

Wikiprint Book

Title: ESGFToolsUI

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Table of Contents

What is ESGF Tools UI?	3
Getting started	3
Pre-requisites	3
Installation	3
Search of ESGF Climate Data	3
Selecting a index node	4
Selecting search parameters	4
Selecting search parameters: Tree of parameters	5
Selecting search parameters: drop-down list of parameters	5
Selecting search parameters: configured parameters	6
Using free text search	6

What is ESGF Tools UI?

A tool that is integrated in [?ToolsUI NetCDF Java](#) for including a desktop client for [?ESGF services](#), with features like search of data along multiple nodes, download manager and metadata aggregation for allowing a full exploration through dataset services.

The added functionality in ToolsUI NetCDF is in ESGF tab. This tab contains 4 sub-tabs, each one with an specific functionality.



Getting started

Pre-requisites

JDK from Sun / Oracle (1.5 - newer) or OpenJDK 6

OpenJDK 7 is not supported

Installation

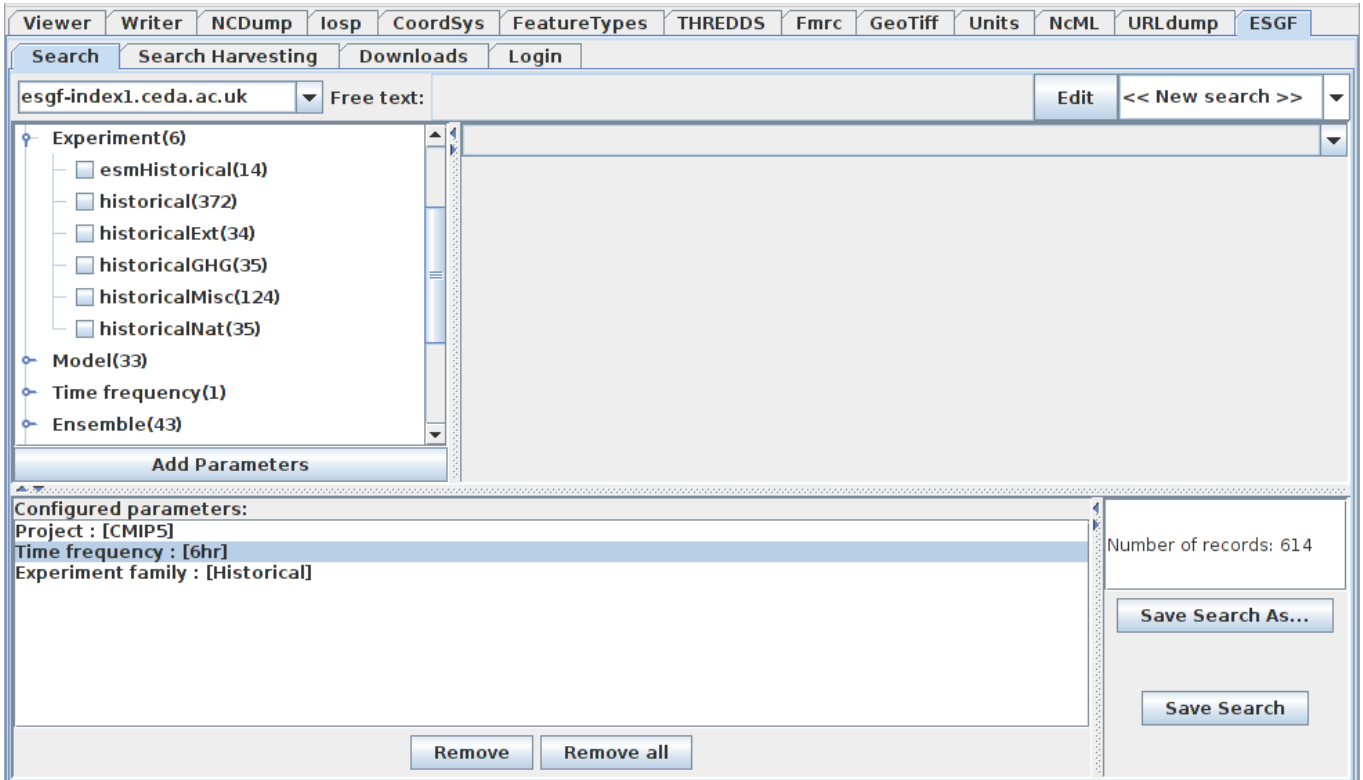
1. Download the zip in [ESGFToolsUI-0.4.1.zip](#)
2. Unzip it
3. Go to unzipped directory
 - In Windows:
 - Open ESGFToolsUI.jar
 - In Linux
 - In shell:

```
java -jar ESGFToolsUI.jar
```

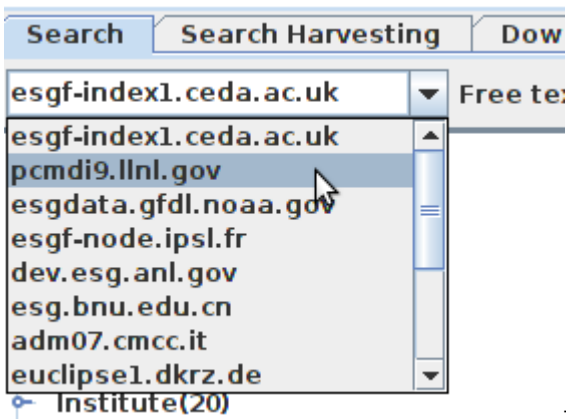
Search of ESGF Climate Data

A search in ESGF returns the records that matching the search constraints after querying to an index node. The ESGF search service is always served by a index node and this node is able to do local and distributed searches. In this tool, the distributed capabilities of the ESGF are used so any selected index node will be used to query all nodes in the ESGF system.

The search panel of ESGF climate data is in the "Search" sub-tab. The search constraints are defined by parameter configuration in the panel or by introduction of a free-text search query. The result are the number of records finding in the federation that satisfy the constraints of search (in panel in bottom right area). Record is the physical replica of a climate dataset that are stored on a data node.



Selecting a index node

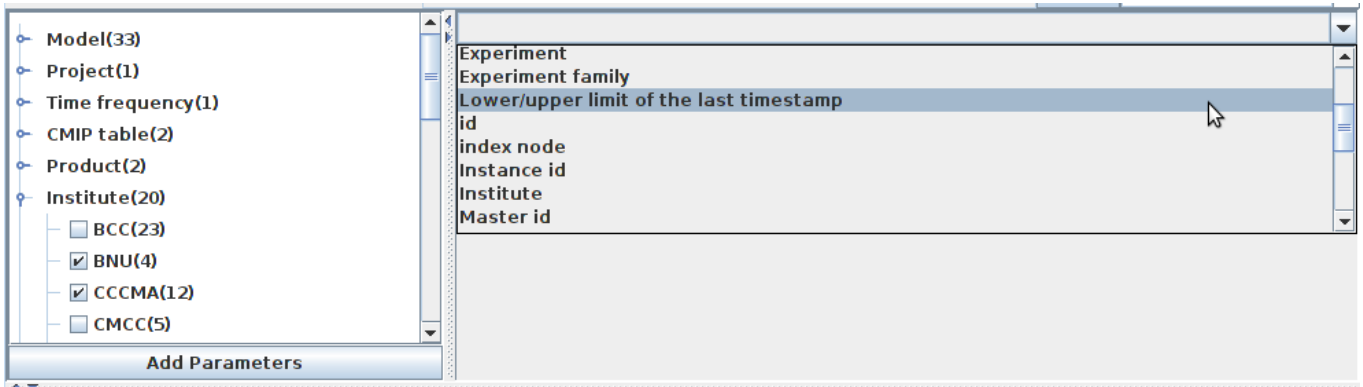


The searches are executed in a index node of the federation. Each node have different processing times for the response. For this reason, the user is allowed to select the index node where prefers send the search petition. The index node may be configured in the top left drop-down list. After selected a new index node the search panel is updated.

Selecting search parameters

The search parameters can be configured on the panel in two ways:

- By values selection in tree of parameters
- By parameter selection in drop-down list



Selecting search parameters: Tree of parameters

The tree of parameters shows the parameters with bounded values which are defined by the federation. In the first level is the name of the parameter and the number of its bounded values. In the second level are the parameter values, each one with the count of records that satisfy the previous configured constraints (restrictions that are listed in the "configured parameters" section) + the new constraint (parameter-value).

For each parameter can be selected more than one value. Finally, for adding the selected values on the tree in the search constraints you must click on "Add parameters" button. All values selected in a parameter are linked by logic OR and the selected parameters are linked by logic AND. Generally, the parameter configuration is as follows, where "P" is a parameter and "V" a value.

$$[(P_1 - V_1) \vee (P_1 - V_2) \vee \dots \vee (P_1 - V_n)] \wedge [(P_2 - V_1) \vee (P_2 - V_2) \vee \dots \vee (P_2 - V_n)] \\ \wedge [(P_n - V_1) \vee (P_n - V_2) \vee \dots \vee (P_n - V_n)]$$

For example, if are selected:

- * Institute
- * BNU ?
- * CCMA ?
- * Model
- * BNU-ESM ?

Then the result will be the number of records that belong to BNU-ESM model and made by BNU or CCMA institutes i.e.
 $((\text{Institute}, \text{BNU}) \vee (\text{Institute}, \text{CCMA})) \wedge ((\text{Model}, \text{BNU-ESM}))$

After adding new parameters the search panel is updated (?Add parameters? button). Now in the tree, all parameters that already have values configured only shows this values. This happens because the allowed values ??for a parameter are always those that do not result in an empty set if they are selected. To configure a parameter previously configured you can uncheck the previously configured values and then click on "Add parameters" or you can remove them in "Configured parameters" section.

Selecting search parameters: drop-down list of parameters

The parameter selection in drop-down list (top right) allows values configuration of some parameters. In this list are contained the parameters without bounded values and that for this reason can't be configured in the tree of parameters. Also contains the parameters with bounded values. After selecting a list parameter, below of the list will be displayed a specific configuration panel for the selected parameter.

In the figure below you can see the panel that is displayed when ?temporal range of data coverage? is selected. Finally, to be added this configuration click in the bottom button "Add parameter" ("Add temporal range parameter" in this case).

Temporal range of data coverage (Start-End)

Select temporal range of data coverage (Start-End)

start								end							
enero				1920				enero				2000			
	lun	mar	mié	jue	vie	sáb	dom		lun	mar	mié	jue	vie	sáb	dom
01				1	2	3	4	52						1	2
02	5	6	7	8	9	10	11	01	3	4	5	6	7	8	9
03	12	13	14	15	16	17	18	02	10	11	12	13	14	15	16
04	19	20	21	22	23	24	25	03	17	18	19	20	21	22	23
05	26	27	28	29	30	31		04	24	25	26	27	28	29	30
								05	31						

Add temporal range parameter

Selecting search parameters: configured parameters

All configured parameters are displayed in a specific panel in bottom left. In this panel are listed the configured parameters with its values assigned.

In the figure below can see that the current search is configured for searching climate data that belong to CMIP5 project, that were made by BNU or CCCMA institute, that have a time frequency of six hours, belongs to "historical" experiment and that have data between 15-01-1920 and 20-01-2000, and finally contains at least one of this variables: "hus", "ps", "psl", "ta".

Configured parameters:

Project : [CMIP5]
 end:2000-01-20T11:40:49Z
 start:1920-01-15T11:40:49Z
 Experiment : [historical]
 Variable : [hus, ps, psl, ta]
 Institute : [BNU, CCCMA]
 Time frequency : [6hr]

This panel also allow to select a parameter and delete its configuration doing click on "Remove" and delete all parameters configuration doing click on "Remove all"

Using free text search

The free-text search o full text search allows to do a search rich in syntax, by arbitrary words, logic operations and wild-cards. In this case, the records searched will be records that contains metadata that are related with what is specified in the free text query.

In top center in the search panel can see the text box where can be introduced the query of free text search. The "Edit" button enables input by keyboard in the text box. The "Save" button adds the free text query parameter in the search. The new configured parameter will be displayed in the "configured parameters" section with the name "query".

The free-text query may have:

- Logic operations (AND & OR) between words
- Wildcard * for the words
- Parentheses () as separators

- `metadata_name:word` to specify the metadata name where must match the given word

For example, the query:

```
institute:CCCMA OR (id:*IPSL* AND (model:IPSL-CM5A-LR OR model:IPSL-CM5B-LR))
```

Will search all records in ESGF whose institute is CCCMA OR that satisfy the following points:

1. Have an id that contains the word IPSL (`id:*IPSL*`)
2. Belong to IPSL-CM5A-LR model OR IPSL-CM5B-LR model