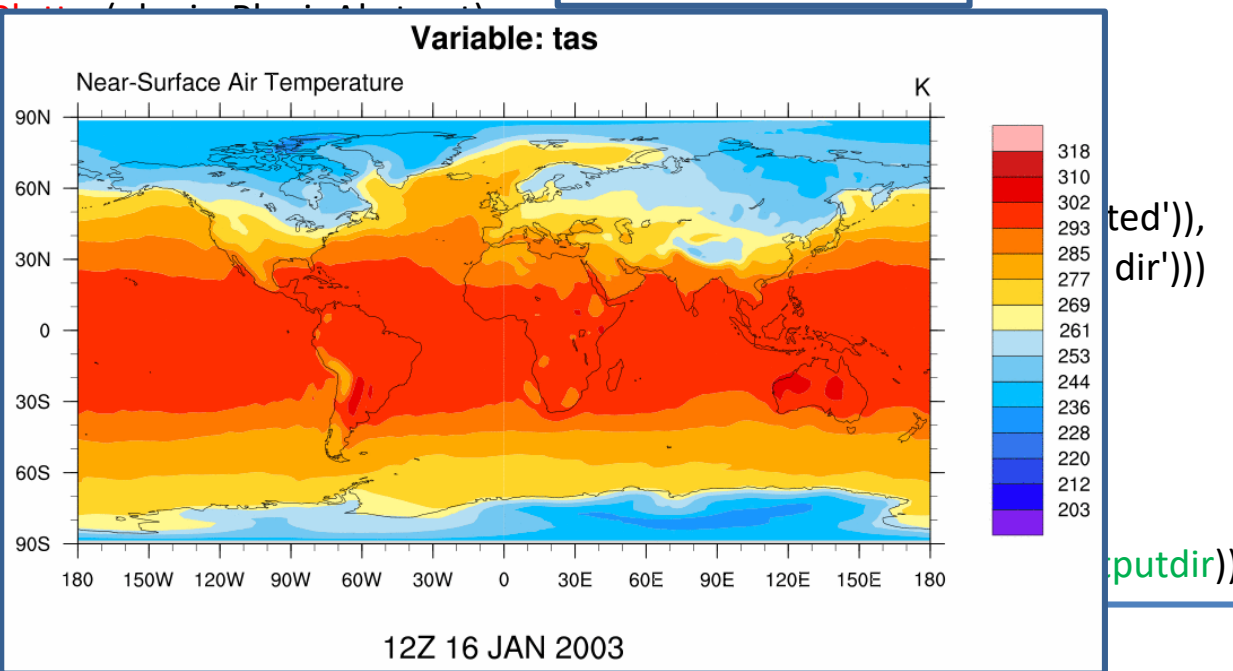
```
    __config
```

```
    output
```

```
def runTool(
```

```
result= self.c
```

NCL



Plugin

Some example tools are set up to show:

- to Developers: **how2plugin** via different scripts
- to Users: **how2use** the evaluation system

ADVANTAGES:

- No specific programming language requested
- No need to know all the code environments

```
frevra --plugin MoviePlotter input=/path/2/tas_Amon_MPI-ESM-LR_decadal2000_r1i1p1_2003.nc outputdir=.
```

```
from evaluation_system.api import plugin
```

```
class MoviePlotter
```

```
__short_c
```

```
__version
```

```
__config
```

```
output
```

```
def runTool(
```

```
result= self.c
```

NCL

C++

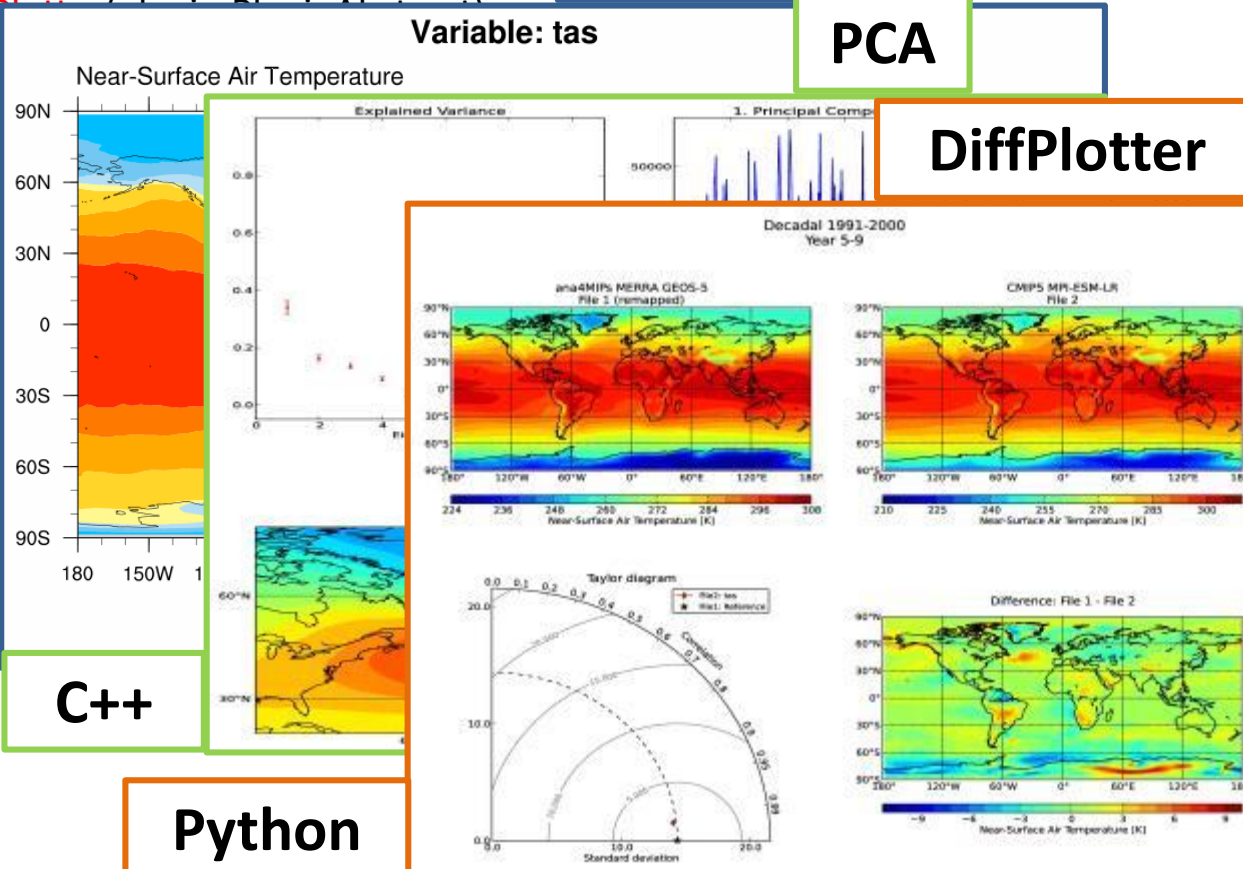
Python

MoviePlotter

PCA

DiffPlotter

Plugin



RELDIAG

Analysis from 21.10.14 21:12:23 done by [b324031](#)

[Edit configuration](#)
[Share Results](#)
[Set Caption](#)
[Unfollow](#)

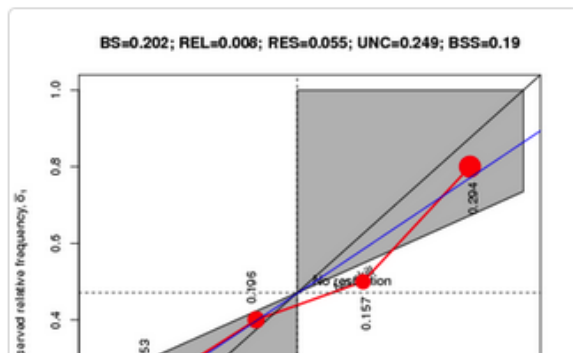
Configuration

Program's output

Notes (0)

Results

 /scratch/b324031/evaluation_system/plots/reldiag/20141020_113305

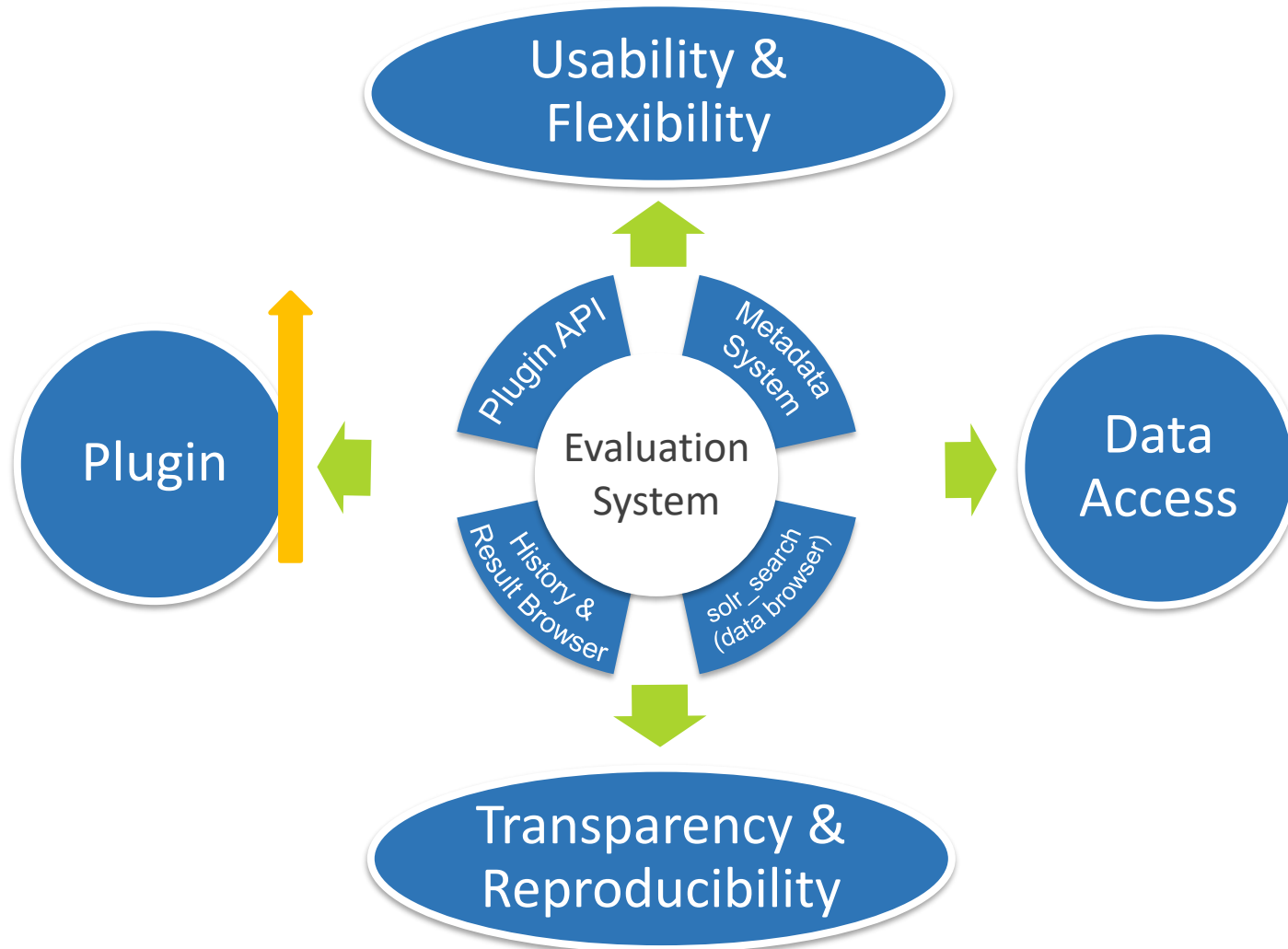


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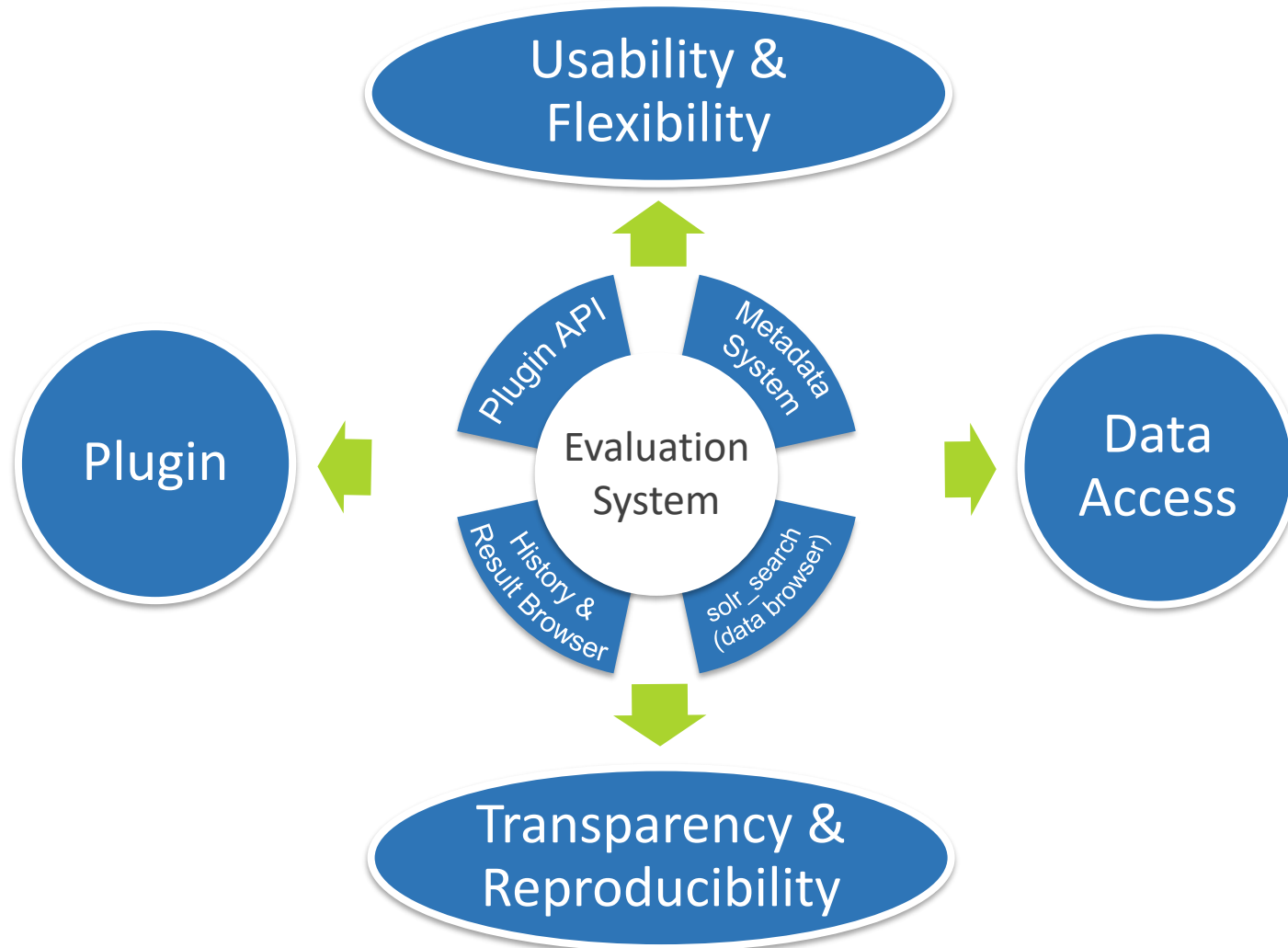
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Summary

Freva Evaluation System Framework

- ✓ Central Scientific Infrastructure
- ✓ Standardized data & analysis tools
- ✓ Usability & Flexibility
- ✓ Transparency & Reproducibility
- ✓ Big Data Analysis & HPC Resource Management

Application Potential

- Major Projects & Big Institutions

More Information (Webtour as ,guest‘)

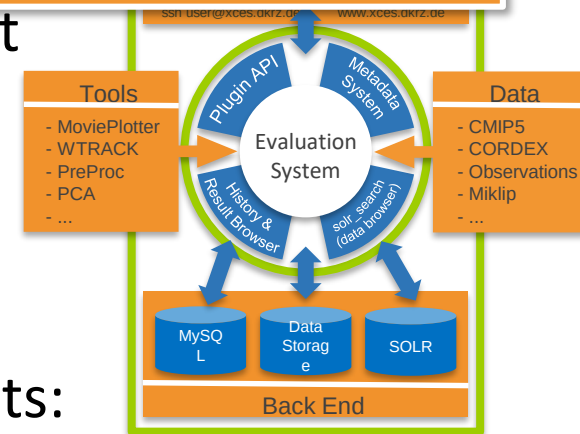
- FU-Berlin, and ClimXtreme and Regiklim projects:
freva.met.fu-berlin.de, www.xces.dkrz.de &
www-regiklim.dkrz.de

GitHub: <https://github.com/FREVA-CLINT/Freva>

coming soon!

New core update: py2.7 -> py3

GitLab: <https://gitlab.dkrz.de/freva>
(not public yet)



Front End

Shell access

```
$ module load xces
Clicktreme Evaluation System by Freva successfully loaded.
If you are using bash, try the auto complete feature for
freva and freva --database by hitting tab as usual.
for more help/information check: www.xces.dkrz.de

freva
Available commands:
--plugin      : Applies some analysis to the given data.
--history     : provides access to the configuration
               history.
--database    : Find data in the system
--crawl_my_data: Use this command to update your
```

ssh user@xces.dkrz.de

Web access



www.xces.dkrz.de

Tools

- MoviePlotter
- WTRACK
- PreProc
- PCA
- ...

Data

- CMIP5
- CORDEX
- Observations
- Miklip
- ...

Evaluation System

Plugin API

Metadata System

History & Result Browser

solr_search (data browser)

MySQL

Data Storage

SOLR

Back End

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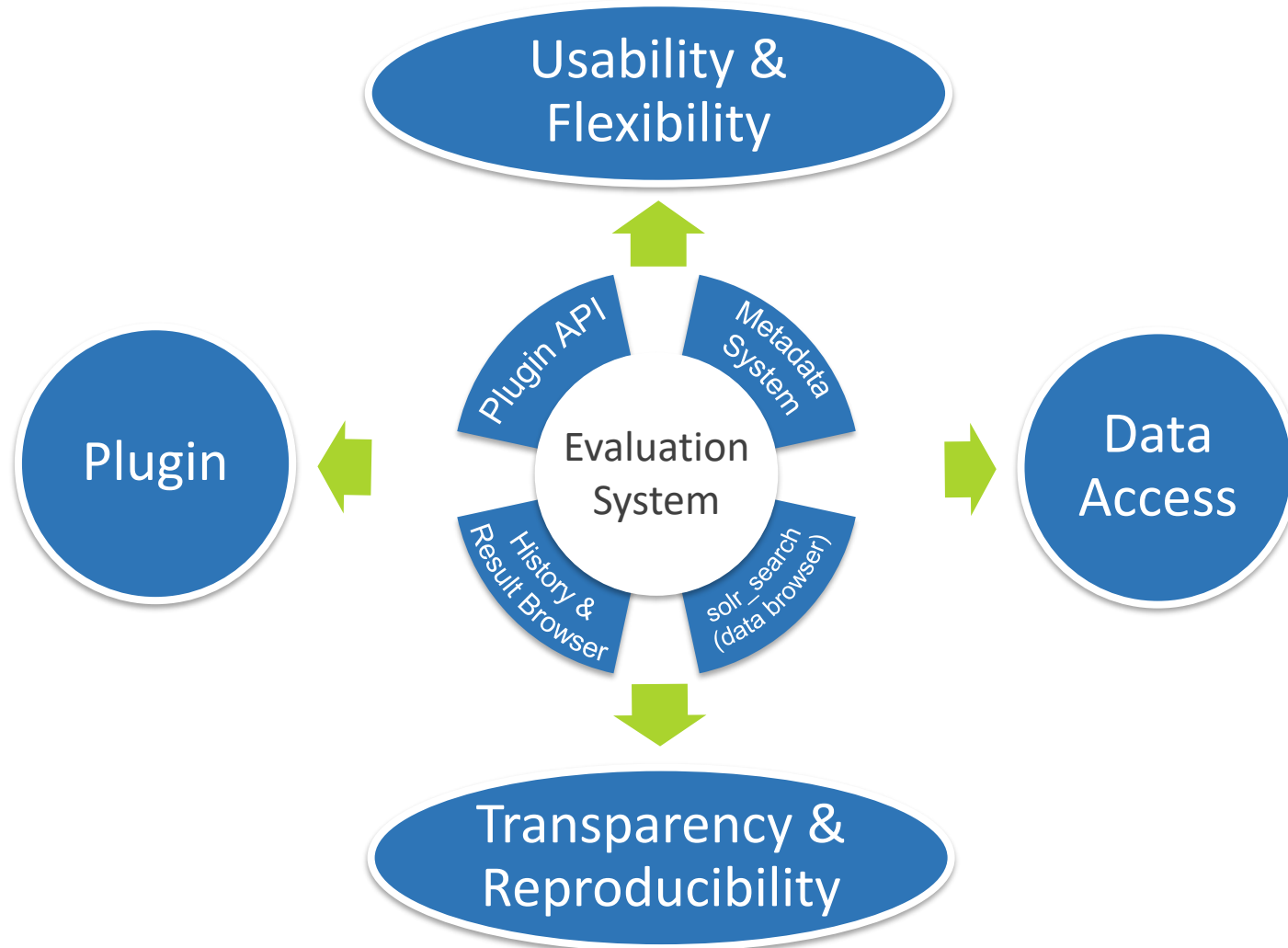
Berlin

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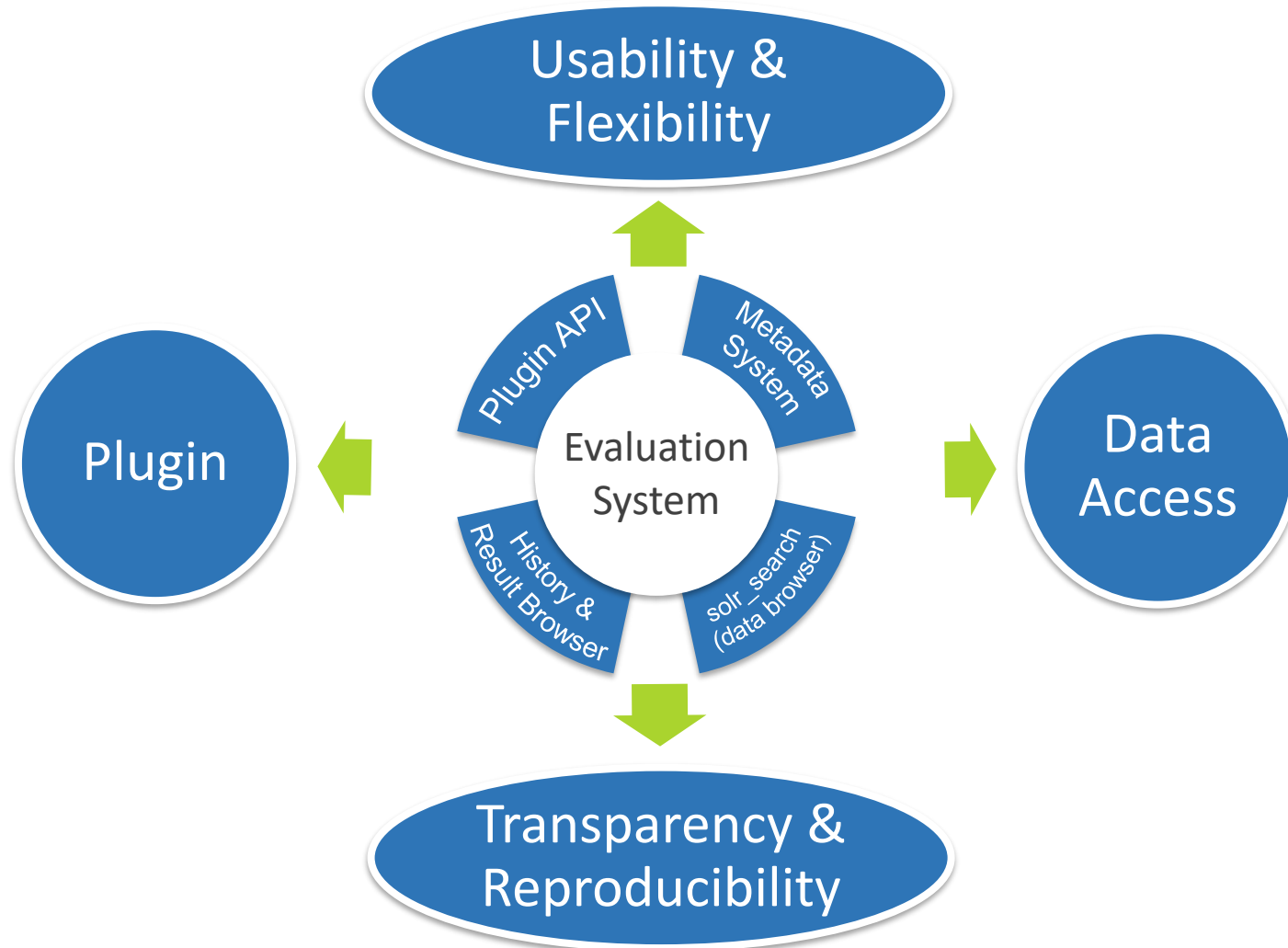
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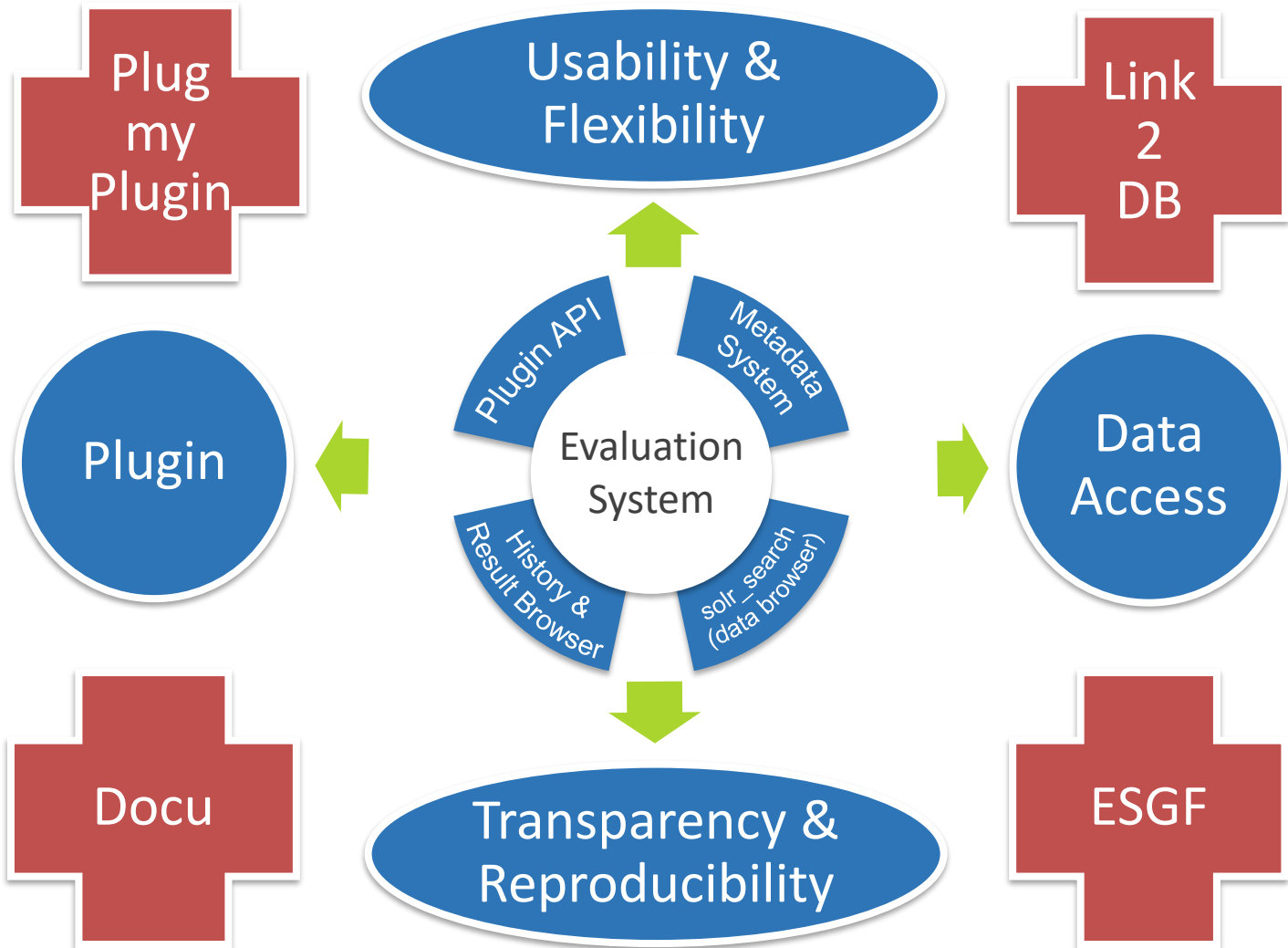
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If the output of a plugin is a post-processed variable, it can be automatically part of the data base

Developers get a function
from Freva for the plugin

```
if link2database:
self.linkmydata(os.path.join
(outputdir_org,'CMOR'))
```

Option in plugin:

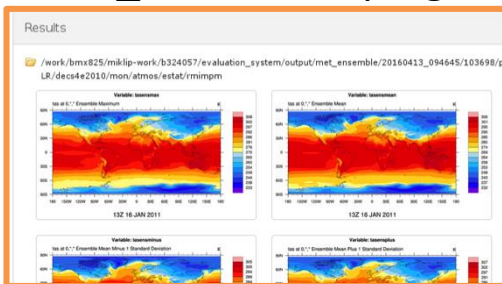
Link2database

☐ False

☒ True

Set "True" for crawl and ingest the output

Preview output of the
MET_ENSEMBLE plugin:



Link
2
DB

If the output of a plugin is a post-processed variable, it can be automatically part of the data base

Developers get a function from Freva for the plugin

```
if link2database:
self.linkmydata(os.path.join
(outputdir_org,'CMOR'))
```

Option in plugin:

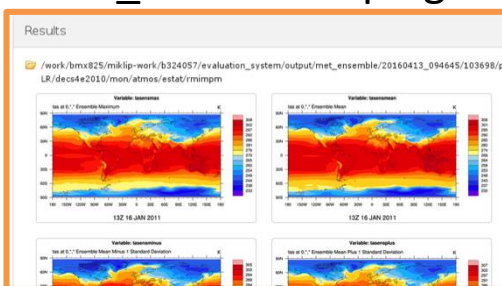
Link2database

☐ False

☒ True

Set "True" for crawl and ingest the output

Preview output of the MET_ENSEMBLE plugin:



Result of the plugin now is part of the users database

Plugins History Data-Browser Shell Help Contact

Data-Browser

[Clear all](#)

project : **user-b324057**

product : **met_ensemble.103698.baseline1.output**

institute : **mpi-m**

model : **mpi-esm-lr**

experiment : **decs4e2010**

time_frequency : **mon**

realm : **atmos**

variable (8)

ensemble : **rmimp**

Link
2
DB

If the output of a plugin is a post-processed variable, it can be automatically part of the data base

Developers get a function from Freva for the plugin

```
if link2database:
    self.linkmydata(os.path.join
(outputdir_org,'CMOR'))
```

Option in plugin:

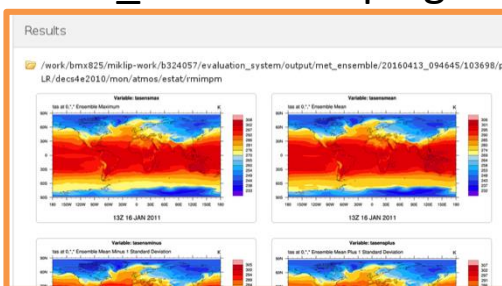
Link2database

☐ False

☒ True

Set "True" for crawl and ingest the output

Preview output of the MET_ENSEMBLE plugin:



Result of the plugin now is part of the users

database

Plugins History Data-Browser Shell Help Contact

Data-Browser

Clear all

project : user-b324057

product : met_ensemble.103698.baseline1.output

institute : mpi-m

model : mpi-esm-lr

experiment : decs4e2010

time_frequency : mon

realm : atmos

variable (8)

ensemble : rmimpm

... and can be chosen as input for next plugin

MET_series

Series Analysis from MET

Outputdir

/work/bmx825/miklip-work/b324031/evaluation_system/ou

The default output directory of the Evaluation System

Cachedir

/work/bmx825/miklip-work/b324031/evaluation_system/ca

Cachedir gets freva id

Cacheclear

☐ False

☒ True

Option switch to NOT clear the cache

Time frequency

mon

Choose time frequency, e.g. 6hr for 6 hourly

Observation variable

tasensmean

Choose one variable

Observation project

user-b324057

met_ensemble.103698.baseline1.output

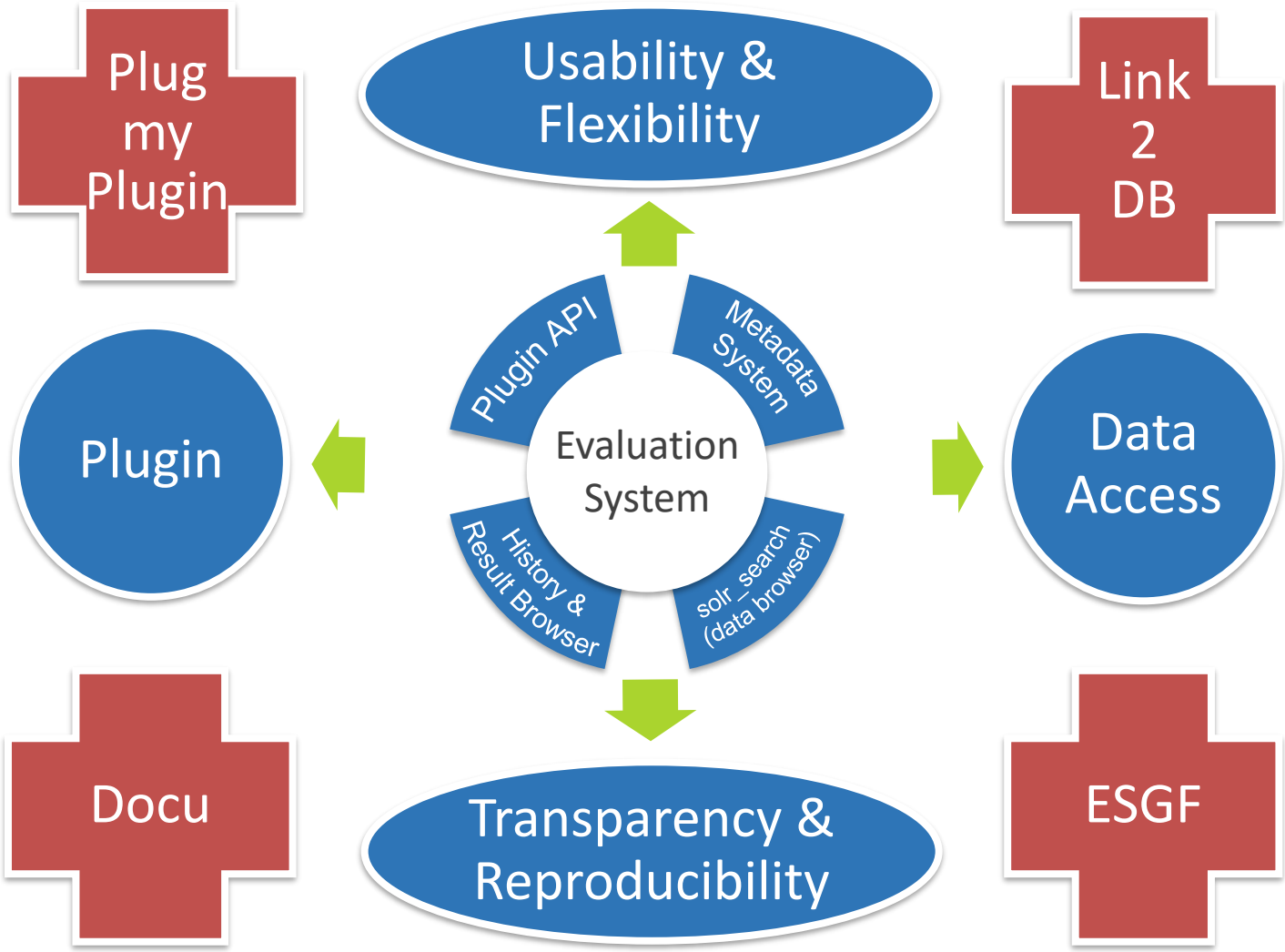
Link
2
DB

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Free Evaluation System Framework (**freva**)
New Features and Development



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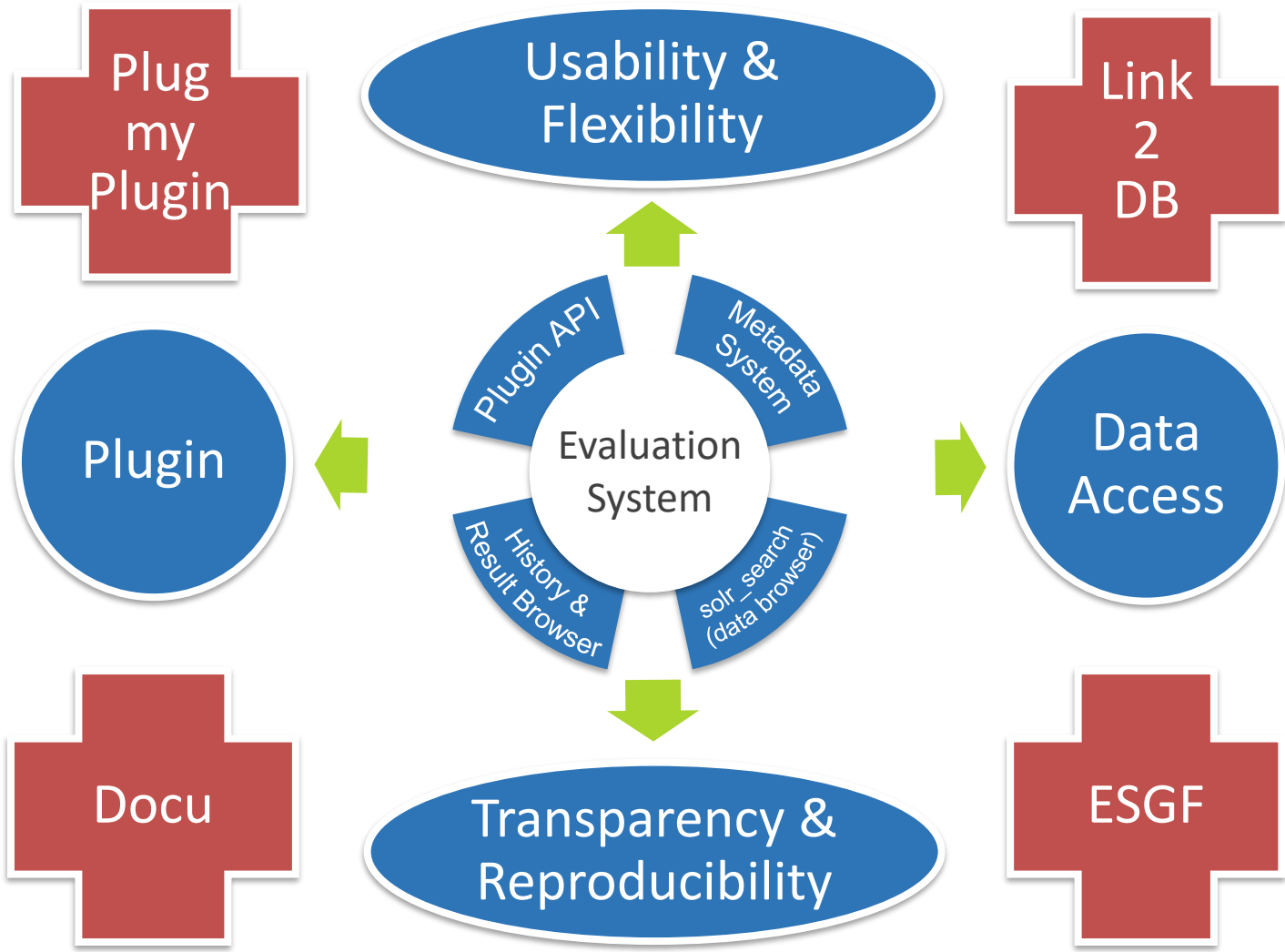


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In the shell freva has a ESGF tool which finds data and builds download script

```
b324031@m11553% freva --esgf --help
```

The query is of the form key=value. the key might be repeated and/or negated with the '_not_' suffix (e.g. model_not=MPI-ESM-LR experiment=decadal2000 experiment=decadal2001)

Simple query:

```
frev a --esgf model=MPI-ESM-LR experiment=decadal2001 variable=tas distrib=False
```

The search API is described here: http://www.esgf.org/wiki/ESGF_Search_REST_API

Some special query keys:

distrib: (*true*, false) search globally or only at DKRZ (MPI data and replicas)
 latest : (true, false, *unset*) search for the latest version, older ones or all.
 replica: (true, false, *unset*) search only for replicas, non-replicas, or all.

Usage: freva --esgf [options]

Options:

-d, --debug	turn on debugging info and show stack trace on exceptions.
-h, --help	show this help message and exit
--datasets	List the name of the datasets instead of showing the urls.
--show-facet=FACET	<list> List all values for the given facet (might be defined multiple times). The results show the possible values of the selected facet according to the given constraints and the number of *datasets* (not files) that selecting such value as a constraint will result (faceted search)
--opendap	List the name of the datasets instead of showing the urls.
--gridftp	Show Opendap endpoints instead of the http default ones (or skip them if none found)
--download-script=FILE	<file> Download wget_script for getting the files instead of displaying anything (only http)
--query=QUERY	<list> Display results from <list> queried fields



In the shell freva has a ESGF tool which finds data and builds download script

```
b324031@m11553% freva --esgf experiment=obs --show-facet=institute
[institute]
```

```
CNES: 1
FUB-DWD: 1
IPSL: 30
NASA-GSFC: 1
NASA-JPL: 8
NCEI: 8
ORNL: 245
PCMDI: 8
REMSS: 1
UOE: 1
UTK: 1
UN: 2
```

```
b324031@m11553% freva --esgf experiment=obs institute=FUB-DWD
```

```
http://esgf1.dkrz.de/thredds/fileServer/obs4MIPs/obs4MIPs/observations/FUB-DWD/Obs-SSMI-MERIS/obs/mon/atmos/prw/prwStddev_SSMI-MERIS_L3_v1-00_200301-200812.nc
http://esgf1.dkrz.de/thredds/fileServer/obs4MIPs/obs4MIPs/observations/FUB-DWD/Obs-SSMI-MERIS/obs/mon/atmos/prw/prwFlag_SSMI-MERIS_L3_v1-00_200301-200812.nc
http://esgf1.dkrz.de/thredds/fileServer/obs4MIPs/obs4MIPs/observations/FUB-DWD/Obs-SSMI-MERIS/obs/mon/atmos/prw/prwErr_SSMI-MERIS_L3_v1-00_200301-200812.nc
http://esgf1.dkrz.de/thredds/fileServer/obs4MIPs/obs4MIPs/observations/FUB-DWD/Obs-SSMI-MERIS/obs/mon/atmos/prw/prw_SSMI-MERIS_L3_v1-00_200301-200812.nc
```

```
b324031@m11553% freva --esgf experiment=obs institute=FUB-DWD --download-script=/TMP/WGET.sh
```

BETA:

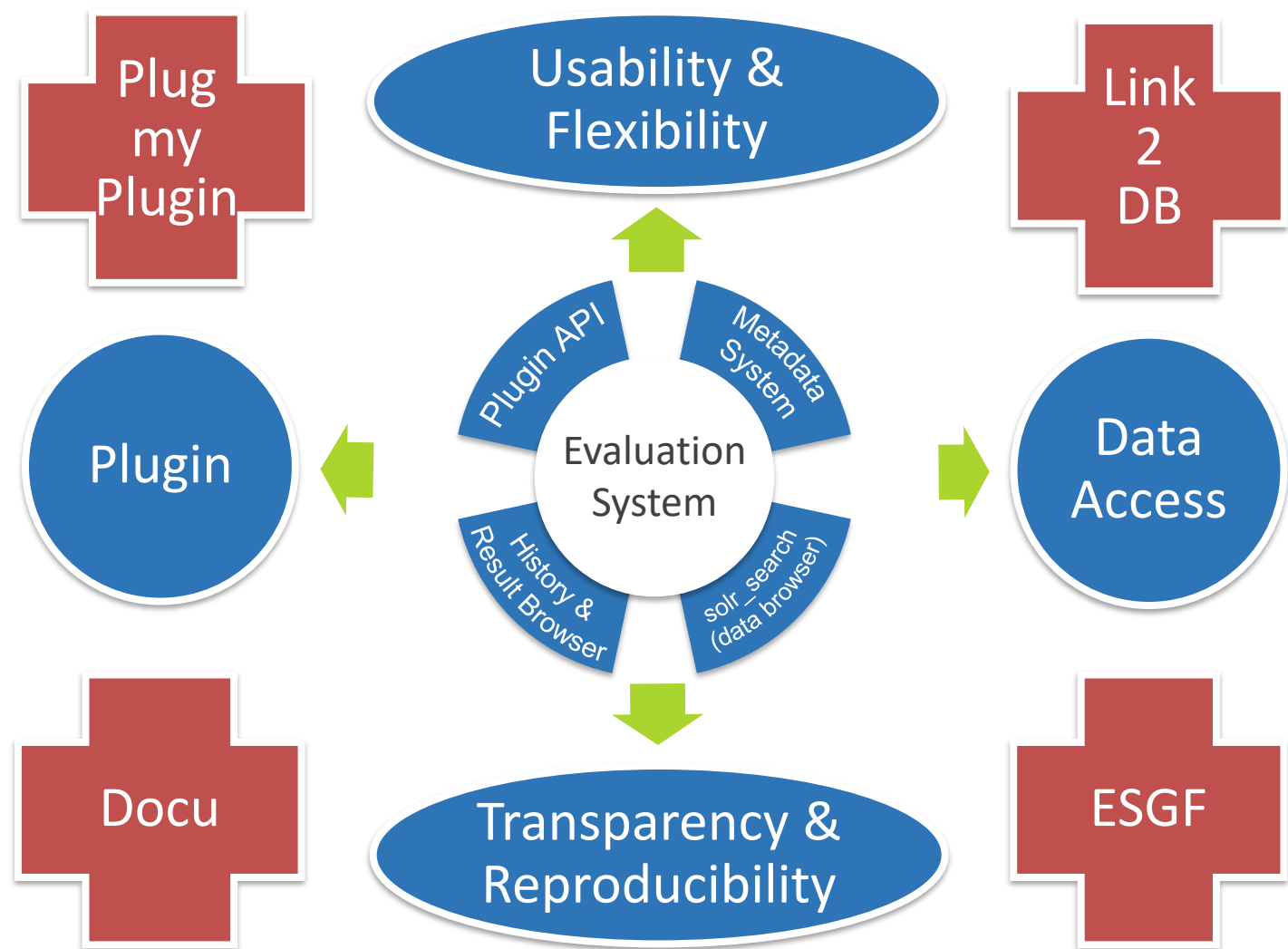
- A **virtual file system** (FUSE) which extends the local data base with the full ESGF
- Users can access (ls, cp, ncdump,etc ...) all files, which are **automatically** downloaded in the moment of touching it.
- A **flexible cache** can be used by all users, it can be hold for a specific time or it will be overwritten
- **Plugins can directly use ESGF** data without the need of downloading before using it
- ... in **the web** as well!

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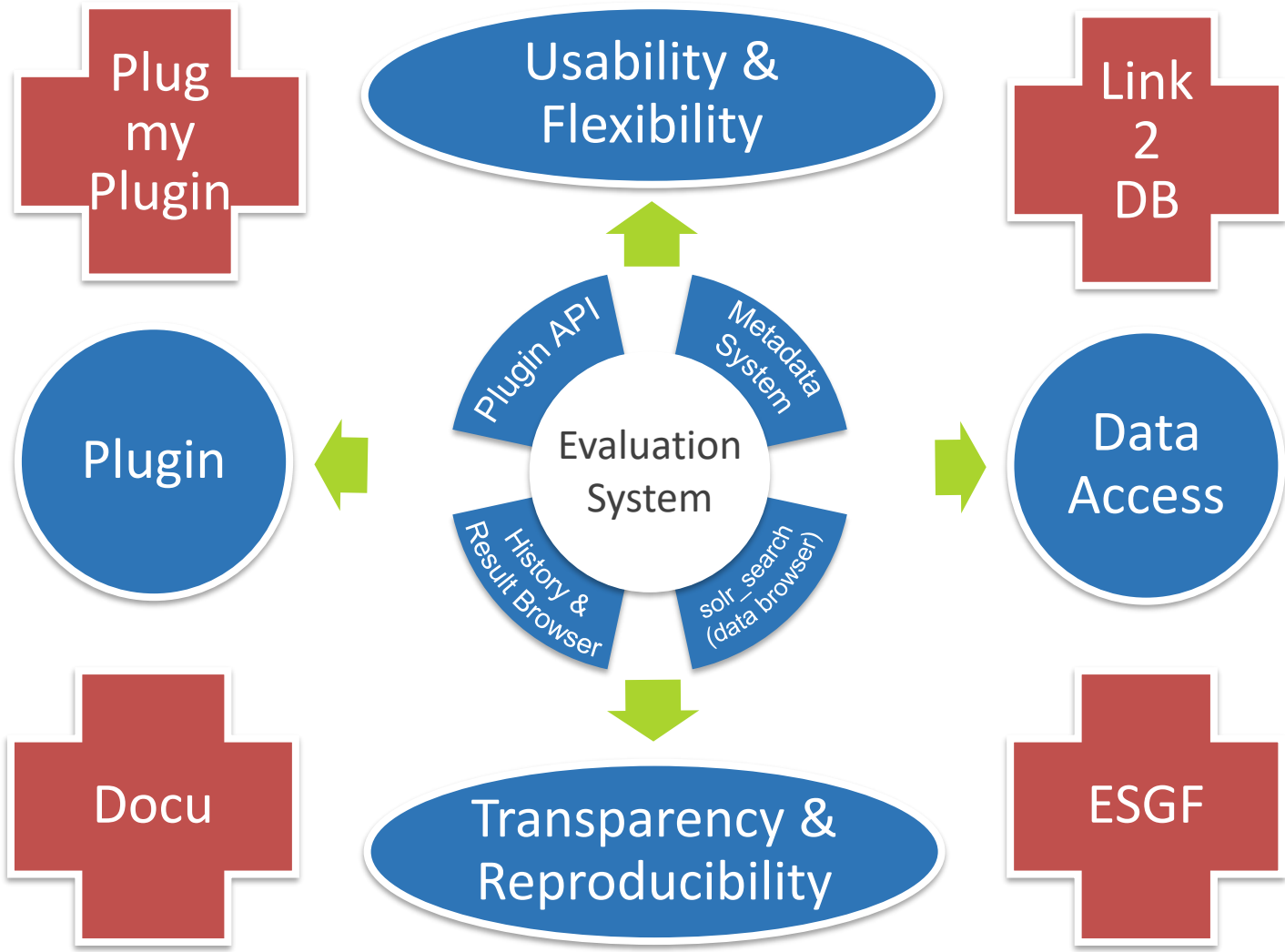
Etor E. Lucio-Eceiza, C. Kadow, M. Bergemann,
M. Ramadoss, S. Illing, O. Kunst, T. Schartner, J.
Grieger, M. Schuster, A. Richling, I. Kirchner, H.
Rust, P. Sommer, U. Cubasch, U. Ulbrich, H.
Thiemann, T. Ludwig

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WEB:

[Plugins](#)[History](#)[Data-Browser](#)[Shell](#)[Help](#)[Contact](#)[logout \(b324031\)](#)

Plugins

[Plug-my-Plugin](#)

Blocking

Calculates the Instantaneous Blocked Longitude (IBL)

DiffPlotter

Plots difference between two NetCDF files

DriftCorrection

Tool to correct data for drifts, trends and other.

Plug
my
Plugin

Developers can test new plugins in the shell and web



WEB:

A screenshot of a web application interface. At the top, there is an orange navigation bar with tabs for 'Plugins', 'History', and 'Data'. On the right side of this bar is a 'logout (b324031)' link. Below the navigation bar, the main content area is titled 'Plug-in your own plugin' with a close button (X) in the top right corner. Inside this modal, there is a sub-header 'Here you can plugin your own plugin' and two tabs: 'Home' and 'Scratch'. Below the tabs is a list of folders: ANC, ANCESTRY, A_GREAT_PLUGIN, CYSTRACK, DATA, EDIT_MURCSS, FESOM2CMOR, IndexPlotter, PERCENTILE-MISTRAL, R, and SUMMER_MURCSS. The 'A_GREAT_PLUGIN' folder is highlighted with a red box, and inside it, the file 'A_GREAT_PLUGIN.py' is also highlighted with a red box. To the left of the modal, a sidebar shows a list of plugins: 'Blocking' (Calculates the Instantaneous B...), 'DiffPlotter' (Plots difference between two N...), and 'DriftCorrection' (Tool to correct data for drifts, tre...). On the right side of the modal, there is a blue button labeled 'Plug-my-Plugin' which is also highlighted with a red box.

Plug
my
Plugin

WEB:

[Plugins](#)[History](#)[Data-Browser](#)[Shell](#)[Help](#)[Contact](#)[logout \(b324031\)](#)

Plugins

Remove exported Plugin

A_GREAT_Plugin

You have plugged in this tool.

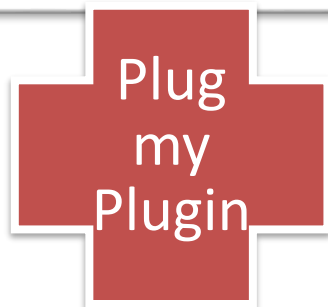
This is a sample plugin

Blocking

Calculates the Instantaneous Blocked Longitude (IBL)

DiffPlotter

Plots difference between two NetCDF files



WEB:

PluginsHistoryData-BrowserShellHelpContact

logout (b324031)

A GREAT_Plugin

This is a sample plugin

Variable

Select a variable

pr

pr

pradjust

prc

prhmax

prsn

prstderr

Unique output id

Remove exported Plugin

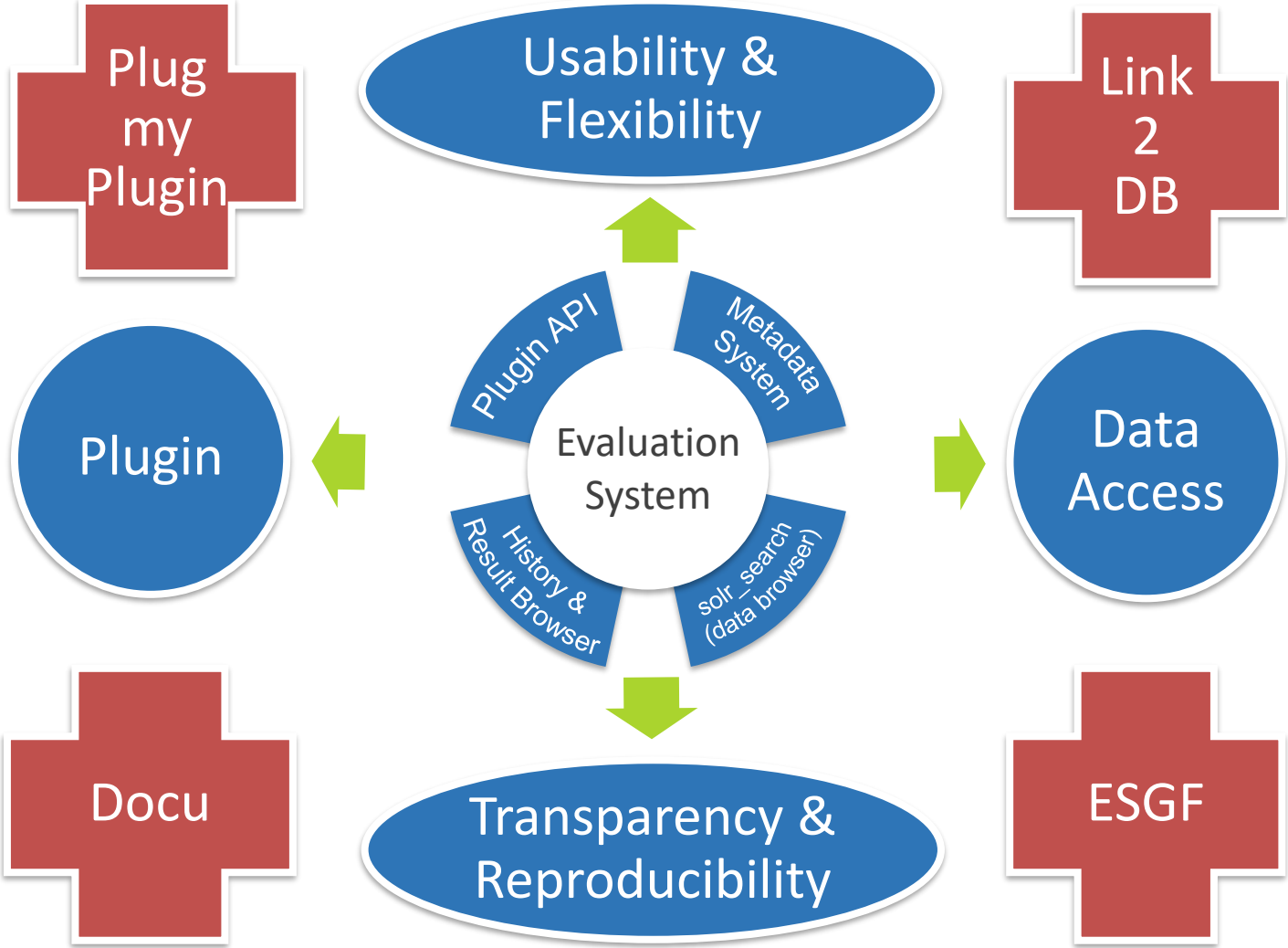


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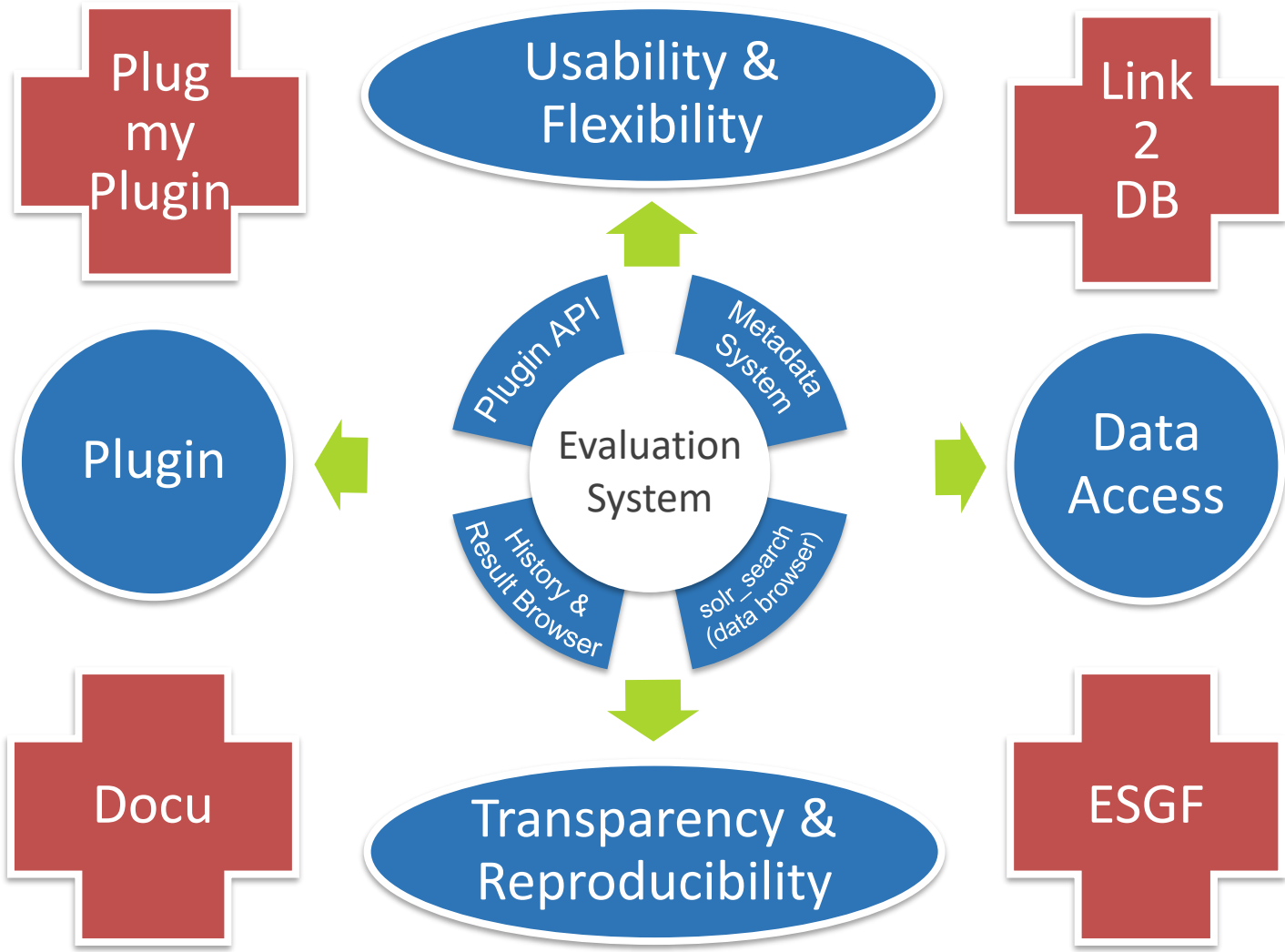


It's a PICO!
Click around...

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Basic documentation of the plugin is given by Freva,
detailed docu in Latex for PDFs and web interface



Short Description

WEB: Plugins

Blocking

Calculates the Instantaneous Blocked Longitude (IBL)

SHELL:

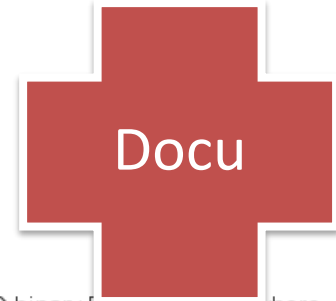
```
b324031@m11553% freva --plugin  
Blocking: Calculates the Instantaneous Blocked Longitude (IBL)
```

Freva Plugin.py:

```
b324031@m11553% more blocking/Blocking_integration_Miklip.py  
import os  
  
from evaluation_system.api import plugin, parameters  
from evaluation_system.misc import config  
  
class Blocking(plugin.PluginAbstract):  
    tool_developer = {'name': 'Andy Richling', 'email': 'andy.richling@met.fu-berlin.de'}  
    __short_description__ = "Calculates the Instantaneous Blocked Longitude (IBL)"  
    __long_description__ = "Calculates the Instantaneous Blocked Longitude (IBL) based on a slightly modified Blocking  
Index after Tibaldi and Molteni (1990). It is a 1D binary Blocking Index where every longitude will be analysed whether  
it is instantaneous blocked or not blocked. Blocking in that index is based on two geopotential height gradients - north  
and south of the normally located stormtrack. Note: Actually, full Plugin is only supported for the Northern Hemisphere."  
    __version__ = (1,0,1)  
    __parameters__ = parameters.ParameterDictionary(  

```

Basic documentation of the plugin is given by Freva,
detailed docu in Latex for PDFs and web interface



Long Description

WEB:

Blocking

Calculates the Instantaneous Blocked Longitude (IBL) based on a slightly modified Blocking Index after Tibaldi and Molteni (1990). It is a 1D binary Blocking Index where every longitude will be analysed whether it is instantaneous blocked or not blocked. Blocking in that index is based on two geopotential height gradients - north and south of the normally located stormtrack. Note: Actually, full Plugin is only supported for the Northern Hemisphere.

Start analysis

Show history

Documentation

Contact developer

SHELL:

```
b324031@m11553% freva --plugin blocking --help
Blocking (v1.0.1): Calculates the Instantaneous Blocked Longitude (IBL) based on a slightly modified Blocking Index after Tibaldi and Molteni (1990). It is a 1D binary Blocking Index where every longitude will be analysed whether it is instantaneous blocked or not blocked. Blocking in that index is based on two geopotential height gradients - north and south of the normally located stormtrack. Note: Actually, full Plugin is only supported for the Northern Hemisphere.
```

Freva Plugin.py:

```
b324031@m11553% more blocking/Blocking_integration_Miklip.py
import os

from evaluation_system.api import plugin, parameters
from evaluation_system.misc import config

class Blocking(plugin.PluginAbstract):
    tool_developer = {'name': 'Andy Richling', 'email': 'andy.richling@met.fu-berlin.de'}
    __short_description__ = "Calculates the Instantaneous Blocked Longitude (IBL)"
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    __version__ = (1,0,1)
    __parameters__ = parameters.ParameterDictionary(
```

Basic documentation of the plugin is given by Freva,
detailed docu in Latex for PDFs and web interface



Options Description

WEB:

Outputdir

```
/work/bmx825/miklip-work/b324031/evaluation_system/output/blocking/20160419_180700
```

The default output directory of the MiKlip Evaluation System

Cachedir

```
/work/bmx825/miklip-work/b324031/evaluation_system/cache/blocking
```

SHELL:

```
outputdir    (default: $USER_OUTPUT_DIR/$SYSTEM_DATETIME) [mandatory]
              The default output directory of the MiKlip Evaluation System
cachedir     (default: $USER_CACHE_DIR) [mandatory]
              The default cache directory of the MiKlip Evaluation System.
              Always gets a freva id
project      (default: <undefined>) [mandatory]
              Choose project, e.g. reanalysis, cmip5, baseline1, baseline0
```

Freva Plugin.py:

```
b324031@m11553% more blocking/Blocking_integration_MiKlip.py
```

```
# Directories
parameters.Directory(name='outputdir', default='$USER_OUTPUT_DIR/$SYSTEM_DATETIME', manda
tory=True, help='The default output directory of the MiKlip Evaluation System'),
parameters.CacheDirectory(name='cachedir', default='$USER_CACHE_DIR', mandatory=True, hel
p='The default cache directory of the MiKlip Evaluation System. Always gets a freva id'),

# MiKlip Data Parameters
parameters.SolrField(name='project', mandatory=True, help='Choose project, e.g. reanalysi
s, cmip5, baseline1, baseline0', facet='project', predefined_facets={'variable':['zg'],'time_frequency':['6hr','day']}),
parameters.SolrField(name='product', mandatory=True, help='Choose product, e.g. reanalysi
s, output', facet='product', predefined_facets={'variable':['zg'],'time_frequency':['6hr','day']}),
parameters.SolrField(name='institute', mandatory=True, help='Choose institute of experime
nt, e.g. MPI-M, ECMWF', facet='institute', predefined_facets={'variable':['zg'],'time_frequency':['6hr','day']}),
parameters.SolrField(name='model', mandatory=True, help='Choose model of experiment, e.g.
```

Basic documentation of the plugin is given by Freva,
detailed docu in Latex for PDFs and web interface



Latex DOCU - PDF and Web

WEB:

Plugins	History	Data-Browser	Shell	Help	Contact	logout (b324031)
---------	---------	--------------	-------	------	---------	------------------

Blocking

Andy Richling*

Christopher Kadow, Sebastian Illing, Oliver Kunst

Institut für Meteorologie, Freie Universität Berlin

Version from November 27, 2015

*andy.richling@met.fu-berlin.de

This is a brief documentation about the Freva Blocking Plugin and is currently still under construction. Please note the Plugin is originally developed for the northern hemisphere (NH), so that some features actually do not work well for the SH. Comments or any kind of feedback is highly appreciated. Please send an e-mail to the authors.

1 Introduction

Blocking anticyclones are synoptic-scale systems which have a crucial role in atmospheric low-frequency variability. In generally, blocking situations persist for multiple days to weeks and block the westerly flow. There exist two basic types of blocking, the dipole block and the omega block. In both of them, in the NH the jet stream is split up into a stronger, northern and a weaker, southern jet branch. The change of the flow in direction, intensity and position due to the characteristic

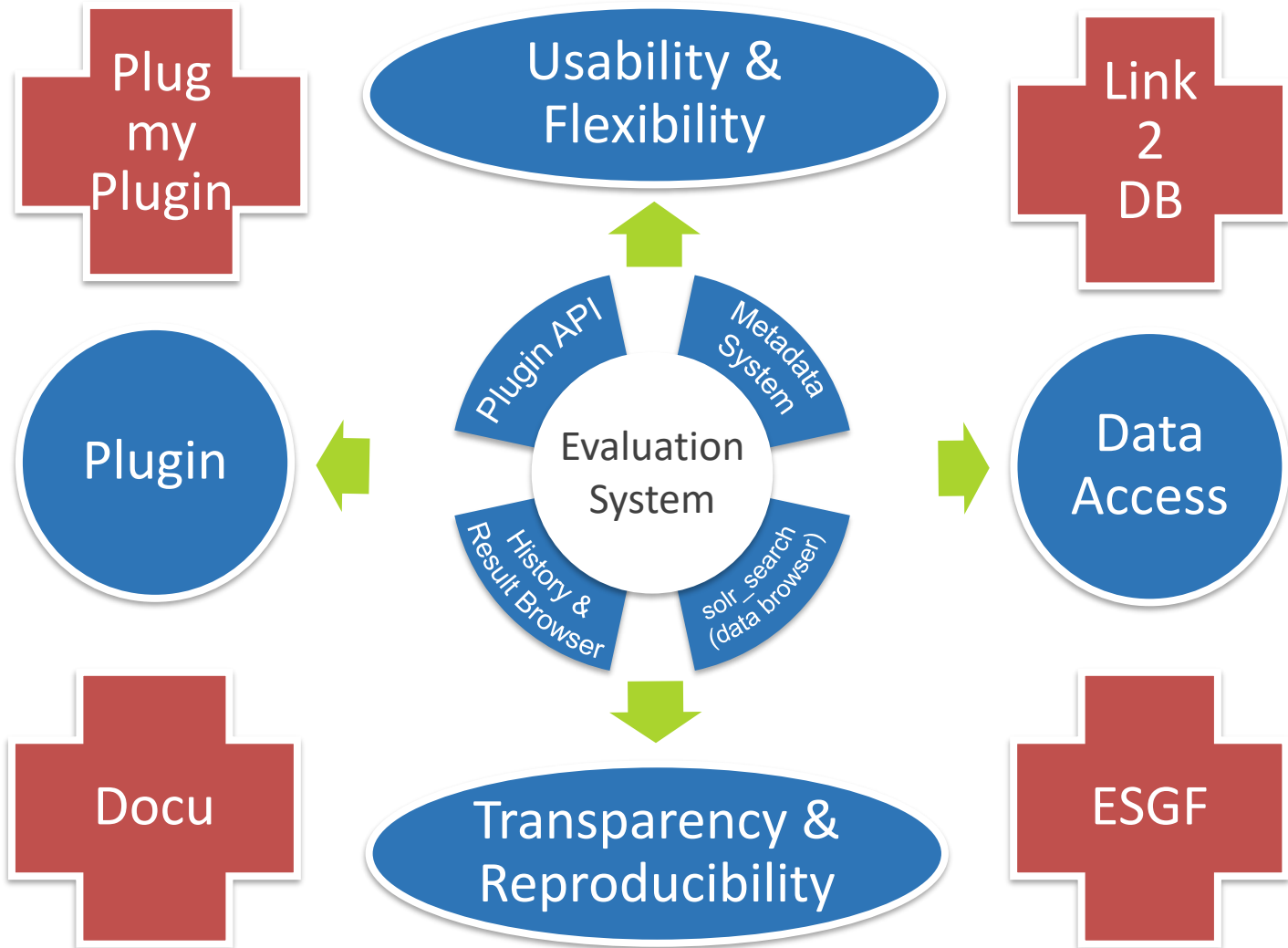
Shell: Is blocking/doc/doc_Blocking_FrevaPlugin.pdf

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